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Interventions for helping to turn term breech babies to head first presentation when using external cephalic version (Review)

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[Intervention Review]

Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

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ABSTRACT

Background

Breech presentation is associated with increased complications. Turning a breech baby to head first presentation using external cephalic version (ECV) attempts to reduce the chances of breech presentation at birth so as to avoid the adverse effects of breech vaginal birth or caesarean section. Interventions such as tocolytic drugs and other methods have been used in an attempt to facilitate ECV.

Objectives

To assess, from the best evidence available, the effects of interventions such as tocolysis, acoustic stimulation for midline spine position, regional analgesia (epidural or spinal), transabdominal amnioinfusion, systemic opioids and hypnosis, or the use of abdominal lubricants, on ECV at term for successful version, presentation at birth, method of birth and perinatal and maternal morbidity and mortality.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 September 2014) and the reference lists of identified studies.

Selection criteria

Randomised and quasi-randomised trials comparing the above interventions with no intervention or other methods to facilitate ECV at term.

Data collection and analysis

We assessed eligibility and trial quality. Two review authors independently assessed for inclusion all potential studies identified as a result of the search strategy and independently extracted the data using a specially designed data extraction form.

Main results

We included 28 studies, providing data on 2786 women. We used the random-effects model for pooling data because of clinical heterogeneity between studies. A number of trial reports gave insufficient information to allow clear assessment of risk of bias. We used GradePro software to carry out formal assessments of quality of the evidence for beta stimulants versus placebo and regional analgesia with tocolysis versus tocolysis alone.

Tocolytic parenteral beta stimulants were effective in increasing cephalic presentations in labour (average risk ratio (RR) 1.68, 95% confidence interval (CI) 1.14 to 2.48, five studies, 459 women, low-quality evidence) and in reducing the number of caesarean sections (average RR 0.77, 95% CI 0.67 to 0.88, six studies, 742 women, moderate-quality evidence). Failure to achieve a cephalic vaginal birth was less likely for women receiving a parenteral beta stimulant (average RR 0.75, 95% CI 0.60 to 0.92, four studies, 399 women, moderate-quality evidence). No clear differences in fetal bradycardias were identified, although this was reported for only one study, which was underpowered for assessing this outcome. Failed external cephalic version was reported in nine studies (900 women), and women receiving parenteral beta stimulants were less likely to have failure compared with controls (average RR 0.70, 95% CI 0.60 to 0.82, moderate-quality evidence). Perinatal mortality and serious morbidity were not reported. Sensitivity analysis by study quality was consistent with overall findings.

For other classes of tocolytic drugs (calcium channel blockers and nitric oxide donors), evidence was insufficient to permit conclusions; outcomes were reported for only one or two studies, which were underpowered to demonstrate differences between treatment and control groups. Little evidence was found regarding adverse effects, although nitric oxide donors were associated with increased risk of headache. Data comparing different tocolytic drugs were insufficient.

Regional analgesia in combination with a tocolytic was more effective than the tocolytic alone for increasing successful versions (assessed by the rate of failed ECVs; average RR 0.61, 95% CI 0.43 to 0.86, five studies, 409 women, moderate-quality evidence), and no difference was identified in cephalic presentation in labour (average RR 1.44, 95% CI 0.78 to 2.66, three studies, 279 women, very low-quality evidence), caesarean sections (average RR 0.74, 95% CI 0.40 to 1.37, three studies, 279 women, very low-quality evidence) nor fetal bradycardia (average RR 1.48, 95% CI 0.62 to 3.57, two studies, 210 women, low-quality evidence), although studies were underpowered for assessing these outcomes. Studies did not report on failure to achieve a cephalic vaginal birth (breech vaginal deliveries plus caesarean sections) nor on perinatal mortality or serious infant morbidity.

Data were insufficient on the use of regional analgesia without tocolysis, vibroacoustic stimulation, amnioinfusion, systemic opioids and hypnosis, and on the use of talcum powder or gel to assist external cephalic version, to permit conclusions about their effectiveness and safety.

Authors' conclusions

Parenteral beta stimulants were effective in facilitating successful ECV, increasing cephalic presentation in labour and reducing the caesarean section rate, but data on adverse effects were insufficient. Data on calcium channel blockers and nitric acid donors were insufficient to provide good evidence.

The scope for further research is clear. Possible benefits of tocolysis in reducing the force required for successful version and possible risks of side effects need to be addressed further. Further trials are needed to compare the effectiveness of routine versus selective use of tocolysis and the role of regional analgesia, fetal acoustic stimulation, amnioinfusion and abdominal lubricants, and the effects of hypnosis, in facilitating ECV. Although randomised trials of nitric oxide donors are small, the results are sufficiently negative to discourage further trials. Intervention fidelity for ECV can be enhanced by standardisation of the techniques and processes used for clinical manipulation of the fetus in the abdominal cavity and ought to be the subject of further research.

PLAIN LANGUAGE SUMMARY

Ways to help turn a breech baby to head first presentation at the end of pregnancy

Babies born in the breech position (bottom first) are at increased risk of complications at birth because of a delay in birth of the head. Turning a breech baby to head first in late pregnancy may reduce these complications. A procedure called 'external cephalic version (ECV)' describes when practitioners use their hands on the woman's abdomen to gently try to turn the baby from the breech position to head first. A number of treatments may help the success of ECV. These include using tocolytic drugs (drugs like beta stimulants and calcium channel blockers that relax the womb), stimulating the baby with sound through the mother's abdomen (acoustic stimulation),

increasing the fluid surrounding the baby (transabdominal amnioinfusion), injecting pain-relieving drugs into the mother's lower back to produce regional analgesia (epidural or spinal analgesia), giving the mother opioid drugs to help her relax, using hypnosis and applying gel or talcum powder to the mother's abdomen.

This review of trials found 28 randomised controlled studies involving 2786 women. Most studies looked at the effects of tocolytic beta stimulant drugs. Results showed that babies are more likely to turn head first during ECV and to remain head first for the start of labour, if women receive beta stimulants. These drugs also reduced the number of caesarean sections, but insufficient data on possible adverse effects were collected. Little information on other types of tocolytic drugs was available, although nitric oxide donors were associated with an increase in headaches. In addition, too little evidence was available to show whether the other ways of trying to help ECV are effective. Further research is needed if we are to increase the success of ECV.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON [Explanation]

Beta stimulant compared with placebo for helping to turn babies with breech presentation when ECV was used

Patient or population: patients with breech presentation
Settings: studies in hospital settings
Intervention: beta stimulant
Comparison: placebo

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Placebo	Beta stimulant				
Cephalic presentation at birth (primary)	Study population		RR 1.68 (1.14 to 2.48)	459 (5 studies)	⊕⊕◯◯ **Low**[1,2]	
	294 per 1000	494 per 1000 (335 to 729)				
	Moderate					
	255 per 1000	428 per 1000 (291 to 632)				
Cephalic vaginal birth not achieved (CS + breech vaginal birth) primary outcome	Study population		RR 0.75 (0.6 to 0.92)	399 (4 studies)	⊕⊕⊕◯ **Moderate**[3]	
	727 per 1000	545 per 1000 (436 to 669)				
	Moderate					
	708 per 1000	531 per 1000 (425 to 651)				
Caesarean section (primary)	Study population		RR 0.77 (0.67 to 0.88)	742 (6 studies)	⊕⊕⊕◯ **Moderate**[1]	

	670 per 1000	**516 per 1000** (449 to 590)				
	Moderate					
	707 per 1000	**544 per 1000** (474 to 622)				
Fetal bradycardia (primary)	**Study population**		**RR 2.81** (0.12 to 66.17)	58 (1 study)	⊕○○○ **Very low**[4,5]	
	0 per 1000	**0 per 1000** (0 to 0)				
	Moderate					
	0 per 1000	**0 per 1000** (0 to 0)				
Failed external cephalic version	**Study population**		**RR 0.7** (0.6 to 0.82)	900 (9 studies)	⊕⊕⊕○ **Moderate**[1]	
	654 per 1000	**458 per 1000** (393 to 537)				
	Moderate					
	632 per 1000	**442 per 1000** (379 to 518)				
Perinatal mortality	See comment	See comment	Not estimable	0 (0)	See comment	No data reported
Perinatal morbidity	See comment	See comment	Not estimable	0 (0)	See comment	No data reported

*The basis for the **assumed risk** (e.g. median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio.

GRADE Working Group grades of evidence.
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

1. Most studies contributing data had design limitations.
2. I^2 > 60%. Effect size varied considerably.
3. All studies providing data had design limitations.
4. The one study included is of poor quality, as it is an unblinded quasi-RCT.
5. Wide 95% CI crossing the line of no effect; small sample size and low event rate.

BACKGROUND

Description of the condition

Breech presentation occurs when the baby is positioned bottom first. It is more common in early pregnancy, and the incidence decreases with increasing gestational age. The incidence at term is about 3% to 4% (Hickok 1992). Breech presentation may be caused by an underlying fetal or maternal abnormality, it may be an apparently chance occurrence or it may be related to an otherwise benign variant such as cornual placental position (the placenta situated in an upper lateral corner of the uterus). In the latter two instances, breech presentation places a healthy baby and mother at increased risk of a complicated vaginal birth or caesarean section. Therefore, it is understandable that obstetricians, midwives and consumer groups take considerable interest in this topic. Prevention of harm with reduction of risk for mother and baby is a quantifiable outcome of carefully gathering this research evidence. Knowing what works best for whom and in what circumstances is the concern of clinical researchers working in this field.

Considerable disagreement surrounds the management of breech (bottom first) presentation, with respect to both the place of external cephalic version (ECV) and the type of birth. Interpretation of the findings of non-randomised trials is confounded by the fact that breech presentation per se appears to be a marker for poor perinatal outcome. For example, the incidence of childhood handicap following breech presentation has been found to be high (16%) for both babies born vaginally and those born by caesarean section (Danielian 1996). Randomised trials of planned mode of birth for vaginal breech birth have shown short-term benefit for the breech presenting baby managed by planned caesarean section compared with planned vaginal birth, although the impact on future pregnancies remains uncertain (Hofmeyr 2003). Two-year outcomes of one of these randomised trials showed no significant difference in the combined risk of death/neurodevelopmental delay between planned vaginal and planned caesarean groups (Whyte 2004). Despite this, these results have had a profound effect on clinical practice, and in many institutions, caesarean section for breech presentation has become routine. Under these circumstances, the impact of ECV on caesarean section rates would be expected to be greater than was the case in previous trials in institutions in which vaginal breech birth was common. The increased rate of caesarean section for breech presentation has decreased the rate of vaginal breech births, and concern has arisen that practitioners are losing the skill of supporting women who have vaginal breech births.

Breech presentation can be classified as complete, frank or incomplete. A complete breech occurs when the baby's hips and knees are flexed, with feet near the buttocks. A frank breech presentation is seen when the baby's legs are extended up to its head. Incomplete breech presentations include a footling breech, in which one or both legs are extended below the baby's bottom, and a kneeling breech, whereby the knees are the presenting part of the breech. Although underlying reasons may explain the breech presentation, the baby may have a more difficult vaginal birth because of the delay in birth of the head.

Description of the intervention

External cephalic version

During an ECV, practitioners use their hands on the woman's abdomen to gently try to turn the baby from the breech position to the head-down position. A video of the procedure can be viewed at https://www.youtube.com/watch?v=fKaNZfUno50.

External cephalic version before term became a part of routine obstetrical practice on the basis of the self-evident immediate effectiveness of the procedure, as well as reassuring results from several non-randomised trials, and in spite of the negative results of the only randomised trial reported before 1980 (Brosset 1956). The popularity of ECV before term waned after the mid-1970s, in part because of reports of an increase in perinatal mortality associated with the procedure (Bradley-Watson 1975), which, in retrospect, may have been due to application of undue force and the increasing perception of caesarean section as a safer option than ECV or breech birth.

Before the mid-1970s, ECV was usually attempted before term because of the belief that the procedure would seldom be successful at term. Subsequent studies showed that with the use of tocolysis, ECV could be achieved in a substantial proportion of women with breech presentation at term (37 or more completed weeks of pregnancy). Predictors of unsuccessful version include engaged presenting part, fetal head not easily palpable and tense uterus (Lau 1997).

Initially, successful ECV at a late stage of pregnancy was considered to have become possible only because of the use of tocolytic drugs to relax the uterus. However, later studies showed that ECV at term was frequently possible without tocolysis. The overall success rate was 60% in a systematic review of randomised controlled trials in which some trials included facilitation and others did not (Hofmeyr 1996).

The question, therefore, arose as to whether tocolysis should be used routinely for ECV at term, or only in those cases in which difficulty is anticipated or initial attempts fail.

A number of interventions to try to make ECV easier and more successful have been suggested, including use of tocolytic drugs, vibroacoustic stimulation, regional analgesia, amnioinfusion, maternal hydration, systemic opioid drugs, hypnosis and abdominal lubricants.

How the intervention might work

Tocolysis to facilitate ECV at term

1. Beta stimulants, such as salbutamol, ritodrine, hexoprenaline or terbutaline, are widely used tocolytics. They are usually given intravenously. Possible side effects for mother and baby include tachycardia (increase in heart rate).
2. Calcium channel blockers, like nifedipine, can be administered orally (Smith 2000). These drugs can be associated with hypotension (fall in blood pressure).
3. Nitric oxide donors, such as intravenous nitroglycerine (Belfort 1993) or sublingual glyceryl trinitrate/nitroglycerine spray (Reddick 1997; Yanny 2000), have been suggested as alternative tocolytics.

Vibroacoustic stimulation to facilitate ECV at term

This procedure is performed when the baby is stimulated using sound applied to the mother's abdomen to provoke the baby to move out of the midline position. It has been studied in one small trial, which is included in this review (Johnson 1995).

Regional analgesia to facilitate ECV at term

Regional analgesia includes spinal and epidural anaesthesia. Epidural analgesia is provided when an anaesthetic drug is infused into the epidural space. Spinal analgesia is given when an anaesthetic drug is injected into the cerebrospinal fluid. In a retrospective cohort study, ECV at term was successful in 59% of 32 women with epidural analgesia, and in 24% of 37 women without (Carlan 1994). In an uncontrolled study, ECV under epidural analgesia was successful in nine of 16 women (56%) in whom initial attempts had failed (Neiger 1998a; Neiger 1998b). Common adverse effects of these analgesics include hypotension and headache.

Amnioinfusion to facilitate ECV at term

An amnioinfusion is a procedure whereby saline is infused into the amniotic sac to increase the volume of fluid to enable the baby to turn more easily. Amnioinfusions can be done transabdominally or transvaginally. In an uncontrolled study, six women with failed ECV had a successful repeat attempt following transabdominal amnioinfusion with 700 mL to 900 mL warmed saline (Benifla 1995). To our knowledge, no randomised trials have determined the effectiveness of this intervention.

Systemic opioids to facilitate ECV at term

Systemic opioids may facilitate ECV by relaxing the mother and reducing her sense of discomfort during the procedure.

Hypnosis to facilitate ECV at term

Different types of hypnosis may facilitate ECV by promoting relaxation, thereby potentially reducing the woman's sense of discomfort during the procedure.

Talcum powder and gel to facilitate ECV at term

Powder or gel applied to the woman's abdomen may act as a lubricant, possibly allowing smoother hand movements during attempts to turn the baby.

Why it is important to do this review

It is important to assess whether various interventions do increase the effectiveness of ECV in turning a breech baby to head first presentation and to help guide their use in clinical practice. Many of these interventions are commonly used, and it is important for doctors to be able to apply evidence-based medicine in this setting to offer the mother the greatest chance of success when undergoing an ECV. It must also be determined whether any of these interventions is associated with possible harm to mother or fetus.

Readers are referred to previous reviews of the topic (Hofmeyr 1989; Hofmeyr 1991; Hofmeyr 1992; Hofmeyr 1993; Hofmeyr 2014; Zhang 1993) - see also related Cochrane reviews: 'Cephalic version by postural management for breech presentation' (Hofmeyr 2012b); 'Cephalic version by moxibustion for breech presentation' (Coyle 2012); 'External cephalic version for breech presentation at term' (Hofmeyr 2012a); and 'External cephalic version for breech presentation before term' (Hutton 2006).

OBJECTIVES

To assess, from the best evidence available, the effects of interventions such as tocolysis, acoustic stimulation for midline spine position, regional analgesia (epidural or spinal), transabdominal amnioinfusion, systemic opioids and hypnosis, or the use of abdominal lubricants, on ECV at term for successful version, presentation at birth, method of birth and perinatal and maternal morbidity and mortality.

METHODS

Criteria for considering studies for this review

Types of studies

Clinical trials comparing the effects of interventions such as routine tocolysis versus selective or no use of tocolysis, or different tocolytics, epidural or spinal analgesia, amnioinfusion, maternal hydration, systemic opioids and fetal acoustic stimulation in midline fetal spine positions or hypnosis or abdominal lubricants on

clinically meaningful outcomes, with random or quasi-random allocation to treatment and control groups and with violations of allocated management and exclusions after allocation not sufficient to materially affect outcomes.

Types of participants

Women with singleton breech presentations at term and no contraindications to ECV or the intervention being studied, with or without previous failed ECV.

Types of interventions

A. Tocolytic drugs.
B. Vibroacoustic stimulation in midline fetal spine positions.
C. Regional analgesia.
D. Amnioinfusion.
E. Systemic opioids.
To avoid duplication of data, we have listed the interventions under study in order, from A to E. Each intervention will be compared with placebo and with only those interventions above it on the list. Thus, the intervention 'Regional analgesia' (C) will be compared with placebo, then with tocolytic drugs (A), then with vibroacoustic stimulation (B) and finally with other regional analgesia (C). When C is compared with C, different types of regional analgesia are compared with each other, so epidural may be compared with spinal analgesia as an intervention to facilitate ECV. Interventions identified in the future will be added to the end of the list.
In this update we identified trials examining other types of interventions used to facilitate ECV.
F. Hypnosis*.
G. Abdominal lubricants* (talcum powder versus gel).
*We decided to include these interventions, although they were not prespecified in the original protocol.

Types of outcome measures

Primary outcomes

1. Cephalic presentation at labour and at birth.
2. Failure to achieve cephalic vaginal birth (composite outcome: caesarean section plus vaginal breech birth)*.
3. Caesarean section.
4. Fetal bradycardia or prolonged decelerations as defined by trial authors.

Secondary outcomes

1. Failed external cephalic version.
2. Difficult external cephalic version.
3. Maternal palpitations.
4. Maternal headaches.
5. Maternal hypotension.
6. Operative vaginal birth.
7. Maternal mortality.
8. Maternal morbidity.
9. Perinatal mortality.
10. Perinatal morbidity.

We have included other outcomes, not specified here, when they were reported in the studies and when we considered them to be clinically important: vaginal breech birth, Apgar less than seven at five minutes, neonatal seizures, admission to neonatal unit, birth trauma, flushing in women, placental abruption, maternal discomfort, pain scores, maternal satisfaction with the procedure and maternal side effects (nausea and vomiting, dizziness and drowsiness).
*In this version of the review, a new primary outcome has been added. The purpose of ECV is to avoid breech presentation, which increases the risk of caesarean section and of breech vaginal delivery. For this reason, and to increase consistency with other related Cochrane reviews, we have added a composite outcome "Failure to achieve cephalic vaginal birth," which represents caesarean section plus vaginal breech births.

Search methods for identification of studies

The following methods section of this review is based on a standard template used by the Cochrane Pregnancy and Childbirth Group.

Electronic searches

We contacted the Trials Search Co-ordinator to search the Cochrane Pregnancy and Childbirth Group's Trials Register (30 September 2014).
The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. monthly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. weekly searches of MEDLINE (Ovid);
3. weekly searches of Embase (Ovid);
4. handsearches of 30 journals and the proceedings of major conferences;
5. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL, MEDLINE and Embase, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Specialized Register' section within the editorial information about the Cochrane Pregnancy and Childbirth Group.
Trials identified through the searching activities described above are each assigned to a review topic (or topics). The Trials Search

Co-ordinator searches the register for each review using the topic list rather than keywords.

Searching other resources

We searched the reference lists of retrieved studies.
We did not apply any language or date restrictions.

Data collection and analysis

For this update, we used the following methods. These methods are based on a standard template used by the Cochrane Pregnancy and Childbirth Group.

Selection of studies

Two review authors independently assessed for inclusion all potential studies identified as a result of the search strategy. We resolved disagreements through discussion, or, if required, we consulted the other review authors to achieve consensus.

Data extraction and management

We designed a form on which to record extracted data. For eligible studies, two review authors extracted data using the agreed upon form. We resolved discrepancies through discussion, or, if required, we consulted the third review author. We entered the data into Review Manager software (RevMan 2014) and checked them for accuracy.
When information in trial reports was unclear, we planned to contact report authors to request further details.

Assessment of risk of bias in included studies

Two review authors independently assessed risk of bias for each study using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). We resolved disagreements by discussion with the other review authors.

(1) Random sequence generation (checking for possible selection bias)

We described for each included study the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.
We assessed the method as:

- low risk of bias (any truly random process, e.g. random number table; computer random number generator);
- high risk of bias (any non-random process, e.g. odd or even date of birth; hospital or clinic record number); or
- unclear risk of bias.

(2) Allocation concealment (checking for possible selection bias)

We described for each included study the method used to conceal allocation to interventions before assignment and assessed whether intervention allocation could have been foreseen in advance of, or during, recruitment, or changed after assignment.
We assessed the methods as:

- low risk of bias (e.g. telephone or central randomisation; consecutively numbered sealed opaque envelopes);
- high risk of bias (open random allocation; unsealed or non-opaque envelopes, alternation; date of birth); or
- unclear risk of bias.

(3.1) Blinding of participants and personnel (checking for possible performance bias)

We described for each included study the methods used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. We considered that studies were at low risk of bias if they were blinded, or if we judged that lack of blinding was unlikely to affect results. We assessed blinding separately for different outcomes or classes of outcomes.
We assessed the methods as:

- low, high or unclear risk of bias for participants; and
- low, high or unclear risk of bias for personnel.

(3.2) Blinding of outcome assessment (checking for possible detection bias)

We described for each included study the methods used, if any, to blind outcome assessors from knowledge of which intervention a participant received. We assessed blinding separately for different outcomes or classes of outcomes.
We assessed methods used to blind outcome assessment as:

- low, high or unclear risk of bias.

(4) Incomplete outcome data (checking for possible attrition bias due to the quantity, nature and handling of incomplete outcome data)

We described for each included study, and for each outcome or class of outcomes, the completeness of data including attrition and exclusions from the analysis. We stated whether attrition and exclusions were reported and the numbers included in the analysis at each stage (compared with the total number of randomly assigned participants), reasons for attrition or exclusion when reported and whether missing data were balanced across groups or were related to outcomes. When sufficient information was reported, or could be supplied by the trial authors, we planned to reinclude missing data in the analyses that we undertook.
We assessed methods as:

- low risk of bias (e.g. no missing outcome data; missing outcome data balanced across groups);

- high risk of bias (e.g. numbers or reasons for missing data imbalanced across groups; 'as treated' analysis done with substantial departure of intervention received from that assigned at randomisation); or
- unclear risk of bias.

(5) Selective reporting (checking for reporting bias)

We described for each included study how we investigated the possibility of selective outcome reporting bias and what we found. We assessed these methods as:

- low risk of bias (when it is clear that all of the study's prespecified outcomes and all expected outcomes of interest to the review have been reported);
- high risk of bias (when not all of the study's prespecified outcomes have been reported; one or more reported primary outcomes were not prespecified; outcomes of interest were reported incompletely and so cannot be used; study failed to include results of a key outcome that would have been expected to have been reported); or
- unclear risk of bias

(6) Other bias (checking for bias due to problems not covered by the methods listed above)

We described for each included study any important concerns we had about other possible sources of bias.

(7) Overall risk of bias

We made explicit judgements about whether studies were at high risk of bias, according to criteria given in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). With reference to the methods listed above, we planned to assess the likely magnitude and direction of bias and whether we considered it likely to impact the findings. When sufficient data were available, we explored the impact of the level of bias by undertaking sensitivity analyses - *see* Sensitivity analysis.

For this update, we assessed the quality of the evidence using the GRADE approach (Schunemann 2009) to assess the quality of the body of evidence related to the following outcomes.

1. Cephalic presentation at labour and at birth.
2. Failure to achieve cephalic vaginal birth.
3. Caesarean section.
4. Fetal bradycardia or prolonged decelerations as defined by trial authors.
5. Failed external cephalic version.
6. Perinatal mortality.
7. Perinatal morbidity.

We graded the evidence and included 'Summary of findings' tables for two comparisons.

1. Tocolytics (parenteral beta stimulants) versus placebo.
2. Regional analgesia with tocolysis versus tocolysis alone.

The GRADE profiler (Grade 2014) was used to import data from Review Manager 5.3 (RevMan 2014) to create 'Summary of findings' tables. We produced a summary of the intervention effect and a measure of quality for each of the above outcomes by using the GRADE (Grades of Recommendation, Assessment, Development and Evaluation) approach. The GRADE approach uses five considerations (study limitations, consistency of effect, imprecision, indirectness and publication bias) to assess the quality of the body of evidence for each outcome. Evidence can be downgraded from 'high quality' by one level for serious, or by two levels for very serious, limitations depending on assessments for risk of bias, indirectness of evidence, serious inconsistency, imprecision of effect estimates or potential publication bias.

Measures of treatment effect

Dichotomous data

For dichotomous data, we have presented results as summary risk ratios with 95% confidence intervals.

Continuous data

We used mean differences if outcomes were measured in the same way between trials. We used standardised mean differences to combine trials that measured the same outcome but used different methods.

Unit of analysis issues

Cluster-randomised trials

We planned to include cluster-randomised trials in the analyses along with individually randomised trials if they were otherwise eligible. For this version of the review, we identified no such trials; if they are included in future updates, we will adjust sample sizes using the methods described in the *Cochrane Handbook for Systematic Reviews of Interventions* based on an estimate of the intracluster correlation co-efficient (ICC) derived from the trial (if possible), from a similar trial or from a study of a similar population. If we use ICCs from other sources, we will report this and will conduct sensitivity analyses to investigate the effects of variation in the ICC. If we identify both cluster-randomised trials and individually randomised trials, we plan to synthesise relevant information. We will consider it reasonable to combine the results from both if little heterogeneity is noted between study designs, and if the interaction between effects of the intervention and choice of the randomisation unit is considered unlikely.

We will also acknowledge heterogeneity in the randomisation unit and will perform a sensitivity analysis to investigate the effects of the randomisation unit.

Cross-over trials

We did not plan to include trials with a cross-over design. One of the trials that was otherwise eligible for inclusion randomly assigned women to two groups (parallel design), but if after two attempts the randomised ECV method was not successful, the trial protocol allowed the alternative method to be used (Vallikkannu 2014). We treated this study as a parallel-group randomised controlled trial and used only data collected before any cross-over to the alternative method.

Other unit of analysis issues

We excluded trials including multiple pregnancies.
In this version of the review, we did not include trials with multiple treatment arms; if we identify such trials for inclusion in future updates, we will use the methods set out in the *Cochrane Handbook for Systematic Reviews of Interventions* for analysis.

Dealing with missing data

For included studies, we noted levels of attrition. In future updates, if more eligible studies are included, review authors will explore the impact of including studies with high levels of missing data in the overall assessment of treatment effect by using sensitivity analysis.
For all outcomes, we carried out analyses, as far as possible, on an intention-to-treat basis (i.e. we attempted to include in the analyses all participants randomly assigned to each group). The denominator for each outcome in each trial was the number randomly assigned minus the number of participants whose outcomes were known to be missing.

Assessment of heterogeneity

We assessed statistical heterogeneity in each meta-analysis using the Tau², I² and Chi² statistics. We regarded heterogeneity as substantial if I² was greater than 30% and either Tau² was greater than zero or the P value (< 0.10) in the Chi² test for heterogeneity was low. If we identified substantial heterogeneity (> 30%), we planned to explore this by performing prespecified subgroup analysis.

Assessment of reporting biases

In future updates, if 10 or more studies are included in the meta-analysis, we plan to investigate reporting biases (such as publication bias) using funnel plots. We will assess funnel plot asymmetry visually. If asymmetry is suggested by a visual assessment, we will perform exploratory analyses to investigate this.

Data synthesis

We carried out statistical analysis using the Review Manager software (RevMan 2014). We used the random-effects model for pooling data because of clinical heterogeneity in the included studies in various comparisons. The random-effects summary represents the average range of possible treatment effects, and we have discussed the clinical implications of differing treatment effects between trials. If the average treatment effect was not considered clinically meaningful, we did not combine trials. We have presented results as the average treatment effect with 95% confidence intervals, and when heterogeneity between trials was noted, with estimates of Tau² and I².

Subgroup analysis and investigation of heterogeneity

If we identified substantial heterogeneity, we investigated this by using subgroup analyses.
When data were available, we planned to carry out the following analysis.

1. nulliparous versus multiparous women.

We restricted subgroup analysis to the review's primary outcomes.
We assessed subgroup differences by performing interaction tests available within RevMan (RevMan 2014). We reported the results of subgroup analyses by quoting the Chi² statistic and the P value, and results of the interaction test by reporting the I² value.

Sensitivity analysis

We explored heterogeneity by performing sensitivity analysis, looking at primary outcomes only, and by excluding trials with greater risk of bias. We considered studies at low risk of bias when they had low risk of bias in generation of the randomisation sequence, concealment of allocation and loss to follow-up.

RESULTS

Description of studies

Results of the search

In total the search identified 56 reports corresponding to 36 studies. In the previous published review (Cluver 2012), 25 studies met the inclusion criteria, and in this update, we have included three additional trials (Munoz 2014; Reinhard 2012; Vallikkannu 2014). The 28 included studies involved a total of 2786 women. We have set out information about all of the included trials in the Characteristics of included studies tables.

Included studies

We found 17 studies involving 1876 women that assessed tocolytic drugs (Bujold 2003a; Bujold 2003b; Chung 1996; Collaris 2009; El-Sayed 2004; Fernandez 1997; Hilton 2009; Impey 2005; Kok 2008; Marquette 1996; Nor Azlin 2005; Nor Azlin 2008; Robertson 1987; Stock 1993; Tan 1989; Vani 2009; Yanny 2000). These drugs included beta stimulants (salbutamol, ritodrine, hexoprenaline and terbutaline), a calcium channel blocker (nifedipine) and a nitric oxide donor (nitroglycerine/glyceryl trinitrate).

We found one study involving 26 women that assessed vibroacoustic stimulation (Johnson 1995).

We found six studies involving 554 women that assessed regional analgesia (Delisle 2001; Dugoff 1999; Mancuso 2000; Schorr 1997; Weiniger 2007; Weiniger 2010). Five of these studies used a tocolytic drug as well in both groups (Dugoff 1999; Mancuso 2000; Schorr 1997; Weiniger 2007; Weiniger 2010), and one study allowed doctors to use a tocolytic at their discretion (Delisle 2001). None of the studies looked at regional analgesia alone.

We found no studies on amnioinfusion.

We found one study involving 95 women that compared regional analgesia with systemic opioids, with both groups also receiving a tocolytic drug (Sullivan 2009).

One study with 60 women examined a systemic opioid (remifentanil) compared with placebo (Munoz 2014).

One study involving 80 women compared two types of hypnosis/relaxation (Reinhard 2012), and one (with 95 women) looked at the application of talcum powder versus gel to assist ECV (Vallikkannu 2014). In this final study after two failed attempts at ECV, cross-over to the other method occurred, and although analysis was done by intention-to-treat (according to original allocation), a proportion of women in both groups received both methods, making interpretation of results difficult; for this reason we have included in the review only data related to the period before the cross-over.

Three studies are awaiting classification (Andarsio 2000; Hollard 2003; Tan 2008) - *see* Characteristics of studies awaiting classification - and two are ongoing (Burgos 2012; Passerini 2013) - *see* Characteristics of ongoing studies.

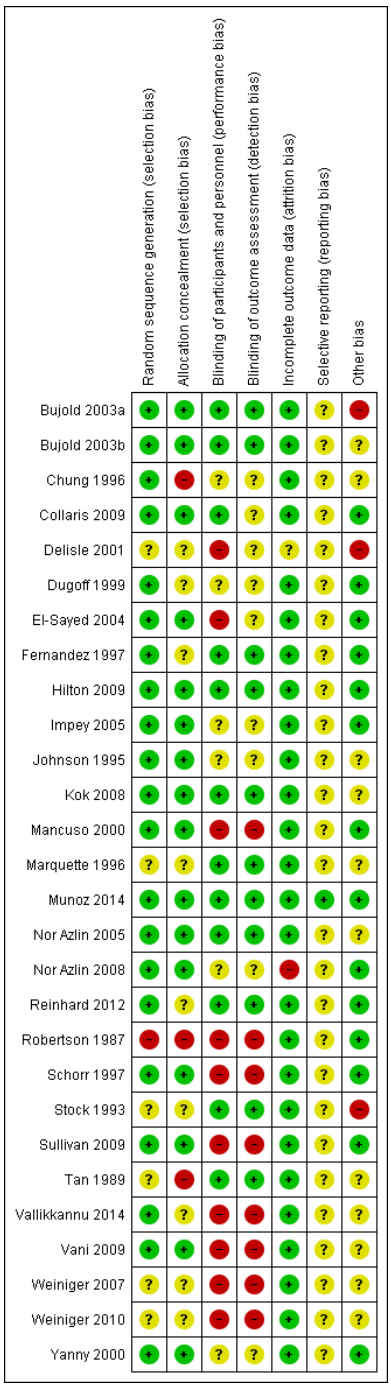
Excluded studies

We excluded three studies (Dockeray 1984; Guittier 2013; Wallace 1984) - *see* Characteristics of excluded studies.

Risk of bias in included studies

See the table of Characteristics of included studies and Figure 1.

Figure 1. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.



Allocation

We judged 16 studies to be at low risk of bias for both adequate sequence generation and adequate allocation concealment (Bujold 2003a; Bujold 2003b; Collaris 2009; El-Sayed 2004; Hilton 2009; Impey 2005; Johnson 1995; Kok 2008; Mancuso 2000; Munoz 2014; Nor Azlin 2005; Nor Azlin 2008; Schorr 1997; Sullivan 2009; Vani 2009; Yanny 2000). We considered one study to be at high risk of bias for both sequence generation and allocation concealment (Robertson 1987). The remaining studies were unclear, or we observed a mixture of low, high and unclear risk of bias (Figure 1).

Blinding

We judged 11 studies to be adequately blinded with low risk of bias for both performance bias (women and staff blinded) and detection bias (outcome assessors blinded) (Bujold 2003a; Bujold 2003b; Fernandez 1997; Hilton 2009; Kok 2008; Marquette 1996; Munoz 2014; Nor Azlin 2005; Reinhard 2012; Stock 1993; Tan 1989). Eight studies were at high risk of bias for both performance and detection bias (Mancuso 2000; Robertson 1987; Schorr 1997; Sullivan 2009; Vallikkannu 2014; Vani 2009; Weiniger 2007; Weiniger 2010). For the remaining studies, blinding was not clearly reported or performance or detection bias was noted (Figure 1).

Incomplete outcome data

We considered 26 studies at low risk of bias when considering attrition. In one study, risk of bias was unclear for this domain (Delisle 2001), and in another study, loss to follow-up meant that for some outcomes the study was at high risk of bias (Nor Azlin 2008) (Figure 1).

Selective reporting

We classified all but one of the studies as unclear because we did not assess the trial protocols (Figure 1).

Other potential sources of bias

We considered 14 studies at low risk of bias in terms of other potential sources of bias, and three at high risk. The remaining studies were unclear on this (Figure 1).

Effects of interventions

See: **Summary of findings for the main comparison** Beta stimulant compared with placebo for helping to turn babies with breech presentation when ECV was used; **Summary of findings 2** Regional analgesia (with tocolysis) versus no intervention of regional analgesia (with or without tocolysis) for breech presentation

We included 28 studies, involving 2786 women (Characteristics of included studies).

Comparison 1. Tocolysis versus placebo for external cephalic version (ECV) at term (13 studies with 15,468 women)

Thirteen studies involving 1548 women looked at this comparison using various tocolytic drugs (Bujold 2003a; Chung 1996; Fernandez 1997; Hilton 2009; Impey 2005; Kok 2008; Marquette 1996; Nor Azlin 2005; Robertson 1987; Stock 1993; Tan 1989; Vani 2009; Yanny 2000).

Beta stimulants: Nine studies looked at beta stimulants. Six studies involving 639 women looked at parenteral ritodrine (Chung 1996; Impey 2005; Marquette 1996; Nor Azlin 2005; Robertson 1987; Stock 1993); two studies involving 174 women looked at oral and parenteral salbutamol (Tan 1989; Vani 2009); and one study involving 103 women looked at parenteral terbutaline (Fernandez 1997).

Calcium channel blockers: One study involving 320 women looked at oral nifedipine (Kok 2008).

Nitric oxide donors: Three studies involving 282 women looked at parenteral or sublingual nitroglycerine/glyceryl nitrate (Bujold 2003a; Hilton 2009; Yanny 2000).

The overall quality of the studies was reasonable. We judged seven studies to have low risk of bias for both sequence generation and allocation concealment (Bujold 2003a; Hilton 2009; Impey 2005; Kok 2008; Nor Azlin 2005; Vani 2009; Yanny 2000) and eight studies to have adequate blinding (Bujold 2003a; Fernandez 1997; Hilton 2009; Kok 2008; Marquette 1996; Nor Azlin 2005; Stock 1993; Tan 1989). *See* Figure 1.

We have used random-effects models throughout these comparisons because of the clinical heterogeneity observed between studies. We have presented data for different classes of tocolytics together in the same forest plots, but we have not pooled results. Findings for different classes of tocolytic drugs are also reported separately in the text, as different classes of drugs have different mechanisms of action. For most outcomes, evidence mainly relates to beta stimulants.

Primary outcomes

We found a statistically significant increase in cephalic presentation at labour and at birth with the use of parenteral beta stimulants (average risk ratio (RR) 1.68, 95% confidence interval (CI) 1.14 to 2.48, five studies, 459 women, random-effects Tau^2 =

0.12, I^2 = 64%, Chi^2 P value 0.03, evidence graded as low quality; Analysis 1.1). Relatively little evidence was found for other classes of tocolytic drugs. One study with 310 women examined the use of a calcium channel blocker and did not demonstrate a difference between intervention and control groups for cephalic presentation at birth (RR 1.13, 95% CI 0.87 to 1.48); single studies examining parenteral and sublingual nitric oxide donors also showed no statistically significant differences between intervention and control groups (RR 1.58, 95% CI 0.91 to 2.76, participants = 125, and, RR 0.74, 95% CI 0.52 to 1.05, participants = 99, respectively).

Failure to achieve a cephalic vaginal birth was less likely for women receiving a beta stimulant (average RR 0.75, 95% CI 0.60 to 0.92, four studies, 399 women, evidence graded as moderate quality; Analysis 1.2). One study examined the use of a sublingual nitric oxide donor and reported no clear evidence of differences between groups (RR 1.22, 95% CI 0.86 to 1.72, participants = 99).

We noted a significant reduction in caesarean sections with the use of beta stimulants to facilitate ECV (average RR 0.77, 95% CI 0.67 to 0.88, participants = 742, six studies, I^2 = 25%; Analysis 1.3). Evidence on the impact of calcium channel blockers and parenteral nitric oxide donors was limited and showed no clear difference in the rates of caesarean section between treatment and control groups (calcium channel blocker: RR 1.11, 95% CI 0.88 to 1.40, one study, participants = 310; parenteral nitric oxide donor: RR 0.83, 95% CI 0.67 to 1.02, one study, participants = 125).

We identified no significant difference in fetal bradycardia in any of the studies reporting this outcome (beta stimulants: RR 2.81, 95% CI 0.12 to 66.17, participants = 58, one study, evidence graded as very low quality; calcium channel blocker: RR 1.11, 95% CI 0.50 to 2.43, participants = 310, one study; oral nitric oxide donor: RR 0.39, 95% CI 0.08 to 1.93, participants = 99, one study; Analysis 1.4).

Only one class of tocolytic drugs, the beta stimulants, had a reasonable number of trials to allow firm conclusions regarding primary outcomes (*see* Summary of findings for the main comparison).

Secondary outcomes

We found a statistically significant reduction in failure of ECV when parenteral beta stimulant drugs were used (average RR 0.70, 95% CI 0.60 to 0.82, participants = 900, nine studies, I^2 = 34%, evidence graded as moderate quality; Analysis 1.5). For other types of tocolytics (oral beta stimulants, oral calcium channel blockers, parenteral or sublingual nitric oxide donors), evidence was insufficient to demonstrate any differences between groups for failure of ECV (RR 1.00, 95% CI 0.56 to 1.79, participants = 45, one study; RR 0.93, 95% CI 0.78 to 1.11, participants = 310, one study; RR 0.86, 95% CI 0.70 to 1.06, participants = 126, one study; average RR 1.04, 95% CI 0.55 to 1.96, participants = 156, two studies, respectively).

Too few studies assessed most of our other secondary outcomes to reveal clear differences between groups. No statistically significant differences between groups were identified for difficult ECV (parenteral beta stimulants: RR 0.50, 95% CI 0.16 to 1.54, participants = 63, one study; Analysis 1.6); maternal palpitation (parenteral beta stimulants: RR 5.00, 95% CI 0.25 to 101.89, participants = 114, one study; parenteral nitric oxide donors: RR 0.49, 95% CI 0.05 to 5.27, participants = 117, one study; Analysis 1.7); or maternal hypotension, which was reported for single studies examining parenteral and sublingual nitric oxide donors (RR 1.47, 95% CI 0.26 to 8.50, participants = 117, and, RR 5.88, 95% CI 0.73 to 47.07, participants = 99, respectively; Analysis 1.9).

Two studies examining the use of parenteral or sublingual nitric oxide donors reported maternal headaches, and women receiving active treatment were more likely to experience headache compared with those given placebo (RR 18.68, 95% CI 1.11 to 313.77, participants = 117, and, RR 10.29, 95% CI 2.55 to 41.56, participants = 99, respectively; Analysis 1.8).

Other outcomes were not reported or were reported in single studies, and evidence was insufficient to reveal differences between groups receiving tocolysis versus placebo.

1. Operative vaginal birth (calcium channel blocker: RR 0.34, 95% CI 0.09 to 1.22, 310 women; Analysis 1.10).
2. Maternal mortality (not reported).
3. Maternal morbidity (not reported).
4. Perinatal mortality (calcium channel blocker: 310 participants, no events; Analysis 1.13).
5. Perinatal morbidity (not reported).

In this version of the review, we added the outcome vaginal breech birth, which was reported in one study with no evidence of a difference between groups (RR 1.00, 95% CI 0.30 to 3.28, one study, 124 women; Analysis 1.15).

Non-prespecified outcomes

An additional six outcomes were reported that we had not specified in the protocol: Apgar less than seven at five minutes (beta stimulants: no events, two studies, 227 infants), neonatal seizures (beta stimulants: no events, one study, 124 infants), admission to neonatal unit (beta stimulants: average RR 1.00, 95% CI 0.30 to 3.36, two studies, 238 infants; Analysis 1.18), birth trauma (beta stimulant: no events, one study, 144 women) and flushing in women (calcium channel blocker: RR 23.30, 95% CI 1.38 to 391.91, one study, 310 women; Analysis 1.20). We found too few data on these outcomes to report findings with confidence.

Subgroup analysis by parity

Six studies reported the data by parity (Chung 1996; Hilton 2009; Impey 2005; Nor Azlin 2005; Stock 1993; Tan 1989), but only two reported data on our primary outcomes (Hilton 2009; Impey 2005). Interaction tests showed no differences between nulliparous and multiparous women. Cephalic presentation in labour and at birth was not statistically significant, but the numbers of women

were small (average RR 1.89, 95% CI 0.98 to 3.62, two studies, 249 women, interaction test Chi² = 0.00, df = 1, P value 0.95; Analysis 21.1). We observed a significant reduction in caesarean sections (average RR 0.84, 95% CI 0.74 to 0.95, two studies, 249 women, interaction test Chi² = 0.68, df = 1, P = 0.41; Analysis 21.2) and in failed ECV (average RR 0.78, 95% CI 0.66 to 0.92, six studies, 513 women, interaction test Chi² = 2.07, df = 1, P = 0.08, Analysis 21.4), with no differences between nulliparous and multiparous women.

Subgroup analysis by study quality

We considered two studies to be at high risk of bias in terms of randomisation, concealment of allocation or completeness of data (Fernandez 1997; Robertson 1987); both of these studies examined parenteral beta stimulants. Even with these studies temporarily excluded, parenteral beta stimulants still appeared to be effective in achieving cephalic presentation at birth (average RR 2.03, 95% CI 1.49 to 2.77, three studies, 289 women). Findings for the outcome of failure to achieve cephalic vaginal birth remained non-significant for parenteral beta stimulants (average RR 0.65, 95% CI 0.38 to 1.11, two studies, 238 women). There remained a significant reduction in caesarean sections for parenteral beta stimulants when studies at high risk of bias were temporarily removed (average RR 0.75, 95% CI 0.63 to 0.89, four studies, 581 women). Fetal bradycardia remained as showing no significant difference identified.

Comparison 2. Tocolytics versus other tocolytics (four studies with 344 women)

Four studies, or parts of studies, involving 344 women looked at these comparisons.

Calcium channel blockers (A2) versus beta stimulants (A1): Two studies involving 176 women made this comparison (Collaris 2009; Nor Azlin 2008).

Nitric oxide donors (A3) versus beta stimulants (A1): Two studies involving 168 women made this comparison (Bujold 2003b; El-Sayed 2004).

Nitric oxide donors (A3) versus calcium channel blockers (A2): No studies looked at this comparison.

One study involving 63 women included three groups and compared two different beta stimulants - hexoprenaline and ritodrine - versus placebo (Stock 1993). We are not comparing different drugs within the same class, so these data are omitted from this section (although the data are included in the section on tocolysis versus placebo).

The overall quality of the studies was reasonable. All four studies were assessed as being at low risk of bias in terms of both sequence generation and allocation concealment (Bujold 2003b; Collaris 2009; El-Sayed 2004; Nor Azlin 2008). Blinding was considered adequate in one study, in which women, staff and outcome assessors were blinded (Bujold 2003b). (*See* Figure 1.)

Primary outcomes

We obtained too few data on these outcomes to report findings with confidence.

Cephalic presentation at birth

1. Calcium channel blockers versus beta stimulants (RR 0.62, 95% CI 0.39 to 0.98, one study, 90 women; Analysis 2.1).
2. Nitric oxide donors versus beta stimulants (RR 0.56, 95% CI 0.29 to 1.09, one study, 74 women; Analysis 2.1.2).

Cephalic vaginal birth not achieved

1. Nitric oxide donors versus beta stimulants (RR 1.13, 95% CI 0.88 to 1.47, one study, 74 women; Analysis 2.2).

Caesarean section

1. Calcium channel blockers versus beta stimulants (average RR 1.28, 95% CI 1.03 to 1.59, two studies, 170 women; Analysis 2.3).

Fetal bradycardia

1. Calcium channel blockers versus beta stimulants (average RR 1.17, 95% CI 0.46 to 3.03, two studies, 170 infants; Analysis 2.4).
2. Nitric oxide donors versus beta stimulants (RR 1.06, 95% CI 0.16 to 7.10, one study, 74 infants; Analysis 2.4.1).

Secondary outcomes

Failed ECV

1. Calcium channel blockers versus beta stimulants (average RR 1.41, 95% CI 1.06 to 1.86, two studies, 176 women; Analysis 2.5.1).
2. Nitric oxide donors versus beta stimulants (average RR 1.48, 95% CI 1.13 to 1.94, two studies, 133 women; Analysis 2.5.2).

Difficult ECV

1. Calcium channel blockers versus beta stimulants (RR 5.22, 95% CI 0.26 to 105.81, one study, 90 women; Analysis 2.6).

Non-prespecified outcomes

Other non-prespecified outcomes (maternal palpitations, headache, hypotension and infant admission to neonatal intensive care unit) were reported in single studies with small sample sizes, and evidence was insufficient to allow firm conclusions.

Subgroup analysis by parity

One small study involving 86 women compared nifedipine versus terbutaline and reported data by parity (Nor Azlin 2008). Failed ECV, the only outcome reported by parity, did not show a significant difference between the two tocolytic drugs, although the interaction tests showed no differences between nulliparous and multiparous women (RR 1.38, 95% CI 0.90 to 2.13, one study, 86 women interaction test $Chi^2 = 0.35$, df = 1, P value 0.55; Analysis 22.4).

Sensitivity analyses by study quality

Studies were insufficient for this analysis.

Comparison 3. Vibroacoustic stimulation in midline fetal spine positions versus placebo (one study, 26 women)

One study involving 26 women (of whom 23 provided data) looked at this comparison and reported only on the number of women in whom ECV failed (Johnson 1995). The quality of the study was reasonable, but only 26 women were included. So the finding of a statistically significant reduction in failed ECV cannot be relied upon (RR 0.09, 95% CI 0.01 to 0.60, one study, 23 women; Analysis 3.5).

Other primary and secondary outcomes were not reported.

Comparison 4. Vibroacoustic stimulation versus tocolytics

We found no studies assessing this comparison.

Comparison 5. Comparison of different types of vibroacoustic stimulation

We found no studies assessing this comparison.

Comparison 6. Regional analgesia versus placebo (six studies, 554 women)

Six studies involving 554 women looked at this comparison. Four of these studies addressed the effect of spinal analgesia on ECV (Delisle 2001; Dugoff 1999; Weiniger 2007; Weiniger 2010); two studies assessed the effect of epidural analgesia (Mancuso 2000; Schorr 1997).

All studies except one (Delisle 2001) used a tocolytic drug as well in both arms; the one exception allowed clinicians to choose to use a tocolytic drug if they wished (Delisle 2001). This study reported on very few of our prespecified outcomes. We have analysed separately the use of regional analgesia with or without tocolysis. Findings for primary outcomes for regional analgesia (with tocolysis) are set out in Summary of findings 2.

The quality of the studies was generally unclear. Only two studies were considered to have low risk of bias in terms of sequence generation and allocation concealment (Mancuso 2000; Schorr 1997). The remainder of the studies were mostly unclear around risk of bias (Figure 1).

Primary outcomes

For regional analgesia with tocolysis versus tocolysis alone, we found no statistically significant differences identified for the primary outcomes: cephalic presentation at labour and at birth (average RR 1.44, 95% CI 0.78 to 2.66, three studies, 279 women, random-effects, $Tau^2 = 0.24$, $I^2 = 80\%$, Chi^2 P value 0.006; Analysis 6.1); caesarean section (average RR 0.74, 95% CI 0.40 to 1.37, three studies, 279 women, random-effects, $Tau^2 = 0.26$, $I^2 = 88\%$, Chi^2 P value 0.0003; Analysis 6.3); and fetal bradycardia (average RR 1.48, 95% CI 0.62 to 3.57, two studies, 210 women, random-effects, $Tau^2 = 0.05$, $I^2 = 8\%$, Chi^2 P value 0.30; Analysis 6.4). Failure to achieve cephalic vaginal delivery was not reported.

Secondary outcomes

We did identify a significant reduction in the number of failures of ECV with regional analgesia with tocolysis (RR 0.61, 95% CI 0.43 to 0.86, participants = 409, five studies, $I^2 = 56\%$; Analysis 6.5). This outcome was also reported in the single study examining regional analgesia without tocolysis versus no intervention, and no evidence suggested a difference between groups (RR 0.89, 95% CI 0.70 to 1.14, participants = 141). None of our other secondary outcomes were reported (operative vaginal birth, maternal mortality, maternal morbidity, perinatal mortality, perinatal morbidity).

Outcomes not prespecified

Some studies assessed placental abruption and maternal discomfort but identified no differences with regional analgesia. Three studies examined maternal hypotension, and regional analgesia with tocolysis was associated with increased risk of hypotension (average RR 11.58, 95% CI 1.53 to 87.50, participants = 280, three studies, $I^2 = 0\%$; Analysis 6.9).

Subgroup analysis by parity

Six studies reported data by parity, but it was not possible to undertake any subgroup analysis.

Sensitivity analysis by study quality

Good quality data were insufficient for subgroup sensitivity analysis for this comparison, as only two (Mancuso 2000; Schorr 1997) of the six identified were considered to have low risk of bias in

terms of randomisation, concealment of allocation or completeness of data.

Comparison 7. Regional analgesia versus tocolytics

We found no studies assessing this comparison.

Comparison 8. Regional analgesia versus vibroacoustic stimulation

We found no studies assessing this comparison.

Comparison 9. Comparison of different types of regional analgesia

We found no studies assessing this comparison.

Comparison 10. Amnioinfusion versus placebo

We found no studies assessing this comparison.

Comparison 11. Amnioinfusion versus tocolytics

We found no studies assessing this comparison.

Comparison 12. Amnioinfusion versus vibroacoustic stimulation

We found no studies assessing this comparison.

Comparison 13. Amnioinfusion versus regional analgesia

We found no studies assessing this comparison.

Comparison 14. Comparison of different types of amnioinfusion

We found no studies assessing this comparison.

Comparison 15. Systemic opioids versus placebo (one study, 60 women)

One study with 60 women was included in this comparison (Munoz 2014); in this trial intravenous patient-controlled remifentanil was compared with an intravenous placebo.

Primary outcomes

Presentation at birth was not reported. Trialists reported "transient" fetal bradycardia, but the study was underpowered to demonstrate a statistically significant difference between groups (RR 0.31, 95% CI 0.09 to 1.04; Analysis 15.3). The frequency of caesarean section was very similar in the two groups (RR 0.99, 95% CI 0.63 to 1.57) (Analysis 15.4).

Secondary outcomes

No clear evidence was found of a difference between groups in failure of ECV (RR 0.77, 95% CI 0.47 to 1.26; Analysis 15.5) nor in frequency of operative vaginal birth (RR 0.94, 95% CI 0.20 to 4.27; Analysis 15.10).
Other secondary outcomes were not reported.

Other outcomes

Several non-prespecified outcomes were reported in this trial. Women receiving the opioid had lower pain scores compared with control participants (mean difference (MD) -1.80 (on a 10-point scale), 95% CI -3.04 to -0.56; Analysis 15.15), and maternal satisfaction with the procedure was increased in the group receiving remifentanil (MD 2.60, 95% CI 1.25 to 3.95; Analysis 15.16). No significant difference between groups was found in maternal side effects (nausea and vomiting, dizziness and drowsiness), although the study was underpowered to demonstrate differences for most outcomes (Analysis 15.17; Analysis 15.18; Analysis 15.19).

Comparison 16. Systemic opioids versus tocolytics

We found no studies assessing this comparison.

Comparison 17. Systemic opioids versus vibroacoustic stimulation

We found no studies assessing this comparison.

Comparison 18. Systemic opioids versus regional analgesia

One study, involving 95 women, assessed this comparison (Sullivan 2009). The quality of the study was good; only lack of blinding might contribute to bias. The remaining assessments were consistent with low risk of bias (Figure 1).

Primary outcomes

The rate of cephalic presentation at birth was not reported. No significant differences between groups were reported for the outcome failure to achieve vaginal cephalic birth (RR 1.18, 95% CI 0.90 to 1.54). Also no clear difference between groups was seen

in terms of the numbers of women undergoing caesarean section (RR 1.18, 95% CI 0.90 to 1.54, 95 women; Analysis 18.3). A similar rate of fetal bradycardia was observed in the two groups (RR 0.71, 95% CI 0.24 to 2.09, 94 women; Analysis 18.4).

Secondary outcomes

No statistically significant difference was observed in frequency of failure of ECV when a systemic opioid was compared with regional analgesia (RR 1.29, 95% CI 0.93 to 1.80, 95 women; Analysis 18.5).

Comparison 19. Systemic opioids versus amnioinfusion

We found no studies assessing this comparison.

Comparison 20. Comparison of different systemic opioids

We found no studies assessing this comparison.

Comparison 23. Hypnosis versus neurolinguistic programming (one study, 80 women)

One study with 80 women compared two types of hypnosis.

Primary outcomes

No primary outcomes were reported.

Secondary outcomes

No significant evidence suggested that one hypnosis technique was more effective than the other (RR 1.08, 95% CI 0.74 to 1.57; Analysis 23.5), and women in both groups reported a similar degree of pain relief during the procedure, as measured on a scale of one to 10 (MD 0.10, 95% CI -0.87 to 0.67, one study, 80 women (non-prespecified outcome); Analysis 23.15).

Comparison 24. Talcum powder versus gel to assist with ECV (one study, 95 women)

One study compared the use of talcum powder versus gel applied to the woman's abdomen to assist with ECV. If after one round of attempts (two attempts) using the allocated method, ECV was not successful, the alternative method could be tried. This meant that many of the women in the trial with initial failed ECV crossed over to the other method; outcome data were very difficult to interpret because although analysis was performed according to original allocation, women may have received both methods. We therefore report here only the secondary outcome related to failure of ECV after the first round of attempts (using the allocated method). There was insufficient evidence to demonstrate whether talcum was more or less effective than gel in assisting version (RR 1.26, 95% CI 0.84 to 1.89, one study, 80 women; Analysis 24.5).

ADDITIONAL SUMMARY OF FINDINGS [*Explanation*]

Regional analgesia (with tocolysis) versus no intervention of regional analgesia (with or without tocolysis) for breech presentation

Patient or population: patients with breech presentation
Settings: studies in hospital settings
Intervention: regional analgesia (with tocolysis) versus no intervention of regional analgesia (with or without tocolysis)

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	Regional analgesia (with tocolysis) vs no intervention of regional analgesia (with or without tocolysis)				
Cephalic presentation at birth (primary)	Study population		RR 1.63 (0.75 to 3.53)	279 (3 studies)	⊕◯◯◯ Very low[1,2,3]	
	393 per 1000	640 per 1000 (295 to 1000)				
	Moderate					
	352 per 1000	574 per 1000 (264 to 1000)				
Cephalic vaginal birth not achieved (CS + breech vaginal birth) (primary)	Study population		RR 0.65 (0.47 to 0.89)	108 (1 study)	⊕⊕◯◯ Low[4,5]	
	741 per 1000	481 per 1000 (348 to 659)				
	Moderate					
	741 per 1000	482 per 1000 (348 to 659)				

Caesarean section (primary)	**Study population**		**RR 0.74** (0.4 to 1.37)	279 (3 studies)	⊕○○○ **Very low**[1,2,3]	
	650 per 1000	**481 per 1000** (260 to 891)				
	Moderate					
	685 per 1000	**507 per 1000** (274 to 938)				
Fetal bradycardia (primary)	**Study population**		**RR 1.48** (0.62 to 3.57)	210 (2 studies)	⊕⊕○○ **Low**[1,3]	
	85 per 1000	**126 per 1000** (53 to 303)				
	Moderate					
	86 per 1000	**127 per 1000** (53 to 307)				
Failed external cephalic version	**Study population**		**RR 0.61** (0.43 to 0.86)	409 (5 studies)	⊕⊕⊕○ **Moderate**[1]	
	585 per 1000	**357 per 1000** (251 to 503)				
	Moderate					
	577 per 1000	**352 per 1000** (248 to 496)				
Perinatal morbidity	See comment	See comment	Not estimable	0 (0)	See comment	No data reported
Perinatal mortality	See comment	See comment	Not estimable	0 (0)	See comment	No data reported

*The basis for the **assumed risk** (e.g. median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio.

GRADE Working Group grades of evidence.
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

1. All studies contributing data had design limitations.
2. $I^2 > 60\%$; direction and size of effect inconsistent.
3. Wide 95% CI crossing the line of no effect and small sample size.
4. Study contributing data had design limitations.
5. Estimate based on small sample size.

DISCUSSION

Summary of main results

Parenteral beta stimulants, used to help external cephalic version of breech babies, were effective in increasing the number of women going into labour with their baby in a cephalic presentation and in reducing the number of women undergoing caesarean section. However, data on possible adverse effects are insufficient. Data derived by comparison of other classes of tocolytic drugs (calcium channel blockers and nitric acid donors) were also insufficient. We identified no difference in response between nulliparous women and multiparous women in terms of successful external cephalic version (ECV), babies in the cephalic presentation during labour and caesarean section.

Use of regional analgesia, in combination with a tocolytic drug, to facilitate ECV was effective in terms of increasing successful versions, but the data show no benefit in terms of babies in the cephalic presentation during labour or reduction in caesarean sections.

Data were insufficient on the use of vibroacoustic stimulation, amnioinfusion, systemic opioids, hypnosis or abdominal lubricants for helping to turn breech babies using ECV techniques.

Overall completeness and applicability of evidence

Available evidence does not describe many of the prespecified outcomes, in particular, possible adverse effects.

Quality of the evidence

The overall quality of the evidence was reasonable, with studies on regional analgesia unable to be blinded. However, several assessments will have yielded insufficient data to provide an answer with any degree of assurance. We carried out formal assessments of quality of the evidence using GRADEpro for parenteral beta stimulants and regional analgesia with tocolysis. For both of these comparisons, the evidence was graded from moderate to very low quality.

Potential biases in the review process

Evidence in this review was derived from studies identified in a detailed search process. Trials comparing interventions to help external cephalic version of breech babies at term that have not been published may not have been identified. We attempted to minimise bias in the review process by having two review authors independently extract data.

Agreements and disagreements with other studies or reviews

We are not aware of any other systematic reviews on this topic. Studies within the review seem to be in reasonable agreement.

AUTHORS' CONCLUSIONS

Implications for practice

Beta stimulant tocolytics, given parenterally to facilitate external cephalic version of breech babies, increased the number of babies in the cephalic presentation during labour and birth, and reduced the number of caesarean sections performed. However, insufficient data were collected on possible adverse effects on mother or baby. Other groups of tocolytics, calcium channel blockers and nitric acid donors yielded insufficient data to provide good evidence. Data on other possible facilitators of external cephalic version (ECV) were insufficient to provide useful evidence.

Use of regional analgesia in combination with tocolytic drugs increased the rate of success of ECV, but data were insufficient to indicate whether this was associated with an increase in cephalic presentation at birth or a change in the rate of caesarean section.

Implications for research

Future research needs to carefully assess any potential adverse effects on both mother and baby.

Routine tocolysis for ECV at term

Further controlled trials of routine tocolysis for ECV at term are needed. In particular, possible benefits of routine tocolysis used to reduce the force required for successful ECV, and possible risks of maternal cardiovascular side effects, need to be addressed further. Additional trials are also needed to compare the effectiveness of routine versus selective use of tocolysis; investigators should include short-term and long-term outcome measures that assess morbidity according to type of birth.

Although randomised trials of nitroglycerine have been small, the results are sufficiently negative to discourage further trials.

Fetal acoustic stimulation for ECV at term

The results presented in this review are sufficiently encouraging to justify further trials of this procedure. Short-term and long-term outcomes must be assessed.

Regional analgesia for ECV at term

Further trials are needed. The effect of vaginal displacement of the presenting part should be assessed. Fluid received by the regional

analgesia group and by the control group should be similar, and whether tocolytic agents should be used adjunctively needs further investigation.

Amnioinfusion for ECV at term

Transabdominal amnioinfusion to increase amniotic fluid volume might facilitate ECV and should be investigated.

Hydration to increase amniotic fluid volume for ECV at term

Intravenous or oral hydration before ECV attempts to increase amniotic fluid volume should be investigated as a separate intervention (Hofmeyr 2002).

Systemic opioids for ECV at term

Given the general adverse effects of opioids (Bricker 2002), research might be better focused on other possible facilitators for ECV of breech babies.

Other interventions

Evidence on other interventions such as hypnosis or abdominal lubricants is insufficient; adequately designed and powered trials may throw light on whether such interventions are worthwhile.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Bujold 2003a

Methods	RCT.
Participants	**Inclusion criteria:** women with singleton breech pregnancy at 36 to 40 weeks' gestation Women also given NST and US evaluation for EFW, fetal morphologic features, AFI and placental location. After NST, if women met criteria, clinician verified breech mobility by abdominal palpation. N = 99 **Exclusion criteria:** IUGR (defined as an EFW (determined by US examination, < 10th percentile for GA), oligohydramnios (defined as AFI ≤ 5 cm), presence of a placenta previa or an abruptio placenta, a previous uterine scar other than a low transverse caesarean delivery, active labour, rupture of membranes, fetal anomalies incompatible with life, a non-mobile breech by abdominal palpation, any contraindication to vaginal delivery, a medical/allergic contraindication to nitroglycerine
Interventions	**Intervention:** tocolysis: nitroglycerine - nitric oxide donor (A3) - sublingual. 2 sublingual sprays of 400 micrograms nitroglycerine given 3 minutes before ECV. N = 50 **Comparison:** placebo: 2 sublingual sprays of placebo given 3 minutes before ECV. N = 49
Outcomes	ECV success (at end of procedure); vertex presentation at labour and at birth; vaginal birth; CS; headache; blood pressure; maternal tachycardia; birthweight
Notes	Sainte-Justine Hospital, April 1999 to August 2002.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computerised randomisation table.
Allocation concealment (selection bias)	Low risk	Placebo-controlled trial with identical preparations.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Participants, clinician and assessor were blinded. Intravenous ritodrine and placebo were supplied in identical form; sublingual nitroglycerine and placebo were also supplied in identical form by the hospital pharmacy
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Participants, clinician and assessor were blinded. Intravenous ritodrine and placebo were supplied in identical form; sublingual nitroglycerine and placebo were also supplied in identical form by the hospital pharmacy

Bujold 2003a (*Continued*)

Incomplete outcome data (attrition bias) All outcomes	Low risk	No indication of loss of participants. Not mentioned whether the analysis was intention-to-treat; appears that a total of 99 women were randomly assigned and all completed
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol, but the trial authors said they would compare the rate of vertex presentation at time of birth and the rate of vertex vaginal birth. They reported only that there was no difference and have not provided data. Other outcomes may also be left out
Other bias	High risk	Halfway through the trial, an interim analysis was performed by the data safety monitoring board. This board decided to stop the trial because of a statistically significant (P value < 0.01) higher rate of side effects and a trend toward a lower rate of successful ECV in 1 group. This decision was based on the likelihood (< 1%) that that group would ultimately show a significant increase in the success rate of ECV, and the likelihood (> 95%) that the subsequently randomly assigned women would be exposed to increased risk of adverse outcomes without potential benefit if the trial was completed. Investigators were informed, and the trial was stopped No statistically significant differences were observed between the 2 groups with regard to maternal age, GA, EFW, AFI, placental location and type of breech

Bujold 2003b

Methods	RCT.
Participants	**Inclusion:** women with singleton breech pregnancy at 36 to 40 weeks' gestation. N = 74 **Exclusion criteria:** IUGR, oligohydramnios, placenta praevia, placenta abruptio, uterine scar other than low transverse CS, active labour, ruptured membranes, fetal anomalies incompatible with life, any contraindication to vaginal birth, contraindications to trial medications, non-reactive CTG. CTG and US performed
Interventions	**Intervention:** tocolysis - nitroglycerine - nitric oxide donor (A3) - sublingual. Nitroglycerine, 2 sublingual sprays of 400 micrograms nitroglycerine plus IV placebo. N = 38 **Comparison:** tocolysis - ritodrine - beta stimulant (A1) - parenteral. Ritodrine 15 mg in 1.5 mL plus 20 mL 5% dextrose water by IVI at 111 micrograms per minute, plus placebo sublingual spray. N = 36 Maximum 4 ECV attempts with US control.
Outcomes	Rate of successful ECV; headaches; blood pressure; maternal heart rate; palpitations, hypotension and prolonged fetal heart rate decelerations (fetal bradycardia)

Bujold 2003b (*Continued*)

Notes	Sainte-Justine Hospital, April 1999 to August 2001.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computerised table of randomisation. For every 6 women who were entered, 3 women were assigned to the ritodrine group and 3 women were assigned to the nitroglycerine group
Allocation concealment (selection bias)	Low risk	Placebo-controlled trial with identical preparations.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	IV ritodrine and placebo were supplied by the hospital pharmacy in identical form; sublingual nitroglycerine and placebo were also supplied by the hospital pharmacy in identical form. The nurse and the attending physician were blinded to the contents of the infusion or the sublingual spray
Blinding of outcome assessment (detection bias) All outcomes	Low risk	IV ritodrine and placebo were supplied by the hospital pharmacy in identical form; sublingual nitroglycerine and placebo were also supplied by the hospital pharmacy in identical form. Staff were blinded
Incomplete outcome data (attrition bias) All outcomes	Low risk	No indication suggested that any women were excluded after randomisation or were lost to follow-up
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	Study stopped after 74 women were enrolled because ritodrine was withdrawn from the market in July 2001 - not because of benefit No statistically significant differences between the 2 groups with regard to maternal age, GA, maternal weight, AFI and Frank breech. However, a significant difference was observed between the 2 groups at admission with respect to mean blood pressure (mm Hg)* at admission for the ritodrine group: 98 (67-125); mean blood pressure (mm Hg)* at admission for the nitroglycerine group: 90 (75-106) (P value 0.03)

Chung 1996

Methods	RCT, stratified by parity.
Participants	**Inclusion criteria:** women with singleton breech presentation, as confirmed by US, at 36 to 38 weeks' gestation. N = 51 recruited but 50 analysed **Exclusion criteria:** contraindication to tocolytic therapy, scarred uterus, antepartum haemorrhage, hypertension, impaired fetal growth, oligohydramnios, vaginal delivery

Chung 1996 (*Continued*)

	contraindicated, abnormal umbilical artery Doppler flow pattern
Interventions	**Intervention:** tocolytic: ritodrine - beta stimulant (A1) - parenteral IVI of ritodrine 0.4 mg/mL in 5% dextrose at 1.5 mL/min via an infusion pump, for 15 minutes before and during ECV attempt. If uterine contractions appeared to be preventing successful version, the infusion rate was increased in steps of 0.75 mL/min. Compared with matching 5% dextrose infusion. ECV attempted by 2 investigators, followed by repeat US scan and CTG. N = 25 **Comparison:** placebo: N = 25.
Outcomes	Failed ECV attempt. Other data presented according to successful or failed ECV attempt: non-cephalic presentation at birth (1/24 vs 23/26); CS (5/24 vs 19/26). 1 intrauterine death occurred 4 weeks after successful ECV (group not stated) Subgroup analysis showed that statistically significant benefit was limited to nulliparous women
Notes	Paired sequential analysis reached significance after 10 pairs. Trial was continued because of erroneous statistical calculations. Thereafter little benefit was seen from tocolysis. Study authors suggest that tocolysis is helpful only during the learning phase of the technique. A subsequent trial (published earlier) from the same group showed no benefit of tocolysis (Stock 1993). Nulliparous and parous women randomly assigned separately.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random numbers: sequential paired design.
Allocation concealment (selection bias)	High risk	Randomisation code was known to 1 of the authors who attended each woman throughout the procedure and for 20 minutes thereafter. He did not take part in version attempts. It is not clear whether allocation in pairs may have enabled the unblinded study author to know the next allocation in some cases, which could introduce selection bias, as could the study author knowing the code even if he did not undertake the procedure
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Participant was blinded; 2 doctors who attempted the version were blind to randomisation throughout, but the code was known to a third review author, who was in attendance throughout
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Participant was blinded; 2 doctors who attempted the version were blind to randomisation throughout, but the code was known to a third review author, who was in attendance throughout

Chung 1996 (*Continued*)

Incomplete outcome data (attrition bias) All outcomes	Low risk	1 woman was excluded because of absent end-diastolic flow in the umbilical artery before commencement of the procedure (unclear whether they were excluded before randomisation) Unclear whether the analysis was intention-to-treat.
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	Groups judged by study authors to be similar in age, parity and mean gestation (Table 1, page 721)

Collaris 2009

Methods	RCT.
Participants	**Inclusion criteria:** woman not in labour, with singleton pregnancy in breech or transverse lie at 36 to 41 weeks' gestation. N = 90 **Exclusion criteria:** in keeping with recommendations of the American College of Obstetricians and Gynecologists on ECV
Interventions	**Intervention:** tocolytic: nifedipine - calcium channel blocker (A2) - oral. Oral nifedipine (10 mg) and SQ saline placebo. N = 44. **Comparison:** tocolytic: terbutaline - beta stimulant (A1) - parenteral. Subcutaenous terbutaline (250 micrograms) with oral placebo. N = 46
Outcomes	Primary outcomes were successful ECV and CS. Secondary outcomes were cephalic fetal presentation at delivery, numerical rating score for satisfaction with ECV, preference for injection or tablet, post ECV. Also, CTG assessment, labour onset, prelabour membrane rupture and various neonatal outcomes
Notes	Women who had a failed ECV on first attempt could be re-randomised. Study authors did a primary analysis on 90 women, but then undertook a secondary analysis by adding in repeat ECV attempts. We will consider only the primary analysis data

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated, variable blocks of 8 or 12.
Allocation concealment (selection bias)	Low risk	No indication that this was an issue; did use sequential opening of sealed opaque envelopes
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Participants and providers blinded; unclear whether outcome assessor was blinded

Collaris 2009 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Participants and providers blinded; unclear whether outcome assessor was blinded
Incomplete outcome data (attrition bias) All outcomes	Low risk	For some outcomes, data were collected only for a subset of participants; CTGs of 7 women (7%) were missing from the files Analysis of participants at primary enrolment was performed on an intention-to-treat basis. All women received treatment as allocated
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	No significant differences were noted in baseline criteria; no other biases were apparent

Delisle 2001

Methods	RCT.
Participants	**Inclusion criteria:** singleton non-vertex; age 18 or older; GA 36 weeks or more; intact membranes; reactive CTG. N = 141
Interventions	**Intervention:** regional analgesia (C). Spinal analgesia with bupivacaine 0.25% 1 mL plus 20 mcg fentanyl vs control; 4 ECV attempts. N = 73 **Comparison:** standard care. N = 68. Nitroglycerine tocolysis was used per operator preference.
Outcomes	ECV failure; non-reassuring CTG (1/73 vs 0/68).
Notes	Conference abstract, August 1998 to June 2001.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information given.
Allocation concealment (selection bias)	Unclear risk	No information given.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and clinicians were not blinded; unclear whether outcome assessor was blinded

Delisle 2001 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Participants and clinicians were not blinded; unclear whether outcome assessor was blinded
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Little information given.
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	High risk	Baseline data: reported as similar in maternal age, GA at time of ECV, parity and birthweight. However, clinicians, who were not blinded to the intervention, were able to give IV tocolysis by choice; this could lead to an imbalance between groups. No information on this is given in the Conference abstract, but this is a potential source of bias

Dugoff 1999

Methods	RCT.
Participants	**Inclusion criteria:** breech presentation, 36 weeks or more, reactive CTG, intact membranes, minimum 2 × 2 cm pocket of amniotic fluid. N = 102 in the main paper (in abstract, reported as 101 women) **Exclusion criteria:** gross fetal anomaly, uterine malformation, EFW > 4000 g, fetal growth restriction, placenta praevia, third-trimester vaginal bleeding, labour, contraindications to spinal analgesia or terbutaline
Interventions	**Intervention:** regional analgesia (C) + tocolytic. Spinal analgesia with 10 mcg sufentanil and 1 mL 0.25% bupivacaine and 500 mL lactated Ringer's prehydration. N = 50 (49 in abstract; we will use detail from the detailed publication) **Comparison:** standard care + tocolytic. N = 52. ECV with terbutaline 0.25 mg was attempted usually by 2 operators, and was stopped for fetal bradycardia, maternal discomfort. Up to 4 attempts were allowed. Vaginal elevation of the presenting part not used
Outcomes	Successful ECV; breech delivery; CS.
Notes	University of Colorado Health Sciences Centre and Denver Health Medical Centre, USA. October 1993 to August 1997

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomised, computer-generated sequence.

Dugoff 1999 (*Continued*)

Allocation concealment (selection bias)	Unclear risk	Allocation by cards in sealed envelopes. Cards designating "spinal" or "no spinal" were placed in sealed opaque envelopes that were opened after women signed informed consent forms
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Likely that the women and the clinician were not blinded to whether or not women received an epidural
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No mention of whether investigators were blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Spontaneous version occurred before ECV in 4 women in the spinal group (after the spinal was given) and in 1 woman in the no spinal group. These women were included in the intention-to-treat analysis
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	No differences in baseline characteristics were noted.

El-Sayed 2004

Methods	RCT - with cross-over for some unsuccessful ECVs.
Participants	**Inclusion criteria:** term singleton pregnancy with breech presentation. N = 59. **Exclusion criteria:** Maternal exclusion criteria included chronic hypertension, preeclampsia, placental abruption, placenta praevia, maternal cardiac disease, chorioamnionitis and previous uterine surgery Fetal exclusion criteria included ruptured membranes, IUGR (EFW < 10th centile for GA by US), decreased AFI or oligohydramnios, fetal anomalies incompatible with life and an extended fetal head
Interventions	**Intervention:** tocolytic: nitroglycerine - nitric oxide donor (A3) - parenteral. IV nitroglycerin (100 μg IV × 2). N = 30. **Comparison:** tocolytic: terbutaline - beta stimulant (A1) - parenteral. Terbutaline (0.25 mg SQ). N = 29. After successful ECV, the decision to induce then or wait for spontaneous labour was left to the doctor. After failed ECV, the options were intervention with the other drug in the trial, discharge with appointment for CS or immediate CS; the decision was left to the doctor
Outcomes	Successful ECV; difficult ECV; palpitations; headaches; method of delivery; light-headedness; flushing; reversion (back to breech after ECV)
Notes	We have used only data on initial "Failed ECV" because of the cross-over element of this study. We are contacting study authors to clarify the other outcome data

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation done by a third party not involved in the trial. 30 labels bearing the word 'nitroglycerin' and 30 labels bearing the word 'terbutaline.' Labels were placed on 60 unmarked opaque envelopes, which were sealed, shuffled thoroughly and numbered sequentially
Allocation concealment (selection bias)	Low risk	Labels were placed on 60 unmarked opaque envelopes, which were sealed and numbered sequentially
Blinding of participants and personnel (performance bias) All outcomes	High risk	No blinding of participant or doctor. Differing routes of administration of drugs, IV or SQ, meant that people would know which drug was being administered
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Unclear whether the assessor was blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	1 woman was assigned to terbutaline before it was confirmed that the baby was breech; excluded as fetus had a cephalic presentation. This was considered insufficient to influence the analysis
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	No statistically significant differences in pretreatment maternal or fetal characteristics (*see* Table 1, on p 2053). These were maternal age, GA at ECV, multiparity, EFW, body mass index, anterior placenta and ECV by maternal-fetal medicine attending

Fernandez 1997

Methods	RCT.
Participants	**Inclusion criteria:** singleton, non-cephalic pregnancy; > 36 weeks' gestation. N = 103 **Exclusion criteria:** younger than 17 years of age, prior uterine surgery, ruptured membranes, placenta praevia, anomalous fetus, multiple gestation, sensitivity to terbutaline, other maternal medical complications
Interventions	**Intervention:** tocolytic: terbutaline - beta stimulant (A1) - parenteral. Terbutaline 0.25 mg in unlabelled insulin syringe given SQ 15 to 30 minutes before ECV attempts. Forward then backward roll attempted. N = 52 **Comparison:** placebo. N = 51.
Outcomes	Successful ECV; CS.
Notes	Parkland Memorial Hospital, Dallas, Texas, USA. January 1994 to June 1995

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomised computer tables - randomisation by pharmacy using computer-generated random sequence
Allocation concealment (selection bias)	Unclear risk	No mention in article.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Terbutaline or placebo obtained from pharmacy in unlabelled syringe. Placebo was an equal volume of normal saline
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Placebo-controlled trial with blinding of staff.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No exclusion of women or loss to follow-up. Appears to be an intention-to-treat analysis
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	With exception of maternal age, the 2 groups did not differ at baseline. Mean age for terbutaline group: 23.4. Mean age for placebo group: 25.7

Hilton 2009

Methods	RCT, stratified by parity and hospital.
Participants	**Inclusion criteria:** non-cephalic singleton pregnancies over 37 weeks with normal AFI. Participants split into nulliparous (N = 82) and multiparous (N = 44). N = 126 **Exclusion criteria:** labour, ruptured membranes, history of third-trimester bleeding, any preexisting uterine scar, pregnancy-induced hypertension or gestational diabetes, oligohydramnios, hydramnios, IUGR, macrosomia, maternal hypotension, inability to comprehend the consent form
Interventions	**Intervention:** tocolytic: nitroglycerine - nitric oxide donor (A3) parenteral. IV nitroglycerine (10 mL of 100 micrograms/mL). N = 65 (nulliparous = 42, multiparous = 23) **Comparison:** placebo. N = 61 (nulliparous = 40, multiparous = 21).
Outcomes	ECV success; cephalic presentation at delivery; CS rate; maternal discomfort; headaches; flushing; hypotension; palpitations; fetal heart rate abnormalities
Notes	Nulliparous group: 4 women excluded after randomisation. In experimental group, 1 excluded for pregnancy-induced hypertension, and 1 excluded for decreased AFI. Control group: 1 excluded as woman was in labour, and 1 excluded because of cephalic presentation. 1 woman in placebo group lost to follow-up Multiparous group: 3 women excluded after randomisation. In experimental group, 2 excluded as presentation was cephalic at the time of version. In placebo group, 1 woman excluded as presentation was cephalic at time of version

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation tables used.
Allocation concealment (selection bias)	Low risk	Using separate randomisation sequences for nulliparous and multiparous women at each hospital site, participants were assigned a study number from sequentially numbered opaque envelopes. The study number was forwarded to the pharmacy, and allocated treatment was provided on the basis of the corresponding study number from randomisation tables kept in the pharmacy. No further details provided on randomisation sequences used Group of allocation was unknown to obstetrician, nurse, anaesthesiologist and woman
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Treatment was prepared as 10 mL of clear fluid in a 10 mL syringe with 10 mL of 100 micrograms/mL of nitroglycerin for women in the nitroglycerin group, or 10 mL of normal

Hilton 2009 (*Continued*)

		saline for women in the placebo group. Syringes for nitroglycerine and placebo were visually indistinguishable. Group for allocation was unknown to obstetrician, nurse, anaesthesiologist and woman
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Treatment was prepared as 10 mL of clear fluid in a 10 mL syringe with 10 mL of 100 micrograms/mL of nitroglycerin for women in the nitroglycerin group, or 10 mL of normal saline for women in the placebo group. Syringes for nitroglycerine and placebo were visually indistinguishable. Group for allocation was unknown to obstetrician, nurse, anaesthesiologist and woman
Incomplete outcome data (attrition bias) All outcomes	Low risk	1 woman lost to follow-up. No apparent exclusion of women after randomisation. 7 women did not undergo ECV, but their outcomes were included in the analysis Nulliparous group: 2 in nitroglycerine group excluded: 1 had pregnancy-induced hypertension, 1 had a decreased AFI Nulliparous group: 2 in placebo group excluded: 1 cephalic, 1 lost to follow-up Multiparous group: 2 in nitroglycerine group excluded: had cephalic presentations Multiparous group: 1 in placebo group excluded: had cephalic presentation Data on fetal heart rate abnormalities were available for 61 women in nitroglycerine group and 58 in placebo group; for side effects, the numbers were 59 and 58, respectively
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	Baseline data: similar for maternal age, GA and anterior placenta in nulliparous and multiparous trials

Impey 2005

Methods	RCT.
Participants	**Inclusion criteria:** nulliparous women, singleton breech presentation at 36 weeks, or multiparous at 37 or more weeks. Eligible for inclusion if an unsuccessful attempt at ECV (without tocolysis) was reported, with normal CTG. N = 144

Impey 2005 (*Continued*)

	Exclusion criteria: preexisting indication for CS, unstable lie, fetal compromise (abdominal circumference below 3rd centile, either umbilical artery resistance index above 97th centile or deepest amniotic fluid pocket 2 cm, rhesus isoimmunisation
Interventions	**Intervention:** tocolytic: ritodrine - beta stimulant (A1) - parenteral. Tocolysis administered as ritodrine hydrochloride (Yutopar infusion of 50 mg (10 mg/mL)) added to 12 mL dextrose saline (total 17 mL of ritodrine 3 mg/mL). N = 62 **Comparison:** placebo: 17 mL dextrose saline infusion by the same route at the same rate. N = 62
Outcomes	Primary outcome cephalic presentation at birth. Secondary outcomes: incidence of successful ECV, CS, length of hospital inpatient stay, incidence of neonatal Apgar scores < 7 at 5 minutes, neonatal admission, rare neonatal outcomes and mean cord arterial pH. McGill pain scale was used to measure intensity of pain
Notes	Setting: Breech Clinic, John Radcliffe Hospital, Oxford: women from community clinics and other local hospitals were referred in at 36 or 37 weeks' gestation

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomly allocated in a ratio of 1:1 using random block sizes up to 20
Allocation concealment (selection bias)	Low risk	Sealed opaque envelopes opened in sequential order.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Specific detail missing, but states same infusion, same timeline, same observation for both control and intervention In discussion, study authors identified problems with blinding of researcher and medical practitioner as potential threats
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Specific detail missing, but states same infusion, same timeline, same observation for both control and intervention In discussion, study authors identified problems with blinding of researcher and medical practitioner as potential threats
Incomplete outcome data (attrition bias) All outcomes	Low risk	Potential sample 505, of whom 284 were deemed eligible for inclusion in the trial. Of these, 13 refused and 47 were not offered All 124 participants (62 in each arm) completed the trial. Intention-to-treat analysis.
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	No differences in age or gestation seen in baseline data.

Johnson 1995

Methods	RCT cross-over - using here only data from first part.
Participants	**Inclusion criteria:** women scheduled for attempted ECV with the fetal spine in the midline (back-up or back-down) on US examination. N = 26. All women approached agreed to participate. **Exclusion criteria:** oligohydramnios (AFI < 5 cm), fetal or uterine anomalies, ruptured amniotic membranes, active labour, engagement of presenting part, fetal heart rate decelerations
Interventions	**Intervention:** vibroacoustic stimulation (B). Fetal acoustic stimulation for 1 to 3 seconds with a Western Electric Division AT&T (Phoenix) model 5C electrolarynx over the fetal head, or over the nurse's upper arm (dummy). Physician blinded by leaving the room during the intervention. N = 12 **Comparison:** placebo. N = 11.
Outcomes	Persistent midline spine position on US (stimulation 1/13, control 13/13); failed ECV attempt. Data on method of delivery not included because followed cross-over treatment
Notes	2 hospitals in Arizona, USA, 1 January 1993 to 31 December 1994 After randomisation, 1 from the treatment group and 2 from the control group were excluded because the breech was found to be deeply engaged in the pelvis during the initial ECV attempt. None had changed position to the spine lateral position, and no further attempts at ECV were made. In keeping with the pre-stated protocol for this review, these women have been included in the outcomes as originally allocated Those women in whom ECV failed were crossed over to the other intervention arm. This review considers only data from the first intervention, according to the original allocation Results of the 'cross-over' part of the study are not included

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Table of random numbers.
Allocation concealment (selection bias)	Low risk	Selection of sequential envelopes generated by a table of random numbers and handed out by research nurse
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Clinicians were blinded, but the nurse applying the stimulation and the women could not be blinded
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Clinicians reported blinded, but the nurse applying the stimulation and the women could not be blinded

Johnson 1995 (*Continued*)

Incomplete outcome data (attrition bias) All outcomes	Low risk	3 women (12%) (1 treatment and 2 control) excluded, as breech was deeply engaged. This loss should be insufficient to affect the comparison
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	No baseline data are available for assessment.

Kok 2008

Methods	Multi-centre RCT.
Participants	**Inclusion criteria:** term singleton, breech presentation pregnancies. GA of 36 weeks onwards. N = 320. **Exclusion criteria:** maternal exclusion: any contradiction to labour or vaginal birth, scarred uterus other than transverse in the lower segment, known uterine anomalies, placental abruption in the obstetric history, preeclampsia, maternal cardiac disease, third-trimester bleeding. Fetal exclusion: IUGR (EFW < 5th percentile for GA assessed by ultrasonography), fetal anomalies or an extended fetal head, oligohydramnios (defined as an AFI $\leq$ 5 cm) and non-reassuring signs of fetal well-being
Interventions	**Intervention**: tocolytic: nifedipine - calcium channel blocker (A2) - oral. Nifedipine (2 doses of 10 mg) orally. N = 160 but 154 analysed **Comparison:** placebo: placebo capsules. N = 160 but 156 analysed.
Outcomes	Primary: successful ECV defined as a fetus in cephalic position 30 minutes after the ECV procedure Secondary: fetal presentation at birth, mode of birth and adverse maternal (major side effects due to medication, hypotension with fetal consequences, anaphylactic shock due to the medication and any adverse cardiac events due to medication intake) and fetal events (fetal death, emergency delivery, fetal bradycardia, premature rupture of the membranes and placental abruption within 24 hours after the ECV procedure). Minor side effects: nausea, dizziness and flushing and cessation of treatment because of side effects
Notes	Nifedipine group - 2 women excluded as they were less than 39 weeks' gestation, 2 excluded as they were repeat versions, 2 women lost to follow-up Placebo group - 2 women excluded as they were less than 38 weeks, 2 excluded as they were repeat versions Study reports no events for fetal death; emergency delivery less than 24 hours; placental abruption less than 24 hours; premature rupture of membranes less than 24 hours; maternal hypotension with fetal consequences; anaphylactic shock

Risk of bias

Bias	Authors' judgement	Support for judgement

Kok 2008 (*Continued*)

Random sequence generation (selection bias)	Low risk	Computer blocks of 10, stratified for centre and parity.
Allocation concealment (selection bias)	Low risk	Pharmacy prepared sealed opaque containers with study medication and kept an allocation list until completion of the study
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Double-blinded. All participants, nurses and doctors who performed the ECV were blinded to the assignment
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Double-blinded. All participants, nurses and doctors who performed the ECV were blinded to the assignment
Incomplete outcome data (attrition bias) All outcomes	Low risk	6 women were lost to follow-up or were excluded in the nifedipine group, and 4 women in the control group
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	Baseline characteristics were similar. Baseline characteristics (Table 1) indicate generally good balance, although there appears to be some imbalance in placental anterior localisation (44 vs 55). Some imbalances were seen in some of the ethnicity data (Central African (4 vs 10) and Other (18 vs 9)

Mancuso 2000

Methods	RCT.
Participants	**Inclusion criteria:** women undergoing ECV attempt. Age 18 years or greater, singleton pregnancy, 37 weeks or more, breech or transverse presentation, intact membranes, EFW 2000 to 4000 g, reassuring fetal heart rate testing. N = 108 **Exclusion criteria:** placenta praevia, prior classical CS, third-trimester bleeding, AFI < 5 or > 25 cm, known uterine malformation, suspected major fetal anomaly, active-phase labour
Interventions	**Intervention:** regional analgesia (C) + tocolytic. Lumbar epidural analgesia with 3 + 10 mL 2% lidocaine, with epinephrine test dose and fentanyl 100 micrograms. N = 54 **Comparison:** no regional analgesia + tocolytic. N = 54. All received Ringer's Lactate 1500 mL IV, and terbutaline 0.25 mg SQ
Outcomes	Presentation after ECV attempt; presentation at birth; fetal bradycardia causing cessation of ECV attempts; the way women gave birth
Notes	Tripler Army Medical Centre, Honolulu, Hawaii, December 1994 to June 1998
Risk of bias	

Mancuso 2000 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random numbers table.
Allocation concealment (selection bias)	Low risk	...with group assignments sealed in sequentially numbered opaque envelopes randomisation
Blinding of participants and personnel (performance bias) All outcomes	High risk	It is not possible to blind people to epidurals.
Blinding of outcome assessment (detection bias) All outcomes	High risk	It is not possible to blind people to epidurals.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No exclusions or loss to follow-up.
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	Baseline data were similar between groups; no evidence of other bias

Marquette 1996

Methods	RCT.
Participants	**Inclusion criteria:** women with singleton breech presentation, 36 to 41 weeks' gestation, reactive CTG, breech mobile on abdominal palpation. N = 283 **Exclusion criteria:** impaired fetal growth (estimated weight < 10th percentile), oligohydramnios (AFI < 5), placenta praevia, placental abruption, uterine scar other than low transverse CS, active labour, ruptured membranes, fetal anomalies incompatible with life, contraindication to vaginal delivery, contraindication to tocolysis
Interventions	**Intervention:** tocolytic: ritodrine - beta stimulant (A1) - parenteral. IVI, for 20 minutes before and during ECV attempt, of ritodrine 111 micrograms/min or placebo. Maximum of 3 ECV attempts as forward or backward flip. CTG was repeated. N = 138 **Comparison:** placebo. N = 145
Outcomes	Duration of infusion (tocolysis mean 32.1 (SD 1.04) vs control 31.7 (1.12) minutes); unsuccessful ECV; CTG results (all reactive); time from ECV to birth (average 2 weeks); maternal and fetal complications (maternal complications < 4%, similar between groups) ; mode of birth; birthweight (3370 (39) vs 3382 (44) grams)

Marquette 1996 (*Continued*)

Notes	Groups differed in terms of frank breech (tocolysis 59/138 vs control 43/145) and nulliparity (58/138 vs 49/145). Parity (nulliparous 34% vs parous 61%), but not type of breech, affected ECV success rate; therefore results controlled for parity

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	States random assignment of every 10 patients enrolled: 5 to ritodrine and 5 to control
Allocation concealment (selection bias)	Unclear risk	No information provided.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Placebo and treatment made up in pharmacy in identical phials and administered IV in the same solution at the same rate
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Placebo and treatment made up in pharmacy in identical phials and administered IV in the same solution at the same rate
Incomplete outcome data (attrition bias) All outcomes	Low risk	No exclusions or loss to follow-up reported.
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	Ritodrine group had higher proportion of nulliparous women. It is unclear whether this would impact the comparison of outcomes

Munoz 2014

Methods	2-arm RCT. Individual women randomly assigned.
Participants	**Dates of data collection:** April 2010 to March 2011. **Setting:** tertiary hospital in Spain with more than 3000 births a year **Inclusion criteria:** women with non-cephalic presentation between 36 and 41 weeks' gestation (All non-labouring pregnant women at 36 to 41 weeks' gestation with a non-cephalic presentation confirmed by ultrasound scan were invited to participate). N = 60 **Exclusion criteria:** fetal abnormalities, intrauterine fetal death, suspicion of fetal growth restriction, fetal weight above 3800 g, maternal cardiovascular disease, American Society of Anesthesiologists class > 2, severe hypertension, allergy to any trial medications, amniotic fluid index < 4 cm, Doppler cerebroplacental ratio > 5th percentile, abnormal cardiotocographic recordings, contraindications to vaginal delivery, uterine abnormalities, coagulation disorders, Rhesus incompatibility, multiple gestation, rupture of membranes and/or placental abruption

Interventions	**Experimental intervention:** remifentanil. Remifentanil at 0.1 lg/kg/min, with rescue boluses on demand of 0.1 lg/kg/min and a lockout period of 4 minutes. Given by patient-controlled pump.All women given IV infusion of ritodrine 200 lg/min for tocolysis. All women given 1 g paracetamol in 100 mL saline (IV) 5 minutes before ECV. N = 31 **Control/Comparison intervention:** placebo. Study control solution at 0.1 lg/kg/min, with rescue boluses on demand of 0.1 lg/kg/min and a lockout period of 4 minutes. Given by patient-controlled pump. All women given IV infusion of ritodrine 200 lg/min for tocolysis. All women given 1 g paracetamol (IV) 5 minutes before ECV. N = 29
Outcomes	Pain score (numerical rating scale 0 to 10, no pain to worst pain imaginable); success of ECV; CS; adverse events (nausea, vomiting, dizziness, etc); mode of birth; fetal bradycardia
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"…computer-generated random sequence…".
Allocation concealment (selection bias)	Low risk	Hospital pharmacy prepared 100 mL infusion bags that contained remifentanil (1 mg) or saline, which were labelled with the patient code and sent to the operative room
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Women blind to allocation (placebo-controlled trial).
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Anaesthesiologists, midwives and obstetricians were blinded to allocation group
Incomplete outcome data (attrition bias) All outcomes	Low risk	"After randomisation, three women were excluded: two for spontaneous conversion of the fetus to a cephalic presentation, and one who declined to participate" Obstetric data for 2 further women were lost, but they were included in the statistical analysis on an intention-to-treat basis
Selective reporting (reporting bias)	Low risk	Trial registration form (Valero 2010) lists outcomes, all of which were reported in main study publication (Munoz 2014).

Other bias	Low risk	No imbalance in age; BMI; estimated fetal weight; ethnicity; parity; previous CS; presentation; placenta and amniotic fluid volume

Nor Azlin 2005

Methods	RCT.
Participants	**Inclusion criteria:** singleton term breech pregnancy at a tertiary hospital. N = 60. **Exclusion criteria:** previous CS or other uterine scar, uterine malformation, antepartum haemorrhage, hypertension, diabetes mellitus, IUGR, oligohydramnios, fetal anomalies, early or active labour, contraindications to IV ritodrine, contraindication to vaginal delivery
Interventions	**Intervention:** tocolytic: ritodrine - beta stimulant (A1) - parenteral. Ritodrine (IV) - 0.4 mg/mL in 5% dextrose infused at 1.5 mL/min. N = 30 (nulliparous 22 and multiparous 8) **Comparison:** placebo. N = 30 (nulliparous 23 and multiparous 7).
Outcomes	Successful ECV.
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer random-number generator.
Allocation concealment (selection bias)	Low risk	Sealed numbered opaque envelopes.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Obstetricians and women were blinded.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Obstetricians and women were blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No exclusions or incomplete data.
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	More babies in the frank breech position in the ritodrine group

Nor Azlin 2008

Methods	RCT.
Participants	**Inclusion criteria:** singleton term pregnancies with a breech presentation. N = 86. **Exclusion criteria:** oligohydramnios, macrosomia, presence of a contraindication for vaginal delivery, previous caesarean delivery, multiple pregnancy, hypertension in pregnancy, rhesus-negative mother, previous history of abruptio placenta, lethal fetal anomaly, contraindication against nifedipine or terbutaline
Interventions	**Intervention:** tocolytic: nifedipine - calcium channel blocker (A2) - oral. Oral nifedipine (20 mg). N = 43 (nulliparous 18, multiparous 25) **Comparison:** tocolytic: terbutaline - beta stimulant (A1) - parenteral. IV terbutaline (50 μg). N = 43 (nulliparous 21, multiparous 22) (6 lost to further follow-up)
Outcomes	Successful ECV, difficult ECV, palpitations, hypotension, method of delivery, perinatal morbidity
Notes	6 successful ECVs from the terbutaline group were lost to follow-up

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computerised random-number generator.
Allocation concealment (selection bias)	Low risk	Sealed, opaque, numbered envelopes in sequence.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Clinicians doing ECV were blinded to the tocolytic drug, women were not blinded because 1 group had oral administration and the other IV. Clinicians doing the ECV were in control of the success rate and were blinded
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Clinicians doing ECV were blinded to the tocolytic drug, women were not blinded because 1 group had oral administration and the other IV. Clinicians doing the ECV were in control of the success rate and were blinded
Incomplete outcome data (attrition bias) All outcomes	High risk	Among those who had successful ECV, 6 from terbutaline group were lost to follow-up, so although all women were included in the assessment of the success of ECV, the outcome of CS is at risk of bias
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	The study was not stopped early. Baseline characteristics were similar between groups in maternal age, GA, AFI, parity and type of breech presentation. No other biases were identified

Reinhard 2012

Methods	RCT comparing 2 interventions (clinical hypnosis or NLP) (a control group receiving no intervention was used as a historical comparison - data for this group have not been included in the review). Single-centre, stratified by parity
Participants	Control group. From January 1, 2009, to October 31, 2010, a control group were all ECVs, during which time neither hypnosis nor NLP was used. These data will not be included **Setting:** a tertiary university hospital in Germany. Johann Wolfgang Goethe University Hospital in Frankfurt am Main **Inclusion criteria:** pregnant women with a singleton fetus in a breech position at the scheduled date of the ECV at or after 370/7 (259 days) weeks' gestation, normal amniotic fluid index, with advanced level of German language. N = 80 **Exclusion criteria:** women in active labour (regular uterine contractions and rupture of membranes), contraindications for a vaginal birth (such as placenta praevia) and planned birth by caesarean section even if the fetus turned to a cephalic position
Interventions	**Experimental intervention:** hypnosis. 20-Minute standardized clinical hypnosis intervention via head phones (Bose, QuietComfort 15) before ECV procedure was carried out. Hypnosis intervention was a voice recording of one of the trialists (a certified hypnotherapist who underwent training in the fundamentals of NLP). A relaxation induction was utilised, in which the therapist focused on breathing and concentrated on various parts of the body for trance deepening. N = 42 **Control/Comparison intervention:** neurolinguistic programming. 20-Minute standardised NLP intervention via head phones (Bose, QuietComfort 15) before ECV procedure was carried out. Hypnosis intervention was a voice recording of 1 of the trialists (a certified hypnotherapist who underwent training in the fundamentals of NLP). N = 38
Outcomes	ECV success; women's views (results reported as means derived from Likert 6-point scale)
Notes	We contacted the study author for more information re the NLP intervention and received additional information

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Off-centre randomisation sequence based on block randomisation was calculated and assigned by the Institute of Biostatistics and Mathematical Modeling
Allocation concealment (selection bias)	Unclear risk	Allocation at the point of randomisation was not described.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Intervention was double-blinded, that is, the participant and the clinician who carried out the ECV procedure did not know

Reinhard 2012 (*Continued*)

		the kind of intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Intervention was double-blinded, that is, the participant and the clinician who carried out the ECV procedure did not know the kind of intervention
Incomplete outcome data (attrition bias) All outcomes	Low risk	No loss to follow-up evident after randomisation.
Selective reporting (reporting bias)	Unclear risk	We did not assess trial protocol.
Other bias	Low risk	Other bias not apparent.

Robertson 1987

Methods	Quasi-RCT
Participants	**Inclusion criteria:** breech presentation suitable for ECV at term (37 to 41 weeks). N = 58 **Exclusion criteria:** oligohydramnios, estimated fetal weight < 2500 g or > 4000 g, non-reactive NST
Interventions	**Intervention:** tocolytic: ritodrine - beta stimulant (A1) - parenteral. Use of tocolysis (ritodrine infusion 200 micrograms per minute for 20 minutes) compared with no tocolysis. All women had IV lines. Repeat version attempt with tocolysis was successful in 1/9, with initial failure in the control group (for immediate success rate, this review considered only the initial attempt). N = 30 **Comparison:** no tocolytic. N = 28.
Outcomes	Non-cephalic presentation at birth; CS; immediate ECV success
Notes	Tacoma, Washington, USA. July 1984 to May 1987.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	High risk	Allocated according to last digit of social security number.
Allocation concealment (selection bias)	High risk	Allocated according to last digit of social security number.
Blinding of participants and personnel (performance bias) All outcomes	High risk	No blinding.

Robertson 1987 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	High risk	No blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	3 women lost to follow-up in the intervention group and 5 in the control group. This seems unlikely to impact outcomes
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	Groups were similar in age, parity, maternal weight, GA, EFW. No other biases apparent

Schorr 1997

Methods	RCT.
Participants	**Inclusion criteria:** breech presentation or transverse lie. N = 69. **Exclusion criteria:** placenta praevia, fetal compromise, fetal growth restriction, ruptured membranes
Interventions	**Intervention:** regional analgesia (C) + tocolytic. Epidural analgesia with 2% lidocaine with 1:200,000 epinephrine (N = 35); prehydration with 2000 mL lactated Ringer's solution vs no epidural (N = 34). All women received 0.25 mg terbutaline SQ. ECV attempted up to 3 times, with vaginal elevation of the presenting part when necessary. N = 35 **Comparison:** no regional analgesia + tocolytic. N = 34. 250 mg terbutaline given as adjunct.
Outcomes	Successful ECV, complications, mode of birth, presentation at delivery
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation cards placed in permuted blocks of 10 by Division of Biostatistics
Allocation concealment (selection bias)	Low risk	Allocation put in sealed opaque envelopes, and all investigators participating in clinical aspects of the study were blinded to the randomisation sequence
Blinding of participants and personnel (performance bias) All outcomes	High risk	It is not possible to blind people to the use of epidurals.

Schorr 1997 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	High risk	It is not possible to blind people to the use of epidurals.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Although 5 women declined randomisation, there seemed to be no exclusions and no loss to follow-up
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	No differences in baseline data. No other biases apparent.

Stock 1993

Methods	RCT.
Participants	**Inclusion criteria:** breech presentation between 36 and 42 weeks with no contraindication to ECV. N = 63. **Exclusion criteria:** diabetes, heart disease, thyrotoxicosis, ruptured membranes, multiple pregnancy, uterine scar, placenta praevia, oligohydramnios, impaired fetal growth, nuchal cord, placenta praevia
Interventions	**Intervention 1:** tocolytic: ritodrine - beta stimulant (A1) - parenteral. Group B: ritodrine 0.3 mg per minute infusion for 30 minutes and during the procedure, and placebo bolus injection. N = 21 **Intervention 2:** tocolytic: hexoprenaline - beta stimulant (A1) - parenteral. Group C: placebo infusion and hexoprenaline 10 micrograms bolus injection. N = 21 **Comparison:** placebo. Group A: placebo infusion and bolus injection. N = 21. For the purposes of this review, which addresses the effectiveness of IV tocolysis for ECV rather than the evaluation of specific tocolytic agents, intervention 1 (group B) and intervention 2 (group C) have been combined Nulliparous = 18 in tocolytic groups and 9 in placebo group. Multiparous = 24 in tocolytic groups and 12 in placebo group We have not set up a subgroup comparison of 1 beta stimulant vs another, so the data from this study on failed ECV for ritodrine (7/21) vs hexoprenaline (5/21) are not included as a direct comparison
Outcomes	Immediate ECV success; ECV completed < 1 minute; fetal bradycardia during ECV
Notes	Improved ECV success rate with tocolysis reached statistical significance for hexoprenaline but not for ritodrine. Study authors decided not to continue the ritodrine/placebo arm of the trial to completion

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Stock 1993 (*Continued*)

Random sequence generation (selection bias)	Unclear risk	'Each investigator had a separate randomisation sequence. These were in sets of 3 to the 3 groups, stratified for parity.' Method of randomisation not specified
Allocation concealment (selection bias)	Unclear risk	No information provided.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Placebo-controlled trial. Practitioners were blind to group allocation, as were the women
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Practitioners were blind to group allocation.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No evidence of exclusions of loss to follow-up.
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	High risk	No statistically significant differences between groups in terms of parity, height, age or gestation at time of ECV (*see* Table 2 on page 266). No differences between groups regarding fetal biparietal diameter, abdominal circumference. Femur length or AFI. Women in ritodrine group were significantly lighter than those in the other 2 groups Trial stopped early for benefit.

Sullivan 2009

Methods	RCT.
Participants	**Inclusion criteria:** singleton breech presentations after 36 weeks' gestation. N = 95. **Exclusion criteria:** patients with contraindications to neuraxial anaesthesia, allergies to study medications
Interventions	**Intervention:** systemic opioids (E) + tocolytic. Systemic opioids (50 µg fentanyl). N = 47. **Comparison:** regional analgesia (C) + tocolytic. CSE anaesthesia (bupivacaine 2.5 mg and 15 µg fentanyl followed by 45 mg lidocaine and 15 µg epinephrine). N = 48 Both groups received terbutaline.
Outcomes	Successful ECV, hypotension, decelerations of FHR, persistent decelerations, CS
Notes	1 woman excluded after randomisation before ECV because of non-reassuring CTG
Risk of bias	

Sullivan 2009 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer random-number table.
Allocation concealment (selection bias)	Low risk	Sequentially numbered opaque envelopes.
Blinding of participants and personnel (performance bias) All outcomes	High risk	No blinding.
Blinding of outcome assessment (detection bias) All outcomes	High risk	No blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	1 woman was excluded after randomisation because she underwent an emergency CS. Other possible exclusions are unclear
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	No significant differences between the 2 groups in age, parity, GA, height, weight or obstetrician predicted difficulty of version. Other biases not identified

Tan 1989

Methods	RCT.
Participants	**Inclusion criteria:** breech presentation beyond 33 weeks' gestation without contraindication to ECV. N = 90. **Exclusion criteria:** signs of growth restriction, vaginal bleeding in the third trimester, toxaemia of pregnancy, labour, polyhydramnios, placenta praevia, previous CS scar, contracted pelvis, fetal malformation and uterine malformation
Interventions	**Intervention 1:** tocolytic: salbutamol - beta stimulant (A1) - parenteral. Group 2 received an IVI of salbutamol until maternal heart rate exceeded 100 beats per minute for 30 minutes. N = 30 (nulliparous 17, multiparous 13) **Intervention 2:** tocolytic: salbutamol - beta stimulant (A1) - oral. Group 1 received salbutamol 4 mg orally 3 times a day for at least 1 day. N = 30 (nulliparous 16, multiparous 14) **Comparison:** placebo. Group 3 received no salbutamol. N = 30 (nulliparous 17, multiparous 13) Groups 1 and 3 received dummy IV lines
Outcomes	Immediate ECV success.

Tan 1989 (*Continued*)

Notes	Singapore. This study compared 2 different routes of administration (oral and IV) of a tocolytic drug to facilitate ECV. So it provides data only for tocolysis vs placebo, and the different routes of administration are considered in subgroups

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information provided.
Allocation concealment (selection bias)	High risk	2 stacks of randomised cards divided according to parity with each stack further subdivided by a colour code for gestation A or B
Blinding of participants and personnel (performance bias) All outcomes	Low risk	States that clinicians were blinded to treatment and dummy IVs were inserted. Clinicians did not know parity or gestation. Women's status unclear, but clinicians more likely to be able to influence outcomes
Blinding of outcome assessment (detection bias) All outcomes	Low risk	States that clinicians were blinded to treatment and dummy IVs were inserted. Clinicians did not know parity or gestation. Women's status unclear, but clinicians more likely to be able to influence outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	No exclusions apparent after randomisation and no loss to follow-up
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	The 3 groups were similar in placental site, abdominal girth, maternal weight, fetal birthweight and stratification of parity and gestation across groups Failed ECV: Time taken was significantly longer (10.5 + 4.9 vs 5.6 + 3.9; P value < 0.001) and onset of labour was significantly earlier (17.6 + 9.8 vs 25.2 + 14.9 days; P value < 0.02), implying that longer manipulation hastened the onset of labour by 70%

Vallikkannu 2014

Methods	RCT 2-arm (then cross-over for second attempt; data following cross-over have not been included in the review)
Participants	**Dates of data collection:** 18 Jan 2011 to 23 Dec 2012. **Setting:** University Hospital, Kuala Lumpur, Malaysia. 6000 to 7000 births a year **Inclusion criteria:** women scheduled for ECV (≥ 36 weeks' gestation). Scheduled ECV, breech presentation or transverse lie, singleton gestation, gestational

	age ≥ 36 weeks, intact membranes, non-anomalous fetus, reassuring fetal status on cardiotocogram. N = 95 **Exclusion criteria:** regular contractions were present, estimated fetal weight < 2 kg, oligohydramnios (amniotic fluid index < 5 cm), severe hypertension, recent antepartum haemorrhage, uterine scar, related allergy and any potential contraindication to vaginal birth
Interventions	**Experimental intervention:** powder. Commercially available baby talcum powder was applied to the woman's abdomen by the operator. N = 48 250 mcg terbutaline was administered subcutaneously 5 to 10 minutes before ECV was attempted In the first round, a maximum of 2 attempts at ECV were permitted. An attempt comprised a continuous manoeuvre typically lasting not longer than 2 to 3 minutes. Fetal presentation and heart rate were then checked by ultrasound. If ECV was unsuccessful but fetal heart rate was normal and the woman was agreeable, a second attempt was made with the same allocated aid. After completion of the first round of a maximum of 2 attempts, the participant was asked to record her ECV-related pain score, and the operator was asked to provide a satisfaction score with use of the allocated aid, using a 10 point visual numerical rating scale (VNRS - scored from 1 to 10, marked as higher score more desirable result) Following an unsuccessful first round of ECV, if fetal status was reassuring on cardiotocogram (i.e. until at least 2 fetal heart rate accelerations were observed in the context of a normal baseline, baseline variability and absence of decelerations), and both the provider and the woman were willing, a second round of up to 2 ECV attempts was permitted with cross-over to the opposing aid, i.e. powder to gel, gel to powder. A further terbutaline dose was given for the second round, which was conducted in similar fashion to the first round **Control/Comparison intervention:** gel. Ultrasound aqueous gel was applied to the woman's abdomen by the operator. N = 47 250 mcg terbutaline was administered subcutaneously 5 to 10 minutes before ECV was attempted In the first round, a maximum of 2 attempts at ECV were permitted. An attempt comprised a continuous manoeuvre typically lasting not longer than 2 to 3 minutes. Fetal presentation and heart rate were then checked by ultrasound. If ECV was unsuccessful but fetal heart rate was normal and the woman was agreeable, a second attempt was made with the same allocated aid. After completion of the first round of a maximum of 2 attempts, the participant was asked to record her ECV-related pain score, and the operator was asked to provide a satisfaction score with use of the allocated aid, using a 10 point visual numerical rating scale (VNRS - scored from 1 to 10, marked as higher score more desirable result) Following an unsuccessful first round of ECV, if fetal status was reassuring on cardiotocogram (i.e. until at least 2 fetal heart rate accelerations were observed in the context of a normal baseline, baseline variability and absence of decelerations), and both the provider and the woman were willing, a second round of up to 2 ECV attempts was permitted with cross-over to the opposing aid, i.e. powder to gel, gel to powder. A further terbutaline dose was given for the second round, which was conducted in similar fashion to the first round

Outcomes	Self-reported pain; success of ECV; operator's VNRS satisfaction score (identical scale to the pain VNRS described above) with the agent used; significant post-ECV cardiotocogram anomaly; cephalic presentation at birth; caesarean (and indication); neonatal outcomes of Apgar score, umbilical cord arterial blood pH and base deficit and neonatal admission; gestational age at birth; blood loss at birth and birthweight; fetal or neonatal death; neonatal hypoxic-ischaemic encephalopathy and major abruptio placenta ECV was considered a success if cephalic presentation was demonstrated on ultrasound immediately after an attempt
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"…computer generated randomisation sequence obtained from http://www.random.org..."
Allocation concealment (selection bias)	Unclear risk	"…randomisation envelopes were prepared by an author (NV who was not involved in recruitment) in a single block of 100…sequential opening of the lowest numbered sealed opaque envelope remaining just before the start of ECV" 5 envelopes were not accounted for.
Blinding of participants and personnel (performance bias) All outcomes	High risk	"Blinding of providers and patients to the intervention was not attempted as it was considered unachievable." It was not clear whether staff were using their usual or preferred method (it was stated that talcum powder had mainly been used, although some staff had started to use gel for ECV)
Blinding of outcome assessment (detection bias) All outcomes	High risk	Blinding was not attempted, as it was considered unachievable
Incomplete outcome data (attrition bias) All outcomes	Low risk	48 randomly assigned to powder and 47 to gel. Recruitment ceased when all 100 numbered envelopes were used. 5 numbered envelopes could not be accounted for (2 allocated to powder and 3 allocated to gel). All participants received powder or gel as allocated for their first round of ECV. Primary analysis was per protocol

Vallikkannu 2014 (*Continued*)

Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	No baseline imbalances in age; gestation; parity; nulliparous; weight; height; BMI; ethnicity; etc. When possible, we have used the data related to the first attempt only, but the assessment of pain seems to be pooled in the published paper

Vani 2009

Methods	RCT.
Participants	**Inclusion criteria:** healthy women, singleton fetus in breech presentation, 37 to 39 weeks with intact membranes, no signs of labour and a clinically EFW 2 to 4 kg. USS performed to confirm breech presentation and to ascertain fetal neck position and location of the placenta. N = 114 **Exclusion criteria:** AFI outside range of 5 to 25, fetal hyperextended neck, placenta previa, gross fetal anomalies, hypertension, gestational diabetes, antepartum haemorrhage, uterine scar (from CS, myomectomy or perforation), uterine malformation allergy or contraindication to salbutamol or contraindication to a trial of labour even if in cephalic presentation
Interventions	**Intervention:** tocolytic: salbutamol - beta stimulant (A1) - parenteral. Salbutamol (IV dose of 0.1 mg salbutamol with further boluses every 5 minutes). N = 57 **Comparison:** placebo. N = 57.
Outcomes	Successful ECV, palpitations, hypotension, fetal presentation at delivery, method of delivery, perinatal morbidity, Apgar scores
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Sequence generated by a random-number generator.
Allocation concealment (selection bias)	Low risk	Sealed numbered opaque envelopes prepared in blocks of 4.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Open-label RCT and IV administration of tocolytic was not blinded

Vani 2009 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	High risk	Open-label RCT and IV administration of tocolytic was not blinded
Incomplete outcome data (attrition bias) All outcomes	Low risk	No exclusions after randomisation and no loss to follow-up. All women received their allocated treatment
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	A significant difference was noted in the location of the placenta between the 2 groups. Significantly more women in the tocolysis group had a placenta attached to the fundus. Fewer women in the intervention group had a placenta in the anterior upper segment and more in the posterior upper segment, although statistical significance is not reported. It is unclear whether this would have an impact on outcomes Post hoc multivariate logistic regression analyses incorporating placental location and allocated treatment as independent co-variables in the analysis with successful ECV and CS reported separately as dependent outcomes. After control for placental location in both models for successful ECV and CS salbutamol, tocolysis remained significantly associated with increased ECV success (adjusted OR 3.4; 95% CI 1.4 to 8.2; decreased CS adjusted OR 3.4; 95% CI 0.14 to 0.79)

Weiniger 2007

Methods	RCT.
Participants	**Inclusion criteria:** All eligible nulliparous women who requested ECV after 37 weeks' gestation during the period from September 2002 to May 2006 were approached for recruitment before the ECV procedure. Inclusion criteria included American Society of Anesthetists status I to II at 37 to 40 weeks' gestation, and no fetal abnormality. N = 70 **Exclusion criteria:** women with a breech presenting fetus who requested elective caesarean delivery, either after failed ECV at another institution or because they did not wish to try ECV at all, were not included or followed up, and data regarding these women were not collected. Women with any of the following were excluded: previous uterine surgery or uterine anomaly, contraindication for vaginal delivery, contraindications for regional analgesia, woman's refusal of regional analgesia, neuropathy, severe back pain with neurological radiation, poor communication and morbid obesity (body mass index > 40 kg/m^2).
Interventions	**Intervention:** regional analgesia (C) + tocolytic. Spinal analgesia (bupivacaine 7.5 mg). N = 36. **Comparison:** no regional analgesia + tocolytic. N = 34. Both groups received 50 mg ritodrine or 20 mg nifedipine sublingually
Outcomes	Successful ECV.

Notes	In spinal group: 1 woman excluded as morbidly obese, 1 women requested to not have spinal after randomisation In placebo group: 1 woman excluded as morbidly obese, 1 refused ECV after randomisation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Allocation cards randomly inserted into envelopes by a physician not involved in the study
Allocation concealment (selection bias)	Unclear risk	Study allocation was by sequentially numbered sealed envelopes containing a concealed allocation card designating the participant to receive (group S), or not receive (group N), spinal analgesia. Allocation sequence was concealed until after enrolment, and informed consent was obtained before study assignment of the participant was revealed
Blinding of participants and personnel (performance bias) All outcomes	High risk	It is not possible to blind people to regional analgesia.
Blinding of outcome assessment (detection bias) All outcomes	High risk	It is not possible to blind people to regional analgesia.
Incomplete outcome data (attrition bias) All outcomes	Low risk	2 women in each group were excluded from the analysis (1 in each group declined ECV or the intervention, and 1 protocol violation was reported in each group). This was considered insufficient to impact the analysis
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	Women in the intervention group were significantly younger than those in the control group, but other baseline characteristics were similar between groups (height, weight, weight gain, EFW, GA, amniotic fluid volume, placental position, fetal presentation, position of fetal spine, tocolytic used)

Weiniger 2010

Methods	RCT.
Participants	**Inclusion criteria:** Healthy multiparae at term requesting ECV for breech presentation, without fetal or uterine anomaly, were enrolled after written informed consent, and all eligible multiparae requesting ECV after 37 weeks' gestation were approached for recruitment before the ECV. ASA status I to II, 37 to 40 complete weeks' gestation,

	no fetal abnormality (including IUGR), no contraindication for vaginal delivery or no contraindication for regional analgesia. N = 64 **Exclusion criteria:** previous CS, previous myomectomy with uterine cavity penetration or uterine anomaly, morbid obesity (body mass index 40 kg/m^2), AFI 7 cm, neuropathy, severe back pain with radicular radiation, patient refusal of regional analgesia, poor communication or request for elective CS (after failed ECV at another institution or not wishing to attempt ECV)
Interventions	**Intervention:** regional analgesia (C) + tocolytic. Spinal analgesia (bupivacaine 7.5 mg). N = 31. **Comparison:** no regional analgesia + tocolytic. N = 33. Ritodrine (50 mg IV) used as muscle relaxant until April 2003, when it was replaced by nifedipine (20 mg orally)
Outcomes	Successful ECV.
Notes	1 woman's data not analysed.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"...concealed cards allocated at random by a physician not involved in study enrolment..."
Allocation concealment (selection bias)	Unclear risk	"Women were randomised using numbered sealed envelopes containing concealed cards allocated at random by a physician not involved in study enrolment"
Blinding of participants and personnel (performance bias) All outcomes	High risk	The 2 experienced ECV-performing obstetricians were not blinded. Women could not be blinded either
Blinding of outcome assessment (detection bias) All outcomes	High risk	No blinding attempted
Incomplete outcome data (attrition bias) All outcomes	Low risk	1 woman (in analgesia group) refused ECV after randomisation. 1 woman randomly assigned to receive spinal analgesia did not receive the intended treatment, as the anaesthetist was unable to locate the dura (her ECV was unsuccessful, but she was analysed as intention-to-treat in the spinal analgesia group) 2 women with breech presentation in consecutive pregnancies were enrolled twice in the current study. A further analysis without these women was performed to exclude potential bias for the primary outcome. The success of ECV with spinal analgesia excluding the repeat data was 23 of 27 (85.1%) vs 19 of 33 (57.5%) without analgesia (P value < 0.02) None of this would be sufficient to have an impact on the analysis

Weiniger 2010 (*Continued*)

Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Unclear risk	Similar maternal age, GA, weight at time of ECV and height. Similar too in terms of breech in past pregnancy, EFW, AFI. Study authors report there was no difference according to parity in the rate of successful ECV within intention-to-treat groups. However, it should be noted that for parity 1, 13 were included in the spinal analgesia group and 21 in the no analgesia group

Yanny 2000

Methods	RCT.
Participants	**Inclusion criteria:** women with breech presentation choosing ECV, cardiotocograph and US examination acceptable, failed initial ECV attempt without tocolysis. N = 57
Interventions	**Intervention:** tocolytic: glycerol trinitrate/nitroglycerine - nitric oxide donor (A3) - sublingual Glyceryl trinitrate sublingual spray 800 µg. N = 31. **Comparison:** placebo. N = 26. Labelled sprays A and B; repeat ECV attempt; if unsuccessful and uterus not relaxed, salbutamol infusion and repeat ECV attempt
Outcomes	Side effects: maternal discomfort; blood pressure; pulse, after spray administration; ECV success; uterine relaxation (poor 8/30 nitroglycerine vs 9/25 placebo, reasonable 11/30 vs 8/25, good 7/30 vs 8/25, excellent 4/30 vs 0/25); salbutamol required (13/31 vs 14/26); dose of salbutamol
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated random numbers.
Allocation concealment (selection bias)	Low risk	Used opaque sealed envelopes, but no information as to whether they were sequentially numbered
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No information provided.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information provided.

Yanny 2000 (*Continued*)

Incomplete outcome data (attrition bias) All outcomes	Low risk	No exclusions were reported after randomisation, and no loss to follow-up
Selective reporting (reporting bias)	Unclear risk	We did not assess the trial protocol.
Other bias	Low risk	Baseline characteristics for the women were similar between the 2 groups in maternal age, parity, extended legs and liquor volume. No other biases were apparent

AFI: amniotic fluid index.
BMI: body mass index.
CI: confidence interval.
CS: caesarean section.
CSE: combined spinal epidural.
CTG: cardiotocography.
ECV: external cephalic version.
EFW estimated fetal weight.
GA: gestational age.
IUGR: intrauterine growth restriction.
IV: intravenous.
IVI: intravenous infusion.
min(s): minute(s).
NST: non-stress test.
OR: odds ratio.
RCT: randomised controlled trial.
SD: standard deviation.
SQ: subcutaneous.
US: ultrasound.
vs: versus.
A: Tocolytic drugs: A1 - beta stimulants; A2 - calcium channel blockers; A3 - nitric oxide donors.
B: Vibroacoustic stimulation.
C: Regional analgesia.
D: Amnioinfusion.
E: Systemic opioids.

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Dockeray 1984	Non-randomised follow-up study comparing outcomes of patients who had an ECV vs patients who had a breech vaginal delivery
Guittier 2013	This was not a randomised trial. 63 women undergoing ECV under hypnosis between 2010 and 2013 were compared with 122 women receiving standard care between 2005 and 2008

(*Continued*)

Wallace 1984	Non-randomised follow-up study after randomised trial of ECV with tocolysis

ECV: external cephalic version.

Characteristics of studies awaiting assessment *[ordered by study ID]*

Andarsio 2000

Methods	RCT.
Participants	**Inclusion criteria:** women undergoing ECV attempt. Unit: individual women. N = 35 women included
Interventions	**Intervention:** tocolysis: nitroglycerine - nitric oxide donor (A3) - no route reported Nitroglycerine: only abstract available, no dose or route of administration given. N = 18 **Comparison:** tocolysis: terbutaline - beta stimulant (A1) - no route reported. Terbutaline: only abstract available, no dose or route of administration given. N = 17
Outcomes	ECV success.
Notes	Preliminary abstract report only reviewed. This study was included in the previous publication (Cluver 2012), but we cannot include in this update until we have information on the routes of administration used. We are writing to study authors to request this information

Hollard 2003

Methods	RCT.
Participants	**Inclusion criteria:** normal singleton breech pregnancy, gestational age 36 weeks or more, intact membranes, not in labour. N = 36
Interventions	**Intervention:** regional analgesia (C). 1000 mL IVI prehydration and intrathecal injection of 6 mg 2% lidocaine with 15 mcg fentanyl. Followed by the same protocol as comparison group. N = 19 **Comparison:** no regional analgesia + tocolytic. 0.25 mg SQ terbutaline and ECV attempted by a MFM physician. N = 17
Outcomes	Maternal pain (reduced in spinal analgesia group) and satisfaction (no difference) on visual scale; ECV success
Notes	January 1998 to January 2003. It is unclear whether both groups received terbutaline or just the comparison group. We are writing to study authors to clarify this and other details of the study

Tan 2008

Methods	Double-blind RCT.
Participants	Women with a singleton baby in the breech position. Gestation ≥ 36 weeks (check for early confirmation of gestational age), intact membranes and assuring fetal status on cardiotocograph. N = at least 103 women
Interventions	250 µg or 500 µg of bolus subcutaneous terbutaline followed by ECV 15 minutes later with a maximum of 2 attempts
Outcomes	Primary: immediate success rate of ECV; caesarean section; cephalic presentation at birth Secondary: post-ECV cardiotocograph abnormalities; neonatal nursery admission; Apgar score at 5 minutes; umbilical cord arterial blood, pH; adverse drug events; visual analogue scale satisfaction score with ECV; indication for operative delivery
Notes	Study reported as completed, but no information or data available as yet

ECV: external cephalic version.
IVI: intravenous infusion.
RCT: randomised controlled trial.

Characteristics of ongoing studies *[ordered by study ID]*

Burgos 2012

Trial name or title	Open randomised controlled trial to evaluate the efficacy and safety of remifentanil versus nitrous oxide in external cephalic version at term in singleton pregnancy in breech presentation (REMIVER)
Methods	Single-centre randomised parallel-group controlled trial. Analysis by intention-to-treat
Participants	Women 18 to 65 with term pregnancy, singleton pregnancy in breech position (estimated enrolment: 180 women). Setting: hospital in Spain
Interventions	Remifentanil vs inhaled nitrous oxide.
Outcomes	Rate of successful ECV, analgesic effect, safety, caesarean rates, acceptability of procedures to the women
Starting date	July 2012 (expected final data collection date: July 2013).
Contact information	Jorge Burgos, jburgoss@sego.es
Notes	

Passerini 2013

Trial name or title	Maternal oral hydration and external cephalic version.
Methods	Randomised trial.
Participants	164 pregnant women over 18 years of age with breech presentation at term
Interventions	Women in the intervention will be asked to drink 2 litres of water in 2 hours; the control group will receive no intervention
Outcomes	Successful external cephalic version, amniotic fluid volume, type of birth
Starting date	October 2011 (expected final data collection date: January 2014)
Contact information	virna.zobbi@unimib.it
Notes	

ECV: external cephalic version.

DATA AND ANALYSES

Comparison 1. Tocolytic drugs (A) vs placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	8		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.1 Beta stimulants - parenteral	5	459	Risk Ratio (M-H, Random, 95% CI)	1.68 [1.14, 2.48]
1.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.3 Calcium channel blockers - oral or sublingual	1	310	Risk Ratio (M-H, Random, 95% CI)	1.13 [0.87, 1.48]
1.4 Nitric oxide donors - parenteral	1	125	Risk Ratio (M-H, Random, 95% CI)	1.58 [0.91, 2.76]
1.5 Nitric oxide donors - oral or sublingual	1	99	Risk Ratio (M-H, Random, 95% CI)	0.74 [0.52, 1.05]
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.1 Beta stimulants - parenteral	4	399	Risk Ratio (M-H, Random, 95% CI)	0.75 [0.60, 0.92]
2.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2.5 Nitric oxide donors - oral or sublingual	1	99	Risk Ratio (M-H, Random, 95% CI)	1.22 [0.86, 1.72]
3 Caesarean section (primary)	8		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
3.1 Beta stimulants - parenteral	6	742	Risk Ratio (M-H, Random, 95% CI)	0.77 [0.67, 0.88]
3.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.3 Calcium channel blockers - oral or sublingual	1	310	Risk Ratio (M-H, Random, 95% CI)	1.11 [0.88, 1.40]
3.4 Nitric oxide donors - parenteral	1	125	Risk Ratio (M-H, Random, 95% CI)	0.83 [0.67, 1.02]
3.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Fetal bradycardia (primary)	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
4.1 Beta stimulants - parenteral	1	58	Risk Ratio (M-H, Random, 95% CI)	2.81 [0.12, 66.17]
4.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

4.3 Calcium channel blockers - oral or sublingual	1	310	Risk Ratio (M-H, Random, 95% CI)	1.11 [0.50, 2.43]
4.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4.5 Nitric oxide donors - oral or sublingual	1	99	Risk Ratio (M-H, Random, 95% CI)	0.39 [0.08, 1.93]
5 Failed external cephalic version	13		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
5.1 Beta stimulants - parenteral	9	900	Risk Ratio (M-H, Random, 95% CI)	0.70 [0.60, 0.82]
5.2 Beta stimulants - oral or sublingual	1	45	Risk Ratio (M-H, Random, 95% CI)	1.0 [0.56, 1.79]
5.3 Calcium channel blockers - oral or sublingual	1	310	Risk Ratio (M-H, Random, 95% CI)	0.93 [0.78, 1.11]
5.4 Nitric oxide donors - parenteral	1	126	Risk Ratio (M-H, Random, 95% CI)	0.86 [0.70, 1.06]
5.5 Nitric oxide donors - oral or sublingual	2	156	Risk Ratio (M-H, Random, 95% CI)	1.04 [0.55, 1.96]
6 Difficult external cephalic version	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
6.1 Beta stimulants - parenteral	1	63	Risk Ratio (M-H, Random, 95% CI)	0.5 [0.16, 1.54]
6.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Maternal palpitations	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
7.1 Beta stimulants - parenteral	1	114	Risk Ratio (M-H, Random, 95% CI)	5.0 [0.25, 101.89]
7.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.4 Nitric oxide donors - parenteral	1	117	Risk Ratio (M-H, Random, 95% CI)	0.49 [0.05, 5.27]
7.5 Nitric oxide donors - oral or sublingual	1	99	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Maternal headaches	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
8.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.4 Nitric oxide donors - parenteral	1	117	Risk Ratio (M-H, Random, 95% CI)	18.68 [1.11, 313.77]
8.5 Nitric oxide donors - oral or sublingual	1	99	Risk Ratio (M-H, Random, 95% CI)	10.29 [2.55, 41.56]

9 Maternal hypotension	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
9.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.4 Nitric oxide donors - parenteral	1	117	Risk Ratio (M-H, Random, 95% CI)	1.47 [0.26, 8.50]
9.5 Nitric oxide donors - oral or sublingual	1	99	Risk Ratio (M-H, Random, 95% CI)	5.88 [0.73, 47.07]
10 Operative vaginal birth	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
10.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10.3 Calcium channel blockers - oral or sublingual	1	310	Risk Ratio (M-H, Random, 95% CI)	0.34 [0.09, 1.22]
10.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11 Maternal mortality	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
11.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12 Maternal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
12.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13 Perinatal mortality	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
13.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.3 Calcium channel blockers - oral or sublingual	1	310	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

13.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Perinatal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
14.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15 Vaginal breech birth	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
15.1 Beta stimulants - parenteral	1	124	Risk Ratio (M-H, Random, 95% CI)	1.0 [0.30, 3.28]
15.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16 Apgar < 7 at 5 minutes (not prespecified)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
16.1 Beta stimulants - parenteral	2	227	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17 Neonatal seizures (not prespecified)	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
17.1 Beta stimulants - parenteral	1	124	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

18 Admission to neonatal unit (not prespecified)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
18.1 Beta stimulants - parenteral	2	238	Risk Ratio (M-H, Random, 95% CI)	1.0 [0.30, 3.36]
18.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19 Birth trauma (not prespecified)	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
19.1 Beta stimulants - parenteral	1	114	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.3 Calcium channel blockers - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20 Maternal flushing (not prespecified)	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
20.1 Beta stimulants - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.2 Beta stimulants - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.3 Calcium channel blockers - oral or sublingual	1	310	Risk Ratio (M-H, Random, 95% CI)	23.30 [1.38, 391.91]
20.4 Nitric oxide donors - parenteral	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.5 Nitric oxide donors - oral or sublingual	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Comparison 2. Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.1 Calcium channel blockers (A2) vs beta stimulants (A1)	1	90	Risk Ratio (M-H, Random, 95% CI)	0.62 [0.39, 0.98]
1.2 Nitric oxide donors (A3) vs beta stimulants (A1)	1	74	Risk Ratio (M-H, Random, 95% CI)	0.56 [0.29, 1.09]

1.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2.2 Nitric oxide donors (A3) vs beta stimulants (A1)	1	74	Risk Ratio (M-H, Random, 95% CI)	1.13 [0.88, 1.47]
2.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Caesarean section (primary)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
3.1 Calcium channel blockers (A2) vs beta stimulants (A1)	2	170	Risk Ratio (M-H, Random, 95% CI)	1.28 [1.03, 1.59]
3.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Fetal bradycardia (primary)	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
4.1 Calcium channel blockers (A2) vs beta stimulants (A1)	2	170	Risk Ratio (M-H, Random, 95% CI)	1.17 [0.46, 3.03]
4.2 Nitric oxide donors (A3) vs beta stimulants (A1)	1	74	Risk Ratio (M-H, Random, 95% CI)	1.06 [0.16, 7.10]
4.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5 Failed external cephalic version	4		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
5.1 Calcium channel blockers (A2) vs beta stimulants (A1)	2	176	Risk Ratio (M-H, Random, 95% CI)	1.41 [1.06, 1.86]
5.2 Nitric oxide donors (A3) vs beta stimulants (A1)	2	133	Risk Ratio (M-H, Random, 95% CI)	1.48 [1.13, 1.94]
5.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6 Difficult external cephalic version	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
6.1 Calcium channel blockers (A2) vs beta stimulants (A1)	1	90	Risk Ratio (M-H, Random, 95% CI)	5.22 [0.26, 105.81]
6.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Maternal palpitations	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
7.1 Calcium channel blockers (A2) vs beta stimulants (A1)	1	86	Risk Ratio (M-H, Random, 95% CI)	0.8 [0.23, 2.78]

7.2 Nitric oxide donors (A3) vs beta stimulants (A1)	1	74	Risk Ratio (M-H, Random, 95% CI)	0.53 [0.10, 2.71]
7.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Maternal headaches	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
8.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.2 Nitric oxide donors (A3) vs beta stimulants (A1)	1	74	Risk Ratio (M-H, Random, 95% CI)	3.52 [1.05, 11.76]
8.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypotension	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
9.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.2 Nitric oxide donors (A3) vs beta stimulants (A1)	1	74	Risk Ratio (M-H, Random, 95% CI)	3.17 [0.35, 29.06]
9.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10 Operative vaginal birth	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
10.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11 Maternal mortality	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
11.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12 Maternal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
12.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13 Perinatal mortality	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only

13.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Perinatal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
14.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15 Vaginal breech birth (not prespecified)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
15.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16 Apgar < 7 at 5 minutes (not prespecified)	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
16.1 Calcium channel blockers (A2) vs beta stimulants (A1)	1	89	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17 Neonatal seizures (not prespecified)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
17.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18 Admissions to neonatal unit (not prespecified)	1	86	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

18.1 Calcium channel blockers (A2) vs beta stimulants (A1)	1	86	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19 Birth trauma (not prespecified)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
19.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20 Maternal flushing (not prespecified)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
20.1 Calcium channel blockers (A2) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.2 Nitric oxide donors (A3) vs beta stimulants (A1)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.3 Nitric oxide donors (A3) vs calcium channel blockers (A2)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Comparison 3. Vibroacoustic stimulation (B) vs placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Caesarean section (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Fetal bradycardia (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5 Failed external cephalic version	1	23	Risk Ratio (M-H, Random, 95% CI)	0.09 [0.01, 0.60]
6 Difficult external cephalic version	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Maternal palpitations	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Maternal headaches	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypotension	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10 Operative vaginal birth	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11 Maternal mortality	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

12 Maternal morbidity	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13 Perinatal mortality	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Perinatal morbidity	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Comparison 6. Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.2 Regional analgesia + tocolysis vs tocolysis	3	279	Risk Ratio (M-H, Random, 95% CI)	1.44 [0.78, 2.66]
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Caesarean section (primary)	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
3.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Regional analgesia + tocolysis vs tocolysis	3	279	Risk Ratio (M-H, Random, 95% CI)	0.74 [0.40, 1.37]
4 Fetal bradycardia (primary)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
4.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4.2 Regional analgesia + tocolysis vs tocolysis	2	210	Risk Ratio (M-H, Random, 95% CI)	1.48 [0.62, 3.57]
5 Failed external cephalic version	6		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
5.1 Regional analgesia alone vs no intervention	1	141	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.70, 1.14]
5.2 Regional analgesia + tocolysis vs tocolysis	5	409	Risk Ratio (M-H, Random, 95% CI)	0.61 [0.43, 0.86]
6 Difficult external cephalic version	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
6.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Maternal palpitations	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
7.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Maternal headaches	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only

8.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypotension	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
9.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.2 Regional analgesia + tocolysis vs tocolysis	3	280	Risk Ratio (M-H, Random, 95% CI)	11.58 [1.53, 87.50]
10 Operative vaginal birth	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
10.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11 Maternal mortality	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
11.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12 Maternal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
12.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13 Perinatal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
13.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Perinatal mortality	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
14.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.2 Regional analgesia + tocolysis vs tocolysis	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15 Placental abruption (not prespecified)	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
15.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.2 Regional analgesia + tocolysis vs tocolysis	1	102	Risk Ratio (M-H, Random, 95% CI)	0.35 [0.01, 8.31]
16 Maternal discomfort (not prespecified)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
16.1 Regional analgesia alone vs no intervention	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.2 Regional analgesia + tocolysis vs tocolysis	2	171	Risk Ratio (M-H, Random, 95% CI)	0.19 [0.03, 1.04]

Comparison 15. Systemic opioids (E) vs placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Fetal bradycardia (primary)	1	60	Risk Ratio (M-H, Random, 95% CI)	0.31 [0.09, 1.04]
4 Caesarean section (primary)	1	60	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.63, 1.57]
5 Failed external cephalic version	1	60	Risk Ratio (M-H, Random, 95% CI)	0.77 [0.47, 1.26]
6 Difficult external cephalic version	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Maternal palpitations	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Maternal headaches	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypotension	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10 Operative vaginal birth	1	60	Risk Ratio (M-H, Random, 95% CI)	0.94 [0.20, 4.27]
11 Maternal mortality	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12 Maternal morbidity	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13 Perinatal mortality	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Perinatal morbidity	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15 Pain score (0-10 scale, lowest best) (non-prespecified)	1	60	Mean Difference (IV, Fixed, 95% CI)	-1.8 [-3.04, -0.56]
16 Maternal satisfaction score (lower score worst) (non-prespecified)	1	60	Mean Difference (IV, Fixed, 95% CI)	2.60 [1.25, 3.95]
17 Nausea and vomiting (non-prespecified)	1	60	Risk Ratio (M-H, Fixed, 95% CI)	0.31 [0.03, 2.83]
18 Dizziness (non-prespecified)	1	60	Risk Ratio (M-H, Fixed, 95% CI)	0.31 [0.01, 7.38]
19 Drowsiness (non-prespecified)	1	60	Risk Ratio (M-H, Fixed, 95% CI)	2.81 [0.12, 66.40]

Comparison 18. Systemic opioids (E) vs regional anaesthesia (C)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	1	95	Risk Ratio (M-H, Random, 95% CI)	1.18 [0.90, 1.54]
3 Caesarean section (primary)	1	95	Risk Ratio (M-H, Random, 95% CI)	1.18 [0.90, 1.54]
4 Fetal bradycardia (primary)	1	94	Risk Ratio (M-H, Random, 95% CI)	0.71 [0.24, 2.09]
5 Failed external cephalic version	1	95	Risk Ratio (M-H, Random, 95% CI)	1.29 [0.93, 1.80]

6 Difficult external cephalic version	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Maternal palpitations	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Maternal headaches	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypotension	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10 Operative vaginal birth	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11 Maternal mortality	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12 Maternal morbidity	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13 Perinatal mortality	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Perinatal morbidity	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Comparison 21. Tocolytics vs placebo - nullips vs multips

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	2	249	Risk Ratio (M-H, Random, 95% CI)	1.89 [0.98, 3.62]
1.1 Nullips	2	170	Risk Ratio (M-H, Random, 95% CI)	2.13 [1.02, 4.45]
1.2 Multips	2	79	Risk Ratio (M-H, Random, 95% CI)	2.02 [0.45, 9.15]
2 Caesarean section (primary)	2	249	Risk Ratio (M-H, Random, 95% CI)	0.84 [0.74, 0.95]
2.1 Nullips	2	170	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.75, 0.97]
2.2 Multips	2	79	Risk Ratio (M-H, Random, 95% CI)	0.67 [0.38, 1.17]
3 Fetal bradycardia (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.1 Nullips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Multips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Failed external cephalic version	6	513	Risk Ratio (M-H, Random, 95% CI)	0.78 [0.66, 0.92]
4.1 Nullips	6	323	Risk Ratio (M-H, Random, 95% CI)	0.85 [0.76, 0.95]
4.2 Multips	6	190	Risk Ratio (M-H, Random, 95% CI)	0.60 [0.38, 0.95]

Comparison 22. Tocolytic (nifedipine) vs tocolytic (terbutaline) - nullips vs multips

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.1 Nullips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.2 Multips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Caesarean section (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2.1 Nullips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2.2 Multips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Fetal bradycardia (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.1 Nullips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Multips	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Failed ECV	1	86	Risk Ratio (M-H, Random, 95% CI)	1.38 [0.90, 2.13]
4.1 Nullips	1	39	Risk Ratio (M-H, Random, 95% CI)	1.60 [0.83, 3.10]

4.2 Multips	1	47	Risk Ratio (M-H, Random, 95% CI)	1.23 [0.69, 2.19]
4.3 Caesarean section (primary)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Comparison 23. Hypnosis vs neurolinguistic programming

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Caesarean section (primary)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
4 Fetal bradycardia (primary)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
5 Failed external cephalic version	1	80	Risk Ratio (M-H, Random, 95% CI)	1.08 [0.74, 1.57]
6 Difficult external cephalic version	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
7 Maternal palpitations	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
8 Maternal headaches	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
9 Maternal hypotension	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
10 Operative vaginal birth	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
11 Maternal mortality	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
12 Maternal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
13 Perinatal mortality	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
14 Perinatal morbidity	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
15 Good pain relief (higher scores better) (non-prespecified)	1	80	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-0.87, 0.67]

Comparison 24. Talcum powder vs gel

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cephalic presentation at birth (primary)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Caesarean section (primary)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
4 Fetal bradycardia (primary)	0		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
5 Failed external cephalic version (after first round of attempts)	1	95	Risk Ratio (M-H, Random, 95% CI)	1.26 [0.84, 1.89]

6 Difficult external cephalic version	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
7 Maternal palpitations	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
8 Maternal headaches	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
9 Maternal hypotension	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
10 Operative vaginal birth	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
11 Maternal mortality	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
12 Maternal morbidity	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
13 Perinatal mortality	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only
14 Perinatal morbidity	0	Risk Ratio (M-H, Random, 95% CI)	Subtotals only

Analysis 1.1. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 1 Cephalic presentation at birth (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 1 Cephalic presentation at birth (primary)

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Fernandez 1997	24/52	13/51		19.9 %	1.81 [1.04, 3.15]
Impey 2005	19/62	7/62		14.0 %	2.71 [1.23, 5.99]
Nor Azlin 2005	14/30	7/30		14.8 %	2.00 [0.94, 4.25]
Robertson 1987	20/30	19/28		26.0 %	0.98 [0.69, 1.41]
Vani 2009	40/57	21/57		25.3 %	1.90 [1.30, 2.78]
Subtotal (95% CI)	**231**	**228**		**100.0 %**	**1.68 [1.14, 2.48]**
Total events: 117 (Tocolytics (A)), 67 (Placebo)					
Heterogeneity: $Tau^2 = 0.12$; $Chi^2 = 11.00$, df = 4 (P = 0.03); $I^2 = 64\%$					
Test for overall effect: Z = 2.62 (P = 0.0088)					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Kok 2008	67/154	60/156		100.0 %	1.13 [0.87, 1.48]
Subtotal (95% CI)	**154**	**156**		**100.0 %**	**1.13 [0.87, 1.48]**
Total events: 67 (Tocolytics (A)), 60 (Placebo)					
Heterogeneity: not applicable					

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Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Test for overall effect: Z = 0.90 (P = 0.37)					
4 Nitric oxide donors - parenteral					
Hilton 2009	24/65	14/60		100.0 %	1.58 [0.91, 2.76]
Subtotal (95% CI)	**65**	**60**		**100.0 %**	**1.58 [0.91, 2.76]**
Total events: 24 (Tocolytics (A)), 14 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.61 (P = 0.11)					
5 Nitric oxide donors - oral or sublingual					
Bujold 2003a	24/50	32/49		100.0 %	0.74 [0.52, 1.05]
Subtotal (95% CI)	**50**	**49**		**100.0 %**	**0.74 [0.52, 1.05]**
Total events: 24 (Tocolytics (A)), 32 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.71 (P = 0.088)					
Test for subgroup differences: Chi^2 = 11.09, df = 3 (P = 0.01), I^2 =73%					

Analysis 1.2. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)

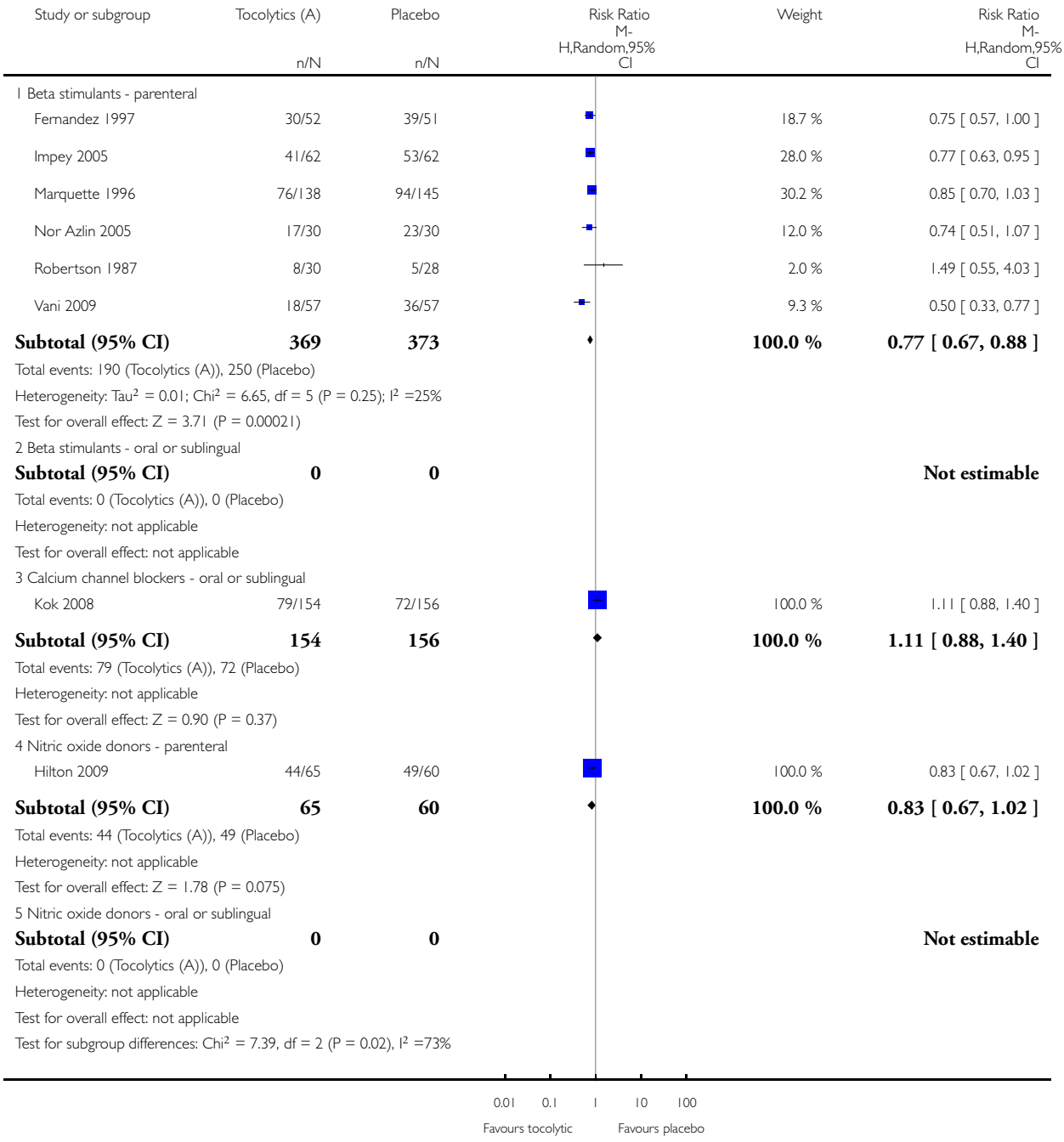
Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Fernandez 1997	31/52	40/51		30.5 %	0.76 [0.58, 0.99]
Impey 2005	46/62	58/62		43.3 %	0.79 [0.68, 0.93]
Robertson 1987	12/30	10/28		8.9 %	1.12 [0.58, 2.17]
Vani 2009	18/57	36/57		17.3 %	0.50 [0.33, 0.77]
Subtotal (95% CI)	**201**	**198**		**100.0 %**	**0.75 [0.60, 0.92]**
Total events: 107 (Tocolytics (A)), 144 (Placebo)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 5.57$, df = 3 (P = 0.13); $I^2 = 46\%$					
Test for overall effect: Z = 2.69 (P = 0.0072)					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Bujold 2003a	31/50	25/49		100.0 %	1.22 [0.86, 1.72]
Subtotal (95% CI)	**50**	**49**		**100.0 %**	**1.22 [0.86, 1.72]**
Total events: 31 (Tocolytics (A)), 25 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.09 (P = 0.27)					
Test for subgroup differences: $Chi^2 = 5.45$, df = 1 (P = 0.02), $I^2 = 82\%$					

Analysis 1.3. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 3 Caesarean section (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 3 Caesarean section (primary)

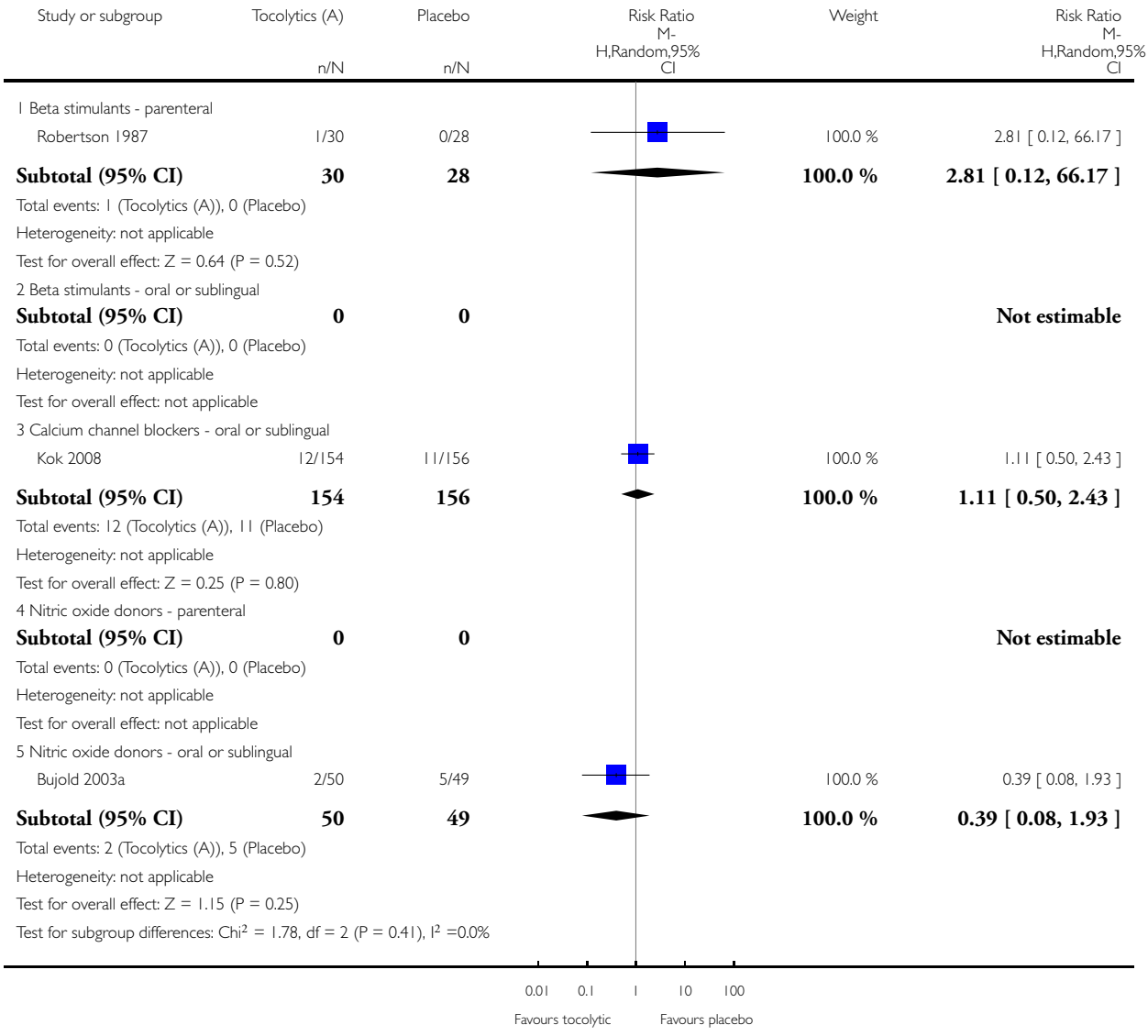


Analysis 1.4. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 4 Fetal bradycardia (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 4 Fetal bradycardia (primary)



Analysis 1.5. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 5 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 5 Failed external cephalic version

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Chung 1996	8/25	18/25		5.3 %	0.44 [0.24, 0.83]
Fernandez 1997	25/52	37/51		13.8 %	0.66 [0.48, 0.92]
Impey 2005	45/62	57/62		25.4 %	0.79 [0.67, 0.94]
Marquette 1996	66/138	84/145		20.8 %	0.83 [0.66, 1.03]
Nor Azlin 2005	15/30	23/30		10.3 %	0.65 [0.43, 0.98]
Robertson 1987	10/30	9/28		3.9 %	1.04 [0.50, 2.17]
Stock 1993	12/42	12/21		5.6 %	0.50 [0.27, 0.92]
Tan 1989	15/30	8/15		5.7 %	0.94 [0.52, 1.70]
Vani 2009	17/57	36/57		9.1 %	0.47 [0.30, 0.74]
Subtotal (95% CI)	**466**	**434**		**100.0 %**	**0.70 [0.60, 0.82]**
Total events: 213 (Tocolytics (A)), 284 (Placebo)					
Heterogeneity: $Tau^2 = 0.02$; $Chi^2 = 12.19$, df = 8 (P = 0.14); $I^2 = 34\%$					
Test for overall effect: Z = 4.47 (P < 0.00001)					
2 Beta stimulants - oral or sublingual					
Tan 1989	16/30	8/15		100.0 %	1.00 [0.56, 1.79]
Subtotal (95% CI)	**30**	**15**		**100.0 %**	**1.00 [0.56, 1.79]**
Total events: 16 (Tocolytics (A)), 8 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.0 (P = 1.0)					
3 Calcium channel blockers - oral or sublingual					
Kok 2008	90/154	98/156		100.0 %	0.93 [0.78, 1.11]
Subtotal (95% CI)	**154**	**156**		**100.0 %**	**0.93 [0.78, 1.11]**
Total events: 90 (Tocolytics (A)), 98 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.79 (P = 0.43)					

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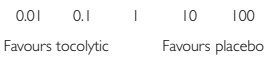
Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
4 Nitric oxide donors - parenteral					
Hilton 2009	45/65	49/61		100.0 %	0.86 [0.70, 1.06]
Subtotal (95% CI)	**65**	**61**		**100.0 %**	**0.86 [0.70, 1.06]**
Total events: 45 (Tocolytics (A)), 49 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.43 (P = 0.15)					
5 Nitric oxide donors - oral or sublingual					
Bujold 2003a	26/50	18/49		45.8 %	1.42 [0.90, 2.23]
Yanny 2000	22/31	23/26		54.2 %	0.80 [0.62, 1.05]
Subtotal (95% CI)	**81**	**75**		**100.0 %**	**1.04 [0.55, 1.96]**
Total events: 48 (Tocolytics (A)), 41 (Placebo)					
Heterogeneity: Tau^2 = 0.17; Chi^2 = 5.83, df = 1 (P = 0.02); I^2 =83%					
Test for overall effect: Z = 0.12 (P = 0.90)					
Test for subgroup differences: Chi^2 = 6.95, df = 4 (P = 0.14), I^2 =42%					



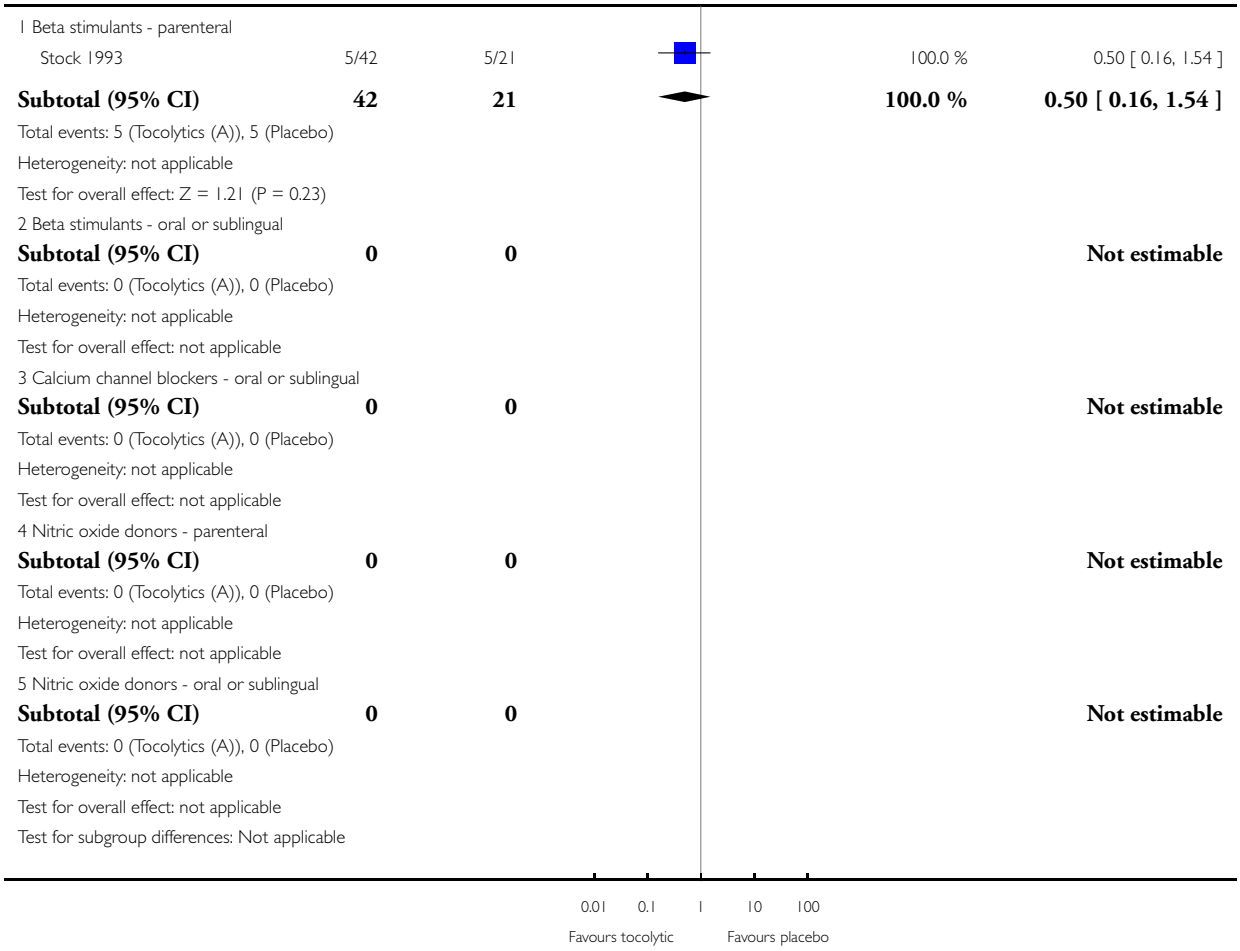
Analysis 1.6. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 6 Difficult external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 6 Difficult external cephalic version

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Stock 1993	5/42	5/21		100.0 %	0.50 [0.16, 1.54]
Subtotal (95% CI)	**42**	**21**		**100.0 %**	**0.50 [0.16, 1.54]**
Total events: 5 (Tocolytics (A)), 5 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.21 (P = 0.23)					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Not applicable					

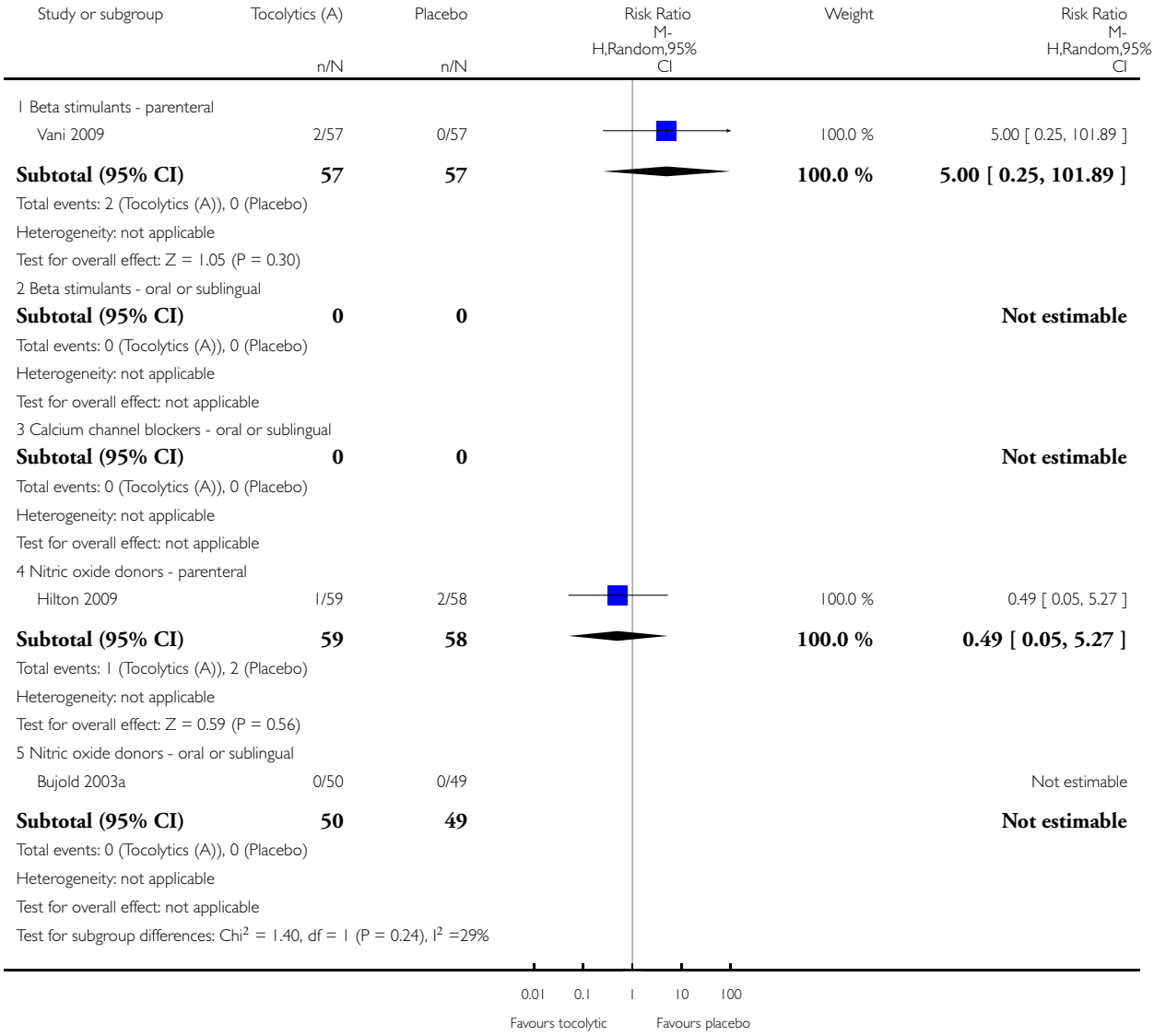


Analysis 1.7. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 7 Maternal palpitations.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 7 Maternal palpitations

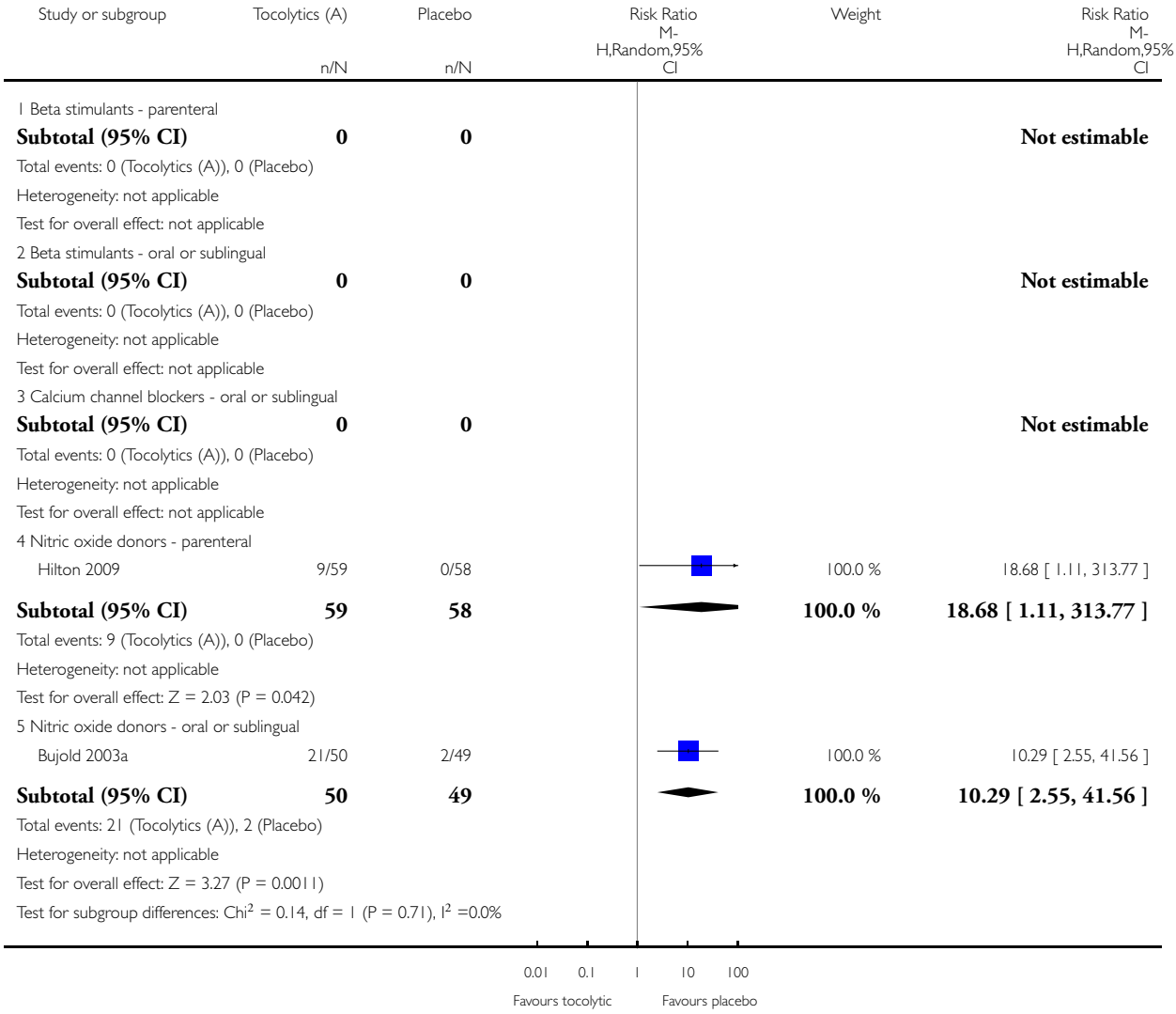


Analysis 1.8. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 8 Maternal headaches.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 8 Maternal headaches

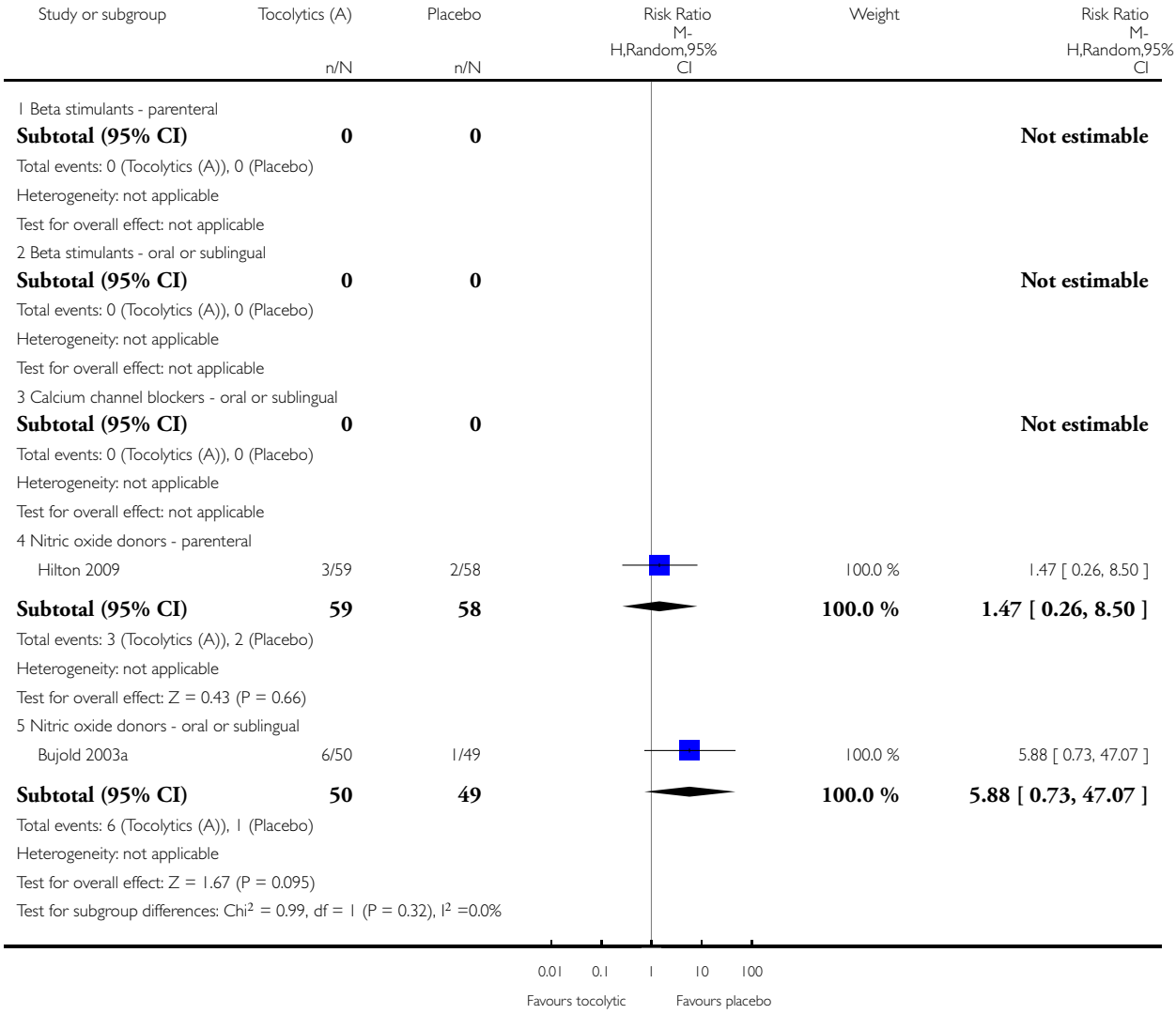


Analysis 1.9. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 9 Maternal hypotension.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 9 Maternal hypotension



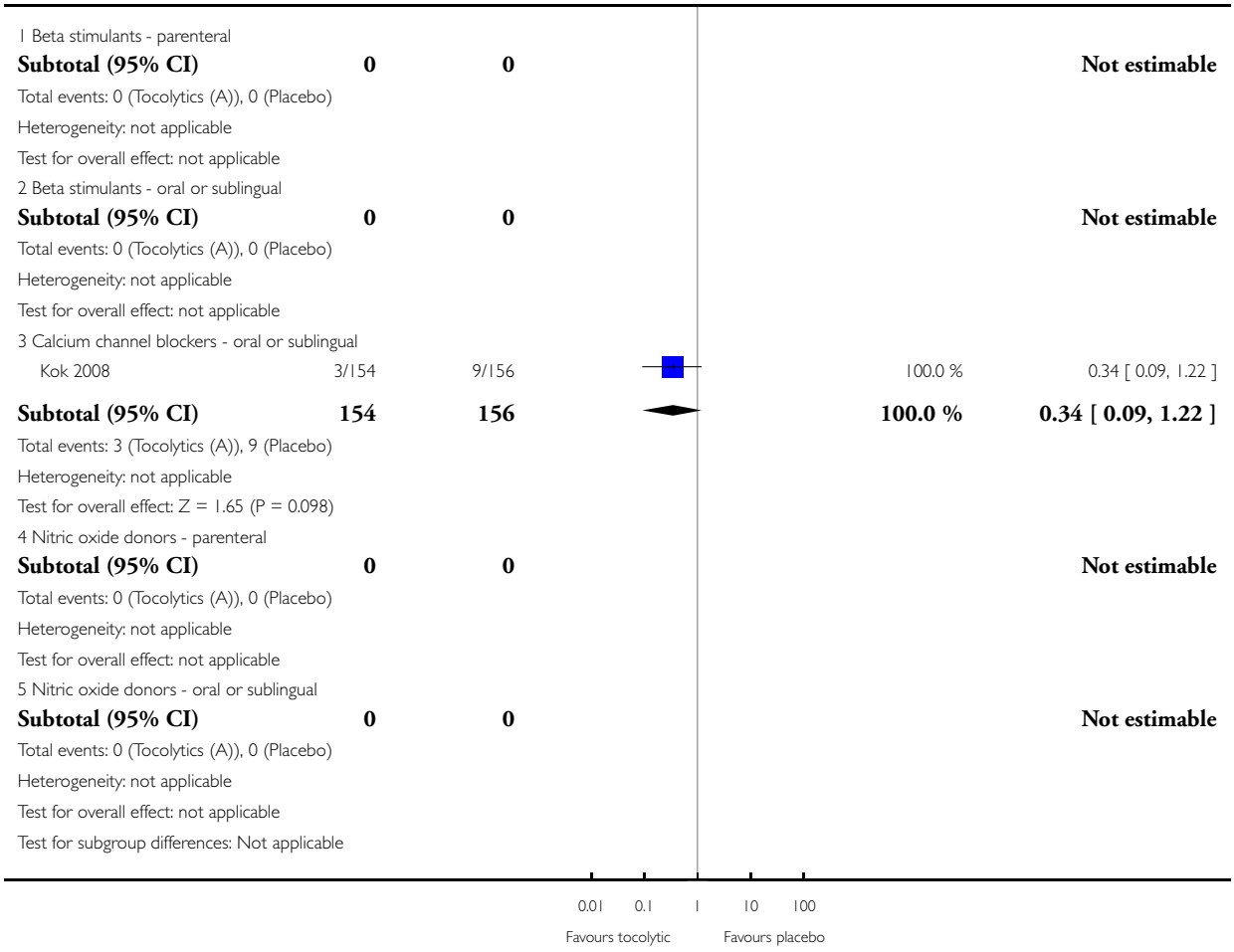
Analysis 1.10. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 10 Operative vaginal birth.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 10 Operative vaginal birth

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Kok 2008	3/154	9/156		100.0 %	0.34 [0.09, 1.22]
Subtotal (95% CI)	**154**	**156**		**100.0 %**	**0.34 [0.09, 1.22]**
Total events: 3 (Tocolytics (A)), 9 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.65 (P = 0.098)					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Not applicable					



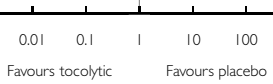
Analysis 1.13. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 13 Perinatal mortality.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 13 Perinatal mortality

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Kok 2008	0/154	0/156			Not estimable
Subtotal (95% CI)	**154**	**156**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 0.0, df = -1 (P = 0.0), I^2 =0.0%					



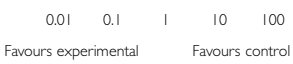
Analysis 1.15. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 15 Vaginal breech birth.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 15 Vaginal breech birth

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Impey 2005	5/62	5/62		100.0 %	1.00 [0.30, 3.28]
Subtotal (95% CI)	**62**	**62**		**100.0 %**	**1.00 [0.30, 3.28]**
Total events: 5 (Tocolytics (A)), 5 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.0 (P = 1.0)					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Not applicable					



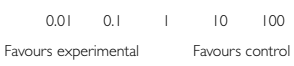
Analysis 1.16. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 16 Apgar < 7 at 5 minutes (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 16 Apgar < 7 at 5 minutes (not prespecified)

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Fernandez 1997	0/52	0/51			Not estimable
Impey 2005	0/62	0/62			Not estimable
Subtotal (95% CI)	**114**	**113**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 0.0, df = -1 (P = 0.0), I^2 =0.0%					



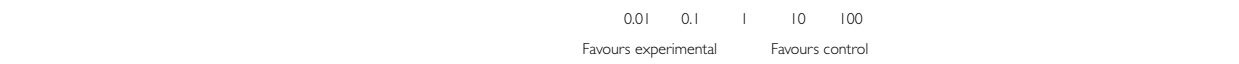
Analysis 1.17. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 17 Neonatal seizures (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 17 Neonatal seizures (not prespecified)

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Impey 2005	0/62	0/62			Not estimable
Subtotal (95% CI)	**62**	**62**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 0.0, df = -1 (P = 0.0), I^2 =0.0%					

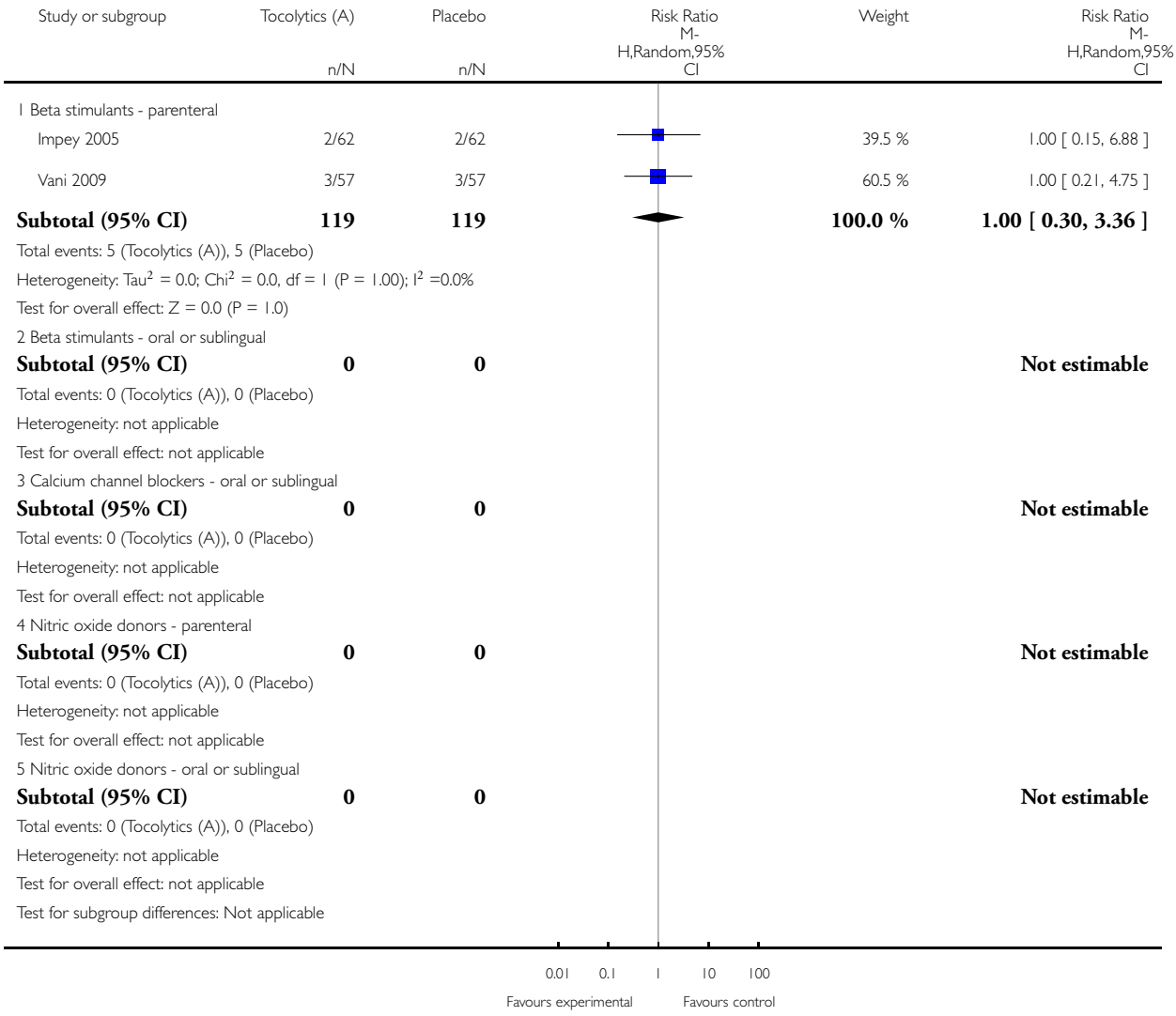


Analysis 1.18. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 18 Admission to neonatal unit (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 18 Admission to neonatal unit (not prespecified)



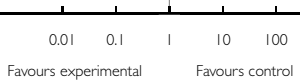
Analysis 1.19. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 19 Birth trauma (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 19 Birth trauma (not prespecified)

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Vani 2009	0/57	0/57			Not estimable
Subtotal (95% CI)	**57**	**57**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 0.0, df = -1 (P = 0.0), I^2 =0.0%					



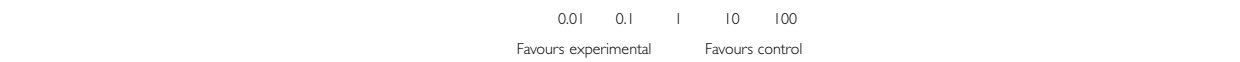
Analysis 1.20. Comparison 1 Tocolytic drugs (A) vs placebo, Outcome 20 Maternal flushing (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 1 Tocolytic drugs (A) vs placebo

Outcome: 20 Maternal flushing (not prespecified)

Study or subgroup	Tocolytics (A) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Beta stimulants - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Beta stimulants - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Calcium channel blockers - oral or sublingual					
Kok 2008	11/154	0/156		100.0 %	23.30 [1.38, 391.91]
Subtotal (95% CI)	**154**	**156**		**100.0 %**	**23.30 [1.38, 391.91]**
Total events: 11 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.19 (P = 0.029)					
4 Nitric oxide donors - parenteral					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
5 Nitric oxide donors - oral or sublingual					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytics (A)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Not applicable					



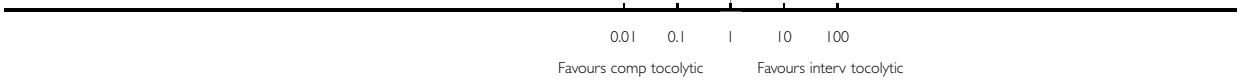
Analysis 2.1. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 1 Cephalic presentation at birth (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 1 Cephalic presentation at birth (primary)

Study or subgroup	Intervention tocolytic n/N	Comparison tocolytic n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Collaris 2009	16/44	27/46		100.0 %	0.62 [0.39, 0.98]
Subtotal (95% CI)	**44**	**46**		**100.0 %**	**0.62 [0.39, 0.98]**
Total events: 16 (Intervention tocolytic), 27 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.04 (P = 0.041)					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Bujold 2003b	9/36	17/38		100.0 %	0.56 [0.29, 1.09]
Subtotal (95% CI)	**36**	**38**		**100.0 %**	**0.56 [0.29, 1.09]**
Total events: 9 (Intervention tocolytic), 17 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.71 (P = 0.087)					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					



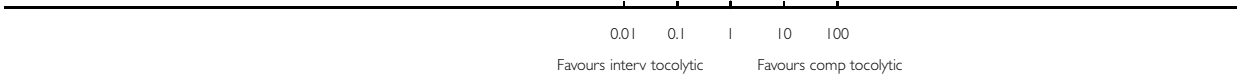
Analysis 2.2. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)

Study or subgroup	Intervention tocolytic n/N	Comparison tocolytic n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Bujold 2003b	29/36	27/38		100.0 %	1.13 [0.88, 1.47]
Subtotal (95% CI)	**36**	**38**		**100.0 %**	**1.13 [0.88, 1.47]**
Total events: 29 (Intervention tocolytic), 27 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.95 (P = 0.34)					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Not applicable					



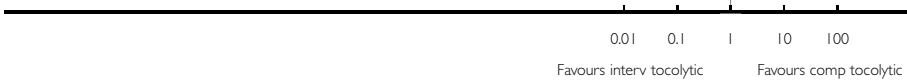
Analysis 2.3. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 3 Caesarean section (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 3 Caesarean section (primary)

Study or subgroup	Intervention tocolytic n/N	Comparison tocolytic n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Collaris 2009	34/44	26/46		51.1 %	1.37 [1.01, 1.85]
Nor Azlin 2008	32/43	23/37		48.9 %	1.20 [0.88, 1.63]
Subtotal (95% CI)	**87**	**83**		**100.0 %**	**1.28 [1.03, 1.59]**
Total events: 66 (Intervention tocolytic), 49 (Comparison tocolytic)					
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.37$, df = 1 (P = 0.54); $I^2 = 0.0\%$					
Test for overall effect: Z = 2.27 (P = 0.023)					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					

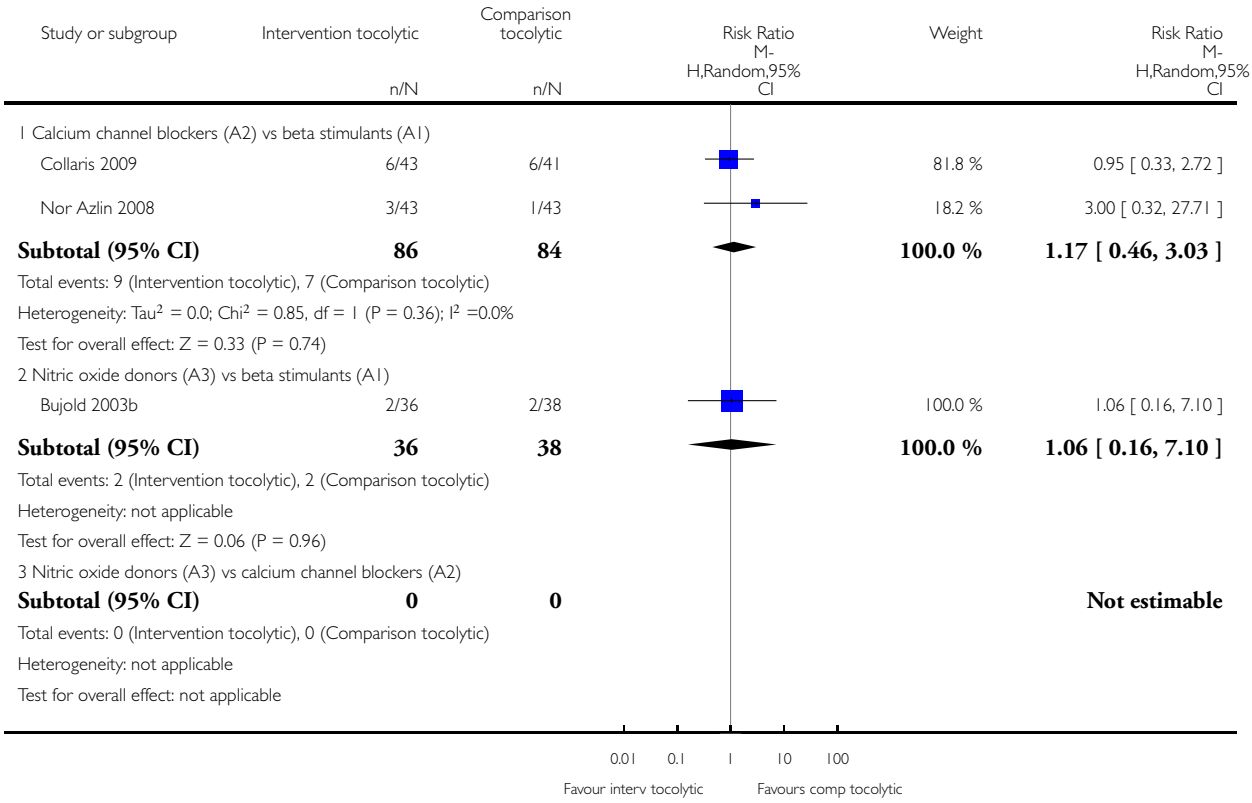


Analysis 2.4. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 4 Fetal bradycardia (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 4 Fetal bradycardia (primary)



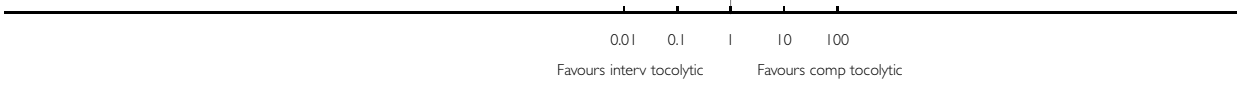
Analysis 2.5. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 5 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 5 Failed external cephalic version

Study or subgroup	Intervention tocolytic n/N	Comparison tocolytic n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Collaris 2009	29/44	22/46		57.3 %	1.38 [0.95, 1.99]
Nor Azlin 2008	26/43	18/43		42.7 %	1.44 [0.94, 2.21]
Subtotal (95% CI)	**87**	**89**		**100.0 %**	**1.41 [1.06, 1.86]**
Total events: 55 (Intervention tocolytic), 40 (Comparison tocolytic)					
Heterogeneity: Tau^2 = 0.0; Chi^2 = 0.03, df = 1 (P = 0.87); I^2 =0.0%					
Test for overall effect: Z = 2.39 (P = 0.017)					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Bujold 2003b	27/36	21/38		63.2 %	1.36 [0.96, 1.91]
El-Sayed 2004	23/30	13/29		36.8 %	1.71 [1.09, 2.68]
Subtotal (95% CI)	**66**	**67**		**100.0 %**	**1.48 [1.13, 1.94]**
Total events: 50 (Intervention tocolytic), 34 (Comparison tocolytic)					
Heterogeneity: Tau^2 = 0.0; Chi^2 = 0.65, df = 1 (P = 0.42); I^2 =0.0%					
Test for overall effect: Z = 2.81 (P = 0.0050)					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					



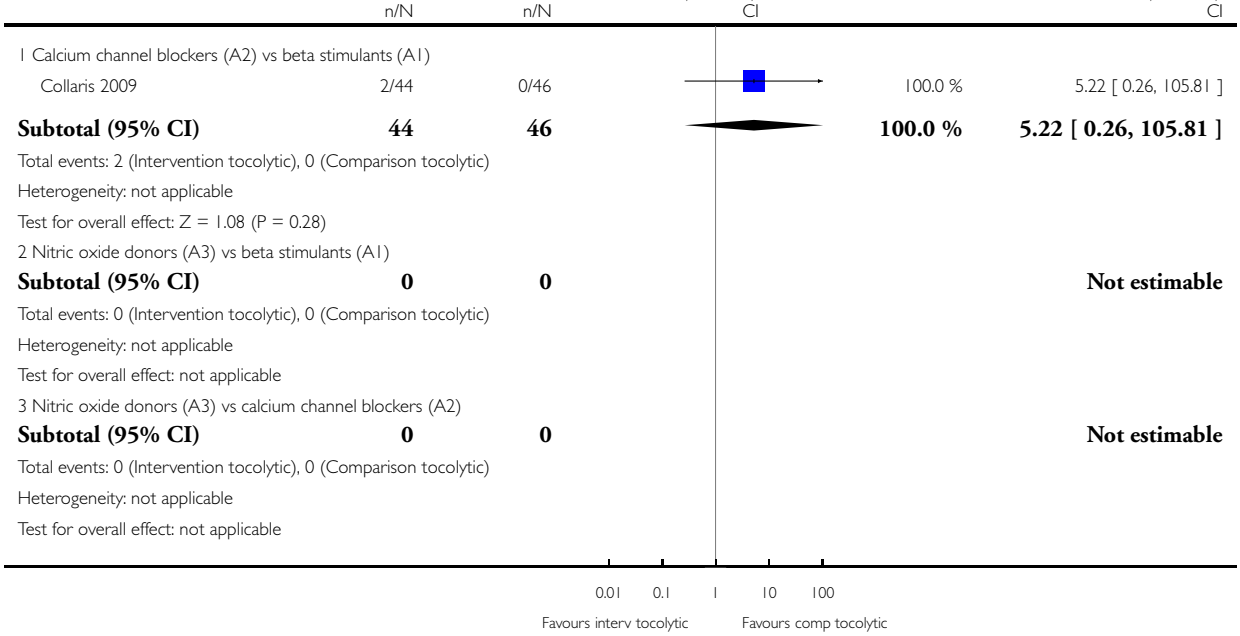
Analysis 2.6. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 6 Difficult external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 6 Difficult external cephalic version

Study or subgroup	Intervention tocolytic n/N	Comparison tocolytic n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Collaris 2009	2/44	0/46		100.0 %	5.22 [0.26, 105.81]
Subtotal (95% CI)	**44**	**46**		**100.0 %**	**5.22 [0.26, 105.81]**
Total events: 2 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.08 (P = 0.28)					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					

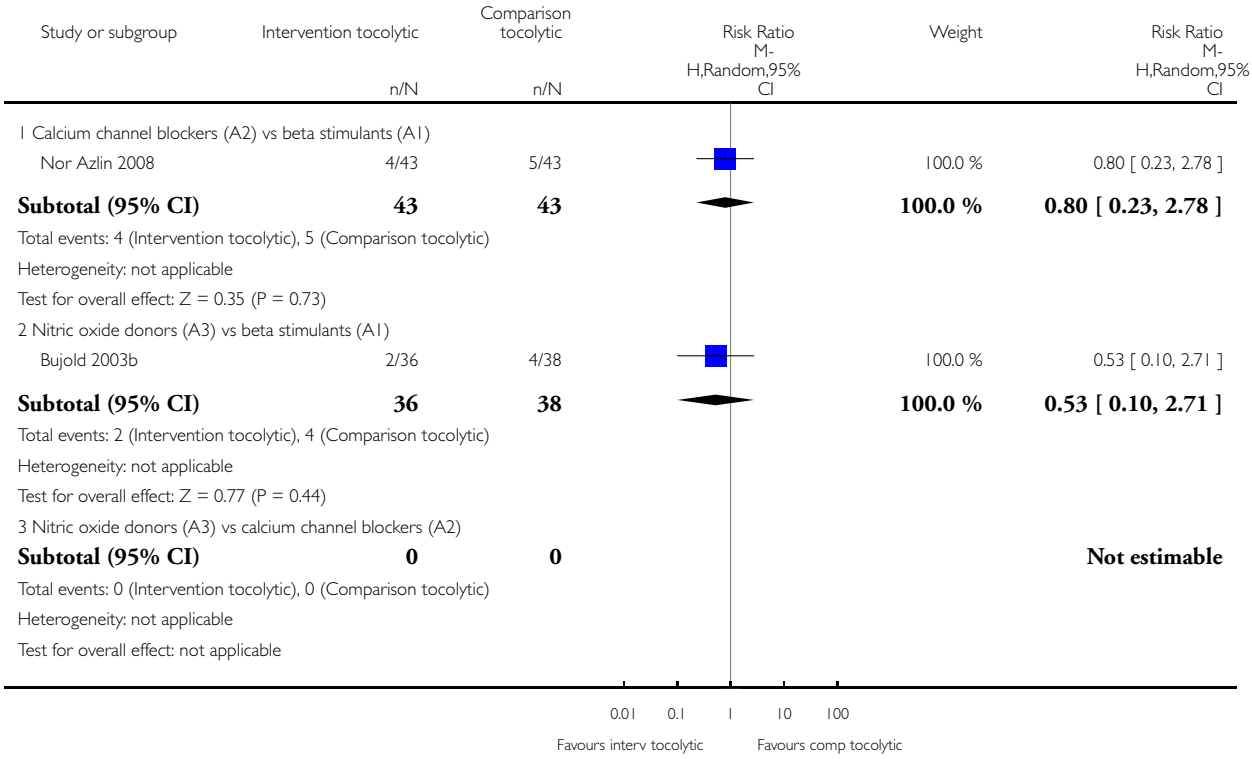


Analysis 2.7. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 7 Maternal palpitations.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 7 Maternal palpitations



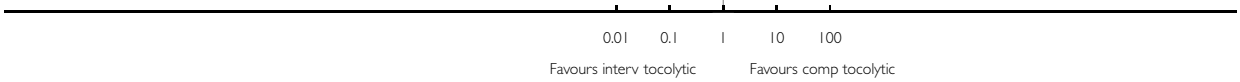
Analysis 2.8. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 8 Maternal headaches.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 8 Maternal headaches

Study or subgroup	Intervention tocolytic n/N	Comparison tocolytic n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Bujold 2003b	10/36	3/38		100.0 %	3.52 [1.05, 11.76]
Subtotal (95% CI)	**36**	**38**		**100.0 %**	**3.52 [1.05, 11.76]**
Total events: 10 (Intervention tocolytic), 3 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.04 (P = 0.041)					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					

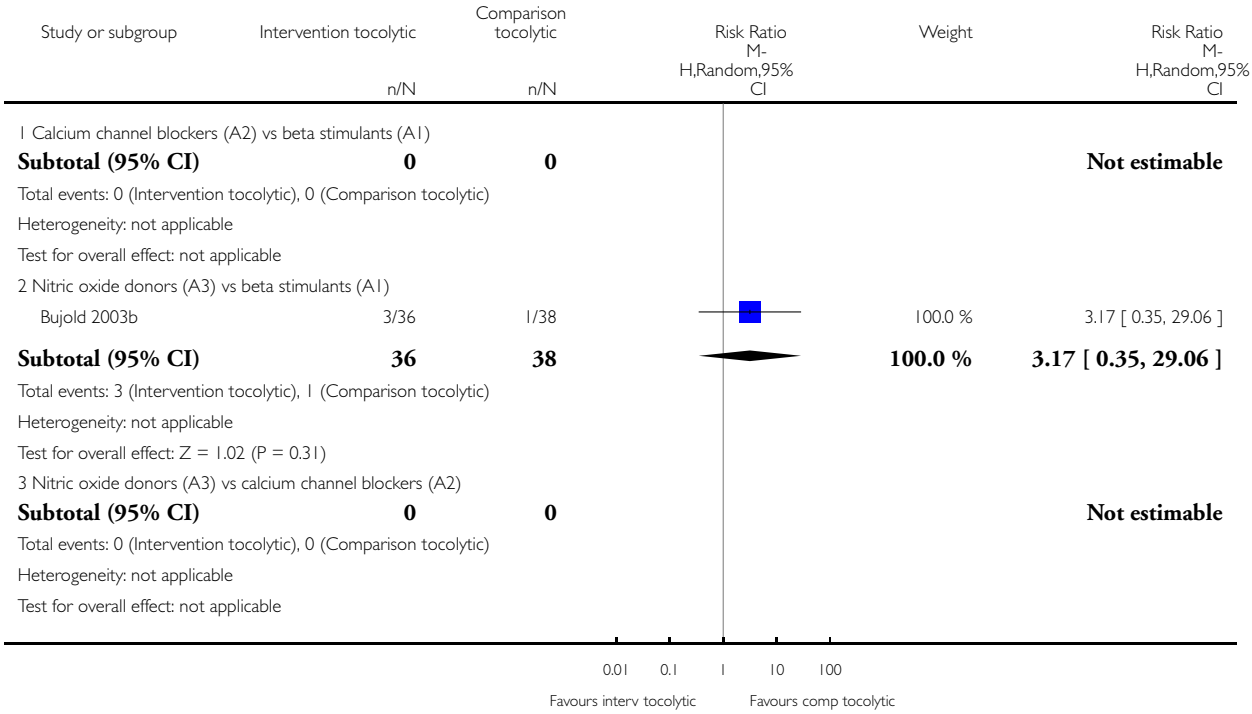


Analysis 2.9. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 9 Maternal hypotension.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 9 Maternal hypotension



Analysis 2.16. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 16 Apgar < 7 at 5 minutes (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 16 Apgar < 7 at 5 minutes (not prespecified)

Study or subgroup	Tocolytic 1 n/N	Tocolytic 2 n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Collaris 2009	0/44	0/45			Not estimable
Subtotal (95% CI)	**44**	**45**			**Not estimable**
Total events: 0 (Tocolytic 1), 0 (Tocolytic 2)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytic 1), 0 (Tocolytic 2)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Tocolytic 1), 0 (Tocolytic 2)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 0.0, df = -1 (P = 0.0), I^2 =0.0%					

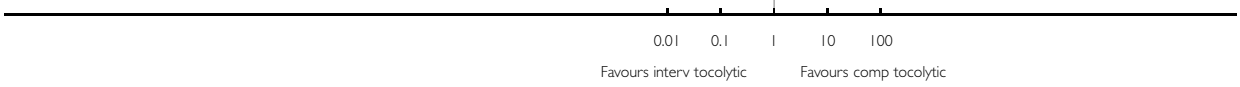
Analysis 2.18. Comparison 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A), Outcome 18 Admissions to neonatal unit (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 2 Tocolytic drug 1 (A) vs tocolytic drug 2 (A)

Outcome: 18 Admissions to neonatal unit (not prespecified)

Study or subgroup	Intervention tocolytic n/N	Comparison tocolytic n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Calcium channel blockers (A2) vs beta stimulants (A1)					
Nor Azlin 2008	0/43	0/43			Not estimable
Subtotal (95% CI)	**43**	**43**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Nitric oxide donors (A3) vs beta stimulants (A1)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
3 Nitric oxide donors (A3) vs calcium channel blockers (A2)					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Total (95% CI)	**43**	**43**			**Not estimable**
Total events: 0 (Intervention tocolytic), 0 (Comparison tocolytic)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 0.0, df = -1 (P = 0.0), I^2 =0.0%					



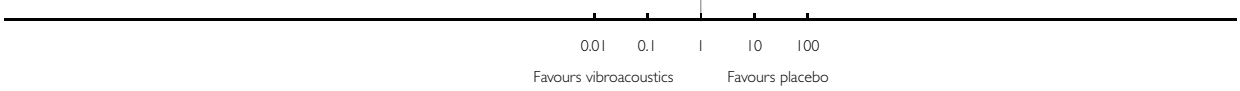
Analysis 3.5. Comparison 3 Vibroacoustic stimulation (B) vs placebo, Outcome 5 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 3 Vibroacoustic stimulation (B) vs placebo

Outcome: 5 Failed external cephalic version

Study or subgroup	Vibroacoustics (B) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Johnson 1995	1/12	10/11		100.0 %	0.09 [0.01, 0.60]
Total (95% CI)	**12**	**11**		**100.0 %**	**0.09 [0.01, 0.60]**
Total events: 1 (Vibroacoustics (B)), 10 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.48 (P = 0.013)					
Test for subgroup differences: Not applicable					



Analysis 6.1. Comparison 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis), Outcome 1 Cephalic presentation at birth (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome: 1 Cephalic presentation at birth (primary)

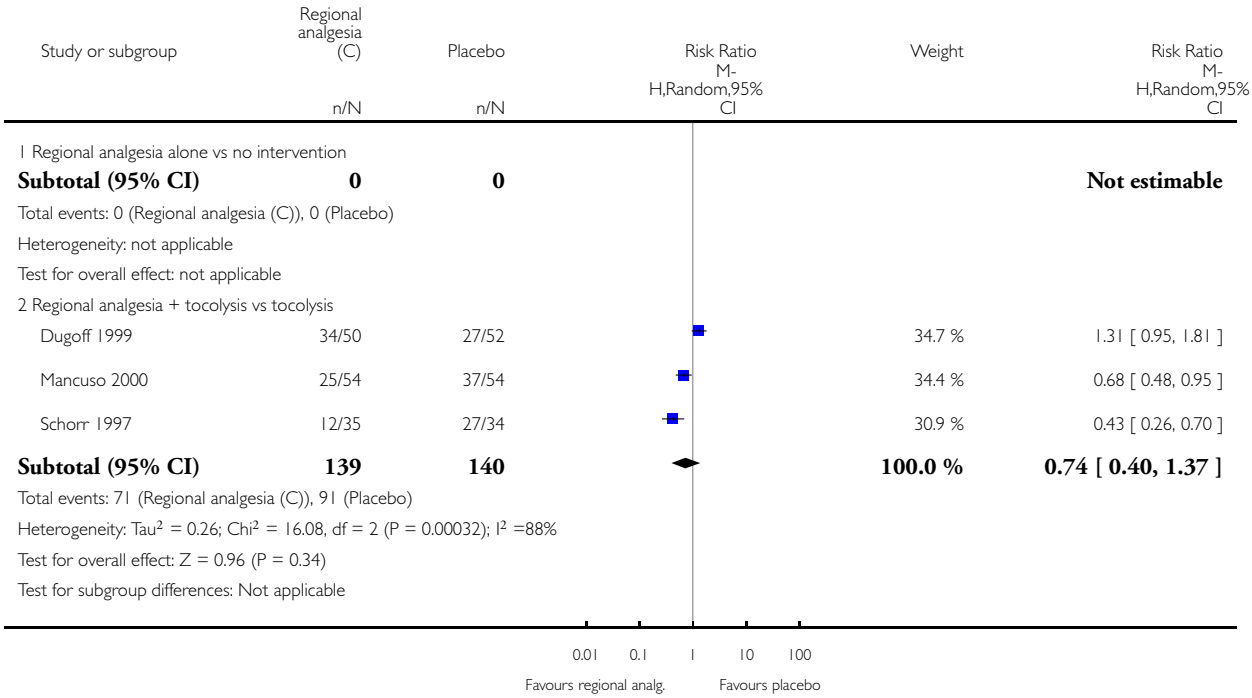
Study or subgroup	Regional analgesia (C) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Regional analgesia alone vs no intervention					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Regional analgesia (C)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Regional analgesia + tocolysis vs tocolysis					
Dugoff 1999	20/50	26/52		34.5 %	0.80 [0.52, 1.24]
Mancuso 2000	32/54	19/54		34.8 %	1.68 [1.10, 2.57]
Schorr 1997	24/35	10/34		30.8 %	2.33 [1.32, 4.11]
Subtotal (95% CI)	**139**	**140**		**100.0 %**	**1.44 [0.78, 2.66]**
Total events: 76 (Regional analgesia (C)), 55 (Placebo)					
Heterogeneity: $Tau^2 = 0.24$; $Chi^2 = 10.19$, df = 2 (P = 0.01); $I^2 = 80\%$					
Test for overall effect: Z = 1.16 (P = 0.24)					
Test for subgroup differences: Not applicable					

Analysis 6.3. Comparison 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis), Outcome 3 Caesarean section (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome: 3 Caesarean section (primary)



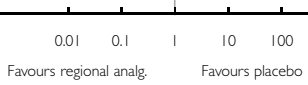
Analysis 6.4. Comparison 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis), Outcome 4 Fetal bradycardia (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome: 4 Fetal bradycardia (primary)

Study or subgroup	Regional analgesia (C) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Regional analgesia alone vs no intervention					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Regional analgesia (C)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Regional analgesia + tocolysis vs tocolysis					
Dugoff 1999	11/50	6/52		76.1 %	1.91 [0.76, 4.76]
Mancuso 2000	2/54	3/54		23.9 %	0.67 [0.12, 3.83]
Subtotal (95% CI)	**104**	**106**		**100.0 %**	**1.48 [0.62, 3.57]**
Total events: 13 (Regional analgesia (C)), 9 (Placebo)					
Heterogeneity: $Tau^2 = 0.05$; $Chi^2 = 1.09$, df = 1 (P = 0.30); $I^2 = 8\%$					
Test for overall effect: Z = 0.88 (P = 0.38)					
Test for subgroup differences: Not applicable					



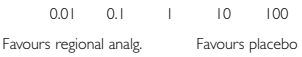
Analysis 6.5. Comparison 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis), Outcome 5 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome: 5 Failed external cephalic version

Study or subgroup	Regional analgesia (C) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Regional analgesia alone vs no intervention					
Delisle 2001	44/73	46/68		100.0 %	0.89 [0.70, 1.14]
Subtotal (95% CI)	**73**	**68**		**100.0 %**	**0.89 [0.70, 1.14]**
Total events: 44 (Regional analgesia (C)), 46 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.91 (P = 0.36)					
2 Regional analgesia + tocolysis vs tocolysis					
Dugoff 1999	28/50	30/52		27.8 %	0.97 [0.69, 1.36]
Mancuso 2000	22/54	36/54		26.3 %	0.61 [0.42, 0.89]
Schorr 1997	9/35	18/34		16.2 %	0.49 [0.25, 0.93]
Weiniger 2007	12/36	23/34		20.5 %	0.49 [0.29, 0.83]
Weiniger 2010	4/27	14/33		9.2 %	0.35 [0.13, 0.94]
Subtotal (95% CI)	**202**	**207**		**100.0 %**	**0.61 [0.43, 0.86]**
Total events: 75 (Regional analgesia (C)), 121 (Placebo)					
Heterogeneity: Tau^2 = 0.08; Chi^2 = 9.16, df = 4 (P = 0.06); I^2 =56%					
Test for overall effect: Z = 2.83 (P = 0.0046)					
Test for subgroup differences: Chi^2 = 3.10, df = 1 (P = 0.08), I^2 =68%					

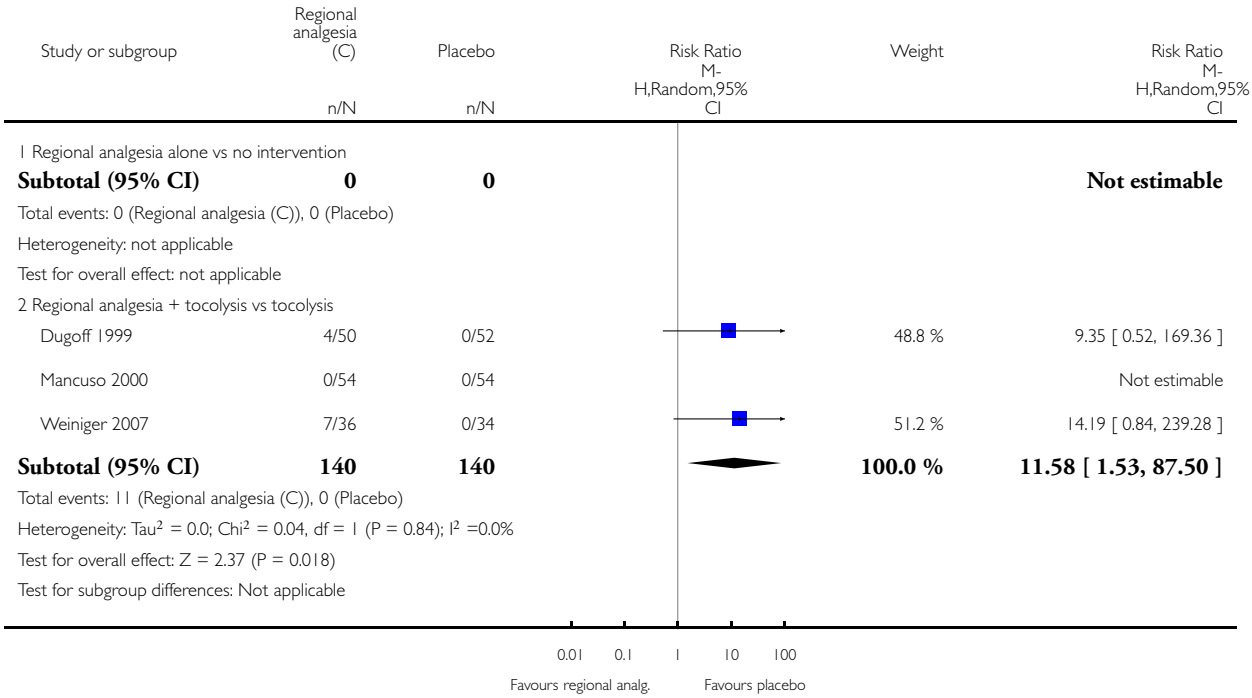


Analysis 6.9. Comparison 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis), Outcome 9 Maternal hypotension.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome: 9 Maternal hypotension



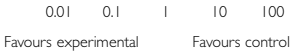
Analysis 6.15. Comparison 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis), Outcome 15 Placental abruption (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome: 15 Placental abruption (not prespecified)

Study or subgroup	Regional analgesia (C) n/N	Placebo n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
1 Regional analgesia alone vs no intervention					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Regional analgesia (C)), 0 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Regional analgesia + tocolysis vs tocolysis					
Dugoff 1999	0/50	1/52		100.0 %	0.35 [0.01, 8.31]
Subtotal (95% CI)	**50**	**52**		**100.0 %**	**0.35 [0.01, 8.31]**
Total events: 0 (Regional analgesia (C)), 1 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.65 (P = 0.51)					
Test for subgroup differences: Not applicable					

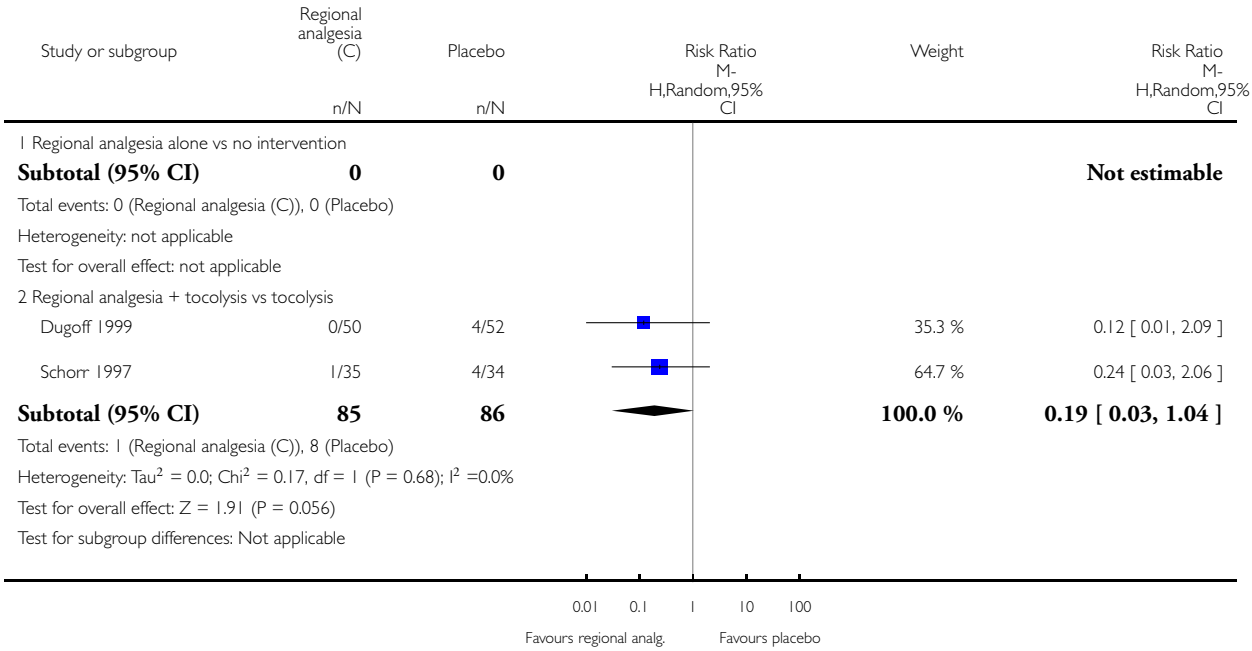


Analysis 6.16. Comparison 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis), Outcome 16 Maternal discomfort (not prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 6 Regional analgesia (with or without tocolysis) vs no intervention of regional analgesia (with or without tocolysis)

Outcome: 16 Maternal discomfort (not prespecified)

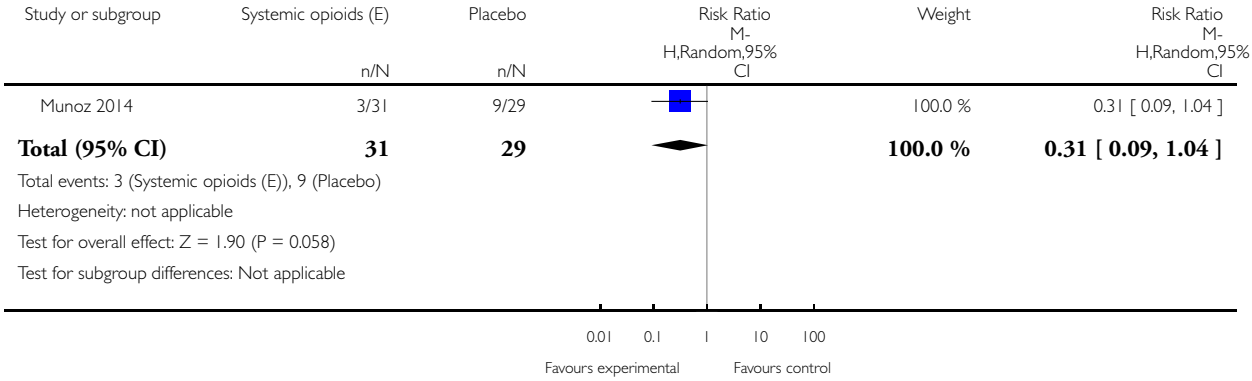


Analysis 15.3. Comparison 15 Systemic opioids (E) vs placebo, Outcome 3 Fetal bradycardia (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 3 Fetal bradycardia (primary)

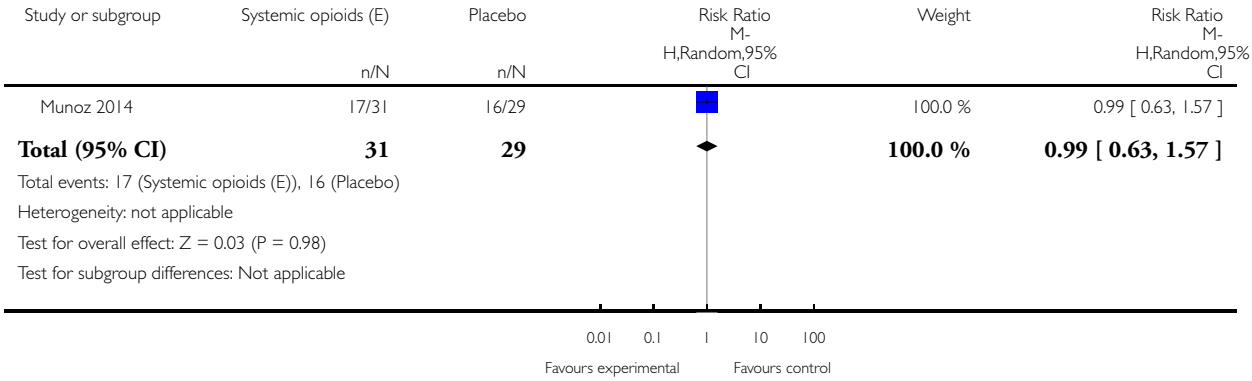


Analysis 15.4. Comparison 15 Systemic opioids (E) vs placebo, Outcome 4 Caesarean section (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 4 Caesarean section (primary)

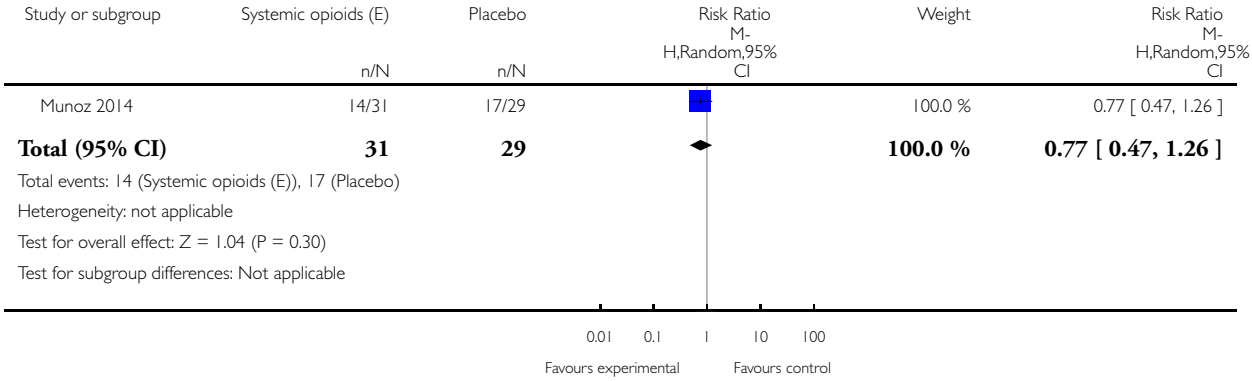


Analysis 15.5. Comparison 15 Systemic opioids (E) vs placebo, Outcome 5 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 5 Failed external cephalic version

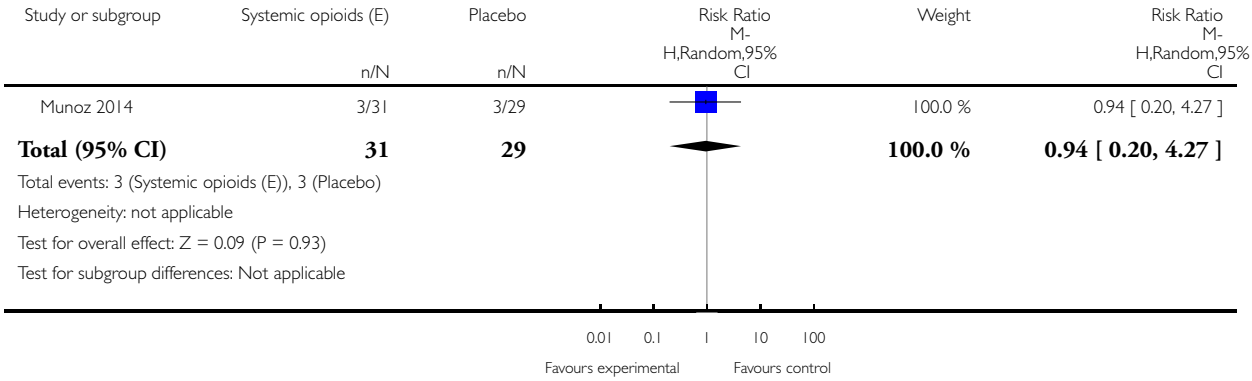


Analysis 15.10. Comparison 15 Systemic opioids (E) vs placebo, Outcome 10 Operative vaginal birth.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 10 Operative vaginal birth



Analysis 15.15. Comparison 15 Systemic opioids (E) vs placebo, Outcome 15 Pain score (0-10 scale, lowest best) (non-prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 15 Pain score (0-10 scale, lowest best) (non-prespecified)

Study or subgroup	Systemic opioids (E) N	Mean(SD)	Placebo N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Munoz 2014	31	4.7 (2.5)	29	6.5 (2.4)		100.0 %	-1.80 [-3.04, -0.56]
Total (95% CI)	**31**		**29**			**100.0 %**	**-1.80 [-3.04, -0.56]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.85 (P = 0.0044)							
Test for subgroup differences: Not applicable							

Analysis 15.16. Comparison 15 Systemic opioids (E) vs placebo, Outcome 16 Maternal satisfaction score (lower score worst) (non-prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 16 Maternal satisfaction score (lower score worst) (non-prespecified)

Study or subgroup	Systemic opioids (E) N	Mean(SD)	Placebo N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Munoz 2014	31	9.5 (1.3)	29	6.9 (3.5)		100.0 %	2.60 [1.25, 3.95]
Total (95% CI)	**31**		**29**			**100.0 %**	**2.60 [1.25, 3.95]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.76 (P = 0.00017)							
Test for subgroup differences: Not applicable							

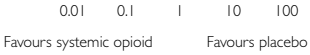
Analysis 15.17. Comparison 15 Systemic opioids (E) vs placebo, Outcome 17 Nausea and vomiting (non-prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 17 Nausea and vomiting (non-prespecified)

Study or subgroup	Systemic opioids (E) n/N	Placebo n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Munoz 2014	1/31	3/29		100.0 %	0.31 [0.03, 2.83]
Total (95% CI)	**31**	**29**		**100.0 %**	**0.31 [0.03, 2.83]**
Total events: 1 (Systemic opioids (E)), 3 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.04 (P = 0.30)					
Test for subgroup differences: Not applicable					



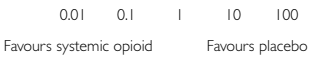
Analysis 15.18. Comparison 15 Systemic opioids (E) vs placebo, Outcome 18 Dizziness (non-prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 18 Dizziness (non-prespecified)

Study or subgroup	Systemic opioids (E) n/N	Placebo n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Munoz 2014	0/31	1/29		100.0 %	0.31 [0.01, 7.38]
Total (95% CI)	**31**	**29**		**100.0 %**	**0.31 [0.01, 7.38]**
Total events: 0 (Systemic opioids (E)), 1 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.72 (P = 0.47)					
Test for subgroup differences: Not applicable					

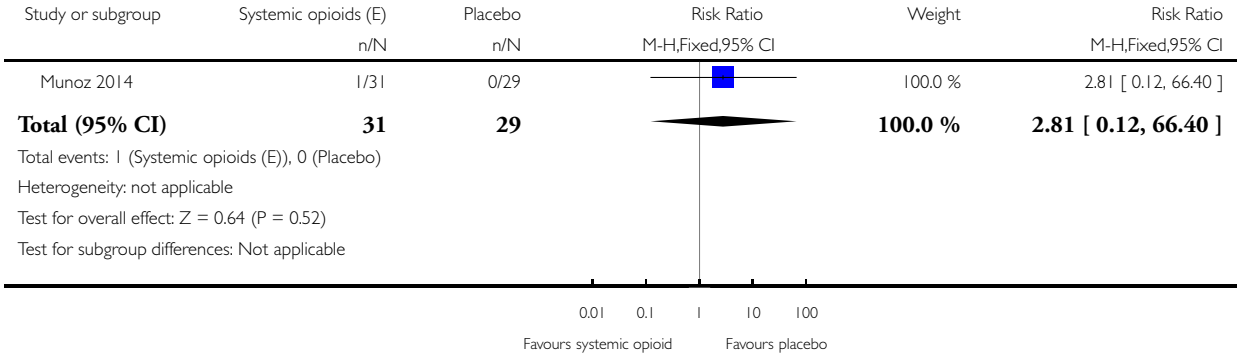


Analysis 15.19. Comparison 15 Systemic opioids (E) vs placebo, Outcome 19 Drowsiness (non-prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 15 Systemic opioids (E) vs placebo

Outcome: 19 Drowsiness (non-prespecified)

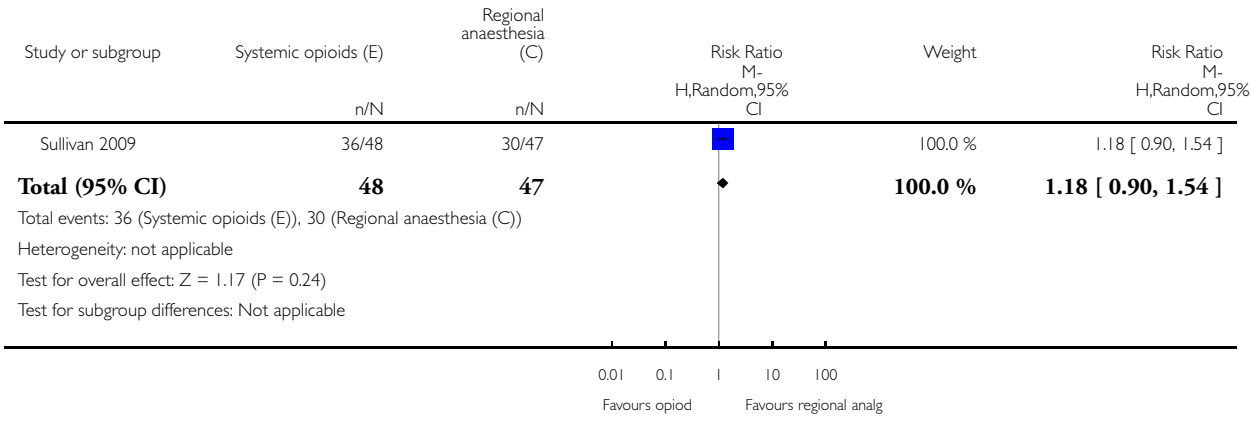


Analysis 18.2. Comparison 18 Systemic opioids (E) vs regional anaesthesia (C), Outcome 2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 18 Systemic opioids (E) vs regional anaesthesia (C)

Outcome: 2 Failure to achieve cephalic vaginal birth (composite outcome: caesarean section + vaginal breech birth)



Analysis 18.3. Comparison 18 Systemic opioids (E) vs regional anaesthesia (C), Outcome 3 Caesarean section (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 18 Systemic opioids (E) vs regional anaesthesia (C)

Outcome: 3 Caesarean section (primary)

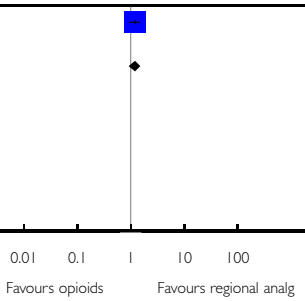
Study or subgroup	Systemic opioids (E) n/N	Regional anaesthesia (C) n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sullivan 2009	36/48	30/47		100.0 %	1.18 [0.90, 1.54]
Total (95% CI)	**48**	**47**		**100.0 %**	**1.18 [0.90, 1.54]**

Total events: 36 (Systemic opioids (E)), 30 (Regional anaesthesia (C))

Heterogeneity: not applicable

Test for overall effect: Z = 1.17 (P = 0.24)

Test for subgroup differences: Not applicable



Analysis 18.4. Comparison 18 Systemic opioids (E) vs regional anaesthesia (C), Outcome 4 Fetal bradycardia (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 18 Systemic opioids (E) vs regional anaesthesia (C)

Outcome: 4 Fetal bradycardia (primary)

Study or subgroup	Systemic opioids (E) n/N	Regional anaesthesia (C) n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sullivan 2009	5/47	7/47		100.0 %	0.71 [0.24, 2.09]
Total (95% CI)	**47**	**47**		**100.0 %**	**0.71 [0.24, 2.09]**

Total events: 5 (Systemic opioids (E)), 7 (Regional anaesthesia (C))

Heterogeneity: not applicable

Test for overall effect: Z = 0.61 (P = 0.54)

Test for subgroup differences: Not applicable

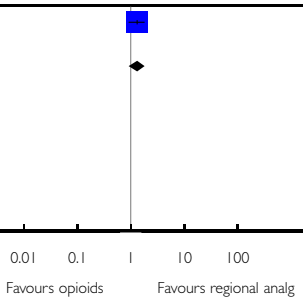
Analysis 18.5. Comparison 18 Systemic opioids (E) vs regional anaesthesia (C), Outcome 5 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 18 Systemic opioids (E) vs regional anaesthesia (C)

Outcome: 5 Failed external cephalic version

Study or subgroup	Systemic opioids (E) n/N	Regional anaesthesia (C) n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Sullivan 2009	33/48	25/47		100.0 %	1.29 [0.93, 1.80]
Total (95% CI)	**48**	**47**		**100.0 %**	**1.29 [0.93, 1.80]**
Total events: 33 (Systemic opioids (E)), 25 (Regional anaesthesia (C))					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.53 (P = 0.13)					
Test for subgroup differences: Not applicable					

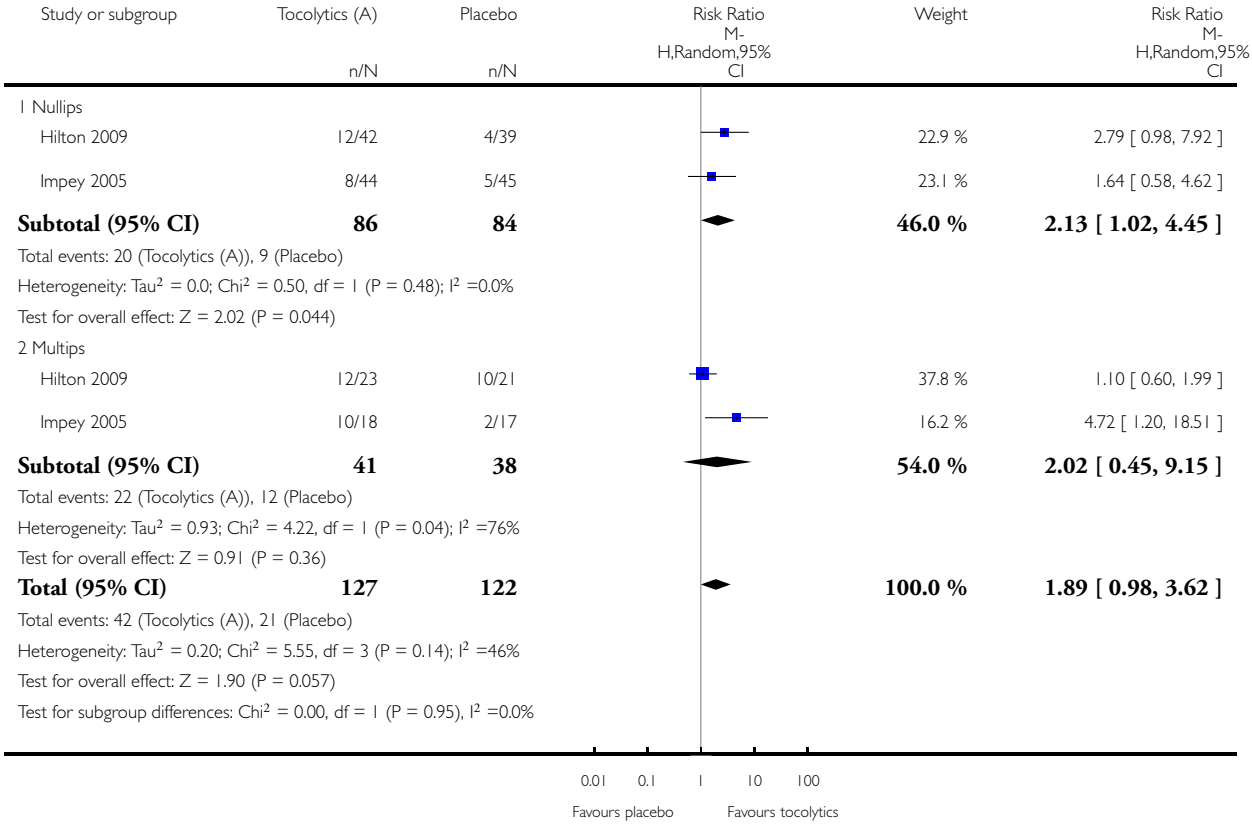


Analysis 21.1. Comparison 21 Tocolytics vs placebo - nullips vs multips, Outcome 1 Cephalic presentation at birth (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 21 Tocolytics vs placebo - nullips vs multips

Outcome: 1 Cephalic presentation at birth (primary)

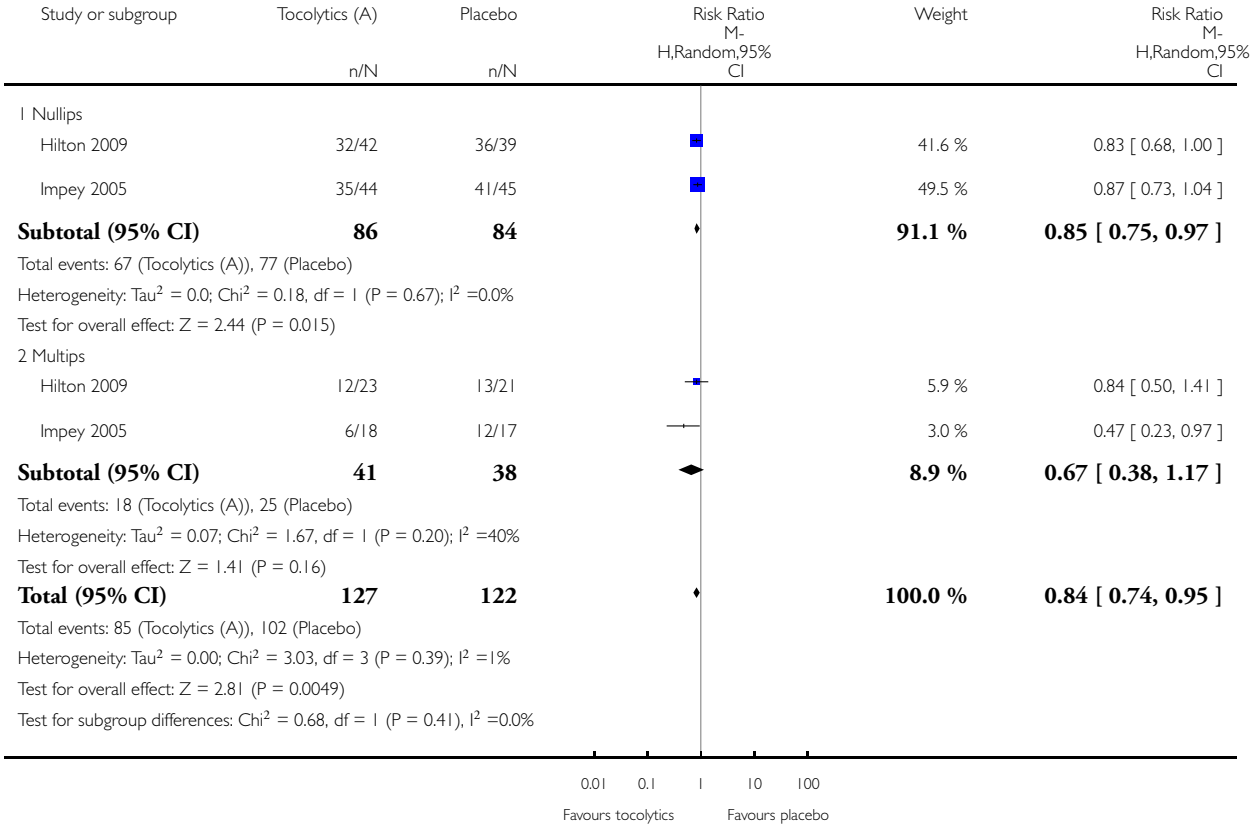


Analysis 21.2. Comparison 21 Tocolytics vs placebo - nullips vs multips, Outcome 2 Caesarean section (primary).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 21 Tocolytics vs placebo - nullips vs multips

Outcome: 2 Caesarean section (primary)

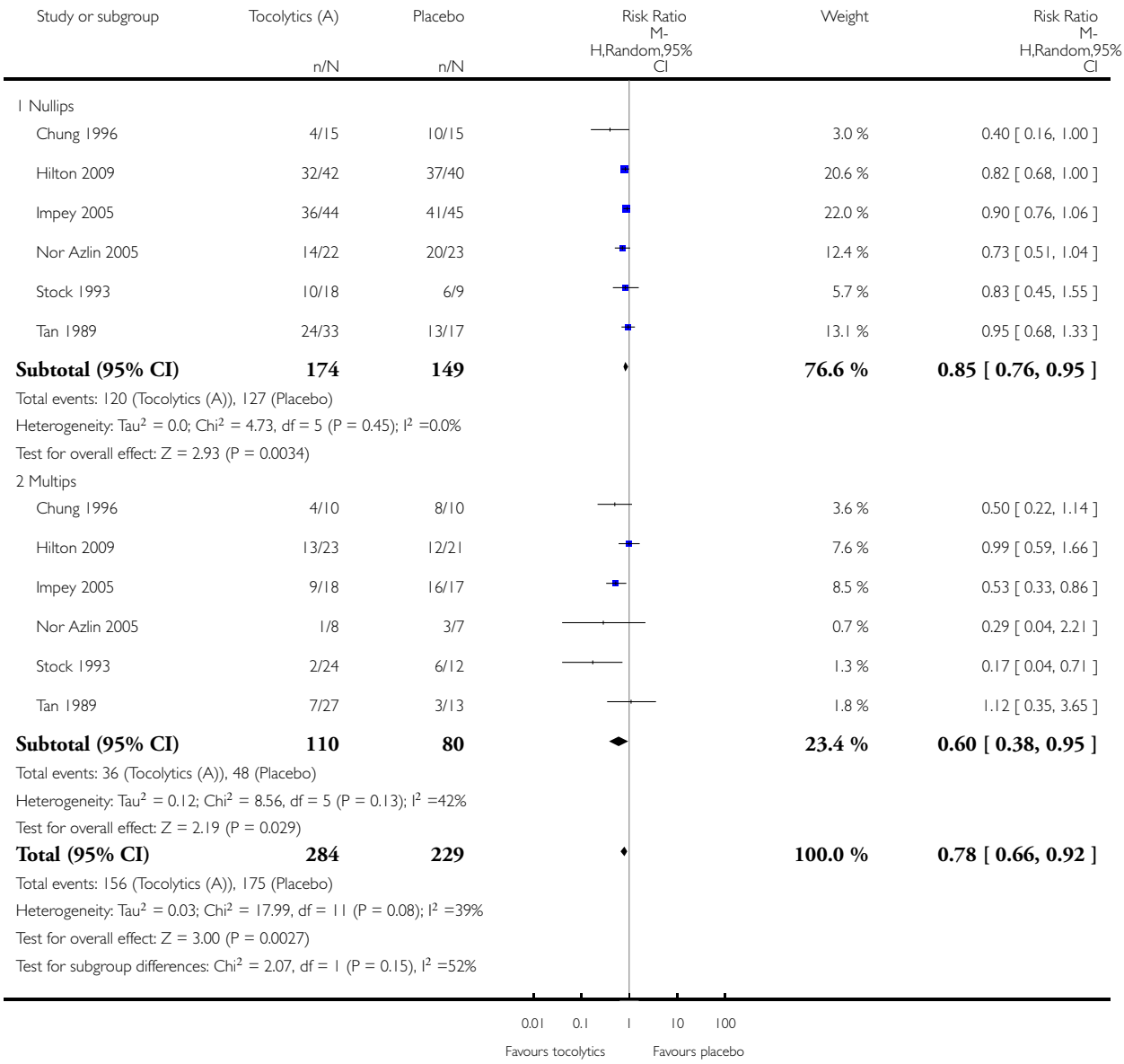


Analysis 21.4. Comparison 21 Tocolytics vs placebo - nullips vs multips, Outcome 4 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 21 Tocolytics vs placebo - nullips vs multips

Outcome: 4 Failed external cephalic version

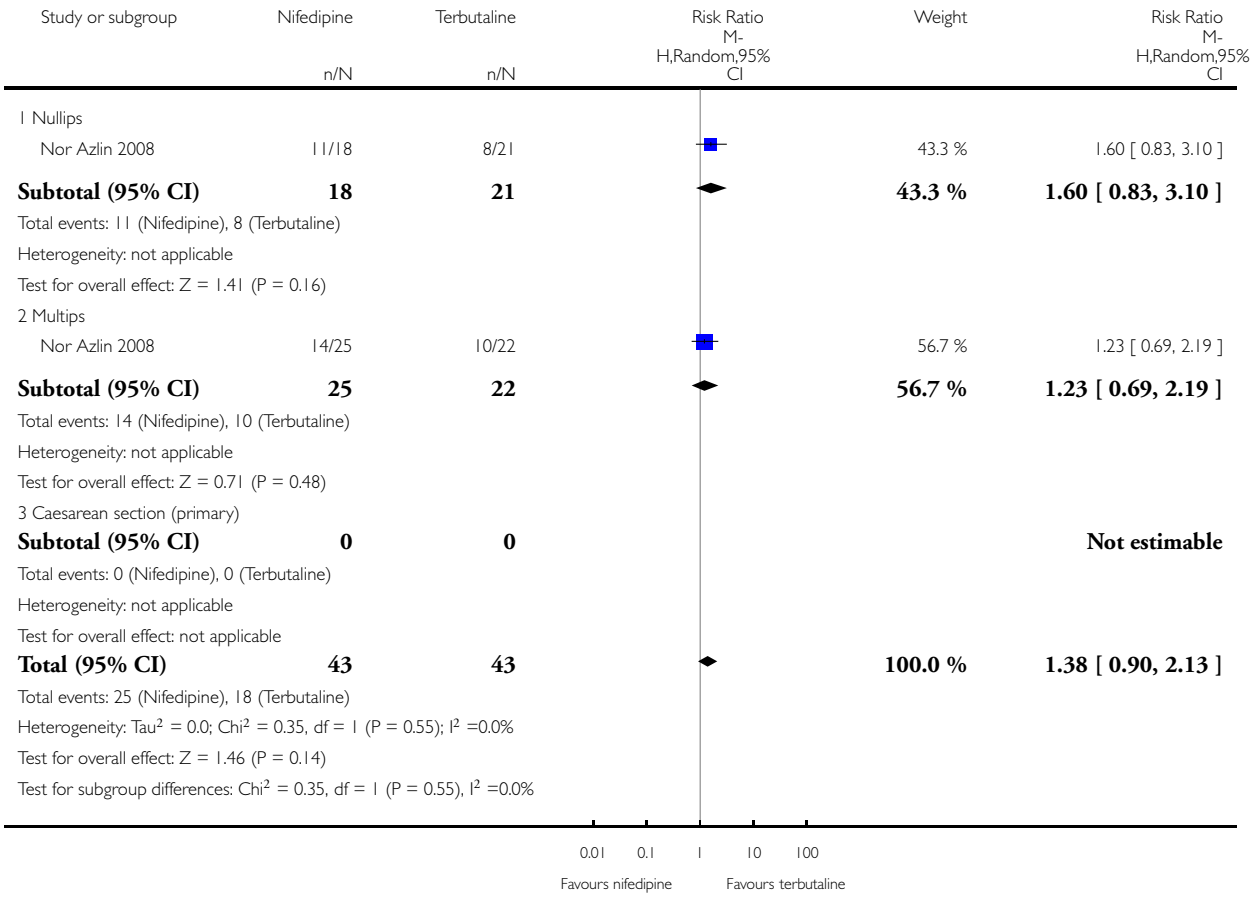


Analysis 22.4. Comparison 22 Tocolytic (nifedipine) vs tocolytic (terbutaline) - nullips vs multips, Outcome 4 Failed ECV.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 22 Tocolytic (nifedipine) vs tocolytic (terbutaline) - nullips vs multips

Outcome: 4 Failed ECV

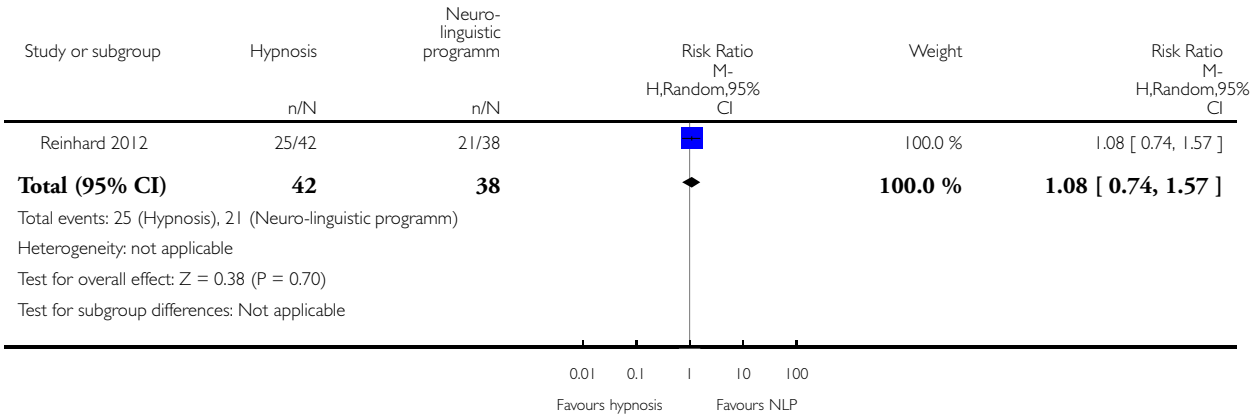


Analysis 23.5. Comparison 23 Hypnosis vs neurolinguistic programming, Outcome 5 Failed external cephalic version.

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 23 Hypnosis vs neurolinguistic programming

Outcome: 5 Failed external cephalic version

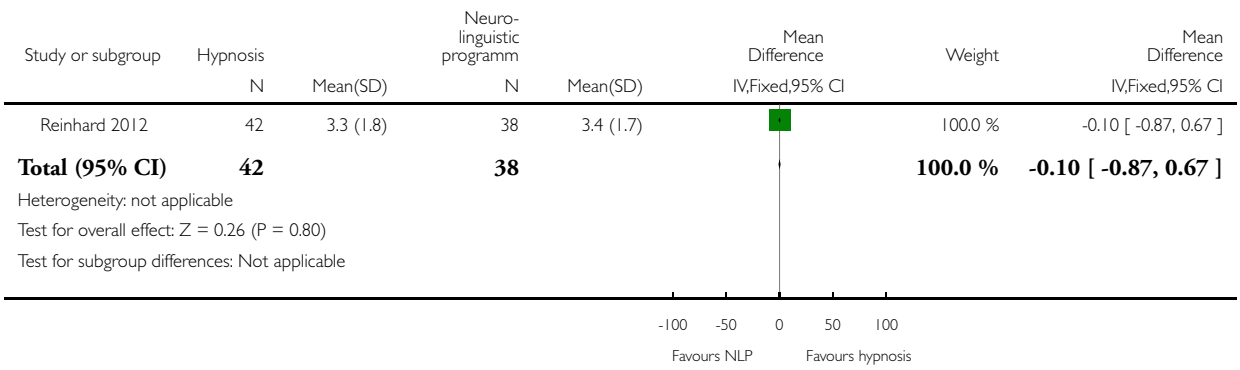


Analysis 23.15. Comparison 23 Hypnosis vs neurolinguistic programming, Outcome 15 Good pain relief (higher scores better) (non-prespecified).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 23 Hypnosis vs neurolinguistic programming

Outcome: 15 Good pain relief (higher scores better) (non-prespecified)

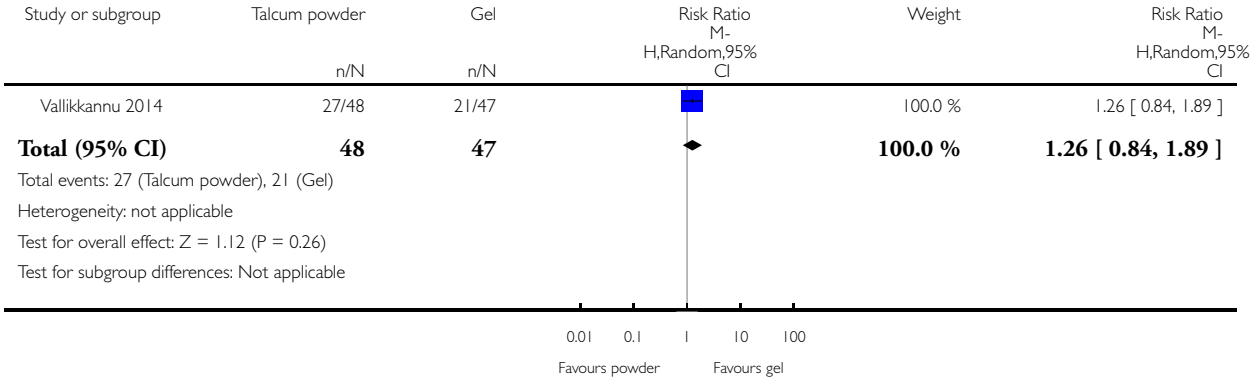


Analysis 24.5. Comparison 24 Talcum powder vs gel, Outcome 5 Failed external cephalic version (after first round of attempts).

Review: Interventions for helping to turn term breech babies to head first presentation when using external cephalic version

Comparison: 24 Talcum powder vs gel

Outcome: 5 Failed external cephalic version (after first round of attempts)



WHAT'S NEW

Last assessed as up-to-date: 30 September 2014.

Date	Event	Description
9 March 2016	Amended	We have corrected a typographical error in Analysis 6.1 (in relation to Schorr 1997). This edit does not affect the analysis/results or conclusions of this review

HISTORY

Protocol first published: Issue 3, 1996

Review first published: Issue 3, 1996

Date	Event	Description
30 September 2014	New search has been performed	We have updated the search and identified 6 new studies. We have included 3 new trials in the review (Munoz 2014; Reinhard 2012; Vallikkannu 2014), excluded 1 study (Guittier 2013) and identified 2 trial registrations for ongoing studies (Burgos 2012; Passerini 2013)
30 September 2014	New citation required but conclusions have not changed	Overall results are similar to those reported in the previous version of the review. A new author joined the review team to assist with the update. We have incorporated a summary of findings table
30 September 2011	New search has been performed	Search updated: 10 new trials added to review We have moved Andarsio 2000 from categorisation as an 'Included study' to 'Awaiting classification' because we need to know the route of administration of the drug before we can include data on subgroups in the updated review. We are trying to obtain this information
19 May 2011	New citation required and conclusions have changed	Beta stimulants are now recommended for facilitating external cephalic version at term, but data on adverse effects were insufficient. Data on calcium channel blockers and nitric acid donors were insufficient to provide good evidence New authors helped update this review
1 October 2009	Amended	Search updated: 19 reports added to Studies awaiting classification
3 November 2008	Amended	Converted to new review format
31 March 2004	New search has been performed	One new trial added to studies awaiting classification (Hollard 2003)
30 September 2003	New citation required and conclusions have changed	With inclusion of Bujold 2003a and Bujold 2003b, we have changed the recommendation regarding nitroglycerine
30 September 2003	New search has been performed	Search updated. 2 new trials included (Bujold 2003a; Bujold 2003b)

CONTRIBUTIONS OF AUTHORS

G. Justus Hofmeyr (JH) prepared the original version of the review. Gill Gyte (GG) and JH revised the review in 2004. Cathy Cluver (CC), JH, Marlene Sinclair (MS) and GG revised the review in 2011, and CC and MS undertook data extraction. JH, CC and GG entered and checked data. CC, JH, MS and Therese Dowswell (TD) revised the review in 2014. TD and GG undertook data extraction and checked the data entered. CC, JH and GG are responsible for editing the review and maintaining it.

DECLARATIONS OF INTEREST

TD is paid by the UK NHS to work on a range of Cochrane Reviews. The Funders have no influence on the content or conclusions of the reviews I work on. I have received payment from NIHR for my work on this and other reviews.

GJH receives royalties for two chapters authored in UpToDate.

SOURCES OF SUPPORT

Internal sources

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External sources

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- UNDP/UNFPA/WHO/World Bank (HRP), Switzerland.
- National Institute for Health Research (NIHR), UK.

NIHR Cochrane Programme Grant Project: 13/89/05 - Pregnancy and childbirth systematic reviews to support clinical guidelines

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We have allocated all outcomes to be primary or secondary outcomes. We have included further interventions examined in recent trials in addition to those originally prespecified in the protocol. We have added an outcome - cephalic vaginal birth not achieved (caesarean section + vaginal breech births) - to enhance consistency with the findings of other related reviews. Additional outcomes are reported that were not specified in the protocol: vaginal breech birth, Apgar less than seven at five minutes, neonatal seizures, admission to neonatal unit, birth trauma, flushing in women, placental abruption, maternal discomfort, pain scores, maternal satisfaction with the procedure and maternal side effects (nausea and vomiting, dizziness and drowsiness).

INDEX TERMS

Medical Subject Headings (MeSH)

Analgesia, Obstetrical [methods]; Breech Presentation [*prevention & control]; Calcium Channel Blockers [therapeutic use]; Delivery, Obstetric; Nitroglycerin [therapeutic use]; Randomized Controlled Trials as Topic; Tocolysis [*methods]; Tocolytic Agents [therapeutic use]; Version, Fetal [*methods]; Vibration [therapeutic use]

MeSH check words

Female; Humans; Pregnancy