National Institute for Health and Care Excellence

Draft for consultation

Intrapartum care for women with existing medical conditions or obstetric complications and their babies

[O] Evidence review for breech presenting in labour

NICE guideline <TBC at publication>

Evidence reviews for women at high risk of adverse outcomes for themselves and/or their baby because of obstetric complications or other reasons

September 2018

Draft for consultation

Developed by the National Guideline Alliance hosted by the Royal College of Obstetricians and Gynaecologists

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ISBN:

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Intrapartum care for women with breech presenting in labour – mode of birth

Review question

What is the optimal mode of birth (emergency caesarean section or continuation of labour) for women with breech presenting in the first or second stage of labour?

Introduction

The aim of this review is to determine the optimal mode of birth (emergency caesarean section or continuation of labour) for women with breech presenting in the first or second stage of labour. The NICE guideline on caesarean section (CG132) recommends that women who have an uncomplicated singleton breech pregnancy at 36 weeks of gestation should be offered external cephalic version, and that pregnant women with a singleton breech presentation at term, for whom external cephalic version is contraindicated or has been unsuccessful, should be offered a caesarean section. This review addresses mode of birth for women with breech presentation in labour who have declined an offer of caesarean section or in whom labour starts before a planned caesarean section is performed.

Preterm labour and birth are excluded from this review question because breech presentation in preterm labour and birth is covered in the NICE guideline on preterm labour and birth (NG25).

Summary of the protocol

See Table 1 for a summary of the population, intervention, comparison and outcome (PICO) characteristics of this review.

Table 1: Summary of the protocol (PICO table)

Population	Women with breech at term presenting in the first or second stage of labour. Including: • undiagnosed and diagnosed breech presentation • planned vaginal breech birth • planned breech caesarean section
Intervention	Emergency caesarean section
Comparison	Continuation of labour, including assisted birth and instrumental birth
Outcomes	For the woman: • major morbidities (pelvic floor injury, OASI, postpartum haemorrhage, or sepsis) • admission to HDU or ITU and duration of hospital stay • woman's experience of labour and birth, including experience of the birth companion, separation of the woman and baby and breastfeeding initiation

	For the baby: • mortality • major morbidities (hypoxic ischaemic encephalopathy, respiratory complications, sepsis, or birth injury) • admission to NICU and duration of hospital stay

HDU: high dependency unit; ITU: intensive therapy unit; NICU: neonatal intensive care unit; OASI: obstetric anal sphincter injury (third- or fourth-degree perineal tear)

For further details see the full review protocol in Appendix A – Review protocol. The search strategies are presented in Appendix B – Literature search strategies.

Clinical evidence

Included studies

Seventeen publications reporting 15 prospective cohort studies were included in this review (see 'Summary of clinical studies included in the evidence review').

Of these, 14 (Alshaheen 2010, Barlov 1986, Bird 1975, Capeless 1985, Collea 1980, De Leeuw 2002, Gimovsky 1983, Jaffa 1981, Maier 2011, Molkenboer 2007, Sarno 1989, Singh 2012, van Loon 1997, Zatuchni 1967) compared emergency caesarean section in labour to continuation of labour; the remainder (Su 2003, Su 2004, Su 2007; 3 publications that reported different outcomes from the same study) compared emergency caesarean section in early labour to continuation of labour, and emergency caesarean section in active labour to continuation of labour.

Evidence from the studies included in the review is summarised below (see 'Quality assessment of clinical studies included in the evidence review').

Data was reported on the critical outcomes, major maternal morbidities (obstetric anal sphincter injury (OASI), postpartum haemorrhage and systemic infection), mortality and major morbidities in the baby (hypoxic ischaemic encephalopathy (HIE), respiratory complications, and birth injury), and on the important outcome, admission to the neonatal intensive care unit (NICU). Data was also reported on 2 composite outcomes, maternal morbidity and adverse perinatal outcome, which included some outcomes in the guideline review protocol, but also outcomes that were not in the protocol. There was no evidence identified for the following outcomes for the woman: pelvic floor injury (critical outcome), admission to a high dependency unit (HDU) or the intensive therapy unit (ITU) and duration of hospital stay (important outcomes). In relation to woman's experience of labour and birth, including experience of her birth companion(s), separation of the woman and the baby and breastfeeding initiation (important outcomes), only evidence on breastfeeding initiation and on a proxy (indirect) outcome (early postpartum depression) was identified. There was no evidence identified for the following critical outcome for the baby: sepsis.

See also the study selection flow chart in Appendix C – Clinical evidence study selection.

Excluded studies

Studies not included in this review with reasons for their exclusion are listed in Appendix D – Excluded studies.

Summary of clinical studies included in the evidence review

2 Table 2 provides a brief summary of the included studies.

3 **Table 2: Summary of included studies**

Study	Population	Intervention/Comparison	Outcomes	Comments
Alshaheen 2010 Prospective cohort study Iraq	N=210 women in labour with singleton term breech presentations between 1 September 2005 and 31 August 2006. Women with obstetric problems and medical illnesses were excluded from the study. The inclusion criteria for a trial of breech birth were: a clinically adequate pelvis, a frank or complete breech with estimated fetal weight < 4 kg with a flexed head and the informed consent of the woman	• Emergency caesarean sections in labour (n=113) • Vaginal births (n=97)	For the baby • stillbirth • early neonatal mortality • birth asphyxia • brachial plexus lesion • fractured clavicle • NICU admission	This article provides data on stillbirth and early neonatal mortality stratified by parity. Indications for caesarean section included: lack of progress in labour, fetal distress, previous difficult vaginal birth, macrosomia, cephalopelvic disproportion, breech with footling presentation
Barlov 1986 Prospective cohort study Sweden	N=125 women in labour with singleton breech presentation from January 1978 to December 1982. Mean (range) gestational age in both groups was 40 (37-44) weeks. Nulliparous: • emergency CS: 16/23 (69.6%)	• Emergency caesarean section in labour (n=23) • Vaginal birth (n=102)	For the woman • mean blood loss at birth (ml) For the baby • neonatal mortality • neonatal pulmonary insufficiency necessitating C-PAP • brachial palsy • fractured humerus	Reasons for performing emergency CS were: conversion from other breech presentations to double footling breech (n=8), suspicion of double footling (n=4), hyperextension of the fetal head (n=3), inertia uteri (n=5), and suspicion of intra-uterine asphyxia,

Study	Population	Intervention/Comparison	Outcomes	Comments
	• vaginal birth (VB): 41/102 (40.1%) Selection for intended vaginal birth was based on a scoring system that took into account pelvic measurements, estimated fetal weight, type of breech, soft birth canal and previous vaginal births		• fractured clavicle	which could not be verified (n=3)
Bird 1975 Prospective cohort study USA	N=290 women in labour with singleton term breech presentations with fetal weight greater than 2,500 g from 1 January 1968 to 1 January 1974. Exclusion criteria were elective induction, vaginal bleeding, significant heart rate abnormalities, monitored late deceleration patterns, or cord prolapse	• Emergency CS in labour (n=56) • Vaginal birth (n=234)	For the baby • stillbirth • neonatal mortality • requiring resuscitation • cardiorespiratory depression • birth injury (depressed skull fracture or unilateral clavicular fracture)	The primary physician was made aware of the Zatuchni-Andros prognostic index score early in labour. This index takes into account parity, gestational age, estimated fetal weight, previous breech, dilatation, and station
Capeless 1985 Prospective cohort study USA	N=86 women in labour with term frank or complete breech presentations between January 1979 and December 1981 who were allowed an adequate trial of labour. Baseline characteristics were not stratified	• Emergency caesarean section in labour (n=35) • Vaginal birth (n=51, of which assisted, n=31; forceps to aftercoming head, n=20; there were no total breech extractions)	For the baby • facial palsy • admission to NICU	Indications for emergency CS were: arrest of active phase (n=27), arrest of descent (n=7), prolapsed cord (n=1)

Study	Population	Intervention/Comparison	Outcomes	Comments
	by relevant intervention and comparison group			
Collea 1980 Prospective cohort study (secondary analysis of RCT data was undertaken by the NGA technical team for the guideline review) USA	N=66 women with singleton term frank breech presentations from July 1975 to May 1979. Women with emergency CS in labour had been allowed to have labour in light of adequate X-ray pelvimetry; 49/55 women in the vaginal birth group also had adequate X-ray pelvimetry results; 3/55 had a vaginal birth before X-ray pelvimetry could be performed; 3/55 were scheduled for CS due to inadequate pelvimetry but had a vaginal birth before CS could be performed. No baseline characteristics were reported stratified by the 2 relevant subgroups. Adverse outcomes relating to congenital anomalies were excluded	• Emergency CS in labour (n=11) • Vaginal birth (n=55); partial breech extraction was used for most vaginal births; in some cases Piper forceps were applied for the aftercoming head	For the baby • perinatal death • spontaneous bilateral pneumothorax • brachial plexus injury	CS in labour was performed due to difficulty in labour or due to fetal distress
De Leeuw 2002 Prospective cohort study	N=170 women in labour with singleton breech presentations from January 1984 to June	• Emergency caesarean sections in labour (n=38) • Vaginal births (n=132, of	For the baby • intrapartum fetal death • early neonatal mortality	Indications for CS not reported separately for the emergency CS subgroup

Study	Population	Intervention/Comparison	Outcomes	Comments
Belgium and the Netherlands	1986 with babies weighing at least 2500 g. Antenatal fetal deaths and lethal malformations were excluded	which unassisted breech (Brach manoeuvre), n=77, assisted breech, n=52, breech extraction, n=3)	• late neonatal mortality	
Gimovsky 1983 Prospective cohort study (secondary analysis of RCT data was conducted by the NGA technical team for the guideline review) United States	N=46 women in labour with singleton non-frank breech presentations with gestational age between 36 and 42 weeks between April 1981 and May 1982. Breech included complete breech, double footling, single footling, and incomplete. Inclusion criteria were an estimated fetal weight between 2 and 4 kg, cervix less than 7 cm dilated, a non-extended normal-appearing fetal skull, and no contraindication to labour. Selection criteria for trial of labour (TOL) included adequate pelvic dimensions on X-ray pelvimetry. Baseline characteristics were not stratified by the 2 relevant subgroups. Adverse outcomes in babies with major congenital anomalies were excluded	• Intervention. Emergency CS in labour (n=11) • Comparison. Vaginal birth (n=35). Vaginal births were assisted births with elective application of Piper forceps	For the baby • neonatal mortality • peripheral nerve injury	Indications for CS included latent phase arrest with oxytocin (n=2), active phase arrest with oxytocin (n=2), active phase arrest without oxytocin (n=1), arrest of descent (n=1), prolapse of umbilical cord in the first stage of labour (n=3), body prolapse in the first stage of labour (n=2)

Study	Population	Intervention/Comparison	Outcomes	Comments
Jaffa 1981 Prospective cohort study Israel	N=277 nulliparous women in labour with term breech presentations from 1972 to 1979. Women whose babies weighed less than 2500 g or had congenital malformations were excluded. Exclusion criteria for TOL were: nulliparous over 35 years old, pelvic deformities, inadequate radiological pelvimetry results	• Emergency caesarean sections in labour (n=17) • Vaginal births (n=260; the Maurceau-Smellie-Veit technique was used routinely)	For the baby • perinatal mortality	Indications for emergency CS in labour were: dysfunctional labour (n=10; for 1 of these women large fetal size was an additional indication); prolapse of umbilical cord (n=6); fetal distress (n=1)
Maier 2011 Prospective cohort study Austria	N=85 women in labour with singleton complete or frank breech presentation >=35 weeks of gestation from 1 January 2002 to 30 April 2005 Nulliparous: • emergency CS: 69.2% • VB: 63.1% Inclusion criteria for intended vaginal birth were: adequate abdominal and pelvic dimensions; estimated fetal weight between 2500 and 3500 g; no deflexion of the head; no suspected fetal anomalies; no placenta praevia; no funic	• Emergency caesarean section (n=39) • Vaginal birth (n=46) (Spontaneous: n=16; Bracht: n=16; Arthur-Mueller/ or Veit-Smellie: n=28; Loevset (nuchal arms) manoeuvres: n=1)	For the baby • genital haematoma • cephalic haematoma • transfer to NICU	Indications for emergency CS not reported

Study	Population	Intervention/Comparison	Outcomes	Comments
	presentation; normal flow in the umbilical artery. Exclusion criteria were: pre-eclampsia, small for gestational age, cephalo-thoracic asymmetry; any maternal morbidity leading to CS for any other reasons.			
Molkenboer 2007 Prospective cohort study The Netherlands	N=140 women in labour with a term breech presentation from 20 July 1998 to 21 April 2000. No data on percentage nulliparous per relevant group	• Emergency caesarean section in labour (n=49) • Vaginal birth (n=91)	For the woman • did breastfeed (for any duration)	Outcome measured 2 years after birth through self-report
Sarno 1989 Prospective cohort study USA	N=27 women with a previous CS and breech presentation from 1 July 1982 to 30 June 1984 Women selected for TOL excluded those with a classic uterine incision. Both frank and nonfrank breech were considered for TOL. Selection for TOL was performed based on a protocol	• Emergency CS in labour (n=14) • Vaginal birth (n=13)	For the baby • neonatal mortality • birth trauma (Erb's palsy or trapped head)	Indications for repeat CS in the TOL group were: arrest of dilation (n=10), fetal distress (n=2), other (n=2)
Singh 2012 Prospective cohort study India	N=154 women with singleton breech presentations at term from January 2007 to September 2009	• Emergency caesarean section (n=94) • Vaginal birth (n=60)	For the baby • perinatal mortality • fractured clavicle • fractured humerus • dislocation of hip	Indications for emergency caesarean section: fetal distress (n=18), failure to progress (n=11), cord prolapse (n=4), footling presentation

Study	Population	Intervention/Comparison	Outcomes	Comments
			• Erb's palsy • damage to soft tissue and laceration	(n=25), placenta previa (n=10), previous caesarean scar (n=30)
Su 2003, Su 2004 and Su 2007 Secondary analysis of data collected during Term Breech Trial – classified as prospective cohort study 121 centres in 26 countries	N=1,540 women in labour with a singleton term fetus(defined as ≥37 weeks) in a frank or complete breech presentation at randomisation (this later became cephalic, footling breech or oblique/transverse presentation in some women) between 9 January 1997 and 21 April 2000 Nulliparous: • CS during early labour: 53% • CS during active labour: 58% • VB: 43% Frank breech: • CS during early labour: 59% • CS during active labour: 60% • VB: 64% Complete breech: • CS during early labour: 36% • CS during active labour: 35% • VB: 33% Uncertain breech: • CS during early labour: 5.2% • CS during active labour: 4.8%	<u>Intervention</u> • Caesarean section during early labour (n=250) • Caesarean section during active labour (n=599) <u>Comparison</u> • Vaginal birth (n=691) Early labour defined as contractions less frequently than every 5 minutes or if more frequently than every 5 minutes, cervix dilated <3 cm and effaced <80%. Active labour defined as contractions more frequently than every 5 minutes and cervix dilated >=3 cm or effaced >=80%	For the woman • postpartum haemorrhage >1500 mL • maternal systemic infection - Postpartum fever >=38.5ºC • maternal morbidity (see evidence statement for definition) • early postpartum depression For the baby • stillbirth • neonatal mortality • ventilation required • birth injury (basal skull fracture, brachial plexus injury, or spinal cord injury) • NICU admission • adverse perinatal outcome (see evidence statement for definition)	Reasons for CS in labour: some women were randomised to planned vaginal birth but had CS in labour due to complications; some women were in labour at the time of randomisation and CS was undertaken as soon as possible. The article reports that in 6 cases adverse outcomes were unrelated to labour and birth (vaginal births, 2 stillbirths probably before enrolment; CS in early labour, 1 anomaly (ventricular septal defect and patent ductus arteriosus); CS in active labour, 3 anomalies (1 intestinal obstruction, 1 Down's syndrome, 1 ruptured myelomeningocele). These 6 adverse outcomes were not extracted for the guideline review; only outcomes reported as being related to labour

Study	Population	Intervention/Comparison	Outcomes	Comments
	• VB: 3.5%			or birth or unexplained were extracted
Van Loon 1997 Secondary analysis of data collected during an RCT on magnetic-resonance pelvimetry – classified as prospective cohort study The Netherlands	N=189 women with singleton breech presentations ≥37 weeks recruited between January 1993 and April 1996. Women had a trial of labour either based on MR pelvimetry results (study group in the RCT) or based on the obstetrician's judgement; manual pelvimetry was permitted (control group in the RCT). Exclusion criteria were an estimated fetal weight greater than 4000 g, hyperextension of the fetal head, a known fetal structural defect, a known pelvic or uterine abnormality, previous fetopelvic disproportion, and planned elective CS for reasons other than suspected pelvic contraction. Multiparity was an exclusion criterion unless the referring obstetrician had doubts about a vaginal birth because of	• Emergency CS (n=63) • Vaginal birth (n=126) (spontaneous: n=80; assisted: n=46)	For the woman • third-degree perineal laceration • blood loss > 500 ml and >1000 ml For the baby • lesion of the brachial plexus	Emergency caesarean section after a trial of labour was performed because of poor progress in the first or second stage (n=41 and 22 respectively). In 5 cases of emergency CS due to prolonged first stage, fetal distress was an additional reason

Study	Population	Intervention/Comparison	Outcomes	Comments
	previous pregnancy ending in CS, a low-birthweight baby, or a difficult labour			
Zatuchni 1967 Prospective cohort study USA	N=139 women in labour with term breech presentations. Severe congenital anomalies, prolapsed cord cases and bleeding placental problems were excluded	• Emergency caesarean section in labour (n=24) • Vaginal birth (n=115)	For the baby • mortality • brachial palsy • anoxia/pneumonia/pneumothorax • nerve palsy, apneic episodes or convulsions	On admission of the woman to the labour suite, staff were made aware of factors involved in the Breech Index (parity, gestational age, estimated fetal weight, previous breech, dilatation, and station), however no direct attempt was made to influence management of labour for any woman

CS: caesarean section; MR: magnetic resonance; NICU: neonatal intensive care unit; RCT: randomised controlled trial; TOL: trial of labour; VB: vaginal birth

See also the study evidence tables in Appendix E – Clinical evidence tables. No meta-analysis was undertaken for this review (and so there are no forest plots in Appendix F – Forest plots).

Quality assessment of clinical studies included in the evidence review

The clinical evidence profiles for this review question are presented in Appendix G – GRADE tables.

Economic evidence

Included studies

No economic evidence was identified for this review.

See the study selection flow chart in Supplement 2 (Health economics).

Excluded studies

Studies not included in this review with reasons for their exclusion are listed in Supplement 2 (Health economics).

Summary of studies included in the economic evidence review

No economic evidence was identified for this review (and so there are no economic evidence tables in Supplement 2 (Health economics)).

Economic model

No economic modelling was undertaken for this review because of the high risk of selection bias in the studies included in the clinical evidence review (see Supplement 2 (Health economics)).

Evidence statements

Emergency caesarean section in labour versus continuation of labour

Outcomes for the woman

Third-degree perineal laceration

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=189) found no clinically important difference in the incidence of third-degree perineal laceration between women who had an emergency caesarean section and those who had a vaginal birth.

Blood loss greater than 500 ml

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=189) found no clinically important difference in the incidence of blood loss > 500 ml between women who had an emergency caesarean section and those who had a vaginal birth.

Blood loss greater than 1000 ml

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=189) found no clinically important difference in the incidence of blood loss > 1000 ml between the group of women who had an emergency caesarean section and those who had a vaginal birth.

Mean blood loss

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=125) reported that mean blood loss at birth was 522.7 ml (range 100 to 1200 ml) in the group who had an emergency caesarean section in labour and 255.2 ml (range 50 to 775 ml) in the group who had a vaginal birth. Due to insufficient data no confidence interval (CI) for the difference between groups could be calculated.

Breastfeeding

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=140) found a clinically important higher incidence of women who breastfed in the group who had an emergency caesarean section compared to the group who had a vaginal birth.

Outcomes for the baby

Perinatal mortality

Very low quality evidence from 2 prospective cohort studies in women with breech presentation in labour (N=277 and N=66) reported no perinatal deaths in the group who had an emergency caesarean section in labour or those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated. Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=154) found no clinically important difference in the incidence of perinatal mortality between women who had an emergency caesarean section and those who had a vaginal birth.

Stillbirth

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=210, including n=104 nulliparous and 106 multiparous) reported no stillbirths in either nulliparous or multiparous women who had an emergency caesarean section in labour or in either nulliparous or multiparous women who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated. Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=290) reported no stillbirths in the group who had an emergency caesarean section in labour or those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated. Very low quality evidence from 2 prospective cohort studies in women with breech presentation in labour (N=170 and N=139) found no clinically important difference in the incidence of stillbirth between the group who had an emergency caesarean section and those who had a vaginal birth.

Early neonatal mortality

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=210, including n=104 nulliparous and 106 multiparous) reported a clinically important lower incidence of early neonatal death in the group of nulliparous women who had emergency CS in labour compared to nulliparous women who had a vaginal birth. The same study found no clinically important difference in the incidence of early neonatal death between multiparous women who had emergency caesarean section in labour and multiparous women who had a vaginal birth. Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=170) reported no early neonatal deaths in the group who had an emergency caesarean section in labour or in those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Neonatal mortality (not further specified as early or late)

Very low quality evidence from 2 prospective cohort studies in women in labour with singleton breech presentation (N=290 and N=46) found no clinically important difference in the incidence of neonatal deaths between the group who had an emergency caesarean section and those who had a vaginal birth. Very low quality evidence from 2 prospective cohort studies in women with breech presentation in labour (N=125 and N=27; in the second study the 27 women also had a previous caesarean section) reported no neonatal deaths in the group who had an emergency caesarean section in labour or in those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Late neonatal mortality

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=170) reported no late neonatal deaths in the group who had an

emergency caesarean section in labour or in those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Birth asphyxia

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=210) found no clinically important difference in the incidence of birth asphyxia between the group who had an emergency caesarean section and those who had a vaginal birth.

Requirement for resuscitation

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=290) found a clinically important lower incidence of babies requiring resuscitation in the group who had an emergency caesarean section compared to those who had a vaginal birth.

Cardiorespiratory depression

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=290) found a possibly clinically important lower incidence of babies with cardiorespiratory depression in the group who had an emergency caesarean section compared to those who had a vaginal birth. ('Possibly' clinically important means that this result was not statistically significant at the 95% confidence level, but it was statistically significant at the 90% confidence level. Moreover the risk ratio was below 0.80, which is the default minimally important difference.)

Neonatal pulmonary insufficiency necessitating C-PAP

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=125) found no clinically important difference in the incidence of neonatal pulmonary insufficiency necessitating continuous positive airway pressure (C-PAP) between the group who had an emergency caesarean section and those who had a vaginal birth.

Spontaneous bilateral pneumothorax

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=66) found no clinically important difference in the incidence of spontaneous bilateral pneumothorax between the group who had an emergency caesarean section and those who had a vaginal birth.

Brachial palsy and brachial plexus lesion or injury

Very low quality evidence from 2 prospective cohort studies in women with breech presentation in labour (N=125 and N=139) found no clinically important difference in the incidence of brachial palsy between the group who had an emergency caesarean section and those who had a vaginal birth. Very low quality evidence from 3 prospective cohort studies in women in labour with singleton breech presentation (N=210, N=66, and N=189) found no clinically important difference in the incidence of brachial plexus lesion or injury between the group of women who had an emergency caesarean section and those who had a vaginal birth.

Fractured humerus

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=125) found no clinically important difference in the incidence of fractured humerus in the baby between the group who had an emergency caesarean section and those who had a vaginal birth. Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=154) reported no events of fractured humerus in the group who had an emergency caesarean section in labour and those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Fractured clavicle

Very low quality evidence from 3 prospective cohort studies in women with breech presentation in labour (N=210, N=125, and N=290) found no clinically important difference in the incidence of fractured clavicle in the baby between the group who had an emergency caesarean section and those who had a vaginal birth. Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=154) reported no events of fractured clavicle in the group who had an emergency caesarean section in labour and those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Depressed skull fracture

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=290) found no clinically important difference in the incidence of depressed skull fracture in the baby between the group who had an emergency caesarean section and those who had a vaginal birth.

Facial palsy

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=86) found no clinically important difference in the incidence of facial palsy between the group who had an emergency caesarean section and those who had a vaginal birth.

Erb's palsy

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour and previous caesarean section (N=27) found no clinically important difference in the incidence of Erb's palsy between the group who had an emergency caesarean section and those who had a vaginal birth. Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=154) reported no events of Erb's palsy in the group who had an emergency caesarean section in labour and those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Birth trauma (due to a trapped head)

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour and previous caesarean section (N=27) found no clinically important difference in the incidence of birth trauma due to a trapped head between the group who had an emergency caesarean section and those who had a vaginal birth.

Genital haematoma

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=85) found no clinically important difference in the incidence of genital haematoma between the group who had an emergency caesarean section and those who had a vaginal birth.

Cephalic haematoma

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=85) found no clinically important difference in the incidence of cephalic haematoma between the group who had an emergency caesarean section and those who had a vaginal birth.

Damage to soft tissue and laceration

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=154) found no clinically important difference in the incidence of damage to the baby's soft tissue and laceration between the group who had an emergency caesarean section and those who had a vaginal birth.

Dislocation of the hip

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=154) reported no events of dislocation of the baby's hip in the group who had an emergency caesarean section in labour and those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Peripheral nerve injury

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=46) reported no events of peripheral nerve injury for the group who had an emergency caesarean section in labour and those who had a vaginal birth. Due to zero events in both groups no risk estimate could be calculated.

Severe neonatal morbidity

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=139) found no clinically important difference in the incidence of severe neonatal morbidity (including anoxia, pneumonia and pneumothorax) between the group who had an emergency caesarean section and those who had a vaginal birth. The same study found no clinically important difference in the incidence of severe neonatal morbidity (including VII nerve palsy, apneic episodes and convulsions) between the 2 groups.

Admission to neonatal intensive care unit

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=210) found a clinically important lower incidence of NICU admissions in the group who had an emergency caesarean section compared to those who had a vaginal birth. Very low quality evidence from 2 prospective cohort studies in women with breech presentation in labour (N=86 and N=85) found no clinically important difference in the incidence of NICU admissions between the group who had an emergency caesarean section and those who had a vaginal birth.

Emergency caesarean section in early labour versus continuation of labour

Outcomes for the woman

Postpartum haemorrhage

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=937) found no clinically important difference in the incidence of postpartum haemorrhage >1500 ml between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Maternal systemic infection, postpartum fever >= 38.5ºC

This outcome was included in the review as a proxy for sepsis (which was an outcome specified in the review protocol). Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=937) found no clinically important difference in the incidence of postpartum fever >= 38.5^0C between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Maternal morbidity

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=937) found a clinically important higher odds of 'maternal morbidity' during the first 6 weeks postpartum in the group who had an emergency caesarean section in early labour compared to those who had a vaginal birth. Maternal morbidity was defined as any of the following: death; postpartum haemorrhage of more than 1500 ml or a need for blood transfusion; dilatation and curettage for bleeding or retained placental tissue; hysterectomy; cervical laceration involving the lower uterine segment (in the case of vaginal birth); vertical uterine incision or serious extension to a transverse uterine incision (in the case of caesarean section); vulvar or perineal haematoma requiring evacuation; deep vein thrombophlebitis or pulmonary embolism requiring anticoagulant therapy; pneumonia; adult respiratory distress syndrome; wound infection requiring prolonged hospital care as an inpatient or outpatient or readmission to hospital; wound dehiscence or breakdown; maternal fever of at least 38.5^0C on 2 occasions at least 24 hours apart and not including the first 24 hours after the birth; bladder, ureteric, or bowel injury requiring repair; genital tract fistula; bowel obstruction; or other serious maternal morbidity as judged by members of the steering committee for the study (masked to allocation group and if possible to mode of birth).

Early postpartum depression.

This outcome was included in the review as a proxy for the woman's experience (which was an outcome specified in the review protocol). Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=937) found no clinically important difference in the incidence of early postpartum depression between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Outcomes for the baby

Stillbirth

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=938) found no clinically important difference in the incidence of stillbirth between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Neonatal mortality

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=938) found no clinically important difference in the incidence of neonatal mortality between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Ventilation required

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=938) found no clinically important difference in the incidence of requirement for ventilation between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Birth injury

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=938) found no clinically important difference in the incidence of birth injury between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Admission to neonatal intensive care unit

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=938) found no clinically important difference in the incidence of admission to NICU between the group who had an emergency caesarean section in early labour and those who had a vaginal birth.

Adverse perinatal outcome

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=856) found a clinically important lower odds of 'adverse perinatal outcome' in the group who had an emergency caesarean section in early labour compared to those who had a vaginal birth. Adverse perinatal outcome was defined as any of the following: perinatal or neonatal mortality within 28 days of the birth (excluding lethal congenital anomalies); birth trauma, including subdural haematoma, intracerebral or intraventricular haemorrhage, spinal cord injury, basal skull fracture, peripheral nerve injury present at discharge from hospital, or clinically important genital injury; seizures occurring within 24 hours of the birth or requiring 2 or more drugs to control them; Apgar score of less than 4 at 5 minutes; cord blood base deficit of at least 15; hypotonia for at least 2 hours; stupor, decreased response to pain, or coma; intubation and ventilation for at least 24 hours; tube feeding for 4 days or more; or admission to NICE for longer than 4 days.

Emergency caesarean section in active labour versus continuation of labour

Outcomes for the woman

Postpartum haemorrhage

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1288) found no clinically important difference in the incidence of postpartum haemorrhage >1500 ml between the group who had an emergency caesarean section in active labour and those who had a vaginal birth.

Maternal systemic infection, postpartum fever >= 38.5 °C

This outcome was included in the review as a proxy for sepsis (which was specified as an outcome in the review protocol). Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1288) found a clinically important higher incidence of postpartum fever >= 38.5^{0}C in the group who had an emergency caesarean section in active labour compared to those who had a vaginal birth.

Maternal morbidity

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1288) found a clinically important higher odds of 'maternal morbidity' during the first 6 weeks postpartum in the group who had an emergency caesarean section in active labour compared to those who had a vaginal birth. Maternal morbidity was defined as any of the following: death; postpartum haemorrhage of more than 1500 ml or a need for blood transfusion; dilatation and curettage for bleeding or retained placental tissue; hysterectomy; cervical laceration involving the lower uterine segment (in the case of vaginal birth); vertical uterine incision or serious extension to a transverse uterine incision (in the case of caesarean section); vulvar or perineal haematoma requiring evacuation; deep vein thrombophlebitis or pulmonary embolism requiring anticoagulant therapy; pneumonia; adult respiratory distress syndrome; wound infection requiring prolonged hospital care as an inpatient or outpatient or readmission to hospital; wound dehiscence or breakdown; maternal fever of at least 38.5^{0}C on 2 occasions at least 24 hours apart and not including the first 24 hours after the birth; bladder, ureteric, or bowel injury requiring repair; genital tract fistula; bowel obstruction; or other serious maternal morbidity as judged by members of the study's steering committee (masked to allocation group and if possible to mode of birth).

Early postpartum depression

This outcome was included in the review as a proxy for the woman's experience (which was specified as an outcome in the review protocol). Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1288) found no clinically important difference in the incidence of early postpartum depression between the group who had an emergency caesarean section in active labour and those who had a vaginal birth.

<u>Outcomes for the baby</u>

Stillbirth

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1285) found no clinically important difference in the incidence of stillbirth between the group who had an emergency caesarean section in active labour and those who had a vaginal birth.

Neonatal mortality

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1285) found no clinically important difference in the incidence of neonatal mortality between the group who had an emergency caesarean section in active labour and those who had a vaginal birth.

Ventilation required

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1285) found no clinically important difference in the incidence of requirement for ventilation between the group who had an emergency caesarean section in active labour and those who had a vaginal birth.

Birth injury

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1285) found no clinically important difference in the incidence of birth injury between the group who had an emergency caesarean section in active labour and those who had a vaginal birth.

Admission to neonatal intensive care

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1285) found no clinically important difference in the incidence of admission to NICU between the group who had an emergency caesarean section in active labour and those who had a vaginal birth.

Adverse perinatal outcome

Very low quality evidence from 1 prospective cohort study in women with breech presentation in labour (N=1158) found a possibly clinically important lower odds of 'adverse perinatal outcome' in the group who had an emergency caesarean section in active labour compared to those who had a vaginal birth. ('Possibly' clinically important means that this result was not statistically significant at the 95% confidence level but it was statistically significant at the 90% confidence level. Moreover the risk ratio was below 0.80, which is the default minimally important difference.) Adverse perinatal outcome was defined as any of the following: perinatal or neonatal mortality within 28 days of the birth (excluding lethal congenital anomalies); birth trauma, including subdural haematoma, intracerebral or intraventricular haemorrhage, spinal cord injury, basal skull fracture, peripheral nerve injury present at discharge from hospital, or clinically important genital injury; seizures occurring within 24 hours of the birth or requiring 2 or more drugs to control them; Apgar score of less than 4 at 5 minutes; cord blood base deficit of at least 15; hypotonia for at least 2 hours; stupor, decreased response to pain, or coma; intubation and ventilation for at least 24 hours; tube feeding for 4 days or more; or admission to NICU for longer than 4 days.

Recommendations

O1. Discuss with women in labour with breech presentation the possible benefits and risks of vaginal birth and caesarean section, including:

- an increase in the chance of serious medical problems for the woman with caesarean section, and
- an increase in the chance of serious medical problems for the baby with vaginal birth
- what it might mean for them and the baby if such problems did occur.

O2. Offer women in labour with breech presentation a choice between continuing labour and caesarean section.

O3. Advise women in labour with breech presentation that any benefit of caesarean section in reducing the chance of complications for the baby may be greater in early labour.

O4. Assess progress of labour in line with the NICE guideline on intrapartum care for healthy women and babies.

Rationale and impact

Why the committee made the recommendations

Evidence showed an increase in maternal infection and other maternal complications during the first 6 weeks after caesarean section in labour for breech presentation compared with vaginal breech birth.

Evidence showed fewer adverse outcomes for the baby after caesarean section in early labour for breech presentation compared with vaginal birth, but the benefit was less clear when caesarean section was performed in the later stages of labour.

The committee acknowledged that offering a choice between continuing labour and emergency caesarean section may differ from the advice that women with breech presentation have received during pregnancy. This is because the balance of risks to the woman and baby have changed, with different considerations coming into play when the woman is in labour. For example, considerations will be different when breech presentation is first identified in labour, or when labour is more advanced. The committee wished to ensure that healthcare professionals give women the opportunity to make an informed choice about mode of birth in this situation. They agreed not to recommend one mode of birth over another, but that following discussion of the likely risks and benefits a woman should be able to decide what is right for her.

Based on their knowledge and experience, the committee agreed that healthcare professionals should follow recommendations in the NICE guideline on intrapartum care for healthy women and babies to avoid unnecessary intervention when there is a delay in labour.

Impact of the recommendations on practice

There is variation in practice regarding counselling in labour for women with breech presentation, following publication of the Term Breech Trial in 2000, which concluded that vaginal birth was associated with higher risks to the baby. The recommendation to offer women in labour with breech presentation a choice between continuing labour and emergency caesarean section will promote a more consistent approach and improved experience for women and their birth companions.

The committee was aware that training may be needed to fully implement the recommendations supporting vaginal breech birth.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

The committee prioritised major maternal morbidities (pelvic floor injury, obstetric anal sphincter injury (OASI), postpartum haemorrhage, or sepsis) as critical outcomes because these may occur with either caesarean section or vaginal birth. For the baby, the committee prioritised mortality and major morbidities (hypoxic ischaemic encephalopathy, respiratory

complications, sepsis, or birth injury) as critical outcomes because both mortality and morbidity can be influenced by mode of birth.

Important outcomes were maternal admission to HDU or ITU and duration of hospital stay, and the woman's experience of labour and birth, including experience of her birth companion(s), separation of the woman and the baby and breastfeeding initiation. The committee considered admission to HDU or ITU and duration of hospital stay to be important because if the intervention is surgery then admission is more likely. With regard to the woman's experience, the committee discussed that currently some women with breech presenting in labour can feel that their choice is limited regarding mode of birth.

The committee considered admission to NICU and duration of hospital stay as important outcomes because these are proxies for neonatal morbidity.

The quality of the evidence

No studies were found that randomised women to caesarean section in labour or continuation of labour. Secondary analyses of data from randomised controlled trials (RCTs) that aimed to answer a different question from the guideline review were treated as prospective cohort studies.

All studies included in this review had a high risk of selection bias because women in the emergency caesarean section group had clinical indications for emergency caesarean section. These indications might, in turn, be associated with adverse outcomes. Most of the studies also had high risk of comparability bias because they did not adjust for any factor. Only one study adjusted for confounders (in relation to the composite outcomes of maternal morbidity and adverse perinatal outcome), however it was unclear what variables were included in the final analysis.

Many outcomes were downgraded for imprecision, which is related to sample size. The committee noted that the study with the biggest sample size was the secondary analysis of the Term Breech Trial reported in 3 publications (Su 2003, Su 2004, Su 2007). Considering that most of the outcomes in the review are rare events, it is possible that in many studies the lack of clinical importance is due to small sample size. The committee noted that 1 study found no clinically important difference in the incidence of third-degree perineal laceration between the group of women who had an emergency caesarean section and those who had a vaginal birth. The committee argued that this was contrary to their clinical experience which suggested that third-degree perineal lacerations are generally due to a vaginal birth. They noted that this result was likely to be due to the small numbers of women and events in the study (Van Loon 1997; 0 events among 63 women who had an emergency caesarean section in labour and 1 event in 126 women who had a vaginal birth).

The following outcomes were downgraded for indirectness: maternal morbidity and adverse perinatal outcome, which were composite outcomes that included some outcomes in the guideline review protocol but also outcomes that were not in the protocol; early postpartum depression, which was included as a proxy for the woman's experience of labour and birth. The committee noted that postpartum depression had serious limitations as a proxy outcome, as it could be due to reasons completely different from a poor experience of labour and birth. Finally, neonatal morbidity, as a composite outcome including convulsions and apneic episodes as well as VII nerve palsy, was downgraded for indirectness. While VII nerve palsy can be considered as a birth injury, convulsions and apneic episodes were not included in the protocol. The committee did not feel they could separate out the individual outcomes incorporated in the composite outcomes for the woman and the baby when drafting the recommendations.

The committee noted that the Term Breech Trial was conducted in multiple countries, some of which may have different clinical practice compared to the UK. Although there was a trial protocol for the management of labour, differences in standard care of women and babies across participating centres may have had an impact on outcomes. Moreover the study is now relatively dated, therefore some treatments included may not be relevant to current practice. However the committee agreed that women should be informed of the results.

The committee noted that a study from Iraq (Alshaheen 2010) showed a clinically important lower incidence of NICU admission in the group who had an emergency caesarean section compared to those who had a vaginal birth, and a clinically important reduction in incidence of early neonatal death in the group of nulliparous women who had an emergency caesarean section in labour compared to nulliparous women who had a vaginal birth. The committee argued that a study from Iraq would not reflect clinical practice in the UK and decided to disregard this study in formulating recommendations. Likewise, a study from 1975 (Bird 1975) showed a clinically important reduction in incidence of babies requiring resuscitation in among women who had an emergency caesarean section compared to those who had a vaginal birth. The committee argued that clinical practice in 1975 would not be representative of current practice. For example, ventilation practices have changed; moreover, in the 1970s early cord clamping was common practice and this may be associated with an additional need for immediate resuscitation. Therefore, the committee decided not to base their recommendations on this study.

2.Benefits and harms

The committee noted that the included study with the largest sample size, that is, the secondary analysis of the Term Breech Trial, showed no clinically important difference in maternal infection between caesarean section in early labour and vaginal birth, but a clinically important increase in maternal infection with caesarean section in active labour compared to vaginal birth. The same study showed a clinically important increase in maternal morbidity (a composite outcome including multiple morbidities and complications) during the first 6 weeks after caesarean section in either early or active labour compared with vaginal birth. Therefore the committee wanted healthcare professionals to discuss with women presenting with a breech position in labour that there is an increase in the chance of serious medical problems for the woman with caesarean section.

The secondary analysis of the Term Breech Trial showed no increased mortality in the baby or morbidity in either group based on each individual outcome included in the guideline review protocol (stillbirth, neonatal mortality, ventilation required, birth injury and admission to NICU). However this study showed a clinically important decrease in a composite adverse perinatal outcome with emergency caesarean section in early labour compared to vaginal birth. This adverse perinatal outcome included not only all the aforementioned outcomes in the review protocol, but also additional outcomes outside of the protocol, therefore it was downgraded for indirectness. However the committee noted that all the outcomes included in the composite outcome were of interest overall. Moreover, the committee recognised that some adverse outcomes could occur only with a vaginal birth for example, the baby's head getting stuck. Therefore, based on the results from the Term Breech Trial and the committee's clinical experience and expertise, they agreed that healthcare professionals should discuss with women that there is an increased chance of serious medical problems for the baby with vaginal birth. The committee noted that the absolute risk is low and it might be helpful to mention this in such discussions.

Based on the composite adverse perinatal outcome, the Term Breech Trial showed clinically important benefits for the baby from a caesarean section in early labour but only a possibility

of clinically important benefits for the baby from a caesarean section in active labour. The committee debated whether there should be 2 separate recommendations, one for labour that is not yet established and one for established labour, but they noted that there is a continuum of risk for the baby over time. They also noted that if the baby's presentation were quite low in more advanced labour then performing a caesarean section could be problematic. Therefore the committee recommended advising women that any benefit of emergency caesarean section in reducing the chance of complications for the baby may be greater in early labour.

The committee acknowledged that offering a choice between continuing labour and emergency caesarean section may differ from the advice that women with breech presentation receive antenatally. This is because the balance of risks to the woman and baby will have changed, with different considerations coming into play when the woman is in labour. For example, considerations will be different when breech presentation is first identified in labour, or when labour is more advanced. The committee wished to ensure that healthcare professionals give women an opportunity to make an informed choice about mode of birth in this situation. They agreed not to recommend one mode of birth over another, but that following discussion of the likely risks and benefits a woman should choose what is right for her based on her individual circumstances and preferences.

The committee noted that the importance of healthcare professionals feeling confident and competent to support women in labour and giving birth vaginally with a baby in the breech position. Ensuring that women who attempt a vaginal breech birth are adequately supported to give birth safely and achieve a positive experience is also important. The committee noted that most healthcare professionals currently practise very few vaginal breech births and it might be helpful to take this into account when balancing risks. Adequate training would be needed to ensure healthcare professionals have the skills to support breech birth.

The committee noted that 1 study found a clinically important increased incidence of breastfeeding among women who had an emergency caesarean section compared to those who had a vaginal birth. The committee agreed that a caesarean section is usually seen as a barrier to breastfeeding initiation because of separation of the woman and the baby. However, they argued that for this reason women might receive extra support for breastfeeding after a caesarean section and speculated that this might be the reason for the finding in the study.

Based on their knowledge and experience, the committee agreed that healthcare professionals should follow recommendations in the NICE guideline on intrapartum care for healthy women and babies (CG190) to avoid unnecessary intervention when there is a delay in labour.

Cost effectiveness and resource use

The committee was aware that emergency caesarean section is more expensive than a vaginal birth. However, a breech vaginal birth is more complicated than a cephalic vaginal birth and, therefore, more resource intensive.

The included studies in the clinical evidence review had a high risk of bias and the committee did not think that cost effectiveness could be readily assessed from differences in adverse outcomes for the woman and the baby and, therefore, the committee agreed it was reasonable to offer women a choice between continuation of labour and an emergency caesarean section. It is estimated that approximately 3-5% of pregnancies are breech at term (Hofmeyr 2015) although breech presenting in labour represents a relatively small subset of

such pregnancies. The committee did not anticipate a significant resource impact given the relatively small number of women affected and because the recommendations do not represent a substantial change from current practice, which is varied.

However, the committee recognised that their recommendations might have training implications in order to support more widespread vaginal breech birth.

Other factors the committee took into account

The committee was aware of existing guidance on other aspects of intrapartum care for women with breech presenting in labour (see the Royal College of Gynaecologists (RCOG) management of breech presentation (Green-top Guideline No. 20b)) such as the woman's position during labour and birth and use of epidural analgesia, and felt that the committee's recommendations would complement the existing guidance. The committee agreed that appropriate support for breech birth includes practices that are likely to reduce unnecessary interventions during labour and birth, such as encouraging women to be mobile and to adopt positions they feel comfortable in (including upright positions), consistent with the NICE guideline on intrapartum care for healthy women and babies (CG190).

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1 Appendices

2 Appendix A – Review protocol

3 Intrapartum care for women with breech presenting in labour – mode of birth

Item	Details	Working notes
Area in the scope	Women at high risk of adverse outcomes for themselves and/or their baby because of obstetric complications or other reasons – intrapartum care for women with breech presenting in labour – mode of birth	
Review question in the scope	What is the optimal mode of birth (emergency caesarean section or continuation of labour) for women with breech presenting in the first or second stage of labour?	
Review question for the guideline	What is the optimal mode of birth (emergency caesarean section or continuation of labour) for women with breech presenting in the first or second stage of labour?	
Objective	The aim of this review is to determine the optimal mode of birth (emergency caesarean section or continuation of labour) for women with breech presenting in the first or second stage of labour. The incidence of breech presentation at term is 3-4%, and breech presentation is associated with higher perinatal mortality and morbidity (RCOG 2006)	
Population and directness	Women with breech at term presenting in the first or second stage of labour. Including: • undiagnosed and diagnosed breech presentation • planned vaginal breech birth • planned breech caesarean section. Studies in which up to 34% of the women have multiple pregnancy will be included. Evidence in which any of the women have multiple pregnancy should be downgraded for indirectness.	
Intervention	Emergency caesarean section	
Comparison	Continuation of labour, including assisted birth and instrumental birth	

Outcomes	Critical outcomes:
	• for the woman:
	  ○ major morbidities (pelvic floor injury, obstetric anal sphincter injury, postpartum haemorrhage, or sepsis)
	• for the baby:
	  ○ mortality
	  ○ major morbidities (hypoxic ischaemic encephalopathy, respiratory complications, sepsis, or birth injury)	

Item	Details	Working notes

	Important outcomes:
	• for the woman:
	  ○ admission to HDU/ITU and duration of hospital stay
	  ○ woman's experience of labour and birth, including experience of the birth companion, separation of the woman and baby and breastfeeding initiation
	• for the baby:
	  ○ admission to NICU and duration of hospital stay	

Importance of outcomes	Preliminary classification of the outcomes for decision making: • critical (up to 3 outcomes) • important but not critical (up to 3 outcomes) • of limited importance (1 outcome)	
Setting	All birth settings	
Stratified, subgroup and adjusted analyses	Groups that will be reviewed and analysed separately: • parity In the presence of heterogeneity, the following subgroups will be considered for sensitivity analysis: • analgesia in labour (including mobilisation, birth pool, birth position, epidural, and relaxation techniques) • parity • type of breech • gestational age • planned caesarean section Potential confounders: • uterine anomalies • abnormal pelvic anatomy • maternal diabetes • fetal malformation • multiple pregnancy • polyhydramnios or oligohydramnios • low birthweight (intrauterine growth restriction) • previous breech birth • previous caesarean section • parity • body mass index	
Language	English	
Study design	• Published full text papers only • Systematic reviews • RCTs	The committee agreed that there were sufficient prospective studies to be included that retrospective

Item	Details	Working notes
	• Only if RCTs unavailable or there is limited data to inform decision making: ○ prospective or retrospective comparative observational studies (including cohort and case-control studies) • Prospective study designs will be prioritised over retrospective study designs • Conference abstracts will not be considered	studies would not be considered
Search strategy	Sources to be searched: Medline, Medline In-Process, CCTR, CDSR, DARE, HTA and Embase. Limits (e.g. date, study design): All study designs. Apply standard animal/non-English language filters. No date limit. Supplementary search techniques: No supplementary search techniques were used. See Appendix B – Literature search strategies for full strategies	
Review strategy	Appraisal of methodological quality: • the methodological quality of each study will be assessed using checklists recommended in the NICE guidelines manual 2014 (for example, AMSTAR or ROBIS for systematic reviews, and Cochrane RoB tool for RCTs) and the quality of the evidence for each outcome (that is, across studies) will be assessed using GRADE • if studies report only p-values, this information will be recorded in GRADE tables without an assessment of imprecision Synthesis of data: • meta-analysis will be conducted where appropriate • default MIDs will be used; 0.8 and 1.25 for dichotomous outcomes; 0.5 times the SD of the measurement in the control arm (or median score across control arms if multiple studies are included) for continuous outcomes • for continuous data, change scores will be used in preference to final scores for data from non-RCT studies; final and change scores will not be pooled; if any study reports both, the method used in the majority of studies will be adopted	Review questions selected as high priorities for health economic analysis (and those selected as medium priorities and where health economic analysis could influence recommendations) will be subject to dual weeding and study selection; any discrepancies will be resolved through discussion between the first and second reviewers or by reference to a third person. This review question was prioritised for health economic analysis and so formal dual weeding and study selection (inclusion/exclusion) will be undertaken. Additionally, internal (NGA) quality assurance processes will include consideration of the outcomes of weeding, study selection and

Item	Details	Working notes
		data extraction and the committee will review the results of study selection and data extraction
Equalities	Equalities considerations will be considered systematically in relation to the available evidence and draft recommendations. The guideline scope includes women with cognitive or physical disability as populations for whom there may be equalities issues. Women who have received no antenatal care will be considered as a subgroup for all systematic reviews performed within the medical conditions work stream and a specific question has been included in the obstetric complications work stream for this population.	
Notes/additional information	None	
Key papers	• The management of breech presentation, RCOG, Guideline No. 20b, 2017 (https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg20b/)	

AMSTAR: Assessing the Methodological Quality of Systematic Reviews; CDSR: Cochrane Database of Systematic Reviews; CENTRAL: Cochrane Central Register of Controlled Trials; DARE: Database of Abstracts of Reviews of Effects; GRADE: Grading of Recommendations Assessment, Development and Evaluation; HDU: high dependency unit; HTA: Health Technology Assessment; ITU: intensive therapy unit; MID: minimally important difference; NGA: National Guideline Alliance; NICE: National Institute for Health and Care Excellence; NICU: neonatal intensive care unit; RCT: randomised controlled trial; RoB: risk of bias; SD: standard deviation; ROBIS: Risk of Bias in Systematic Reviews

Appendix B – Literature search strategies

Intrapartum care for women with breech presenting in labour – mode of birth

Database: Medline; Medline EPub Ahead of Print; and Medline In-Process & Other Non-Indexed Citations

#	Searches
1	BREECH PRESENTATION/
2	(breech$ adj3 (present$ or complet$ or incomplet$ or frank$)).ab,ti.
3	or/1-2
4	exp CESAREAN SECTION/
5	(c?esar#an$ or c section$ or csection$ or (deliver$ adj3 abdom$)).ti,ab.
6	or/4-5
7	LABOR, OBSTETRIC/
8	((vagina$ or spontaneous$) adj1 (birth$ or born or deliver$)).ti,ab.
9	((expect$ or continu$) adj3 labo?r$).ti,ab.

#	Searches
10	or/7-9
11	LABOR, INDUCED/
12	(induc$ adj3 (labo?r$ or birth$ or born or deliver$)).ti,ab.
13	or/11-12
14	exp EXTRACTION, OBSTETRICAL/
15	((extract$ or vacuum$) adj3 (birth$ or born or deliver$ or obstetric$)).ti,ab.
16	(vacuum$ adj3 extract$).ti,ab.
17	ventouse?.ti,ab.
18	OBSTETRICAL FORCEPS/
19	forcep?.ti,ab.
20	((assist$ or instrument$) adj3 (birth$ or born or deliver$)).ti,ab.
21	or/14-20
22	"TRIAL OF LABOR"/
23	(trial adj3 labo?r$).ti,ab.
24	or/22-23
25	*DELIVERY, OBSTETRIC/mt [Methods]
26	(mode? adj3 birth?).ti,ab.
27	((route? or mode?) adj3 deliver$).ti,ab.
28	or/25-27
29	3 and 6 and 10
30	3 and 6 and 13
31	3 and 6 and 21
32	3 and 24
33	3 and 28
34	or/29-33
35	limit 34 to english language
36	LETTER/
37	EDITORIAL/
38	NEWS/
39	exp HISTORICAL ARTICLE/
40	ANECDOTES AS TOPIC/
41	COMMENT/
42	CASE REPORT/
43	(letter or comment*).ti.
44	or/36-43
45	RANDOMIZED CONTROLLED TRIAL/ or random*.ti,ab.
46	44 not 45
47	ANIMALS/ not HUMANS/
48	exp ANIMALS, LABORATORY/
49	exp ANIMAL EXPERIMENTATION/

#	Searches
50	exp MODELS, ANIMAL/
51	exp RODENTIA/
52	(rat or rats or mouse or mice).ti.
53	or/46-52
54	35 not 53

Database: Cochrane Central Register of Controlled Trials

#	Searches
1	BREECH PRESENTATION/
2	(breech$ adj3 (present$ or complet$ or incomplet$ or frank$)).ab,ti.
3	or/1-2
4	exp CESAREAN SECTION/
5	(c?esar#an$ or c section$ or csection$ or (deliver$ adj3 abdom$)).ti,ab.
6	or/4-5
7	LABOR, OBSTETRIC/
8	((vagina$ or spontaneous$) adj3 (birth$ or born or deliver$)).ti,ab.
9	((expect$ or continu$) adj3 labo?r$).ti,ab.
10	or/7-9
11	LABOR, INDUCED/
12	(induc$ adj3 (labo?r$ or birth$ or born or deliver$)).ti,ab.
13	or/11-12
14	exp EXTRACTION, OBSTETRICAL/
15	((extract$ or vacuum$) adj3 (birth$ or born or deliver$ or obstetric$)).ti,ab.
16	(vacuum$ adj3 extract$).ti,ab.
17	ventouse?.ti,ab,kw.
18	OBSTETRICAL FORCEPS/
19	forcep?.ti,ab,kw.
20	((assist$ or instrument$) adj3 (birth$ or born or deliver$)).ti,ab.
21	or/14-20
22	"TRIAL OF LABOR"/
23	(trial adj3 labo?r$).ti,ab.
24	or/22-23
25	DELIVERY, OBSTETRIC/mt [Methods]
26	(mode? adj3 birth?).ti,ab.
27	((route? or mode?) adj3 deliver$).ti,ab.
28	or/25-27
29	3 and 6 and 10
30	3 and 6 and 13
31	3 and 6 and 21
32	3 and 24

#	Searches
33	3 and 28
34	or/29-33

Database: Cochrane Database of Systematic Reviews

#	Searches
1	BREECH PRESENTATION.kw.
2	(breech$ adj3 (present$ or complet$ or incomplet$ or frank$)).ab,ti.
3	or/1-2
4	CESAREAN SECTION.kw.
5	(c?esar#an$ or c section$ or csection$ or (deliver$ adj3 abdom$)).ti,ab.
6	or/4-5
7	LABOR, OBSTETRIC.kw.
8	((vagina$ or spontaneous$) adj3 (birth$ or born or deliver$)).ti,ab.
9	((expect$ or continu$) adj3 labo?r$).ti,ab.
10	or/7-9
11	LABOR, INDUCED.kw.
12	(induc$ adj3 (labo?r$ or birth$ or born or deliver$)).ti,ab.
13	or/11-12
14	EXTRACTION, OBSTETRICAL.kw.
15	((extract$ or vacuum$) adj3 (birth$ or born or deliver$ or obstetric$)).ti,ab.
16	(vacuum$ adj3 extract$).ti,ab.
17	ventouse?.ti,ab.
18	OBSTETRICAL FORCEPS.kw.
19	forcep?.ti,ab.
20	((assist$ or instrument$) adj3 (birth$ or born or deliver$)).ti,ab.
21	or/14-20
22	"TRIAL OF LABOR".kw.
23	(trial adj3 labo?r$).ti,ab.
24	or/22-23
25	(mode? adj3 birth?).ti,ab.
26	((route? or mode?) adj3 deliver$).ti,ab.
27	or/25-26
28	3 and 6 and 10
29	3 and 6 and 13
30	3 and 6 and 21
31	3 and 24
32	3 and 27
33	or/28-32

Database: Database of Abstracts of Reviews of Effects

#	Searches
1	BREECH PRESENTATION.kw.
2	(breech$ adj3 (present$ or complet$ or incomplet$ or frank$)).tw,tx.
3	or/1-2
4	CESAREAN SECTION.kw.
5	(c?esar#an$ or c section$ or csection$ or (deliver$ adj3 abdom$)).tw,tx.
6	or/4-5
7	LABOR, OBSTETRIC.kw.
8	((vagina$ or spontaneous$) adj3 (birth$ or born or deliver$)).tw,tx.
9	((expect$ or continu$) adj3 labo?r$).tw,tx.
10	or/7-9
11	LABOR, INDUCED.kw.
12	(induc$ adj3 (labo?r$ or birth$ or born or deliver$)).tw,tx.
13	or/11-12
14	EXTRACTION, OBSTETRICAL.kw.
15	((extract$ or vacuum$) adj3 (birth$ or born or deliver$ or obstetric$)).tw,tx.
16	(vacuum$ adj3 extract$).tw,tx.
17	ventouse?.tw,tx.
18	OBSTETRICAL FORCEPS.kw.
19	forcep?.tw,tx.
20	((assist$ or instrument$) adj3 (birth$ or born or deliver$)).tw,tx.
21	or/14-20
22	"TRIAL OF LABOR".kw.
23	(trial adj3 labo?r$).tw,tx.
24	or/22-23
25	(mode? adj3 birth?).tw,tx.
26	((route? or mode?) adj3 deliver$).tw,tx.
27	or/25-26
28	3 and 6 and 10
29	3 and 6 and 13
30	3 and 6 and 21
31	3 and 24
32	3 and 27
33	or/28-32

Database: Health Technology Assessment

#	Searches
1	BREECH PRESENTATION/
2	(breech$ adj3 (present$ or complet$ or incomplet$ or frank$)).tw.
3	or/1-2

#	Searches
4	exp CESAREAN SECTION/
5	(c?esar#an$ or c section$ or csection$ or (deliver$ adj3 abdom$)).tw.
6	or/4-5
7	LABOR, OBSTETRIC/
8	((vagina$ or spontaneous$) adj3 (birth$ or born or deliver$)).tw.
9	((expect$ or continu$) adj3 labo?r$).tw.
10	or/7-9
11	LABOR, INDUCED/
12	(induc$ adj3 (labo?r$ or birth$ or born or deliver$)).tw.
13	or/11-12
14	exp EXTRACTION, OBSTETRICAL/
15	((extract$ or vacuum$) adj3 (birth$ or born or deliver$ or obstetric$)).tw.
16	(vacuum$ adj3 extract$).tw.
17	ventouse?.tw.
18	OBSTETRICAL FORCEPS/
19	forcep?.tw.
20	((assist$ or instrument$) adj3 (birth$ or born or deliver$)).tw.
21	or/14-20
22	"TRIAL OF LABOR"/
23	(trial adj3 labo?r$).tw.
24	or/22-23
25	DELIVERY, OBSTETRIC/mt [Methods]
26	(mode? adj3 birth?).tw.
27	((route? or mode?) adj3 deliver$).tw.
28	or/25-27
29	3 and 6 and 10
30	3 and 6 and 13
31	3 and 6 and 21
32	3 and 24
33	3 and 28
34	or/29-33

Database: Embase

#	Searches
1	*BREECH PRESENTATION/
2	(breech$ adj3 (present$ or complet$ or incomplet$ or frank$)).ab,ti.
3	or/1-2
4	exp *CESAREAN SECTION/
5	(c?esar#an$ or c section$ or csection$ or (deliver$ adj3 abdom$)).ti,ab.
6	or/4-5

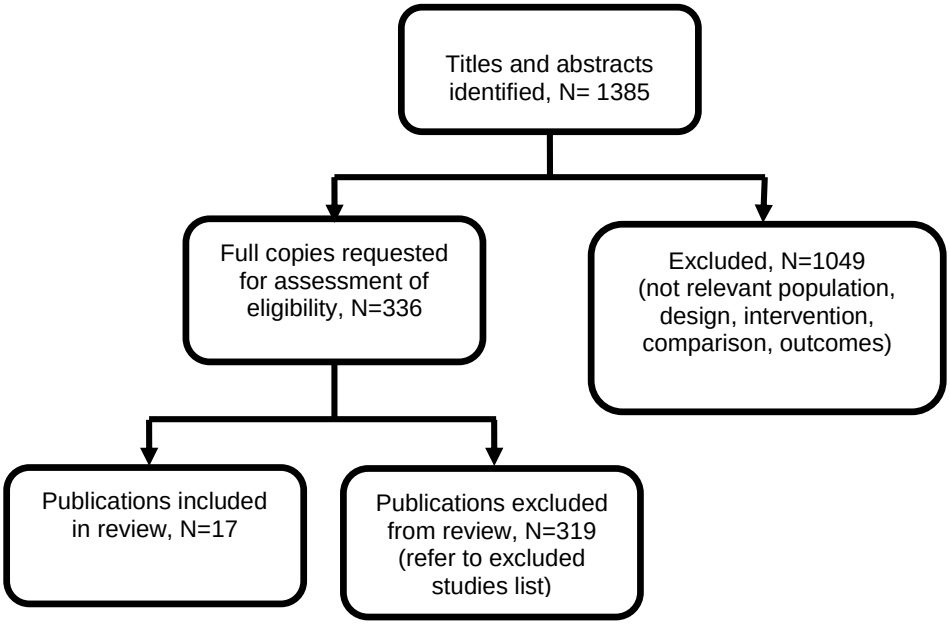
#	Searches
7	*LABOR/
8	*VAGINAL DELIVERY/
9	((vagina$ or spontaneous$) adj1 (birth$ or born or deliver$)).ti,ab.
10	((expect$ or continu$) adj3 labo?r$).ti,ab.
11	or/7-10
12	*LABOR INDUCTION/
13	(induc$ adj3 (labo?r$ or birth$ or born or deliver$)).ti,ab.
14	or/12-13
15	*VACUUM EXTRACTION/
16	((extract$ or vacuum$) adj3 (birth$ or born or deliver$ or obstetric$)).ti,ab.
17	(vacuum$ adj3 extract$).ti,ab.
18	ventouse?.ti,ab.
19	*FORCEPS DELIVERY/
20	*OBSTETRICAL FORCEPS/
21	forcep?.ti,ab.
22	((assist$ or instrument$) adj3 (birth$ or born or deliver$)).ti,ab.
23	or/15-22
24	"TRIAL OF LABOR"/
25	(trial adj3 labo?r$).ti,ab.
26	or/24-25
27	(mode? adj3 birth?).ti,ab.
28	((route? or mode?) adj3 deliver$).ti,ab.
29	or/27-28
30	3 and 6 and 11
31	3 and 6 and 14
32	3 and 6 and 23
33	3 and 26
34	3 and 29
35	or/30-34
36	limit 35 to english language
37	letter.pt. or LETTER/
38	note.pt.
39	editorial.pt.
40	CASE REPORT/ or CASE STUDY/
41	(letter or comment*).ti.
42	or/37-41
43	RANDOMIZED CONTROLLED TRIAL/ or random*.ti,ab.
44	42 not 43
45	ANIMAL/ not HUMAN/
46	NONHUMAN/

#	Searches
47	exp ANIMAL EXPERIMENT/
48	exp EXPERIMENTAL ANIMAL/
49	ANIMAL MODEL/
50	exp RODENT/
51	(rat or rats or mouse or mice).ti.
52	or/44-51
53	36 not 52

Appendix C – Clinical evidence study selection

Intrapartum care for women with breech presenting in labour – mode of birth

Figure 1: Flow diagram of clinical article selection for intrapartum care for women with breech presenting in labour – mode of birth



Appendix D – Excluded studies

Intrapartum care for women with breech presenting in labour – mode of birth

Clinical studies

Study	Reason for exclusion
Abdul Hathi, M. B., Khan, F., Ghazal-Aswad, S., External cephalic version for breech presentation at term: Tawam Hospital experience, Emirates Medical Journal, 24, 205-209, 2006	No relevant comparison. Comparing births after successful external cephalic version (ECV) to births after failed or declined ECV
Abu-Heija, A. T., Ziadeh, S., Obeidat, A., Breech delivery at term: Do the perinatal results justify a trial of labour?, Journal of Obstetrics and Gynaecology, 17, 258-260, 1997	No separate outcome data relating to caesarean sections performed after the onset of labour
Abu-Heija, A., Ali, A. M., Is breech presentation in nulliparous women at term an absolute indication for cesarean section?, Annals of Saudi Medicine, 21, 190-2, 2001	Retrospective study. Prospective studies were prioritised for this review
Adegbola,O., Akindele,O.M., Outcome of term singleton breech deliveries at a University Teaching Hospital in Lagos, Nigeria, Nigerian Postgraduate Medical Journal, 16, 154-157, 2009	No relevant outcome data. The only outcome that is presented separately for emergency caesarean sections is the Apgar score, which is not an outcomes included in the protocol. Other relevant outcomes are reported but these are not presented separately for emergency caesarean sections
Adjaoud, S., Demailly, R., Michel-Semail, S., Rakza, T., Storme, L., Deruelle, P., Garabedian, C., Subtil, D., Is trial of labor harmful in breech delivery? A cohort comparison for breech and vertex presentations, Journal of Gynecology Obstetrics and Human Reproduction, 46, 445-448, 2017	A full-text copy of the article could not be obtained
Akinola, S. E., Archibong, E. I., Bhawani, K. P., Sobande, A. A., Assisted breech delivery, is the art fading?, Saudi Medical Journal, 23, 423-6, 2002	No relevant comparison. Comparing caesarean sections to vaginal births, but no distinction is made between caesarean sections performed before or after the onset of labour
Al Sharhan, W., Cherian, A. R., Venkiteswaran, G. D., Al Shafi, A., A five year study of the mode of delivery and immediate outcome of term singleton breech delivery, Kuwait Medical Journal, 39, 335-339, 2007	Retrospective study. Prospective studies were prioritised for this review
Alarab,M., Regan,C., O'Connell,M.P., Keane,D.P., O'Herlihy,C., Foley,M.E., Singleton vaginal breech delivery at term: still a safe option, Obstetrics and Gynecology, 103, 407-412, 2004	Retrospective study. Prospective studies were prioritised for this review
Albrechtsen, S., Rasmussen, S., Dalaker, K., Irgens, L. M., Perinatal mortality in breech	Authors do not specify if caesarean sections were performed before labour or in labour

Study	Reason for exclusion
presentation sibships, Obstetrics and Gynecology, 92, 775-780, 1998	
Albrechtsen, S., Rasmussen, S., Reigstad, H., Markestad, T., Irgens, L. M., Dalaker, K., Evaluation of a protocol for selecting fetuses in breech presentation for vaginal delivery or cesarean section, American Journal of Obstetrics & Gynecology, 177, 586-92, 1997	Retrospective study. Prospective studies were prioritised for this review
Alessandri, L. M., Stanley, F. J., Read, A. W., A case-control study of intrapartum stillbirths, British Journal of Obstetrics & Gynaecology, 99, 719-23, 1992	Retrospective study. Prospective studies were prioritised for this review
Al-Mulhim, A., Gasim, T. G., Breech delivery at term: Do the perinatal results justify a trial of labor?, Bahrain Medical Bulletin, 24, 23-27, 2002	Retrospective study. Prospective studies were prioritised for this review
Al-Najjar,F.S., Al-Shafiai,A.M., Safety of vaginal breech delivery, Saudi Medical Journal, 25, 1517-1518, 2004	Retrospective study. Prospective studies were prioritised for this review
Alran, S., Sibony, O., Oury, J. F., Luton, D., Blot, P., Differences in management and results in term-delivery in nine European referral hospitals: descriptive study, European Journal of Obstetrics, Gynecology, & Reproductive Biology, 103, 4-13, 2002	No relevant comparison. This is a descriptive study on 9 tertiary referral hospitals. The study outlines the different policies of these hospitals in relation to breech; more specifically in relation to elective caesarean section for primipara, radiopelvimetry and manoeuvre used in vaginal breech birth. Moreover, maternal and perinatal outcomes are presented for each hospital
Althaus, F., Cesarean section poses fewer risks than vaginal delivery for term infants in breech presentation, Family Planning Perspectives, 33, 92, 2001	Summary of publication by Hannah 2000, which has been assessed separately for inclusion in this review
Anderman,S., Ellenbogen,A., Jaschevatzky,O.E., Grunstein,S., Is term breech presentation in primigravida an absolute indication for cesarean section?, European Journal of Obstetrics, Gynecology, and Reproductive Biology, 18, 11-16, 1984	Retrospective study. Prospective studies were prioritised for this review
Andrews, Suzanne, Leeman, Lawrence, Yonke, Nicole, Finding the breech: Influence of breech presentation on mode of delivery based on timing of diagnosis, attempt at external cephalic version, and provider success with version, Birth (Berkeley, Calif.), 44, 222-229, 2017	Retrospective study. Prospective studies were prioritised for this review
Anonymous,, Breech: vaginal delivery or caesarean section?, British medical journal (Clinical research ed.), 285, 1275-1276, 1982	Three commentaries relating to breech
Anonymous,, Management of breech delivery, European Journal of Obstetrics, Gynecology, & Reproductive Biology, 24, 93-103, 1987	Meeting report

Study	Reason for exclusion
Azizi,I., Azizi,Z., Czerwiec,A., Kaminski,K., Rechberger,T., Breech delivery and neonatal morbidity rates in obstetrics-gynecology University Hospital in Kosova, UNMIK, Polish Journal of Gynaecological Investigations, 9, 14-17, 2006	A full-text copy of the article could not be obtained
Azria, E., Le Meaux, J. P., Khoshnood, B., Alexander, S., Subtil, D., Goffinet, F., Factors associated with adverse perinatal outcomes for term breech fetuses with planned vaginal delivery, American Journal of Obstetrics and Gynecology, 207, 285, 2012	No relevant intervention. Emergency caesarean section is not assessed as a potential risk factor
Babovic, I., Arandjelovic, M., Plesinac, S., Sparic, R., Vaginal delivery or cesarean section at term breech delivery - Chance or risk?, Journal of Maternal-Fetal and Neonatal Medicine, 29, 1930-1934, 2016	Retrospective study. Prospective studies were prioritised for this review
Bako, A. U., Audu, L. I., Undiagnosed breech in Zaria, Nigeria, Journal of Obstetrics and Gynaecology, 20, 148-150, 2000	No relevant comparison. Comparing breech diagnosed before labour to breech diagnosed in labour
Balayla, J., Dahdouh, E. M., Villeneuve, S., Boucher, M., Gauthier, R. J., Audibert, F., Fuchs, F., Obstetrical and neonatal outcomes following unsuccessful external cephalic version: a stratified analysis amongst failures, successes, and controls, Journal of Maternal-Fetal & Neonatal Medicine, 28, 605-10, 2015	No relevant comparison. Comparing successful ECV to failed ECV, and elective caesarean sections to trials of labour
Bassaw,B., Rampersad,N., Roopnarinesingh,S., Sirjusingh,A., Correlation of fetal outcome with mode of delivery for breech presentation, Journal of Obstetrics and Gynaecology, 24, 254-258, 2004	Retrospective study. Prospective studies were prioritised for this review
Belfrage, P., Gjessing, L., The term breech presentation. A retrospective study with regard to the planned mode of delivery, Acta Obstetricia et Gynecologica Scandinavica, 81, 544-550, 2002	Retrospective study. Prospective studies were prioritised for this review
Berger,R., Bender,S., Sefkow,S., Klingmuller,V., Kunzel,W., Jensen,A., Peri/intraventricular haemorrhage: a cranial ultrasound study on 5286 neonates, European Journal of Obstetrics, Gynecology, and Reproductive Biology, 75, 191-203, 1997	No separate outcome data relating to caesarean sections perfomed after the onset of labour
Bibi, N., Jabeen, N., Khatoon, S., Khalid, T., Comparison of fetal outcome in booked versus non-booked patients in term singleton breech presentation, Pakistan Journal of Medical and Health Sciences, 10, 931-935, 2016	No relevant comparison. Comparing booked and unbooked women, with mode of birth as an outcome. Not comparing outcomes between different modes of births

Study	Reason for exclusion
Bilodeau, R., Marier, R., Breech presentation at term, American Journal of Obstetrics and Gynecology, 130, 555-557, 1978	Authors do not specify if caesarean sections were performed before labour or in labour
Bin, Y. S., Roberts, C. L., Ford, J. B., Nicholl, M. C., Outcomes of breech birth by mode of delivery: A population linkage study, Australian and New Zealand Journal of Obstetrics and Gynaecology, 2016	No relevant comparison. Comparing planned vaginal births (which include emergency caesarean sections due to failure to progress or fetal distress or for a failed trial of labour) to planned caesarean sections and to "intention uncertain" (emergency caesarean sections for which the indication was non-specific)
Bingham, P., Hird, V., Lilford, R. J., Management of the mature selected breech presentation: an analysis based on the intended method of delivery, British Journal of Obstetrics & Gynaecology, 94, 746-52, 1987	Retrospective study. Prospective studies were prioritised for this review
Bingham, P., Lilford, R. J., Management of the selected term breech presentation: assessment of the risks of selected vaginal delivery versus cesarean section for all cases, Obstetrics & Gynecology, 69, 965-78, 1987	Non-systematic literature review and probability model using data from the literature
Bistoletti,P., Nisell,H., Palme,C., Lagercrantz,H., Term breech delivery. Early and late complications, Acta Obstetricia et Gynecologica Scandinavica, 60, 165-171, 1981	No separate outcome data relating to caesarean sections performed in labour
Biswas, A., Johnstone, M. J., Term breech delivery: Does x-ray pelvimetry help?, Australian and New Zealand Journal of Obstetrics and Gynaecology, 33, 150-153, 1993	No relevant comparison. Comparing different policies regarding X-ray pelvimetry
Bjellmo, S., Vik, T., Andersen, G., Martinussen, M., Romundstad, P., Hjelle, S., Mode of delivery in breech presentation-a risk factor for cerebral palsy?, Developmental Medicine and Child Neurology, 58, 7-8, 2016	Conference abstract
Borbolla Foster, A., Bagust, A., Bisits, A., Holland, M., Welsh, A., Lessons to be learnt in managing the breech presentation at term: An 11-year single-centre retrospective study, Australian and New Zealand Journal of Obstetrics and Gynaecology, 54, 333-339, 2014	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
Bowen-Simpkins, P., Fergusson, I. L., Lumbar epidural block and the breech presentation, British Journal of Anaesthesia, 46, 420-4, 1974	Retrospective study. Prospective studies were prioritised for this review
Bowes, W. A., Jr., Taylor, E. S., O'Brien, M., Bowes, C., Breech delivery: evaluation of the method of delivery on perinatal results and maternal morbidity, American Journal of Obstetrics & Gynecology, 135, 965-73, 1979	No relevant comparison. Comparing caesarean sections to vaginal births however it is unclear if caesarean sections were performed before or after the onset of labour
Brenner, W. E., Bruce, R. D., Hendricks, C. H., The characteristics and perils of breech	Retrospective study. Prospective studies were prioritised for this review

Study	Reason for exclusion
presentation, American Journal of Obstetrics & Gynecology, 118, 700-12, 1974	
Brenner,W.E., Breech presentation, Clinical Obstetrics and Gynecology, 21, 511-531, 1978	Non-systematic literature review
Breslin, E., Cochrane, V., Khare, M., Is there a role for vaginal delivery in undiagnosed breech presentations in labour? A systematic review and meta-analysis, BJOG: An International Journal of Obstetrics and Gynaecology, 123, 104, 2016	Conference abstract
Brodrick, A., Breeching the comfort zone, Practising Midwife, 17, 5, 2014	A full-text copy of the article could not be obtained
Brown,L., Karrison,T., Cibils,L.A., Mode of delivery and perinatal results in breech presentation, American Journal of Obstetrics and Gynecology, 171, 28-34, 1994	No separate outcome data relating to caesarean sections performed after the onset of labour
Burgos, J., Rodriguez, L., Cobos, P., Osuna, C., Del Mar Centeno, M., Larrieta, R., Martinez-Astorquiza, T., Fernandez-Llebrez, L., Management of breech presentation at term: A retrospective cohort study of 10 years of experience, Journal of Perinatology, 35, 803-808, 2015	Retrospective study. Prospective studies were prioritised for this review
Cahill, D. J., Turner, M. J., Stronge, J. M., Breech presentation: Is a reduction in traumatic intracranial haemorrhage feasible?, Journal of Obstetrics and Gynaecology, 11, 417-419, 1991	No outcome data relating to caesarean sections in labour
Calvert, J., Clinical forum 9. Obstetrics II: breech presentation, Nursing Mirror, 153, suppl v-ix, 1981	Discussion paper
Chattopadhyay,S.K., Sengupta,B.S., Zaidi,M.H., Edrees,Y.B., Trend in breech delivery in Saudi Arabia, Australian and New Zealand Journal of Obstetrics and Gynaecology, 27, 111-114, 1987	The authors do not specify if caesarean sections were performed before or after the onset of labour
Chevreau, J., Foulon, A., Abou Arab, O., Luisin, M., Parent, C., Sergent, F., Gondry, J., Management of breech and twin labor during registrarship: A two-year prospective, observational study, Journal of Gynecology Obstetrics and Human Reproduction, 2018	No data comparing outcomes between emergency caesarean section and vaginal birth for women with breech presentation in labour
Christian,S.S., Brady,K., Read,J.A., Kopelman,J.N., Vaginal breech delivery: a five-year prospective evaluation of a protocol using computed tomographic pelvimetry, American Journal of Obstetrics and Gynecology, 163, 848-855, 1990	No relevant outcomes; poor reporting in relation to neonatal duration of hospital stay
Cibils, L. A., Point/counterpoint: II. Management of a full-term fetus presenting by the breech,	Opinion paper

Study	Reason for exclusion
Obstetrical & Gynecological Survey, 50, 762, 1995	
Cibils, L. A., Karrison, T., Brown, L., Factors influencing neonatal outcomes in the very-low-birth-weight fetus (<1500 grams) with a breech presentation, American Journal of Obstetrics and Gynecology, 171, 35-42, 1994	No relevant population. Authors do not specify if births were preterm or term
Cockburn, J., Foong, C., Cockburn, P., Undiagnosed breeches presenting in labour - Should they be allowed a trial of labour?, Journal of Obstetrics and Gynaecology, 14, 151-156, 1994	Retrospective study. Prospective studies were prioritised for this review
Collea, J. V., The intrapartum management of breech presentation, Clinics in Perinatology, 8, 173-81, 1981	Non-systematic literature review
Collea,J.V., Current management of breech presentation, Clinical Obstetrics and Gynecology, 23, 525-531, 1980	Non-systematic literature review
Confino, E., Ismajovich, B., Sherzer, A., Peyser, R. M., David, M. P., Vaginal versus cesarean section oriented approaches in the management of breech delivery, International Journal of Gynaecology & Obstetrics, 23, 1-6, 1985	No separate outcome data relating to caesarean sections performed after the onset of labour
Cook,H.A., Experience with external cephalic version and selective vaginal breech delivery in private practice, American Journal of Obstetrics and Gynecology, 168, 1886-1889, 1993	No relevant comparison. Only 2 caesarean sections were performed after a trial of labour with breech presentation
Corchia, C., Paone, M. C., Mortality in the first week of life and mode of delivery, Acta Paediatrica Scandinavica, 74, 70-6, 1985	No relevant comparison
Correy, J. F., Perinatal mortality in vaginal breech delivery in Tasmania, Australian and New Zealand Journal of Obstetrics and Gynaecology, 20, 106-108, 1980	No relevant comparison
Crawford,J.S., An appraisal of lumbar epidural blockade in patients with a singleton fetus presenting by the breech, Journal of Obstetrics and Gynaecology of the British Commonwealth, 81, 867-872, 1974	Unclear if prospective or retrospective but assumed to be a retrospective study based on description reported. Prospective studies were prioritised for this review
Croughan-Minihane, M. S., Petitti, D. B., Gordis, L., Goldich, I., Morbidity among breech infants according to method of delivery, Obstetrics and Gynecology, 75, 821-825, 1990	No separate outcome data relating to caesarean sections in labour
Cruikshank,D.P., Breech presentation, Clinical Obstetrics and Gynecology, 29, 255-263, 1986	Non-systematic lterature review
Cubert, R., Cheng, E. Y., Mack, S., Pepin, M. G., Byers, P. H., Osteogenesis imperfecta: Mode of delivery and neonatal outcome, Obstetrics and Gynecology, 97, 66-69, 2001	No relevant population. Only 37% of term presentations were breech. No separate outcome data for breech presentations nor for caesarean sections performed in labour

Study	Reason for exclusion
Dancy, R. B., The Breech Index Scoring System, Midwifery Today with International Midwife, 26-27, 2013	Discussion paper outlining the author's views and experiences with breech and describing a breech index scoring system to make decisions about attempting a breech vaginal birth
Daniel,Y., Fait,G., Lessing,J.B., Jaffa,A., David,M.P., Kupferminc,M.J., Outcome of 496 term singleton breech deliveries in a tertiary center, American Journal of Perinatology, 15, 97-101, 1998	Retrospective study. Prospective studies were prioritised for this review
Darby, S., Thornton, C. A., Hunter, D. J., Extradural analgesia in labour when the breech presents, BRIT.J.OBSTET.GYNAEC., 83, 35-38, 1976	No relevant comparison
Darmstadt,G.L., Yakoob,M.Y., Haws,R.A., Menezes,E.V., Soomro,T., Bhutta,Z.A., Reducing stillbirths: interventions during labour, BMC Pregnancy and Childbirth, 9 Suppl 1, S6-, 2009	Individual studies assessed for inclusion
Daskalakis,G., Anastasakis,E., Papantoniou,N., Mesogitis,S., Thomakos,N., Antsaklis,A., Cesarean vs. vaginal birth for term breech presentation in 2 different study periods, International Journal of Gynaecology and Obstetrics, 96, 162-166, 2007	No relevant comparison
Davis, V. E., Singleton breach presentation planned for vaginal delivery, Medical Journal of Zambia, 10, 164-168, 1976	A full-text copy of the article could not be obtained
Daw,E., Hyperextension of the foetal head--? The best mode of delivery, Practitioner, 214, 397-400, 1975	Discussion paper
De Leeuw, J. P., De Haan, J., Derom, R., Thiery, M., Van Maele, G., Martens, G., Indications for caesarean section in breech presentation, European Journal of Obstetrics Gynecology and Reproductive Biology, 79, 131-137, 1998	No relevant intervention. Outcome data are not stratified by emergency and elective caesarean sections
Demirci,O., Tugrul,A.S., Turgut,A., Ceylan,S., Eren,S., Pregnancy outcomes by mode of delivery among breech births, Archives of Gynecology and Obstetrics, 285, 297-303, 2012	No separate outcome data relating to caesarean sections in labour
Diro,M., Puangsricharern,A., Royer,L., O'Sullivan,M.J., Burkett,G., Singleton term breech deliveries in nulliparous and multiparous women: a 5-year experience at the University of Miami/Jackson Memorial Hospital, American Journal of Obstetrics and Gynecology, 181, 247-252, 1999	Retrospective study. Prospective studies were prioritised for this review
Doyle, N. M., Riggs, J. W., Ramin, S. M., Sosa, M. A., Gilstrap, L. C., 3rd, Outcomes of term	No separate outcome data relating to caesarean sections performed after the onset of labour

Study	Reason for exclusion
vaginal breech delivery, American Journal of Perinatology, 22, 325-8, 2005	
Doyle,L.W., Rickards,A.L., Ford,G.W., Pepperell,R.J., Kitchen,W., Outcome for the very low birth-weight (500-1,499g) singleton breech: benefit of caesarean section, Australian and New Zealand Journal of Obstetrics and Gynaecology, 25, 259-265, 1985	The authors do not specify if caesarean sections were performed before or during labour
Dresner-Barnes, H., Bodle, J., 1. Vaginal breech birth--the phoenix arising from the ashes, The practising midwife, 17, 30-33, 2014	A full-text copy of the article could not be obtained
Duenhoelter,J.H., Wells,C.E., Reisch,J.S., Santos-Ramos,R., Jimenez,J.M., A paired controlled study of vaginal and abdominal delivery of the low birth weight breech fetus, Obstetrics and Gynecology, 54, 310-313, 1979	No relevant population. Mean number of weeks of gestation was 34.63 among caesarean sections and 34.44 among vaginal births
Effer,S.B., Saigal,S., Rand,C., Hunter,D.J., Stoskopf,B., Harper,A.C., Nimrod,C., Milner,R., Effect of delivery method on outcomes in the very low-birth weight breech infant: is the improved survival related to cesarean section or other perinatal care maneuvers?, American Journal of Obstetrics and Gynecology, 145, 123-128, 1983	No relevant population. The majority of births occurred at less than 32 weeks of gestation
Ekeus, C., Norman, M., Aberg, K., Winberg, S., Stolt, K., Aronsson, A., Vaginal breech delivery at term and neonatal morbidity and mortality - a population-based cohort study in Sweden, Journal of Maternal-Fetal and Neonatal Medicine, 1-6, 2017	Retrospective study. Prospective studies were prioritised for this review
el Gammal, N. A., Jallad, K. B., O'Deh H, M., Breech vaginal delivery after one cesarean section: a retrospective study, International Journal of Gynaecology & Obstetrics, 33, 99-102, 1990	Authors do not specify if caesarean sections were performed before or after the onset of labour
Erkaya, S., Tuncer, R. A., Kutlar, I., Onat, N., Ercakmak, S., Outcome of 1040 consecutive breech deliveries: clinical experience of a maternity hospital in Turkey, International Journal of Gynaecology & Obstetrics, 59, 115-8, 1997	Authors do not specify if caesarean sections were performed before or during labour
Evans, J., Breech birth: abnormal or unusual?, Midwifery Today with International Midwife, 16-18, 2013	Discussion paper
Fait,G., Daniel,Y., Lessing,J.B., Bar-Am,A., Gull,I., Kupferminc,M.J., Breech delivery: The value of X-ray pelvimetry, European Journal of Obstetrics Gynecology and Reproductive Biology, 78, 1-4, 1998	Retrospective study. Prospective studies were prioritised for this review

Study	Reason for exclusion
Faiz, S. A., Habib, F. A., Sporrong, B. G., Khalil, N. A., Results of delivery in umbilical cord prolapse, Saudi Medical Journal, 24, 754-757, 2003	No relevant population. The majority of presentations were not breech. No separate outcome data for breech presentations
Fajar, J. K., Andalas, M., Harapan, H., Comparison of apgar scores in breech presentations between vaginal and cesarean delivery, Tzu Chi Medical Journal, 29, 24-29, 2017	Retrospective study. Prospective studies were prioritised for this review
Fawole,A.O., Adeyemi,A.S., Adewole,I.F., Omigbodun,A.O., A ten-year review of breech deliveries at Ibadan, African Journal of Medicine and Medical Sciences, 30, 87-90, 2001	No relevant outcomes
Fischer-Rasmussen, W., Trolle, D., Abdominal versus vaginal delivery in breech presentation. A retrospective study comparing 420 breech presentations and 9,291 cephalic presentations for infants weighing more than 2,5000 g at birth, Acta Obstetricia et Gynecologica Scandinavica, 46, 1967	No separate outcome data relating to caesarean sections performed in labour
Flanagan, T. A., Mulchahey, K. M., Korenbrot, C. C., Green, J. R., Laros, R. K., Jr., Management of term breech presentation, American Journal of Obstetrics & Gynecology, 156, 1492-502, 1987	Retrospective study. Prospective studies were prioritised for this review
Fleming, J. S., Weindling, A. M., Holt, E. M., Selective management of breech presentation in mature infants, Journal of Obstetrics and Gynaecology, 3, 249-252, 1983	Retrospective study. Prospective studies were prioritised for this review
Fortney, J. A., Higgins, J. E., Kennedy, K. I., Laufe, L. E., Wilkens, L., Delivery type and neonatal mortality among 10,749 breeches, American Journal of Public Health, 76, 980-5, 1986	No separate outcome data relating to caesarean sections performed in labour
Fortney,J.A., Kennedy,K.I., Laufe,L.E., Management of breech presentations in developing country hospitals, Tropical Doctor, 17, 34-38, 1987	Unclear whether caesarean sections were performed before or after the onset of labour
Garcia Adanez, J., Navarro Lopez, M., Escudero, A., Vaquerizo, O., Sanchez, M., Pagola, N., Fernandez Ferrera, C., Vaginal breech delivery rescue, Journal of Maternal-Fetal and Neonatal Medicine, Conference, 2012	Conference abstract
Ghose, N., Breech presentation and obstetricians, Journal of the Indian Medical Association, 82, 337-9, 1984	Discussion paper and non-systematic literature review
Gilady,Y., Battino,S., Reich,D., Gilad,G., Shalev,E., Delivery of the very low birthweight breech: what is the best way for the baby?,	Preterm births

Study	Reason for exclusion
Israel Journal of Medical Sciences, 32, 116-120, 1996	
Gilbert,W.M., Hicks,S.M., Boe,N.M., Danielsen,B., Vaginal versus cesarean delivery for breech presentation in California: a population-based study, Obstetrics & Gynecology, 102, 911-917, 2003	Retrospective study. Prospective studies were prioritised for this review
Gimovsky, M. L., Petrie, R. H., Optimal method of delivery of the low birth weight breech fetus: an unresolved issue, Journal of Perinatology, 8, 141-4, 1988	Non-systematic literature review
Gimovsky, M. L., Petrie, R. H., Todd, W. D., Neonatal performance of the selected term vaginal breech delivery, Obstetrics and Gynecology, 56, 687-691, 1980	No relevant comparison
Gimovsky,M.L., Paul,R.H., Singleton breech presentation in labor: experience in 1980, American Journal of Obstetrics and Gynecology, 143, 733-739, 1982	Unclear whether caesarean sections were performed before or after the onset of labour
Gimovsky,M.L., Petrie,R.H., The intrapartum and neonatal performance of the low-birth-weight vaginal breech delivery, Journal of Reproductive Medicine, 27, 451-454, 1982	No relevant comparison. Comparing protocol and non-protocol management of vaginal breech births. The protocol includes elements such as radiologic confirmation of pelvic adequacy and intensive intrapartum surveillance
Giuliani, A., Scholl, W. M., Basver, A., Tamussino, K. F., Mode of delivery and outcome of 699 term singleton breech deliveries at a single center, American Journal of Obstetrics & Gynecology, 187, 1694-8, 2002	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
Glennon, C., Kathursinghe, S., Duplessis, J., Sheehan, P., Comparison of vaginal birth and caesarean section in preterm breech, Australian and New Zealand Journal of Obstetrics and Gynaecology, 56, 39, 2016	Conference abstract
Glezerman,M., Five years to the term breech trial: the rise and fall of a randomized controlled trial, American Journal of Obstetrics and Gynecology, 194, 20-25, 2006	Discussion paper and non-systematic literature review
Goffinet, F., Carayol, M., Foidart, J. M., Alexander, S., Uzan, S., Subtil, D., Breart, G., Is planned vaginal delivery for breech presentation at term still an option? Results of an observational prospective survey in France and Belgium, American Journal of Obstetrics and Gynecology, 194, 1002-1011, 2006	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
Golfier, F., Vaudoyer, F., Ecochard, R., Champion, F., Audra, P., Raudrant, D., Planned vaginal delivery versus elective caesarean section in singleton term breech presentation: a study of 1116 cases, European journal of	No relevant comparison. Comparing planned vaginal births to planned caesarean sections

Study	Reason for exclusion
obstetrics, gynecology, and reproductive biology, 98, 186-192, 2001	
Gorbe,E., Chasen,S., Harmath,A., Patkos,P., Papp,Z., Very-low-birthweight breech infants: short-term outcome by method of delivery, Journal of Maternal-Fetal Medicine, 6, 155-158, 1997	Unclear whether caesarean sections were performed before labour or during labour
Grant,A., Penn,Z.J., Steer,P.J., Elective or selective caesarean delivery of the small baby? A systematic review of the controlled trials, British Journal of Obstetrics and Gynaecology, 103, 1197-1200, 1996	No relevant comparison; comparing elective caesarean sections to trials of labour. No relevant population; preterm births
Graves,W.K., Breech delivery in twenty years of practice, American Journal of Obstetrics and Gynecology, 137, 229-234, 1980	Unclear whether caesarean sections were performed before or after the onset of labour
Haheim, L. L., Albrechtsen, S., Berge, L. N., Bordahl, P. E., Egeland, T., Henriksen, T., O. Ian P, Breech birth at term: vaginal delivery or elective cesarean section? A systematic review of the literature by a Norwegian review team, Acta Obstetricia et Gynecologica Scandinavica, 83, 126-30, 2004	No relevant data (elective caesarean section versus planned vaginal birth)
Haider, S., Effect of mode of delivery on perinatal outcome in breech presentation, Pakistan Journal of Medical and Health Sciences, 9, 392-395, 2015	Authors do not specify if caesarean sections were performed before or after the onset of labour
Hall, J. E., Kohl, S. G., O'Brien, F., Ginsberg, M., Breech Presentation and Perinatal Mortality; a Study of 6,044 Cases, American Journal of Obstetrics & Gynecology, 91, 665-83, 1965	Retrospective study. Prospective studies were prioritised for this review
Halligan,A., Connolly,M., Clarke,T., Gleeson,R.P., Holohan,M., Matthews,T., King,M., Darling,M.R., Intrapartum asphyxia in term and post term infants, Irish Medical Journal, 85, 97-100, 1992	No relevant comparison (asphyxia data for assisted vaginal breech birth pooled with data for cephalic emergency caesarean section and no subgroup analysis reported)
Halta, V. E., Normalizing the breech delivery, Midwifery Today & Childbirth Education, 22-4, 41, 1996	Opinion paper
Han, H. C., Tan, K. H., Chew, S. Y., Management of breech presentation at term, Singapore Medical Journal, 34, 247-252, 1993	Unclear whether prospective or retrospective but assumed to be a retrospective study based on description in the article. Prospective studies were prioritised for this review
Hannah, M. E., Hannah, W. J., Hewson, S. A., Hodnett, E. D., Saigal, S., Willan, A. R., Planned caesarean section versus planned vaginal birth for breech presentation at term: A randomised multicentre trial, Lancet, 356, 1375-1383, 2000	No relevant comparison. Comparing planned caesarean section versus planned vaginal birth
Hannah, M. E., Hannah, W. J., Hodnett, E. D., Chalmers, B., Kung, R., Willan, A., Amankwah,	No relevant comparison. Comparing women that planned a vaginal birth and had a caesarean

Study	Reason for exclusion
K., Cheng, M., Helewa, M., Hewson, S., Saigal, S., Whyte, H., Gafni, A., Outcomes at 3 months after planned cesarean vs planned vaginal delivery for breech presentation at term: The international randomized Term Breech Trial, Journal of the American Medical Association, 287, 1822-1831, 2002	section to women that had a vaginal birth. However, caesarean sections in women that had planned a vaginal birth were not necessarily performed in labour. For example, if a footling breech presentation presented before labour, a caesarean section before labour was performed
Hannah, M. E., Whyte, H., Hannah, W. J., Hewson, S., Amankwah, K., Cheng, M., Gafni, A., Guselle, P., Helewa, M., Hodnett, E. D., Hutton, E., Kung, R., McKay, D., Ross, S., Saigal, S., Willan, A., Maternal outcomes at 2 years after planned cesarean section versus planned vaginal birth for breech presentation at term: The international randomized Term Breech Trial, American Journal of Obstetrics and Gynecology, 191, 917-927, 2004	No relevant comparison. Comparing women that planned a vaginal birth and had a caesarean section to women that had a vaginal birth. However, caesarean sections in women that had planned a vaginal birth were not necessarily performed in labour (as in Hannah 2002 also in this excluded studies list)
Hannah,M.E., Whyte,H., Hannah,W.J., Hewson,S., Amankwah,K., Cheng,M., Gafni,A., Guselle,P., Helewa,M., Hodnett,E.D., Hutton,E., Kung,R., McKay,D., Ross,S., Saigal,S., Willan,A., Murphy,D.J., Similar maternal outcomes at 2 years after planned cesarean section or planned vaginal birth for breech presentation at term, Evidence-based Obstetrics and Gynecology, 7, 132-based, 2005	No relevant comparison. Comparing planned caesarean sections to planned vaginal births
Hansen,A.K., Wisborg,K., Uldbjerg,N., Henriksen,T.B., Risk of respiratory morbidity in term infants delivered by elective caesarean section: cohort study, BMJ, 336, 85-87, 2008	No relevant comparison. Comparing elective caesarean sections to planned vaginal births. No relevant population. Mixed population that included breech presentations, but no separate results presented for breech presentations
Hehir,M.P., O'Connor,H.D., Kent,E.M., Fitzpatrick,C., Boylan,P.C., Coulter-Smith,S., Geary,M.P., Malone,F.D., Changes in vaginal breech delivery rates in a single large metropolitan area, American Journal of Obstetrics and Gynecology, 206, 498-4, 2012	No relevant comparison
Hellsten,C., Lindqvist,P.G., Olofsson,P., Vaginal breech delivery: Is it still an option?, European Journal of Obstetrics Gynecology and Reproductive Biology, 111, 122-128, 2003	No relevant comparison. Comparing planned caesarean sections to planned vaginal births
Hemelaar, J., Lim, L., Impey, L., Breech presentation of singletons at term delivery: 10 years of ECV clinic experience, BJOG: An International Journal of Obstetrics and Gynaecology, 119, 11-12, 2012	Conference abstract
Herbst, A., Almstrom, E., Bejlum, C., Buchhave, P., Clausen, J., Dahle, L., Froding, I., Itzel, E., Jacobsson, B., Kallen, K., Laurin, J., Leyon, J., Lindholm-Jansson, L., Lindqvist, A., Lindstrom, A. M., Olofsson, P., Pettersson, K., Rydhstrom,	No relevant comparison. Comparing planned vaginal births to planned caesarean sections

Study	Reason for exclusion
H., Stale, H., Soderlund, J., Walles, B., Wennerholm, U. B., Westgren, M., Wolff, K., Otterblad Olausson, P., Term breech delivery in Sweden: Mortality relative to fetal presentation and planned mode of delivery, Acta Obstetricia et Gynecologica Scandinavica, 84, 593-601, 2005	
Herbst, A., Thorngren-Jerneck, K., Mode of delivery in breech presentation at term: Increased neonatal morbidity with vaginal delivery, Acta Obstetricia et Gynecologica Scandinavica, 80, 731-737, 2001	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
Hibbard, J. U., Wang, Y., Te, C., Karrison, T., Ismail, M. A., Failed vaginal birth after a cesarean section: How risky is it? I. Maternal morbidity, American Journal of Obstetrics and Gynecology, 184, 1365-1373, 2001	No relevant population. The majority of presentations were not breech. No separate outcome data relating to breech are provided
Hill, J. G., Eliot, B. W., Campbell, A. J., Pickett-Heaprs, A. A., Intensive care of the fetus in breech labour, British Journal of Obstetrics & Gynaecology, 83, 271-5, 1976	No relevant comparison
Ho,N.K., Neonatal outcome of breech babies in Toa Payoh Hospital 1984-1989, Singapore Medical Journal, 33, 333-336, 1992	Author does not specify if caesarean sections were performed before labour or in labour
Hodnett,E.D., Hannah,M.E., Hewson,S., Whyte,H., Amankwah,K., Cheng,M., Gafni,A., Guselle,P., Helewa,M., Hutton,E., Kung,R., McKay,D., Saigal,S., Willan,A., Mothers' views of their childbirth experiences 2 years after planned Caesarean versus planned vaginal birth for breech presentation at term, in the international randomized Term Breech Trial, Journal of Obstetrics and Gynaecology Canada: JOGC, 27, 224-231, 2005	No relevant comparison. Comparing planned caesarean section to planned vaginal birth
Hoffmann, J., Thomassen, K., Stumpp, P., Grothoff, M., Engel, C., Kahn, T., Stepan, H., New MRI criteria for successful vaginal breech delivery in primiparae, PLoS ONE, 11, e0161028, 2016	No relevant outcomes
Hogberg, U., Claeson, C., Krebs, L., Svanberg, A. S., Kidanto, H., Breech delivery at a University Hospital in Tanzania, BMC Pregnancy and Childbirth, 16, 342, 2016	No separate outcome data relating to caesarean sections perfomed in labour
Hopkins,L.M., Esakoff,T., Noah,M.S., Moore,D.H., Sawaya,G.F., Laros,R.K.,Jr., Outcomes associated with cesarean section versus vaginal breech delivery at a university hospital, Journal of Perinatology, 27, 141-146, 2007	No relevant comparison. Comparing planned caesarean sections to planned vaginal births

Study	Reason for exclusion
Huchcroft, S. A., Wearing, M. P., Buck, C. W., Late results of cesarean and vaginal delivery in cases of breech presentation, Canadian Medical Association Journal, 125, 726-30, 1981	Retrospective study. Prospective studies were prioritised for this review
Huerter, H., Voigt, I., Louwen, F., Management of breech presentation beyond 40 weeks of gestation, Reproductive Sciences, 24, 123A-124A, 2017	Conference abstract
Hutchins, C. J., Delivery of the growth-retarded infant, Obstetrics and Gynecology, 56, 683-686, 1980	No relevant comparison in the subgroup with breech presentation
Hutten-Czapski, P., Anderson, A., The occasional breech, Canadian Journal of Rural Medicine, 10, 47-50, 2005	Non-systematic literature review and discussion paper
Igwegbe, A. O., Monago, E. N., Ugboaja, J. O., Caesarean versus vaginal delivery for term breech presentation: A comparative analysis, African Journal of Biomedical Research, 13, 15-18, 2010	Authors do not specify if caesarean sections were performed before or during labour
Ilesanmi,O.A., Sobowale,O.A., Marinho,O.A., Outcome of 441 breech singleton deliveries at the Catholic Hospital, Oluyoro, Ibadan, African Journal of Medicine and Medical Sciences, 25, 41-46, 1996	No separate outcome data relating to caesarean sections performed after the onset of labour
Ismail,M.A., Nagib,N., Ismail,T., Cibils,L.A., Comparison of vaginal and cesarean section delivery for fetuses in breech presentation, Journal of Perinatal Medicine, 27, 339-351, 1999	No relevant intervention. No separate outcome data for emergency caesarean sections
Jaddoon, S., Khan, Z. A., Hanif, S., Ashraf, T., Maternal and fetal short term outcome in breech delivered vaginally, Pakistan Journal of Medical and Health Sciences, 10, 11-14, 2016	Retrospective study. Prospective studies were prioritised for this review
Jain,L., Ferre,C., Vidyasagar,D., Cesarean delivery of the breech very-low-birth-weight infant: does it make a difference?, Journal of Maternal-Fetal Medicine, 7, 28-31, 1998	No relevant population. Mean gestational age was 26.9 weeks in the breech vaginal birth group and 29.0 weeks in the breech caesarean section group
Jensen, V. M., Wust, M., Can Caesarean section improve child and maternal health? The case of breech babies, Journal of Health Economics, 39, 289-302, 2015	Retrospective study. Prospective studies were prioritised for this review
Jeyabalan,A., Larkin,R.W., Landers,D.V., Vaginal breech deliveries selected using computed tomographic pelvimetry may be associated with fewer adverse outcomes, Journal of Maternal-Fetal and Neonatal Medicine, 17, 381-385, 2005	No relevant intervention. Comparing vaginal births selected using computed tomographic pelvimetry to vaginal births selected using only clinical criteria
John,E., Todd,D., Burnard,E.D., Antenatal and intrapartum events influencing outcome in very low birth-weight infants, Australian and New	No relevant population. Mean gestational age was 27.9 weeks in the vaginal breech birth

Study	Reason for exclusion
Zealand Journal of Obstetrics and Gynaecology, 26, 264-268, 1986	group and 30.9 weeks in the caesarean section group
Johns, N., Thimma Vidyasagar, A., Undiagnosed breech births in a tertiary centre, BJOG: An International Journal of Obstetrics and Gynaecology, 120, 60-61, 2013	Conference abstract
Johnson, C. E., Breech presentation at term, American Journal of Obstetrics & Gynecology, 106, 865-71, 1970	Unclear whether all caesarean sections were performed in labour
Jonas,H.A., Lumley,J.M., The effect of mode of delivery on neonatal mortality in very low birthweight infants born in Victoria, Australia: Caesarean section is associated with increased survival in breech-presenting, but not vertex-presenting, infants, Paediatric and Perinatal Epidemiology, 11, 181-199, 1997	No relevant population. The majority of births occurred at gestational age less than or equal to 31 weeks
Joyce,D.N., Giwa-Osagie,F., Stevenson,G.W., Role of pelvimetry in active management of labour, British Medical Journal, 4, 505-507, 1975	Retrospective study. Prospective studies were prioritised for this review
Kancherla, R., Sankineani, S. R., Naranje, S., Rijal, L., Kumar, R., Ansari, T., Trikha, V., Birth-related femoral fracture in newborns: risk factors and management, Journal of Childrens Orthopaedics, 6, 177-80, 2012	Case series of 10 cases of femoral shaft fracture. No control group
Kaplan,B., Rabinerson,D., Hirsch,M., Mashiach,R., Hod,M., Neri,A., Intrapartum management of the low-birth-weight breech fetus, Clinical and Experimental Obstetrics and Gynecology, 22, 307-311, 1995	No relevant population. Authors do not specify if births were preterm or term. Birthweights were between 1000 and 2499 g
Karim,R., Jabeen,S., Comparison of mode of delivery in undiagnosed breech presentation in labour, Journal of Postgraduate Medical Institute, 27, 170-173, 2013	Retrospective study. Prospective studies were prioritised for this review
Karp, L. E., Breech presentation and parity: The proof of the pelvis, Journal of the American Medical Association, 249, 647, 1983	Discussion paper
Kauppila,O., The perinatal mortality in breech deliveries and observations on affecting factors. A retrospective study of 2227 cases, Acta Obstetricia et Gynecologica Scandinavica - Supplement, 39, 1-79, 1975	Retrospective study. Prospective studies were prioritised for this review
Kaur-Desai, T., Georgiou, D., Ciantar, E., Outcomes of term breech deliveries: A retrospective audit, Archives of Disease in Childhood: Fetal and Neonatal Edition, 97, A93-A94, 2012	Conference abstract
Kayem, G., Goffinet, F., Clement, D., Hessabi, M., Cabrol, D., Breech presentation at term: morbidity and mortality according to the type of	Retrospective study. Prospective studies were prioritised for this review

Study	Reason for exclusion
delivery at Port Royal Maternity hospital from 1993 through 1999, European Journal of Obstetrics, Gynecology, & Reproductive Biology, 102, 137-42, 2002	
Kiely, J. L., Mode of delivery and neonatal death in 17587 infants presenting by the breech, British Journal of Obstetrics and Gynaecology, 98, 898-904, 1991	Authors do not provide separate data for caesarean sections performed during labour as opposed to before labour. They report that they could not make this distinction due to data limitations
Kishor, T., Singh, C., Barman, S. D., Gupta, A. N., Study of vaginal delivery in patients with one previous lower segment caesarean section, Australian & New Zealand Journal of Obstetrics & Gynaecology, 26, 245-8, 1986	No relevant intervention; 14 women had an assisted breech birth
Koike, T., Minakami, H., Sasaki, M., Sayama, M., Tamada, T., Sato, I., The problem of relating fetal outcome with breech presentation to mode of delivery, Archives of Gynecology & Obstetrics, 258, 119-23, 1996	Retrospective study. Prospective studies were prioritised for this review
Koo, M. R., Dekker, G. A., Van Geijn, H. P., Perinatal outcome of singleton term breech deliveries, European Journal of Obstetrics Gynecology and Reproductive Biology, 78, 19-24, 1998	Retrospective study. Prospective studies were prioritised for this review
Kopelman, J. N., Duff, P., Karl, R. T., Schipul, A. H., Read, J. A., Computed tomographic pelvimetry in the evaluation of breech presentation, Obstetrics & Gynecology, 68, 455-8, 1986	Only 3 women had emergency caesarean sections. It is unclear whether "there were no instances of birth injury" refers only to 14 women who had vaginal births or to all 17 women who had a trial of labour
Kotaska, A., Menticoglou, S., Gagnon, R., Farine, D., Basso, M., Bos, H., Delisle, M. F., Grabowska, K., Hudon, L., Mundle, W., Murphy-Kaulbeck, L., Ouellet, A., Pressey, T., Roggensack, A., Maternal Fetal Medicine, Committee, Society of, Obstetricians, Gynaecologists of, Canada, Vaginal delivery of breech presentation, Journal of Obstetrics & Gynaecology Canada: JOGC, 31, 557-66, 567-78, 2009	Non-systematic literature review and guideline
Krebs, L., Langhoff-Roos, J., Weber, T., Breech at term - Mode of delivery? A register-based study, Acta Obstetricia et Gynecologica Scandinavica, 74, 704-706, 1995	Retrospective study. Prospective studies were prioritised for this review
Krebs,L., Breech at term. Early and late consequences of mode of delivery, Danish Medical Bulletin, 52, 234-252, 2005	Individual studies relating to the comparison of interest assessed separately for inclusion
Krebs,L., Langhoff-Roos,J., Breech delivery at term in Denmark, 1982-92: a population-based case-control study, Paediatric and Perinatal Epidemiology, 13, 431-441, 1999	No relevant outcomes

Study	Reason for exclusion
Krebs,L., Langhoff-Roos,J., Elective cesarean delivery for term breech, Obstetrics and Gynecology, 101, 690-696, 2003	Retrospective study. Prospective studies were prioritised for this review
Krupitz,H., Arzt,W., Ebner,T., Sommergruber,M., Steininger,E., Tews,G., Assisted vaginal delivery versus caesarean section in breech presentation, Acta Obstetricia et Gynecologica Scandinavica, 84, 588-592, 2005	No relevant comparison. Comparing elective caesarean sections to trials of labour
Laajili, H., Chioukh, F. Z., Hajji, A., Ben Ameur, K., Faleh, R., Monastiri, K., Sakouhi, M., Influence of breech delivery on neonatal prognosis: A retrospective study of 896 singleton pregnancies in a Tunisian maternity level III, Journal of Maternal-Fetal and Neonatal Medicine, 27, 192, 2014	Conference abstract
Langer, B., Boudier, E., Schlaeder, G., Breech presentation after 34 weeks - A meta-analysis of corrected perinatal mortality/morbidity according to the method of delivery, Journal of Obstetrics and Gynaecology, 18, 127-132, 1998	Individual studies assessed separately for inclusion
Lanka, L. D., Nelson, H. B., Breech presentation with low fetal mortality. A comparative study, American Journal of Obstetrics & Gynecology, 104, 879-82, 1969	No relevant comparison
Laros Jr, R. K., Flanagan, T. A., Kilpatrick, S. J., Management of term breech presentation: A protocol of external c version and selective trial of labor, American Journal of Obstetrics and Gynecology, 172, 1916-1925, 1995	Retrospective study. Prospective studies were prioritised for this review
Lashen, H., Fear, K., Sturdee, D., Trends in the management of the breech presentation at term; experience in a district general hospital over a 10-year period, Acta Obstetricia et Gynecologica Scandinavica, 81, 1116-1122, 2002	Retrospective study. Prospective studies were prioritised for this review
Lawrenson,R.A., An independent obstetric review: Te Kuiti Hospital 1971-80, New Zealand Medical Journal, 95, 279-281, 1982	Case series of all births in a hospital after 28 weeks of gestation or live births over 1000 g. No relevant data
Lawson, G. W., The term breech trial ten years on: primum non nocere?, Birth (Berkeley, Calif.), 39, 3-9, 2012	Discussion paper and non-systematic literature review
Lebed,M.R., Schifrin,B.S., Waffran,F., Real-time B scanning in the diagnosis of neonatal intracranial hemorrhage, American Journal of Obstetrics and Gynecology, 142, 851-861, 1982	No relevant population. Unclear whether babies with breech presentation were preterm or term. The majority of the overall population (that is, not just breech presentations) was preterm
Lee,K.S., Khoshnood,B., Sriram,S., Hsieh,H.L., Singh,J., Mittendorf,R., Relationship of cesarean delivery to lower birth weight-specific neonatal mortality in singleton breech infants in the United	Authors do not specify if caesarean sections were performed before or after the onset of labour

Study	Reason for exclusion
States, Obstetrics and Gynecology, 92, 769-774, 1998	
Leiberman, J. R., Fraser, D., Mazor, M., Chaim, W., Karplus, M., Katz, M., Glezerman, M., Breech presentation and cesarean section in term nulliparous women, European Journal of Obstetrics Gynecology and Reproductive Biology, 61, 111-115, 1995	No relevant comparison. Comparing 2 departments, one of which performed trials of labour, and the other which performed elective caesarean sections. Caesarean sections in one department were compared to vaginal births in the other department, however not all caesarean sections in the first department were performed in labour (some were performed for failed induction of labour)
Lennox, C. E., Kwast, B. E., Farley, T. M. M., Breech labor on the WHO partograph, International Journal of Gynecology and Obstetrics, 62, 117-127, 1998	No separate outcome data relating to caesarean sections performed in labour
Lewis, B. V., Seneviratne, H. R., Vaginal breech delivery or cesarean section, American Journal of Obstetrics & Gynecology, 134, 615-8, 1979	Retrospective study. Prospective studies were prioritised for this review
Lindqvist, A., Norden-Lindeberg, S., Hanson, U., Perinatal mortality and route of delivery in term breech presentations, British Journal of Obstetrics and Gynaecology, 104, 1288-1291, 1997	No relevant outcome data relating to caesarean sections performed in labour
Litorp, H., Kidanto, H. L., Nystrom, L., Darj, E., Essen, B., Increasing caesarean section rates among low-risk groups: a panel study classifying deliveries according to Robson at a university hospital in Tanzania, BMC Pregnancy & Childbirth, 13, 107, 2013	No relevant comparison
Lopez-Escobar, G., Riano-Gamboa, G., Fortney, J., Janowitz, B., Breech presentations in a sample of Colombian hospitals, International Journal of Gynecology and Obstetrics, 17, 284-289, 1980	No separate outcome data relating to caesarean sections performed after the onset of labour
Louwen, F., Daviss, B. A., Johnson, K. C., Reitter, A., Does breech delivery in an upright position instead of on the back improve outcomes and avoid cesareans?, International Journal of Gynecology and Obstetrics, 136, 151-161, 2017	No relevant comparison
Lumbiganon, P., Laopaiboon, M., Gulmezoglu, A. M., Souza, J. P., Taneepanichskul, S., Ruyan, P., Attygalle, D. E., Shrestha, N., Mori, R., Nguyen, D. H., Hoang, T. B., Rathavy, T., Chuyun, K., Cheang, K., Festin, M., Udomprasertgul, V., Germar, M. J., Yanqiu, G., Roy, M., Carroli, G., Ba-Thike, K., Filatova, E., Villar, J., World Health Organization Global Survey on, Maternal, Perinatal Health Research, Group, Method of delivery and pregnancy	No relevant population. Data for breech and other non-cephalic presentations were pooled together

Study	Reason for exclusion
outcomes in Asia: the WHO global survey on maternal and perinatal health 2007-08.[Erratum appears in Lancet. 2010 Dec 4;376(9756):1902], Lancet, 375, 490-9, 2010	
Luterkort, M., Marsal, K., Umbilical cord acid-base state and Apgar score in term breech neonates, Acta Obstetricia et Gynecologica Scandinavica, 66, 57-60, 1987	No relevant intervention. Babies born by emergency caesarean section after the onset of labour were not included in the study
Lyons, E. R., Papsin, F. R., Cesarean section in the management of breech presentation, American Journal of Obstetrics and Gynecology, 130, 558-561, 1978	Authors do not specify if caesarean sections were performed before or after the onset of labour
Lyons, J., Pressey, T., Bartholomew, S., Liu, S., Liston, R. M., Joseph, K. S., Delivery of breech presentation at term gestation in Canada, 2003-2011, Obstetrics and Gynecology, 125, 1153-1161, 2015	Retrospective study. Prospective studies were prioritised for this review
Macharey, G., Gissler, M., Ulander, V. M., Rahkonen, L., Vaisanen-Tommiska, M., Nuutila, M., Heinonen, S., Risk factors associated with adverse perinatal outcome in planned vaginal breech labors at term: A retrospective population-based case-control study, BMC Pregnancy and Childbirth, 17, 93, 2017	No relevant intervention. Emergency caesarean section is not assessed as a potential risk factor
Maduanusi, C., Lewis, D., Yoong, W., Breech in spontaneous labour: How safe is vaginal versus caesarean delivery?, BJOG: An International Journal of Obstetrics and Gynaecology, 124, 30, 2017	Conference abstract
Mahomed, K., Breech delivery: A critical evaluation of the mode of delivery and outcome of labor, International Journal of Gynecology and Obstetrics, 27, 17-20, 1988	Retrospective study. Prospective studies were prioritised for this review
Mahomed, K., Seeras, R., Coulson, R., Outcome of term breech presentation, East African Medical Journal, 66, 819-823, 1989	Retrospective study. Prospective studies were prioritised for this review
Mailath-Pokorny,M., Preyer,O., Dadak,C., Lischka,A., Mittlbock,M., Wagenbichler,P., Laml,T., Breech presentation: a retrospective analysis of 12-years' experience at a single center, Wiener Klinische Wochenschrift, 121, 209-215, 2009	Retrospective study. Prospective studies were prioritised for this review
Main,D.M., Main,E.K., Maurer,M.M., Cesarean section versus vaginal delivery for the breech fetus weighing less than 1,500 grams, American Journal of Obstetrics and Gynecology, 146, 580-584, 1983	No relevant population. Mean gestational age was 29.3 weeks among vaginal births and 30.0 weeks among caesarean sections
Makris, N., Xygakis, A., Chionis, A., Sakellaropoulos, G., Michalas, S., The management of breech presentation in the last	No relevant comparison. Comparing caesarean section rates between different years and

Study	Reason for exclusion
three decades, Clinical and Experimental Obstetrics and Gynecology, 26, 178-180, 1999	comparing adverse outcomes between different years
Mann, L. I., Gallant, J. M., Modern management of the breech delivery, American Journal of Obstetrics & Gynecology, 134, 611-4, 1979	Authors do not specify if caesarean sections were performed before or after the onset of labour
Manzke, H., Morbidity among infants born in breech presentation, Journal of Perinatal Medicine, 6, 127-140, 1978	Includes a non-systematic literature review and an analysis of author's data. With regard to the latter, the outcomes are not relevant to the guideline review
Marchick,R., Antepartum external cephalic version with tocolysis: a study of term singleton breech presentations, American Journal of Obstetrics and Gynecology, 158, 1339-1346, 1988	No relevant comparison. This study provides outcome data stratified by successful, attempted, or not attempted ECV. No outcome data stratified by relevant intervention and comparator are reported
Maric, M., Petrovic, O., Sindik, N., Haller, H., Breech delivery - mode of delivery and early neonatal outcome, Gynaecologia et Perinatologia, 21, 115-118, 2012	Published in Croatian language
Mazhar, S. B., Kausar, S., Outcome of singleton breech deliveries beyond 28 weeks gestation: The experience at MCH Centre, PIMS, Journal of the Pakistan Medical Association, 52, 471-475, 2002	No relevant comparison. No separate outcome data relating to caesarean sections performed after the onset of labour
Mbweza,E., Risk factors for perinatal asphyxia at Queen Elizabeth Central Hospital, Malawi, Clinical Excellence for Nurse Practitioners, 4, 158-162, 2000	No relevant comparison
McLean, M. T., Marion's message. Vaginal delivery on demand?, Midwifery Today with International Midwife, 7-69, 2001	Discussion paper
McNiven, P., Kaufman, K., McDonald, H., Campbell, D. C., Prevention: Planned Cesarean delivery reduces early perinatal and neonatal complications for term breech presentations, Canadian Journal of Anesthesia, 48, 1114-1116, 2001	Commentaries on publication by Hannah 2000, which has been assessed separately for inclusion
Mecke, H., Weisner, D., Freys, I., Semm, K., Delivery of breech presentation infants at term. An analysis of 304 breech-deliveries, Journal of Perinatal Medicine, 17, 121-126, 1989	Unclear whether prospective or retrospective but assumed to be a retrospective study based on the description in the article. Prospective studies were prioritised for this review
Menticoglou, S. M., Why vaginal breech delivery should still be offered, Journal of Obstetrics & Gynaecology Canada: JOGC, 28, 380-5; discussion 386-9, 2006	Non-systematic literature review
Mesleh,R.A., Asiri,F., Al-Naim,M.F., Cesarean section in the primigravid, Saudi Medical Journal, 21, 957-959, 2000	No relevant comparison
Michel, S., Drain, A., Closset, E., Deruelle, P., Ego, A., Subtil, D., Lille Breech Study, Group,	No relevant comparison. Comparing the percentages of vaginal births and caesarean

Study	Reason for exclusion
Evaluation of a decision protocol for type of delivery of infants in breech presentation at term, European Journal of Obstetrics, Gynecology, & Reproductive Biology, 158, 194-8, 2011	sections after the onset of labour as well as adverse outcomes between 2 study periods. Comparing planned vaginal births to planned caesarean sections across the 2 study periods
Mishra,M., Sinha,P., Does caesarean section provide the best outcome for mother and baby in breech presentation? A perspective from the developing world.[Erratum appears in J Obstet Gynaecol. 2011 Oct;31(7):678], Journal of Obstetrics and Gynaecology, 31, 495-498, 2011	No relevant comparison
Mohammed, N. B., NoorAli, R., Anandakumar, C., Qureshi, R. N., Luby, S., Management trend and safety of vaginal delivery for term breech fetuses in a tertiary care hospital of Karachi, Pakistan, Journal of Perinatal Medicine, 29, 250-9, 2001	Retrospective study. Prospective studies were prioritised for this review
Molkenboer, J. F., Vencken, P. M., Sonnemans, L. G., Roumen, F. J., Smits, F., Buitendijk, S. E., Nijhuis, J. G., Conservative management in breech deliveries leads to similar results compared with cephalic deliveries, Journal of Maternal-Fetal & Neonatal Medicine, 20, 599-603, 2007	No relevant comparison. Comparing cephalic to breech presentations
Molkenboer,J.F., Reijners,E.P., Nijhuis,J.G., Roumen,F.J., Moderate neonatal morbidity after vaginal term breech delivery, The journal of maternal-fetal and neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians, 16, 357-361, 2004	No relevant comparison. Comparing caesarean sections performed before labour to trials of labour
Mollberg,M., Hagberg,H., Bager,B., Lilja,H., Ladfors,L., High birthweight and shoulder dystocia: the strongest risk factors for obstetrical brachial plexus palsy in a Swedish population-based study, Acta Obstetricia et Gynecologica Scandinavica, 84, 654-659, 2005	No relevant intervention. Caesarean section after the onset of labour in breech presentation was not assessed as a risk factor
Monaghan, C., Goodall, H., Roberts, R., Caesarean section delivery: Lowering the incidence. A prospective observational study of 1182 deliveries, BJOG: An International Journal of Obstetrics and Gynaecology, 122, 291-292, 2015	Conference abstract
Moodley,J., Khedun,S.M., Devjee,J., Breech presentation at a district level hospital in South Africa, South African Family Practice, 52, 64-68, 2010	Retrospective study. Prospective studies were prioritised for this review

Study	Reason for exclusion
Morales,W.J., Koerten,J., Obstetric management and intraventricular hemorrhage in very-low-birth-weight infants, Obstetrics and Gynecology, 68, 35-40, 1986	No relevant population. Gestational age under 33 weeks was an inclusion criterion
Mphahlele, M., Van Der Meulen, A. J., Obstructed labour at the University Teaching Hospital, Lusaka, Zambia (April 1972 December 1973), South African Medical Journal, 49, 1204-1206, 1975	No relevant population
Muhuri,P.K., Macdorman,M.F., Menacker,F., Method of delivery and neonatal mortality among very low birth weight infants in the United States, Maternal and Child Health Journal, 10, 47-53, 2006	No relevant population. Mean gestational age for the overall population (breech and other presentations) was 30 weeks in the caesarean section group and 29 weeks in the vaginal birth group. Mean gestational age for breech presentations only is not reported. Birthweight of babies was between 500 g and 1,499 g
Mullan, C., Musial, N., Byrd, L., Vaginal breech delivery - 12 years after the term breech trial are the risks as high as suggested? audit of practise within the setting of a high risk labour ward, Archives of Disease in Childhood: Fetal and Neonatal Edition, 98, 2013	Conference abstract
Munstedt, K., Von Georgi, R., Reucher, S., Zygmunt, M., Lang, U., Term breech and long-term morbidity - Cesarean section versus vaginal breech delivery, European Journal of Obstetrics Gynecology and Reproductive Biology, 96, 163-167, 2001	No relevant outcomes
Mustard,C.A., Harman,C.R., Hall,P.F., Derksen,S., Impact of a nurses' strike on the cesarean birth rate, American Journal of Obstetrics and Gynecology, 172, 631-637, 1995	No relevant comparison
Myers, S. A., Gleicher, N., The Mount Sinai cesarean section reduction program: an update after 6 years, Social Science & Medicine, 37, 1219-22, 1993	No relevant comparison. Caesareans sections are compared to vaginal births but no distinction is made between elective and emergency caesarean sections
Nadas,S., Reinberg,O., Obstetric fractures, European Journal of Pediatric Surgery, 2, 165-168, 1992	No relevant comparison
Nagase, H., Ishikawa, H., Toyoshima, K., Itani, Y., Furuya, N., Kurosawa, K., Hirahara, F., Yamanaka, M., Fetal outcome of trisomy 18 diagnosed after 22 weeks of gestation: Experience of 123 cases at a single perinatal center, Congenital Anomalies, 56, 35-40, 2016	Authors do not specify if caesarean sections in breech presentations were performed before labour or in labour
Nahid, F., Outcome of singleton term breech cases in the pretext of mode of delivery, JPMA - Journal of the Pakistan Medical Association, 50, 81-5, 2000	No relevant comparison. This article pools together outcome data for emergency caesarean sections performed before and during labour

Study	Reason for exclusion
Nalliah,S., Loh,K.Y., Japaraj,R.P., Mukudan,K., Is there a place for selective vaginal breech delivery in Malaysian hospitals: experiences from the Ipoh hospital, Journal of Maternal-Fetal & Neonatal Medicine, 22, 129-136, 2009	No relevant comparison. The article provides the rate of emergency caesarean sections and vaginal births, as well as mortality data, for different years
Nelson, Richard L., Furner, Sylvia E., Westercamp, Matthew, Farquhar, Cindy, Cesarean delivery for the prevention of anal incontinence, Cochrane Database of Systematic Reviews, 2017	Included studies relating to breech presentations were assessed separately for inclusion
Nemor, J. C., Breech delivery in the primigravida: Vaginal versus cesarean section, Journal of the American Osteopathic Association, 78, 479-487, 1979	A full-text copy of the article could not be obtained
Newton, W. P., Should breech babies be delivered vaginally or by planned cesarean delivery?, The Journal of family practice, 50, 105, 2001	Summary of and commentary on a publication on mode of birth for breech presentation
Nkwabong, E., Fomulu, J. N., Kouam, L., Ngassa, P. C., Outcome of breech deliveries in cameroonian nulliparous women, Journal of Obstetrics and Gynecology of India, 62, 531-535, 2012	No relevant outcomes. Emergency caesarean sections are compared to vaginal births however the comparison focuses on Apgar score only
Nwosu,E.C., Walkinshaw,S., Chia,P., Manasse,P.R., Atlay,R.D., Undiagnosed breech, British Journal of Obstetrics and Gynaecology, 100, 531-535, 1993	No relevant comparison
Oboro, V. O., Dare, F. O., Ogunniyi, S. O., Outcome of term breech by intended mode of delivery, Nigerian journal of medicine : journal of the National Association of Resident Doctors of Nigeria, 13, 106-109, 2004	A full-text copy of the article could not be obtained
Obwegeser, R., Ulm, M., Simon, M., Ploeckinger, B., Gruber, W., Breech infants: vaginal or cesarean delivery?, Acta Obstetricia et Gynecologica Scandinavica, 75, 912-6, 1996	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
O'Grady,J.P., Veille,J.C., Holland,R.L., Burry,K.A., External cephalic version: a clinical experience, Journal of Perinatal Medicine, 14, 189-196, 1986	No relevant comparison
Ohlsen, H., Outcome of term breech delivery in primigravidae. A feto pelvic breech index, Acta Obstetricia et Gynecologica Scandinavica, 54, 141-151, 1975	Retrospective study. Prospective studies were prioritised for this review
Oian, P., Skramm, I., Hannisdal, E., Bjoro, K., Breech delivery. An obstetrical analysis, Acta Obstetricia et Gynecologica Scandinavica, 67, 75-9, 1988	Outcome data are not stratified by elective and emergency caesarean sections

Study	Reason for exclusion
O'Leary, J. A., Vaginal delivery of the term breech. A preliminary report, Obstetrics & Gynecology, 53, 341-3, 1979	No relevant comparison
Olshan,A.F., Shy,K.K., Luthy,D.A., Hickok,D., Weiss,N.S., Daling,J.R., Cesarean birth and neonatal mortality in very low birth weight infants, Obstetrics and Gynecology, 64, 267-270, 1984	No relevant population. The authors do not report whether births were preterm or term. Birthweights were between 700 g and 1500 g
Ophir, E., Oettinger, M., Yagoda, A., Markovits, Y., Rojansky, N., Shapiro, H., Breech presentation after cesarean section: Always a section?, American Journal of Obstetrics and Gynecology, 161, 25-28, 1989	Retrospective study. Prospective studies were prioritised for this review
Otamiri, G., Berg, G., Ledin, T., Leijon, I., Nilsson, B., Influence of elective cesarean section and breech delivery on neonatal neurological condition, Early Human Development, 23, 53-66, 1990	No relevant comparison. Comparing elective caesarean sections to vaginal breech births and to vaginal vertex births
Pajntar, M., Verdenik, I., Pestevsek, M., Cesarean section in breech by birth weight, European Journal of Obstetrics, Gynecology, & Reproductive Biology, 54, 181-4, 1994	Outcome data in the caesarean section group are not stratified by caesarean sections performed before and after the onset of labour
Parissenti, Tamara K., Hebisch, Gundula, Sell, Wieland, Staedele, Patricia E., Viereck, Volker, Fehr, Mathias K., Risk factors for emergency caesarean section in planned vaginal breech delivery, Archives of Gynecology and Obstetrics, 295, 51-58, 2017	Retrospective study. Prospective studies were prioritised for this review
Pasupathy,D., Wood,A.M., Pell,J.P., Fleming,M., Smith,G.C., Time trend in the risk of delivery-related perinatal and neonatal death associated with breech presentation at term, International Journal of Epidemiology, 38, 490-498, 2009	Retrospective study. Prospective studies were prioritised for this review
Peittit, D. B., Golditch, I. M., Mortality in relation to method of delivery in breech infants, International Journal of Gynecology and Obstetrics, 22, 189-193, 1984	Authors do not specify if caesarean sections were performed before or after the onset of labour
Persson, J., Wolner-Hanssen, P., Rydhstroem, H., Obstetric risk factors for stress urinary incontinence: A population- based study, Mechanisms of Development, 96, 440-445, 2000	No relevant comparison
Pradhan,P., Mohajer,M., Deshpande,S., Outcome of term breech births: 10-year experience at a district general hospital, BJOG: An International Journal of Obstetrics & Gynaecology, 112, 218-222, 2005	Retrospective study. Prospective studies were prioritised for this review
Preis,K., Bidzan,M., Swiatkowska-Freund,M., Peplinska,A., Long-term follow-up for organic dysfunction in breech - presenting children,	No relevant outcomes

Study	Reason for exclusion
Medical Science Monitor, 18, CR741-CR746, 2012	
Rauf,B., Nisa,M., Hassan,L., External cephalic version for breech presentation at term, Jcpsp, Journal of the College of Physicians and Surgeons - Pakistan, 17, 550-553, 2007	A full-text copy of the article could not be obtained
Raynor, B. D., The experience with vaginal birth after cesarean delivery in a small rural community practice, American Journal of Obstetrics and Gynecology, 168, 60-62, 1993	No relevant population. No separate data for women with breech presentation
Reinhard,J., Sanger,N., Hanker,L., Reichenbach,L., Yuan,J., Herrmann,E., Louwen,F., Delivery mode and neonatal outcome after a trial of external cephalic version (ECV): A prospective trial of vaginal breech versus cephalic delivery, Archives of Gynecology and Obstetrics, 287, 663-668, 2013	No relevant comparison
Ridley, W. J., jackson, P., Stewart, J. H., Boyle, P., Role of antenatal radiography in the management of breech deliveries, British Journal of Obstetrics and Gynaecology, 89, 342-347, 1982	Retrospective study. Prospective studies were prioritised for this review
Rietberg, C. C., Elferink-Stinkens, P. M., Brand, R., van Loon, A. J., Van Hemel, O. J., Visser, G. H., Term breech presentation in The Netherlands from 1995 to 1999: mortality and morbidity in relation to the mode of delivery of 33824 infants, BJOG: An International Journal of Obstetrics & Gynaecology, 110, 604-9, 2003	Retrospective study. Prospective studies were prioritised for this review
Rietberg,C.C., Elferink-Stinkens,P.M., Visser,G.H., The effect of the Term Breech Trial on medical intervention behaviour and neonatal outcome in The Netherlands: an analysis of 35,453 term breech infants, BJOG: An International Journal of Obstetrics and Gynaecology, 112, 205-209, 2005	Retrospective study. Prospective studies were prioritised for this review
Roberts, C. L., Peat, B., Algert, C. S., Henderson-Smart, D., Term breech birth in New South Wales, 1990-1997, Australian & New Zealand Journal of Obstetrics & Gynaecology, 40, 23-9, 2000	Retrospective study. Prospective studies were prioritised for this review
Rodrigo Rodriguez, M., Diaz Rabasa, B., Laborda Gotor, R., Ruiz Sada, J., Agustin Oliva, A., Redrado Gimenez, O., Rodriguez Solanilla, B., Rodriguez Lazaro, L., Lapresta Moros, M., Vaginal versus cesarean delivery for breech presentation, Journal of Perinatal Medicine, 43, 2015	Conference abstract
Roman, J., Bakos, O., Cnattingius, S., Pregnancy outcomes by mode of delivery	Retrospective study. Prospective studies were prioritised for this review

Study	Reason for exclusion
among term breech births: Swedish experience 1987-1993, Obstetrics & Gynecology, 92, 945-50, 1998	
Rondinelli, M., Bertasi, M., Capoti, C., Propersi, G., Breech presentation: Delivery or caesarean section?, Journal of Foetal Medicine, 6, 67-71, 1986	Unclear whether caesarean sections were performed before or after the onset of labour
Rosen, M. G., Chik, L., The effect of delivery route on outcome in breech presentation, American Journal of Obstetrics and Gynecology, 148, 909-914, 1984	Retrospective study. Prospective studies were prioritised for this review
Rosen, M. G., Debanne, S., Thompson, K., Bilenker, R. M., Long-term neurological morbidity in breech and vertex births, American Journal of Obstetrics and Gynecology, 151, 718-720, 1985	No relevant outcomes. Unclear whether caesarean sections were performed before or during labour
Roumen, F. J., Luyben, A. G., Safety of term vaginal breech delivery, European Journal of Obstetrics, Gynecology, & Reproductive Biology, 40, 171-7, 1991	Unclear whether prospective or retrospective but assumed to be a retrospective study based on the description in the article. Prospective studies were prioritised for this review
Rovinsky, J. J., Miller, J. A., Kaplan, S., Management of breech presentation at term, American Journal of Obstetrics & Gynecology, 115, 497-513, 1973	No separate outcomes relating to caesarean sections performed in labour
Sachs, B. P., McCarthy, B. J., Rubin, G., Burton, A., Terry, J., Tyler Jr, C. W., Cesarean section. Risk and benefits for mother and fetus, Journal of the American Medical Association, 250, 2157-2159, 1983	Authors do not specify if caesarean sections were performed before or after the onset of labour
Sanchez-Ramos,L., Wells,T.L., Adair,C.D., Arcelin,G., Kaunitz,A.M., Wells,D.S., Route of breech delivery and maternal and neonatal outcomes, International Journal of Gynaecology and Obstetrics, 73, 7-14, 2001	No relevant comparison. Comparing elective caesarean sections to trials of labour. Also comparing elective caesarean sections to actual vaginal births
Sarodey, G., Shah, P., Rebirth of the art of vaginal breech delivery, Journal of Perinatal Medicine, 41, 2013	Conference abstract
Saunders, N. J., The management of breech presentation, British Journal of Hospital Medicine, 56, 456-8, 1996	Discussion paper and non-systematic literature review
Schiff, E., Friedman, S. A., Mashiach, S., Hart, O., Barkai, G., Sibai, B. M., Maternal and neonatal outcome of 846 term singleton breech deliveries: seven-year experience at a single center, American Journal of Obstetrics & Gynecology, 175, 18-23, 1996	Retrospective study. Prospective studies were prioritised for this review
Sellers, J. D., Breech presentation in the primigravida at term, Journal of the American Osteopathic Association, 73, 144-9, 1973	Retrospective study. Prospective studies were prioritised for this review

Study	Reason for exclusion
Shashidhar, T. G., Shashirekha, S. R., Bandamma, N., Nivedita, S. K., Raj, S., Clinical study of the mode of delivery and perinatal outcome in breech delivery, Indian Journal of Public Health Research and Development, 6, 17-21, 2015	A full-text copy of the article could not be obtained
Shembrey, M. A., Letchworth, A. T., The management of breech presentation in a district general hospital, Journal of Obstetrics and Gynaecology, 13, 437-439, 1993	No relevant outcomes
Shoaib, M., Afridi, U., Huma, Z. E., Tareen, S., Maternal and fetal complications associated with full term breech delivery in sandeman provincial hospital, Quetta, Pakistan Journal of Medical and Health Sciences, 6, 620-622, 2012	No separate outcomes relating to caesarean sections performed in labour
Sibony,O., Luton,D., Oury,J.F., Blot,P., Six hundred and ten breech versus 12,405 cephalic deliveries at term: is there any difference in the neonatal outcome?, European Journal of Obstetrics, Gynecology, and Reproductive Biology, 107, 140-144, 2003	Retrospective study. Prospective studies were prioritised for this review
Smith,M.L., Spencer,S.A., Hull,D., Mode of delivery and survival in babies weighing less than 2000 g at birth, British Medical Journal, 281, 1118-1119, 1980	No relevant population. Authors do not specify if births were preterm or term. Birthweights were between 750 g and 2000 g
Sobande,A., Yousuf,F., Eskandar,M., Almushait,M.A., Breech delivery before and after the term breech trial recommendation, Saudi Medical Journal, 28, 1213-1217, 2007	No relevant comparison
Sobande,A.A., Pregnancy outcome in singleton term breeches from a referral hospital in Saudi Arabia, West African Journal of Medicine, 22, 38-41, 2003	No relevant comparison. Comparing caesarean sections to vaginal births, but no distinction is made between caesarean sections performed before or after the onset of labour
Socol,M.L., Cohen,L., Depp,R., Dooley,S.L., Tamura,R.K., Apgar scores and umbilical cord arterial pH in the breech neonate, International Journal of Gynaecology and Obstetrics, 27, 37-43, 1988	No relevant outcomes. Authors do not specify if caesarean sections were performed before labour or in labour
Songane, F. F., Thobani, S., Malik, H., Bingham, P., Lilford, R. J., Balancing the risks of planned cesarean section and trial of vaginal delivery for the mature, selected, singleton breech presentation, Journal of Perinatal Medicine, 15, 531-543, 1987	Retrospective study. Prospective studies were prioritised for this review
Spinapolice, R. X., La Magra, R. J., Belsky, D. H., Use of the Z-A breech score in the management of breech presentation at term, Journal of the American Osteopathic Association, 81, 751-753, 1982	No relevant outcomes reported for women undergoing a caesarean section. It is unclear whether this is due to an absence of adverse outcomes or to incomplete reporting

Study	Reason for exclusion
Srisudha, K., Saraswathi, K., Study of maternal and perinatal outcome in term singleton breech presentation, Research Journal of Pharmaceutical, Biological and Chemical Sciences, 5, 284-287, 2014	No relevant comparison. Comparing caesarean sections to vaginal births, however no separate outcome data are reported for caesarean sections performed after the onset of labour
Stein, A., Breech delivery--a cooperative nurse-midwifery medical management approach, Journal of Nurse-Midwifery, 31, 93-7, 1986	No separate outcome data relating to caesarean sections in labour
Stevenson, J., More thoughts on breech, Midwifery Today & Childbirth Education, 24-5, 1993	A full-text copy of the article could not be obtained
Suidan,J.S., Sayegh,R.A., Delivery of the low birthweight and the very low birthweight breech: cesarean section or vaginal delivery?, Journal of Perinatal Medicine, 17, 145-149, 1989	No relevant population. The authors do not specify if births were preterm or term. Birthweights were between 1000 g and 2500 g
Svenningsen,N.W., Westgren,M., Ingemarsson,I., Modern strategy for the term breech delivery--a study with a 4-year follow-up of the infants, Journal of Perinatal Medicine, 13, 117-126, 1985	No relevant comparison. Comparing 2 time periods using different protocols regarding criteria used for performing a caesarean section. Comparing caesarean sections to vaginal births but no distinction is made between caesarean sections performed before or after the onset of labour
Tabuika, U., Stavinskaya, L., Sagaidac, I., Cernetkaya, O., Paladi, G., Perinatal results of deliveries with fetuses in Breech presentation, Journal of Maternal-Fetal and Neonatal Medicine, 27, 186-187, 2014	Conference abstract
Tan, K. L., Breech presentation and delivery, Singapore Medical Journal, 33, 325-6, 1992	Discussion paper and non-systematic literature review
Tatum, R. K., Orr, J. W., Soong, S. J., Huddleston, J. F., Vaginal breech delivery of selected infants weighing more than 2000 grams. A retrospective analysis of seven years' experience, American Journal of Obstetrics and Gynecology, 152, 145-155, 1985	Retrospective study. Prospective studies were prioritised for this review
Tejani,N., Verma,U., Shiffman,R., Chayen,B., Effect of route of delivery on periventricular/intraventricular hemorrhage in the low-birth-weight fetus with a breech presentation, Journal of Reproductive Medicine, 32, 911-914, 1987	No relevant population. Authors do not specify for all births if births were preterm or term, however 44/99 births (47.8%) occurred before or at 30 weeks of gestation. All birthweights were between 501 g and 2,000 g
Thorpe-Beeston, J. G., Banfield, P. J., Saunders, N. J., Outcome of breech delivery at term, BMJ, 305, 746-7, 1992	Unclear whether prospective or retrospective but assumed to be a retrospective study based on the description in the article. Prospective studies were prioritised for this review
Thwaini Al-Inizi, S. A., Khayata, G., Ezimokhai, M., Al-Safi, W., Planned vaginal delivery of term breech remains an option - Result of eight years	No separate outcome data relating to caesarean sections performed after the onset of labour. There were only 2 caesarean sections performed after the onset of labour

Study	Reason for exclusion
experience at a single centre, Journal of Obstetrics and Gynaecology, 25, 263-266, 2005	
Tiwary, C. M., Testicular injury in breech delivery: possible implications, Urology, 34, 210-2, 1989	Authors do not specify if caesarean sections were performed before or after the onset of labour
Toivonen,E., Palomaki,O., Huhtala,H., Uotila,J., Selective vaginal breech delivery at term - still an option, Acta Obstetricia et Gynecologica Scandinavica, 91, 1177-1183, 2012	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
Tully, G., Identifying and resolving obstructed breech birth: when to touch and when to be hands-free, Midwifery Today with International Midwife, 21-23, 2013	Discussion paper
Turner,M.J., The Term Breech Trial: are the clinical guidelines justified by the evidence?, Journal of Obstetrics and Gynaecology, 26, 491-494, 2006	Discussion paper
Ulander,V.M., Gissler,M., Nuutila,M., Ylikorkala,O., Are health expectations of term breech infants unrealistically high?, Acta Obstetricia et Gynecologica Scandinavica, 83, 180-186, 2004	No relevant comparison. Comparing trials of labour to planned caesarean sections
Uotila,J., Tuimala,R., Kirkinen,P., Good perinatal outcome in selective vaginal breech delivery at term, Acta Obstetricia et Gynecologica Scandinavica, 84, 578-583, 2005	No relevant comparison. Comparing planned vaginal births to elective caesarean sections
Usta, I. M., Nassar, A. H., Khabbaz, A. Y., Abu Musa, A. A., Undiagnosed term breech: Impact on mode of delivery and neonatal outcome, Acta Obstetricia et Gynecologica Scandinavica, 82, 841-844, 2003	No relevant comparison. Comparing breech presentations diagnosed antenatally with those diagnosed on admission for birth or in the intrapartum period
Vaclavinkova, V., Breech delivery in a Middle East hospital, International Journal of Gynecology and Obstetrics, 30, 241-244, 1989	No relevant comparison. Caesarean sections are compared to vaginal births however no distinction is made between outcomes of elective and emergency caesarean sections
van Eygen, L., Rutgers, S., Caesarean section as preferred mode of delivery in term breech presentations is not a realistic option in rural Zimbabwe, Tropical Doctor, 38, 36-9, 2008	Unclear whether the caesarean sections that are compared to vaginal births were performed before or after the onset of labour
van Roosmalen, J., Rosendaal, F., There is still room for disagreement about vaginal delivery of breech infants at term, BJOG: An International Journal of Obstetrics & Gynaecology, 109, 967-9, 2002	Discussion paper including some data from the authors' hospital. Unclear whether prospective or retrospective study design in relation to these data, assumed to be retrospective based on the description in the article. Prospective studies were prioritised for this review
Varner, W. D., Management of labor in the primigravida with breech presentation, American Journal of Obstetrics & Gynecology, 84, 876-83, 1962	Retrospective study. Prospective studies were prioritised for this review

Study	Reason for exclusion
Vazquez Maiz, O., Aristegi, O., Bombin, A., Navarrina, J. A., Del Valle, D., Garcia, M., Goiri, K., Larraza, M. J., Breech delivery at Donostia university hospital, Journal of Perinatal Medicine, 43, 2015	Conference abstract
Veridiano, N. P., Thorner, N. S., Ducey, J., Vaginal delivery after cesarean section, International Journal of Gynecology and Obstetrics, 29, 307-311, 1989	No relevant population. Insufficient information relating to breech presentations
Vidaeff, A. C., Breech delivery before and after the term breech trial, Clinical Obstetrics & Gynecology, 49, 198-210, 2006	Non-systematic literature review
Villar, J., Carroli, G., Zavaleta, N., Donner, A., Wojdyla, D., Faundes, A., Velazco, A., Bataglia, V., Langer, A., Narvaez, A., Valladares, E., Shah, A., Campodonico, L., Romero, M., Reynoso, S., De Padua, K. S., Giordano, D., Kublickas, M., Acosta, A., Maternal and neonatal individual risks and benefits associated with caesarean delivery: Multicentre prospective study, British Medical Journal, 335, 1025-1029, 2007	No relevant population. Data for breech and other non-cephalic presentations were pooled together
Vistad, I., Cvancarova, M., Hustad, B. L., Henriksen, T., Vaginal breech delivery: results of a prospective registration study, BMC Pregnancy & Childbirth, 13, 153, 2013	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
Vistad, I., Klungsoyr, K., Albrechtsen, S., Skjeldestad, F. E., Neonatal outcome of singleton term breech deliveries in Norway from 1991 to 2011, Acta Obstetricia et Gynecologica Scandinavica, 94, 997-1004, 2015	No relevant comparison. Comparing planned vaginal births to planned caesarean sections
Vlemmix, F., Bergenhenegouwen, L., Schaaf, J. M., Ensing, S., Rosman, A. N., Ravelli, A. C., Van Der Post, J. A., Verhoeven, A., Visser, G. H., Mol, B. W., Kok, M., Term breech deliveries in the Netherlands: did the increased cesarean rate affect neonatal outcome? A population-based cohort study, Acta Obstetricia et Gynecologica Scandinavica, 93, 888-96, 2014	Retrospective study. Prospective studies were prioritised for this review
Wade,R.V., Traylor,T.R., Breech delivery: impact of increasing cesarean section delivery, Southern Medical Journal, 74, 1233-1237, 1981	Authors do not specify if caesarean sections were performed before labour or in labour
Walker, Shawn, Parker, Pam, Scamell, Mandie, Expertise in physiological breech birth: A mixed-methods study, Birth (Berkeley, Calif.), 2017	Analysis of 2 studies to define the meaning of expertise in breech birth. One study used Delphi consensus techniques and the other used qualitative interviews. No relevant comparison. No relevant study design
Watson, W. J., Benson, W. L., Vaginal delivery for the selected frank breech infant at term, Obstetrics and Gynecology, 64, 638-640, 1984	No separate outcome data relating to caesarean sections performed in labour

Study	Reason for exclusion
Weissman,A., Blazer,S., Zimmer,E.Z., Jakobi,P., Paldi,E., Low birthweight breech infant: short-term and long-term outcome by method of delivery, American Journal of Perinatology, 5, 289-292, 1988	No relevant population. Preterm births
Wesnes, S. L., Rortveit, G., Hannestad, Y., Delivery parameters and urinary incontinence 6 months postpartum, Neurourology and Urodynamics, 32, 530-531, 2013	Conference abstract
Westgren, M., Grundsell, H., Ingemarsson, I., Muhlow, A., Svenningsen, N. W., Hyperextension of the fetal head in breech presentation. A study with long-term follow-up, British Journal of Obstetrics and Gynaecology, 88, 101-104, 1981	Authors do not specify if caesarean sections were performed before labour or in labour
Westin, B., Evaluation of a feto-pelvic scoring system in the management of breech presentations, Acta Obstetricia et Gynecologica Scandinavica, 56, 505-8, 1977	No relevant comparison
White,P.C., Cibils,L.A., Clinical significance of fetal heart rate patterns during labor. VIII. Breech presentations, Journal of Reproductive Medicine, 29, 45-51, 1984	Retrospective study. Prospective studies were prioritised for this review
Wisestanakorn, W., Herabutya, Y., O. Prasertsawat P, Thanantaseth, C., Fetal outcome in term frank breech primipara delivered vaginally and by elective cesarean section, Journal of the Medical Association of Thailand = Chotmaihet thangphaet, 73 Suppl 1, 47-51, 1990	No relevant intervention. Caesarean sections in labour were excluded
Wolter, D. F., Patterns of management with breech presentation, American Journal of Obstetrics and Gynecology, 125, 733-739, 1976	Retrospective study. Prospective studies were prioritised for this review
Wongwananuruk,T., Borriboonhirunsarn,D., Incidence of vaginal breech delivery in singleton in Siriraj Hospital, Journal of the Medical Association of Thailand, 88, 582-587, 2005	Retrospective study. Prospective studies were prioritised for this review
Woo, J. S. K., Chan, P. H., Ghosh, A., Term breech delivery - Is a high caesarean section rate justified?, Australian and New Zealand Journal of Obstetrics and Gynaecology, 23, 25-27, 1983	Retrospective study. Prospective studies were prioritised for this review
Woods,J.R.,Jr., Effects of low-birth-weight breech delivery on neonatal mortality, Obstetrics and Gynecology, 53, 735-740, 1979	No relevant population. Authors do not specify if births were preterm or term. Birthweights were between 1000 g and 2499 g
Yamazaki, T., Otsuka, S., Inaba, F., Fukasawa, I., Watanabe, H., Inaba, N., Clinical evaluation of breech deliveries over a fifteen-year period at a	No relevant outcomes

Study	Reason for exclusion
hospital in Ota, Japan, Dokkyo Journal of Medical Sciences, 33, 181-185, 2006	
Yu,V.Y., Bajuk,B., Cutting,D., Orgill,A.A., Astbury,J., Effect of mode of delivery on outcome of very-low-birthweight infants, British Journal of Obstetrics and Gynaecology, 91, 633-639, 1984	No relevant population. Authors do not specify if births were preterm or term. Birthweights were between 501 g and 1500 g
Zahoor,S., Faiz,N.R., Maternal and fetal outcome in undiagnosed and diagnosed singleton breech presentation at term, Journal of Postgraduate Medical Institute, 22, 113-117, 2008	No data on relevant outcomes reported in relation to relevant comparison
Zatuchni, G. I., Andros, G. J., Prognostic Index for Vaginal Delivery in Breech Presentation at Term, American Journal of Obstetrics & Gynecology, 93, 237-42, 1965	Retrospective study. Prospective studies were prioritised for this review
Zeck,W., Walcher,W., Lang,U., External cephalic version in singleton pregnancies at term: a retrospective analysis, Gynecologic and Obstetric Investigation, 66, 18-21, 2008	No relevant comparison
Ziadeh, S., Abu-Heija, A. T., El-Jallad, M. F., Abukteish, F., Effect of mode of delivery on perinatal results in singleton breech presentation weighing >/= 1500 g, Journal of Obstetrics & Gynaecology, 18, 30-2, 1998	No separate outcome data relating to caesarean sections performed in labour

Economic studies

See Supplement 2 (Health economics) for details of economic evidence reviews and health economic modelling.

Appendix E – Clinical evidence tables

Intrapartum care for women with breech presenting in labour – mode of birth

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Full citation Alshaheen, H., Abd Al-Karim, A., Perinatal outcomes of singleton term breech deliveries in Basra, Eastern Mediterranean Health Journal, 16, 34-9, 2010 **Ref Id** 649759 **Country/ies where the study was carried out** Iraq **Study type** Prospective cohort **Aim of the study** To assess perinatal morbidity and mortality in breech births	**Sample size** N=113 women had a caesarean section in labour N=97 had a vaginal birth **Characteristics** Criteria for selection for a trial of labour with breech presentation were: a clinically adequate pelvis, a frank or complete breech with estimated fetal weight <4 kg with a flexed head and informed consent of the mother.	**Interventions** Intervention: emergency caesarean section (CS) in labour Comparison: vaginal birth (assisted or spontaneous)	**Details** In this 12-month prospective study all women were informed about the study before they gave consent to participate. All women who were eligible for the study consented to participation. All women were examined by the same obstetrician. Abdominal examination was performed for fetal presentation, engagement and fetal size. Pelvic examination was performed to assess cervical dilatation, type of breech and state of amniotic membranes, also to exclude cord prolapse or presentation and to assess the pelvis. Ultrasound was performed to confirm gestational age, to estimate fetal weight, to exclude congenital malformations, to exclude	**Results** **Neonatal** Stillbirth: caesarean section (n=113): 0 vaginal birth (n=97): 0 Nullipara: caesarean section (n=83): 0 vaginal birth (n=21): 0 Multipara: caesarean section (n=30): 0 vaginal birth (n=76): 0 Neonatal death in the first week: caesarean section (n=113): 1 vaginal birth (n=97): 8 The cause of neonatal death was	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained because only births occurring during the researchers' visits were included in the study; the outcomes of interest was not present at the start of the

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
and to assess the correlation of parity and birthweight with perinatal mortality by mode of birth **Study dates** From 1 September 2005 to 31 August 2006 **Source of funding** Not reported	Indications for caesarean section included: lack of progress of labour, fetal distress, previous difficult vaginal birth, macrosomia, cephalopelvic disproportion, breech with footling presentation. Age (% in the 31-45 years group): caesarean section: 34.5% versus vaginal birth: 48.5% Age (% in the 17-30 years group): caesarean section: 65.5 % versus vaginal birth: 51.5 % Nulliparous: caesarean section: 73.5 % versus vaginal birth: 21.6 % Multiparous: caesarean section: 26.5 %		multiple pregnancy and to locate the placenta. Abdominal X-ray was performed only for women in the early stages of labour (n=156) to diagnose extended head	birth asphyxia in both vaginal births and caesarean sections Nullipara: caesarean section (n=83): 1 vaginal birth (n=21): 5 Multipara: caesarean section (n=30): 0 vaginal birth (n=76): 3 <u>Birth asphyxia:</u> caesarean section (n=113): 0 vaginal birth (n=97): 2 <u>Brachial plexus lesion:</u> caesarean section (n=113): 0 vaginal birth (n=97): 3 <u>Fractured clavicle:</u> caesarean section (n=113): 0 vaginal birth (n=97): 1 <u>NICU admission:</u> caesarean section (n=113): 2	study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (assessment of outcome was adequate as only births occurring during the researchers' visits were included in the study and all neonates were examined by the paediatric resident following birth; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	versus vaginal birth: 78.4 % Baby's birthweight (% in the 2500-3500 g group): caesarean section: 72.6 % versus vaginal birth: 83.5 % Baby's birthweight (% in the >3500-4000 g group): caesarean section: 27.4 % versus vaginal birth: 16.5 % **Inclusion criteria** Criteria for inclusion in the study: women in labour who attended the birth room in Basra maternity and child hospital with a live singleton term breech presentation and who gave birth during the			vaginal birth (n=97): 8	

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	researchers' visits (3-4 times per week) **Exclusion criteria** Women with obstetric problems and medical illnesses				
Full citation Barlov, K., Larsson, G., Results of a five-year prospective study using a feto-pelvic scoring system for term singleton breech delivery after uncomplicated pregnancy, Acta Obstetricia et Gynecologica Scandinavica, 65, 315-319, 1986 **Ref Id** 649781 **Country/ies where the study was carried out** Sweden	**Sample size** N=226 **Characteristics** Mean age: vaginal birth 27.2 years (range 17-39 years), emergency caesarean section (CS) 25.7 years (range 19-38 years) Nullipara: vaginal birth 41/102, emergency CS 16/23 Previous gynaecological	**Interventions** Intervention. Emergency CS in labour Comparator. Vaginal birth	**Details** Continuous electronic fetal monitoring was used routinely during vaginal birth. Vaginal birth proceeded spontaneously to just past the umbilicus and in the absence of nuchal arms was assisted with an assistant simultaneously performing Kristeller's manoeuvre. Forceps were not used unless difficulties were encountered in delivering the aftercoming head. The perineum was always incised	**Results** **Maternal** Mean blood loss at birth (range): Vaginal birth: 255.2 ml (50-775 ml) (n=102) Emergency CS: 522.7 ml (100-1200 ml) (n=23) **Neonatal** Neonatal mortality: Vaginal birth 0/102 Emergency CS 0/23 Brachial palsy: Vaginal birth: 1/102 Emergency CS: 0/23 Fractured humerus: Vaginal birth: 1/102 Emergency CS: 0/23	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records;

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Study type Prospective cohort **Aim of the study** To examine whether a feto-pelvic scoring system could be used to identify women with breech presentation who could give birth vaginally **Study dates** 1978-1982 **Source of funding** None reported	disease or operation: vaginal birth 17.6%, emergency CS 8.7% Mean birthweight: vaginal birth 3266g (range 1850-4550g), emergency CS 3300g (range 2120-4420g) Mean gestational age at birth in weeks: vaginal birth 40 (range 37-44), emergency CS: 40 (range 37-44) Apgar <7 at 1 minute: vaginal birth 30/102, emergency CS 4/23 Apgar <7 at 5 minute: vaginal birth 1/102, emergency CS 0/23 **Inclusion criteria**			<u>Fractured clavicle:</u> Vaginal birth: 4/102 Emergency CS: 0/23 <u>Neonatal pulmonary insufficiency necessitating continuous positive airway pressure (C-PAP):</u> Vaginal birth: 0/102 Emergency CS: 1/23	outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (assessment of outcomes was through medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	Singleton breech presentation with uncomplicated pregnancy **Exclusion criteria** None reported				
Full citation Bird,C.C., McElin,T.W., A six-year prospective study of term breech deliveries utilizing the Zatuchni-Andros Prognostic Scoring Index, American Journal of Obstetrics and Gynecology, 121, 551-558, 1975 **Ref Id** 169093 **Country/ies where the study was carried out** USA **Study type** Prospective cohort	**Sample size** N=290 **Characteristics** Age range 17 to 44 years, mean age 26 years Gravidity range 1 to 7, 172/290 (59.4%) primigravidas Birthweight: 2500-2999g: vaginal birth 103/234, caesarean section (CS) 5/56 3000-3499g: vaginal birth 74/234, CS 25/56	**Interventions** Intervention: CS after labour had already started (n=56). Comparator: vaginal birth (n=234)	**Details** This study included consecutive breech births. On admission to the labour unit the women were evaluated by an attending physician and/or resident and a breech score was assigned. The management of the labour and birth then proceeded according to the desires and discretion of the primary physician bearing in mind the breech score assigned upon admission	**Results** **Neonatal** <u>Stillbirth:</u> Vaginal birth 0/234 Emergency CS: 0/56 <u>Neonatal death:</u> Vaginal birth 2/234 Emergency CS: 0/56 <u>Requiring resuscitation:</u> Vaginal birth 31/234 Emergency CS 1/56 <u>Cardiorespiratory depression:</u> Vaginal birth 14% (33/234*) Emergency CS 4% (2/56*) *Calculated by the NGA technical team <u>Birth injury (depressed skull fractures):</u>	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS, although it is unclear to what extent the indications were related to the breech score or to other factors. The indications could, in turn, be associated with adverse outcomes; however, exposed and non exposed groups were both representative of the population of interest; the exposure was ascertained

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Aim of the study To report term breech births occurring between 1 January 1968 and 1 January 1974 in the study authors' institution based on the Zatuchni-Andros Breech Scoring Index **Study dates** 1968-1974 **Source of funding** None reported	3500-3999g: vaginal birth 47/234, CS 14/56 4000-4499g: vaginal birth 8/234, CS 8/56 4500+g: vaginal birth 2/23, CS 4/56 Apgar score <=3 at 1 min: vaginal birth 46/234, CS 2/56 Apgar score >=4 at 1 min: vaginal birth 188/234, CS 54/56 Oxytocin given to stimulate labour: 45/172 primigravidas (26.2%), 50/118 multigravidas (42.4%), overall 95/290 (32.7%) of whom 7 went on to have a CS Zatuchni and Andros breech score <=3: vaginal birth 35/234, CS 43/56 Zatuchni and Andros breech score >=4: vaginal			Vaginal birth 2/234 Emergency CS 0/56 <u>Birth injury (unilateral clavicular fractures):</u> Vaginal birth 4/234 Emergency CS 0/56	through medical records; outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (assessment of outcomes was through medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	birth 212/234, CS 13/56 **Inclusion criteria** Consecutive term (fetal weight >2500g) breech births **Exclusion criteria** Elective induction; twin pregnancies; women in whom vaginal bleeding, significant gross heart rate abnormalities, monitored late deceleration patterns or cord prolapse occurred				
Full citation Capeless,E.L., Mann,L.I., A vaginal delivery protocol for the term breech infant utilizing ball pelvimetry, Journal of Reproductive Medicine, 30, 545-548, 1985	**Sample size** N=35 women undergoing an emergency caesarean section (CS) in labour	**Interventions** Intervention. Emergency caesarean section in labour Comparator. Vaginal birth (assisted or	**Details** Radiological evaluation of the maternal pelvis was obtained with the Ball pelvimetry technique. Infant follow-up was limited to the initial hospitalisation. The use of	**Results** **Neonatal** Facial palsy Emergency caesarean section in labour (n=35): 1	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non- exposed group was drawn from a

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Ref Id 193288 **Country/ies where the study was carried out** USA **Study type** Prospective cohort (assumed to be prospective although this is not clearly reported in the article) **Aim of the study** To report on the study author's hospital's experience with Ball pelvimetry for evaluation of fetopelvic volume relationships **Study dates** Women with breech presentations between January 1979 and December 1981 **Source of funding** Not reported	N=51 women undergoing a vaginal birth (assisted: n=31; forceps to aftercoming head: n=20) **Characteristics** All pregnancies were at term. Reasons for CS after being allowed an 'adequate' trial of labour: arrest of active phase: n=27, arrest of descent: n=7, prolapsed cord: n=1. The study authors reported that no caesarean sections were performed for fetal distress) The following characteristics were reported for the overall group of 107 women	forceps to aftercoming head). There were no total breech extractions	analgesia during labour was minimal, with narcotic analgesia given when necessary. Only local anaesthesia was used	Vaginal birth (n=51): 1 <u>Admission to the neonatal intensive care unit (NICU)</u> Emergency caesarean section in labour (n=35): 4 (reasons: meconium aspiration (n=1), transient respiratory distress (n=1), pyloric stenosis (n=1), not reported (n=1)) Vaginal birth (n=51): 4 (reasons: triple nuchal cord - acidosis (n=1), transient respiratory distress (n=1), transient respiratory distress - smallness for gestational age (n=1), premature - smallness for gestational age (n=1))	different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records; outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (outcomes were assessed through medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	(separate characteristics for the 86 women allowed an 'adequate' trial of labour and included in the analysis were not reported): mean age: 25.6 years (range 17-37); gravidity: 1.9 (range 1-13); nullipara: 53%; multipara: 47%; frank breech: n=103; complete breech: n=4 mean gestational age (weeks): 39.8 (range 34-43); mean infant weight: 3,315 g (range 1,960-4,394); characteristics not stratified by intervention or comparator group **Inclusion criteria**				

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	Women with breech presentations at the Medical Center Hospital of Vermont, USA who presented in labour were included in the study. However, only women who were allowed an 'adequate' trial of labour were included in the main analyses **Exclusion criteria** N=21 women were included in the study but excluded from the main analyses because they were not allowed an adequate trial of labour due to the following indications: evidence of				

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	disproportion or deficit on pelvimetry (n=15), fetuses with a hyperextended head (n=2), abnormal pelvic architecture (n=4)				
Full citation Collea, J. V., Chein, C., Quilligan, E. J., The randomized management of term frank breech presentation: A study of 208 cases, American Journal of Obstetrics and Gynecology, 137, 235-244, 1980 **Ref Id** 649870 **Country/ies where the study was carried out** USA **Study type** Prospective cohort (a secondary analysis was reported in the article using	**Sample size** N=66 **Characteristics** Women with singleton term frank breech presentation. No baseline characteristics were reported with stratification by relevant subgroups. Women with emergency caesarean section (CS) in labour due to difficulty in labour or fetal distress had been allowed to have	**Interventions** Interventiion. Emergency CS in labour (n=11) Comparison. Vaginal birth (n=55). Partial breech extraction was used for most vaginal births. In some cases Piper forceps were applied for the aftercoming head	**Details** Women were randomised to elective CS or a trial of labour (TOL) group. However, some women in the TOL group were scheduled for CS due to inadequate X-ray pelvimetry measurements. For the analysis in this article, data were extracted for only 55 women who gave birth vaginally, and 11 women who required CS for difficulties during labour. Pudendal block anesthesia was used for most vaginal breech births. A combination of pudendal block anaesthesia for delivery of the fetal body and a general anaesthetic technique for delivery of the aftercoming head was used in some births	**Results** **Neonatal** <u>Perinatal death:</u> Emergency CS in labour (n=11): 0 Vaginal birth (n=55): 0 <u>Spontaneous bilateral pneumothorax:</u> Emergency CS in labour (n=11): 0 Vaginal birth (n=55): 1 <u>Brachial plexus injury:</u> Emergency CS in labour (n=11): 0 Vaginal birth (n=55): 2 (1 was mild) Congenital anomalies were excluded from the results	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population as compared to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the study authors did not report how exposure was ascertained but given the study setting it is assumed that medical records were

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
data from a randomised controlled trial (RCT)) **Aim of the study** To determine the effect of mode of birth on maternal and infant outcomes **Study dates** July 1975 to May 1979 **Source of funding** Not reported	labour in light of adequate X-ray pelvimetry; 49/55 women in the vaginal birth group also had had adequate X-ray pelvimetry results; 3/55 had a vaginal birth before X-ray pelvimetry could be performed; 3/55 were scheduled for CS due to inadequate pelvimetry but had a vaginal birth before CS could be performed **Inclusion criteria** Women with singleton term frank breech presentation **Exclusion criteria** Not reported				used; outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (the study authors did not report how outcomes were assessed but given the study setting it is assumed this was done with medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Full citation De Leeuw, J. P., De Haan, J., Derom, R., Thiery, M., Martens, G., Van Maele, G., Mortality and early neonatal morbidity in vaginal and abdominal deliveries in breech presentation, Journal of Obstetrics and Gynaecology, 22, 127-139, 2002 **Ref Id** 649896 **Country/ies where the study was carried out** Belgium and the Netherlands **Study type** Prospective cohort **Aim of the study** To investigate the management of breech presentation in two university hospitals **Study dates**	**Sample size** N=38 emergency caesarean sections in labour N=132 vaginal births **Characteristics** Only data on births with infant weight of at least 2500 g were extracted for the guideline review. Indications for emergency caesarean section (CS) were: fetal (n=12), dystocia (n=37), placental (n=1), maternal (n=7) Selection criteria for trial of labour (TOL) were: no placenta praevia, no overt contracted pelvis, no hyperextension of the fetal head,	**Interventions** Emergency caesarean sections in labour (n=38) Vaginal births (n=132) (unassisted breech (Brach manoeuvre): n=77, assisted breech: n=52, breech extraction: n=3)	**Details** No formal prognostic breech scoring indices were used. Women had assessment of the maternal pelvis by vaginal examination. No routine X-ray pelvimetry was performed before labour. An experienced obstetrician and a neonatologist were always present at the birth in both hospitals	**Results** **Neonatal** <u>Intrapartum fetal death</u> Emergency caesarean sections in labour (n=38): 0 Vaginal births (n=132): 1 (Death was "... caused by puncturing a prolapsed umbilical cord by a fetal scalp electrode. This fetal error occurred during the unjustified replacement of an electrode, which became detached just before the diagnosis of cord prolapse was made; an exotic trauma, which with competent management should have been avoided".) <u>Early neonatal mortality</u> Emergency caesarean sections in labour (n=38): 0	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records; outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (outcomes were assessed through medical records; follow-up was long enough

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Women with singleton breech presentations from January 1984 to June 1986 **Source of funding** Not reported	no specific cases of uterine scar Indications for CS not reported separately for emergency CS subgroup **Inclusion criteria** Women with singleton breech presentations in two university hospitals: the Department of Obstetrics and Gynaecology at the University of Ghent (Belgium) and the Department of Obstetrics and Gynaecology at the University of Limburg, Maastricht (the Netherlands) from January 1984 to June 1986			Vaginal births (n=132): 0 <u>Late neonatal mortality</u> Emergency caesarean sections in labour (n=38): 0 Vaginal births (n=132): 0 Post-neonatal mortality data were reported provided in the article but not extracted for the guideline review	for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	Exclusion criteria Antenatal fetal deaths and lethal malformations				
Full citation Gimovsky, M. L., Wallace, R. L., Schifrin, B. S., Paul, R. H., Randomized management of the nonfrank breech presentation at term: a preliminary report, American Journal of Obstetrics & Gynecology, 146, 34-40, 1983 **Ref Id** 387182 **Country/ies where the study was carried out** USA **Study type** Prospective cohort (secondary analysis of randomised controlled trial (RCT) data was performed for the guideline review)	**Sample size** N=46 **Characteristics** Baseline characteristics were not stratified by the two relevant subgroups. Breech included complete breech, double footling, single footling, and incomplete. Indications for caesarean section (CS) included latent phase arrest with oxytocin (n=2), active phase arrest with oxytocin (n=2), active phase arrest without oxytocin (n=1), arrest of	**Interventions** Intervention. Emergency CS in labour (n=11) Comparison. Vaginal birth (n=35)	**Details** Women were randomised to elective caesarean section or to trial of labour, but not all women randomised to trial of labour actually had a trial of labour. For the guideline review, data were extracted only for women who had CS for an indication clearly related to labour. Vaginal births were assisted birth with elective application of Piper forceps. A generous midline episiotomy or episioproctotomy was performed. Intravenous analgesia was permitted in labour as per normal routine. Local and pudendal nerve blocks were the main anaesthetic techniques used, with general anaesthesia being on standby in case needed	**Results** **Neonatal** <u>Neonatal deaths</u> Emergency CS in labour (n=11): 0 Vaginal birth (n=35): 1. The baby was apparently healthy but died after vaginal birth These results exclude babies with major congenital anomalies <u>Peripheral nerve injury</u> Emergency CS in labour (n=11): 0 Vaginal birth (n=35): 0	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the study authors did not report how exposure was ascertained but given the study setting it is assumed that medical records were used; outcomes of interest were not present at the start of the study as they occurred during or after birth)

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Aim of the study To compare elective CS to a selective management protocol for the nonfrank breech presentation **Study dates** Recruitment occurred between April 1981 and May 1982 **Source of funding** Not reported	descent (n=1), prolapse of umbilical cord in the first stage of labour (n=3), body prolapse in the first stage of labour (n=2); 31/35 in the vaginal birth group had been randomised to trial of labour, and 4/35 had been randomised to elective CS **Inclusion criteria** Women with singleton nonfrank breech presentation with gestational age between 36 and 42 weeks, an estimated fetal weight between 2 and 4 kg, cervix less than 7 cm dilated, a non-extended normal-appearing fetal				Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (the study authors did not report how outcomes were assessed but given the study setting it is assumed this was done with medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	skull on roentgenogram, and no contraindication to labour **Exclusion criteria** Women were excluded from a trial of labour (TOL) after randomisation if if they had inadequate pelvic dimensions on X-ray pelvimetry				
Full citation Jaffa,A.J., Peyser,M.R., Ballas,S., Toaff,R., Management of term breech presentation in primigravidae, British Journal of Obstetrics and Gynaecology, 88, 721-724, 1981 **Ref Id** 193318	**Sample size** N=170 **Characteristics** Baseline characteristics were not reported for the relevant subgroups **Inclusion criteria**	**Interventions** Intervention. Emergency caesarean sections in labour (n=17) Comparator. Vaginal births (n=260) (the Maurceau-Smellie-Veit technique was used routinely)	**Details** Radiological pelvimetry and radiological assessment of fetal attitude was performed before selection for vaginal birth. Two obstetricians were involved in the selection for vaginal birth. A single intravenous injection of 75 mg pethidine and 25 mg promethazine was used for analgesia. A paracervical block was often established at a cervical dilatation of 5-6 cm	**Results** **Neonatal** <u>Perinatal mortality</u> Emergency caesarean sections (n=17): 0 Vaginal births (n=260): 0 The study authors reported that no significant perinatal morbidity occurred, however they did not provide a definition of	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Country/ies where the study was carried out Israel **Study type** Prospective cohort **Aim of the study** To demonstrate that carefully selected attempts at vaginal breech birth could result in a relatively low emergency caesarean section (CS) rate with no perinatal mortality and minimal neonatal morbidity **Study dates** Women with breech presentations from 1972 to 1979 **Source of funding** Not reported	Nulliparous women with term breech presentations who gave birth during the study period, irrespective of medical complications such as hypertensive disorders or mild class diabetes **Exclusion criteria** Women whose babies weighed less than 2500 g or had congenital malformations. Exclusion criteria for a trial of labour (TOL) were: nulliparous over 35 years old, pelvic deformities, inadequate radiological pelvimetry results		and pudendal block at full dilatation. General anaesthesia was given for two women when cord prolapse occurred at full dilatation and birth was achieved through breech extraction	significant perinatal morbidity, therefore this outcome was not included in the guideline review. The study authors reported that one baby had Erb's palsy and recovered within 1 month, but they did not report the mode of birth for this baby	exposed and non-exposed groups were both representative of the population of interest; the study authors did not specify how exposure was assessed, but given the study setting it is assumed this was through medical records; outcomes of interest were not present at the start of the study as outcomes occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (the study authors did not report how outcomes were assessed, but given the study setting it is assumed this was through medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Full citation Maier,B., Georgoulopoulos,A., Zajc,M., Jaeger,T., Zuchna,C., Hasenoehrl,G., Fetal outcome for infants in breech by method of delivery: Experiences with a stand-by service system of senior obstetricians and women's choices of mode of delivery, Journal of Perinatal Medicine, 39, 385-390, 2011 **Ref Id** 171638 **Country/ies where the study was carried out** Austria **Study type** Prospective cohort **Aim of the study** Included investigating whether emergency caesarean section during labour of intended vaginal breech births would result in any maternal or fetal adverse outcomes	**Sample size** N=39 emergency caesarean sections N=49 vaginal births **Characteristics** Inclusion criteria for intended vaginal birth were: adequate abdominal and pelvic dimensions; estimated fetal weight between 2500 and 3500 g; no deflexion of the head; no suspected fetal anomalies; location of the placenta - no placenta praevia; no funic presentation; normal flow in the umbilical artery. Indications for	**Interventions** Intervention. Emergency caesarean section (n=39) (The study authors reported that these women intended to have a vaginal birth but had a secondary CS. For the guideline review this has been interpreted as emergency caesarean section in labour) Comparator. Vaginal births (n=46) (Spontaneous: n=16; Bracht: n=16; Arthur-Mueller/Veit-Smellie: n=28; Loevset (nuchal arms) manoeuvres: n=1)	**Details** An obstetrician experienced in breech presentation and a neonatologist were both present at birth	**Results** **Neonatal** <u>Genital haematoma</u> Emergency caesarean sections (n=39): 2 Vaginal births (n=46): 3 <u>Cephalic heamatoma</u> Emergency caesarean sections (n=39): 0 Vaginal births (n=46): 1 <u>Transfer to the neonatal intensive care unit (NICU)</u> Emergency caesarean sections (n=39): 5 (Reasons (including multiple reasons): adaptation problems: n=5; amnion infection syndrome (AIS): n=1; aspiration of meconium: n=1. Mean duration of NICU care was 4.2 days). Vaginal births (n=46): 2 (Reasons	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS (indications were not reported but it is assumed that they were clinical). The indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records; outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (outcomes were assessed

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Study dates Women with breech presentations between 1 January 2002 and 30 April 2005 **Source of funding** Not reported	emergency CS were not reported. Maternal age (median (range), years): Emergency CS: 29 (20-37) versus vaginal birth: 30 (18-38) Gestational age (median (range), weeks): Emergency CS: 39 (34.86-41.71) versus vaginal birth: 39.36 (35.57-43.29) Birthweight (median (range), g): Emergency CS: 3220 (2200-4500) versus vaginal birth: 3105 (2120-4030) Nulliparous: Emergency CS: 69.2% vs vaginal birth: 63.1% **Inclusion criteria**			(including multiple reasons): adaptation problems: n=2; AIS: n=1. Mean duration of NICU care was 4.5 days). All babies in both groups left NICU in good health, without any neurological or mechanical trauma	through medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** The study authors acknowledged that the sample was too small to show a significant difference with regard to rare fetal outcomes

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	Women with singleton complete or frank breech presentation >=35 weeks of gestation from 1 January 2002 to 30 April 2005 **Exclusion criteria** Pre-eclampsia; small for gestational age, < 10th percentile; cephalo-thoracic asymmetry; large baby (>3500 g); maternal morbidity leading to caesarean section for any other reasons				
Full citation Molkenboer, J. F., Debie, S., Roumen, F. J., Smits, L. J., Nijhuis, J. G., Maternal health outcomes two years after term breech delivery, Journal of	**Sample size** N=49 emergency caesarean sections N=91 vaginal births	**Interventions** Intervention. Emergency caesarean section in labour (n=49) Comparator. Vaginal birth (n=91) (spontaneous birth:	**Details** The study authors' department participated in the Term Breech Trial with 35 randomised women. During the trial period non-randomised term breech presentations were also	**Results** Maternal <u>Did breastfeed (for any duration)</u> Emergency caesarean section in labour (n=49): 32	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Maternal-Fetal & Neonatal Medicine, 20, 319-24, 2007 **Ref Id** 395980 **Country/ies where the study was carried out** The Netherlands **Study type** Prospective cohort **Aim of the study** To evaluate maternal health outcomes 2years after term breech birth **Study dates** Women with a breech presentation from 20 July 1998 to 21 April 2000 **Source of funding** Not reported	**Characteristics** No data on % of nulliparous women in the relevant groups **Inclusion criteria** Women with a term breech presentation from 20 July 1998 to 21 April 2000 **Exclusion criteria** Women who participated in the Term Breech Trial were excluded from the study reported in this article; 2 births were excluded due to lethal congenital anomalies	n=42; assisted birth: n=47; forceps for aftercoming head: n=2)	carefully documented. Planned vaginal births in these women were managed according to usual departmental procedures, which followed the guidelines of the Term Breech Trial protocol. These women were sent the same questionnaire as the randomised women in the Term Breech Trial 2 years after birth. In these questionnaires the women were asked to evaluate their health and related topics from the previous 3-6 months. Most outcomes reported in the article were not extracted for the guideline review because they were considered to be too indirectly related to birth based on the time that had elapsed since birth. However, the outcome "did breastfeed" was extracted	Vaginal birth (n=91): 44	group because at least some women in the exposed group were likely to have had clinical indications for an emergency caesarean section (CS), although the indications were not reported. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records; outcomes of interest were not present at the start of the study as outcomes occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (outcomes were assessed through self report; self-report on whether a woman has breastfed or not is assumed to be reliable; follow-up was long enough for the outcomes to occur; women lost to follow-

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
					up were unlikely to introduce a bias due to the small number lost (18/203: 8.9%)) **Other information** None
Full citation Sarno, A. P., Jr., Phelan, J. P., Ahn, M. O., Strong, T. H., Jr., Vaginal birth after cesarean delivery. Trial of labor in women with breech presentation, Journal of Reproductive Medicine, 34, 831-3, 1989 **Ref Id** 650323 **Country/ies where the study was carried out** USA **Study type** Prospective cohort (assumed to be prospective although this is not clearly reported in the article)	**Sample size** N=14 emergency CS in labour N=13 vaginal births **Characteristics** Both frank and nonfrank breech were considered for a trial of labour (TOL). A standardised protocol was used for TOL selection. Indications for repeat CS in the TOL group were: arrest of dilation (n=10), fetal distress (n=2), other (n=2); 7/14	**Interventions** Intervention. Emergency CS in labour (n=14) Comparator. Vaginal birth (n=13)	**Details** No further details reported	**Results** **Neonatal** <u>Neonatal death</u> Emergency CS in labour (n=14): 0 Vaginal birth (n=13): 0 <u>Birth trauma (Erb's palsy)</u> Emergency CS in labour (n=14): 0 Vaginal birth (n=13): 1 <u>Birth trauma (trapped head)</u> Emergency CS in labour (n=14): 0 Vaginal birth (n=13): 1	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records; outcomes of interest were not present at the start of the study as outcomes occurred during or after birth)

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Aim of the study To provide detailed information on women who presented with a breech presentation and requested a trial of labour after an previous caesarean birth **Study dates** Women with a previous caesarean section (CS) and breech presentation from 1 July 1982 to 30 June 1984 **Source of funding** Not reported	women who had an emergency caesarean section had had either oxytocin augmentation or induction. The group that achieved vaginal birth did not require oxytocin. Baseline characteristics were not reported **Inclusion criteria** Women with a previous CS and breech presentation who presented at the Los Angeles County / University of Southern California Medical Center during the study period **Exclusion criteria**				Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (outcomes were assessed through medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	Women selected for TOL excluded those with a classic uterine incision				
Full citation Singh,A., Mishra,N., Dewangan,R., Delivery in breech presentation: The decision making, Journal of Obstetrics and Gynecology of India, 62, 401-405, 2012 **Ref Id** 291618 **Country/ies where the study was carried out** India **Study type** Prospective cohort study (assumed to be prospective although this was not reported clearly in the article) **Aim of the study**	**Sample size** N=94 emergency caesarean sections N=60 vaginal births **Characteristics** Indications for emergency caesarean section: fetal distress (n=18), failure to progress (n=11), cord prolapse (n=4), footling presentation (n=25), placenta praevia (n=10), previous caesarean scar (n=30)	**Interventions** Intervention. Emergency caesarean section in labour (n=94) Comparator. Vaginal birth (n=60). Assisted breech birth was the method of choice, following a principle of non-intervention until delivery of the scapula. The delivery of the extended arms was achieved using Lovset's method, whereas the delivery of the aftercoming head was achieved using the Burns Marshall Method or Mauriceau Smellie Veit manoeuvre. After birth, the baby was attended by the paediatrician	**Details** On admission, details on demographic profile, menstrual and obstetric history were noted. A general, systemic and obstetric examination was carried out. All women were subjected to obstetric ultrasonography and afterwards they were assigned to either planned caesarean section or to trial of vaginal birth	**Results** **Neonatal** Perinatal mortality (excluding mortality due to intrauterine fetal death) Emergency caesarean section in labour (n=94): 7 (causes of death: birth asphyxia: n=4; septicaemia: n=1; intraventricular haemorrhage: n=0; cord prolapse: n=2) Vaginal birth (n=60): 5 (causes of death: birth asphyxia: n=2; septicaemia: n=1; intraventricular haemorrhage: n=1; cord prolapse: n=1) Fractured clavicle Emergency caesarean section in labour (n=94): 0	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency caesarean section (CS). These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records; outcomes of interest were not present at the start of the study as outcomes occurred during or after birth)

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
To optimise fetal and maternal outcomes in breech presentation using different modes of birth **Study dates** Women with breech presentations from January 2007 to September 2009 **Source of funding** Not reported	**Inclusion criteria** Women with singleton breech presentations during the study period. Only data on women with term presentations were extracted for the guideline review. A trial of labour (TOL) was given to women who consented to it **Exclusion criteria** The following were indications for planned caesarean section: fetopelvic disproportion, hyperextension of the head, footling presentation, and other medical and obstetric complications that were standard indications for			Vaginal birth (n=60): 0 <u>Fractured humerus</u> Emergency caesarean section in labour (n=94): 0 Vaginal birth (n=60): 0 <u>Dislocation of hip</u> Emergency caesarean section in labour (n=94): 0 Vaginal birth (n=60): 0 <u>Erb's palsy</u> Emergency caesarean section in labour (n=94): 0 Vaginal birth (n=60): 0 <u>Damage to soft tissue and laceration</u> Emergency caesarean section in labour (n=94): 0 Vaginal birth (n=60): 1	Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (the study authors did not report how outcomes were assessed but given the medical setting it is assumed that outcomes were assessed through medical records; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** The majority of women were admitted in labour because the study was carried out in the largest teaching hospital in the state, meaning that there was a high number of referrals to the hospital

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	planned caesarean section				
Full citation Su, M., Hannah, W. J., Willan, A., Ross, S., Hannah, M. E., Planned caesarean section decreases the risk of adverse perinatal outcome due to both labour and delivery complications in the Term Breech Trial, BJOG: An International Journal of Obstetrics and Gynaecology, 111, 1065-1074, 2004 **Ref Id** 650363 **Country/ies where the study was carried out** Canada/multiple countries (the trial was carried out in 26 countries) **Study type** Secondary analysis of randomised controlled trial (RCT) data (Term Breech Trial)	**Sample size** n=2088 originally randomised n=2083 with entry and outcome data n=1540 with outcome data excluding prelabour CS **Characteristics** See Su 2003 (also included in the guideline review) **Inclusion criteria** Singleton fetus in a frank or complete breech presentation at term (>=37 weeks) and who were without contraindication to labour or vaginal birth	**Interventions** The RCT originally randomised women to have a planned CS or planned vaginal birth. Interventions relevant to this review: CS during early labour, CS during active labour, vaginal birth	**Details** Women entering the trial were randomly allocated to planned CS or planned vaginal birth. If randomised to the planned CS group, the CS was scheduled for >=38 weeks of gestation. If the woman was in labour at the time of randomisation, the CS was undertaken as soon as possible. If the woman was randomised to the planned vaginal birth group, management was expectant until spontaneous labour began, unless there was an indication to induce labour or perform a CS. Babies in breech presentation who were born vaginally were attended by a clinician experienced in vaginal breech birth. A companion article (Hannah 2002) reported labour complications that led to CS in the group randomised to planned vaginal birth, such as failure to progress in labour	**Results** **Neonatal** Stillbirth: Vaginal birth: 6/689* CS during early labour: 0/249** CS during active labour: 0/596*** Neonatal death: Vaginal birth: 5/689* CS during early labour: 0/249** CS during active labour: 1/596*** Ventilation required: Vaginal birth: 9/689* CS during early labour: 0/249** CS during active labour: 3/596*** Birth injury (basal skull fracture, brachial plexus injury, spinal cord injury or significant genital injury): Vaginal birth: 7/689* CS during early labour: 0/249**	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (some of the participants in the non-exposed group were drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; the exposure was ascertained by a secure record; outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (assessment of outcome was through medical records; follow-up was long enough for the outcomes to occur; women lost to follow-up unlikely to introduce bias

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Aim of the study To determine whether a decreased risk of adverse perinatal outcome with a policy of planned caesarean section (CS), compared with a policy of planned vaginal birth, reported in the Term Breech Trial was due to a decrease in risk of adverse outcomes during labour or during birth **Study dates** Not reported **Source of funding** The Canadian Institutes of Health Research (CIHR), Centre for Research in Women's Health, Sunnybrook and Women's College Health Sciences Centre, and the Department of Obstetrics and Gynecology at the University of Toronto	**Exclusion criteria** For the analysis for the guideline review, prelabour CS was excluded		Early labour defined as contractions less frequent than every 5 min or if more frequent than every 5 min, cervix dilated <3 cm and effaced <80%; active labour defined as contractions more frequent than every 5 min and cervic dilated >=3 cm or effaced >=80%.	CS during active labour: 4/596*** NICU admission: Vaginal birth: 13/689* CS during early labour: 2/249** CS during active labour: 6/596*** *2 cases of adverse perinatal outcome in the vaginal birth group (2 stillbirths probably before enrolment) not included and also subtracted from the denominator because the cause was judged to be unrelated to labour or birth ** 1 case of adverse perinatal outcome in the CS during early labour group (1 anomaly, ventricular septal defect and patent ductus arteriosus) not included and also subtracted from the denominator	(very small number of women without relevant data)) **Other information** In some cases, randomisation to "planned CS" happened when labour had already started. Therefore, CS during early labour or CS during active labour might still have been considered "planned CS" in the trial

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
				because the cause was judged to be unrelated to labour or birth ***3 cases of adverse perinatal outcome in the CS during active labour group (3 anomalies: 1 intestinal obstruction, 1 Down's syndrome, and 1 ruptured myelomeningocele) not included and also subtracted from the denominator because the cause was judged to be unrelated to labour or birth	
Full citation Su, M., McLeod, L., Ross, S., Willan, A., Hannah, W. J., Hutton, E., Hewson, S., Hannah, M. E., Term Breech Trial Collaborative, Group, Factors associated with adverse perinatal outcome in the Term Breech Trial, American Journal of Obstetrics	**Sample size** n=2088 originally randomised n=1887 with data on adverse perinatal outcome n=1384 with data on adverse perinatal outcome excluding prelabour	**Interventions** The RCT originally randomised women to have a planned caesarean section or planned vaginal birth. Interventions relevant to the guideline review: caesarean section during early labour, caesarean	**Details** Women entering the trial were randomly allocated to planned CS or planned vaginal birth. If randomised to the planned CS group, the CS was scheduled for >=38 weeks of gestation. If the woman was in labour at the time of randomisation, the CS was performed as soon as	**Results** **Neonatal** <u>Adverse perinatal outcome:</u> Vaginal birth: 38/630 (6.0%), adjusted odds ratio (aOR)*: reference CS during early labour: 3/226 (1.3%),	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: low risk of bias (the exposed group is representative of the population of interest; the non-exposed group was drawn from the same population as the exposed

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
& Gynecology, 189, 740-5, 2003 **Ref Id** 650364 **Country/ies where the study was carried out** Canada/multiple countries (the trial was carried out in 26 countries) **Study type** Secondary analysis of randomised controlled trial (RCT) data (Term Breech Trial) **Aim of the study** To identify factors associated with adverse perinatal outcomes **Study dates** Not reported **Source of funding**	caesarean sections **Characteristics** Maternal age >=30 years: 595/1887 Maternal age <30 years: 1292/1887 Parity >4: 109/1887 Parity 1-4: 771/1887 Parity 0: 1007/1887 Gestational age >=41 weeks: 123/1887 Maternal diabetes: 30/1887 Uterine anomaly: 15/1887 Hypertension: 96/1887 Previous caesarean section: 51/1887 Epidural analgesia: 522/1887 Frank breech: 1240/1887	section during active labour, vaginal birth	possible. If the woman was randomised to the planned vaginal birth group, management was expectant until spontaneous labour began, unless there was an indication to induce labour or perform a CS. Babies in breech presentation who were born vaginally were attended by a clinician experienced in vaginal breech birth. A companion article (Hannah 2002) reports some labour complications that led to CS in the group randomised to planned vaginal birth, such as failure to progress in labour Early labour defined as contractions less frequent than every 5 min or if more frequent than every 5 min, cervix dilated <3 cm and effaced <80%; active labour defined as contractions more frequent than every 5 min and cervic dilated >=3 cm or effaced >=80%. "Adverse perinatal outcome" defined as one or more of the following: perinatal or neonatal	aOR*: 0.21 95% CI 0.06 to 0.69, p=0.01 CS during active labour: 18/528 (3.4%), aOR*: 0.57 95% CI 0.32 to 1.02, p=0.06 *Not clearly reported in the article but assumed that the final analysis adjusted for birthweight	group; the exposure was ascertained by a secure record; outcomes of interest were not present at the start of the study as they occurred after birth) Comparability: low risk of bias (the study calculated adjusted odds ratios by building a multiple regression model, adding or removing variables using a step-wise approach) Outcome: low risk of bias (assessment of outcome was through medical records; follow-up was long enough for the outcomes to occur; women lost to follow-up were unlikely to introduce bias (very small number of women did not have data on outcomes (5 out of 2088) and around 10% (around 200 out of remaining 2083) of the women were excluded from outcome analysis because of non-breech presentation) **Other information**

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
The Canadian Institutes of Health Research (CIHR), Centre for Research in Women's Health, Sunnybrook and Women's College Health Sciences Centre, and the Department of Obstetrics and Gynecology at the University of Toronto	Complete breech: 647/1887 Birthweight >3500g: 460/1887 Birthweight 2800-3500g: 1060/1887 Birthweight <2800g: 367/1887 **Inclusion criteria** Singleton fetus in a frank or complete breech presentation at term (>=37 weeks of gestation) and who were without contraindication to labour or vaginal birth **Exclusion criteria** Lethal congenital anomalies, perinatal deaths that occurred before randomisation, babies with missing labour and		mortality at less than 28 days of age (excluding lethal congenital anomalies); birth trauma including subdural haematoma, spinal cord injury, basal skull fracture, peripheral nerve injury present at discharge from hospital, or clinically significant genital injury; seizures occurring at less than 24 hours of age or requiring 2 or more drugs to control them; Apgar score of less than 4 at 5 minutes; cord blood base deficit of at least 15; hypotonia for at least 2 hours; stupor, decreased response to pain or coma; intubation and ventilation for at least 24 hours; tube feeding for 4 days or more; or admission to the neonatal intensive care unit for longer than 4 days. Multiple logistic regression analysis was done to determine the adjusted odds ratio of adverse perinatal outcome between modes of birth. A step-wise approach was used to build to multiple regression model, level to		In some cases, randomisation to "planned CS" happened when labour had already started. Therefore, CS during early labour or CS during active labour might still have been considered "planned CS" in the trial

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	birth data because they were born in a non-participating hospital. For the analysis for the guideline review, prelabour caesarean section (CS) was excluded		enter the model was set a p<0.05 and the level to remove from the model was set at p>0.2. The variables included maternal age, parity, gestational age, maternal diabetes, uterine abnormality, hypertension, previous Caesarean section, national perinatal mortality rate of the country, mode of delivery, epidural analgesia, type of breech at delivery, birth weight.		
Full citation Su, M., McLeod, L., Ross, S., Willan, A., Hannah, W. J., Hutton, E. K., Hewson, S. A., McKay, D., Hannah, M. E., Factors Associated with Maternal Morbidity in the Term Breech Trial, Journal of Obstetrics and Gynaecology Canada, 29, 324-330, 2007 **Ref Id** 650365 **Country/ies where the study was carried out**	**Sample size** n=2088 originally randomised n=2078 with data on maternal morbidity n=1536 with data on maternal morbidity excluding prelabour caesarean sections **Characteristics**	**Interventions** The RCT originally randomised women to have a planned caesarean section or planned vaginal birth. Interventions relevant to the guideline review: caesarean section during early labour, caesarean section during active labour, vaginal birth	**Details** Women entering the trial were randomly allocated to planned CS or planned vaginal birth. If randomised to the planned CS group, the CS was scheduled for >=38 weeks of gestation. If the woman was in labour at the time of randomisation, the CS was performed as soon as possible. If the woman was randomised to the planned vaginal birth group, management was expectant until spontaneous labour began, unless there was an indication to induce labour or	**Results** **Maternal** Postpartum haemorrhage >1500 ml: Vaginal birth: 1/689 (0.1%) CS during early labour: 1/248 (0.4%) CS during active labour: 3/599 (0.5%) Maternal systemic infection Postpartum fever >=38.5C: Vaginal birth: 1/689 (0.1%)	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (some of the women in the non-exposed group were drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; the exposure was ascertained by a secure record; outcomes of interest were not present at the start

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Canada/multiple countries (the trial was carried out in 26 countries) **Study type** Secondary analysis of randomised controlled trail (RCT) data (Term Breech Trial) **Aim of the study** To identify factors associated with maternal morbidity among 2078 women **Study dates** Not reported **Source of funding** The Canadian Institutes of Health Research (CIHR), Centre for Research in Women's Health, Sunnybrook and Women's College Health Sciences Centre, and the Department of Obstetrics and Gynecology at the University of Toronto	See Su 2003 (also included in the guideline review) **Inclusion criteria** Singleton fetus in a frank or complete breech presentation at term (>=37 weeks of gestation) and who were without contraindication to labour or vaginal birth **Exclusion criteria** Women with missing data related to duration of labour. For the analysis for the guideline review, prelabour caesarean section (CS) was excluded		perform a CS. Babies in breech presentation who were born vaginally were attended by a clinician experienced in vaginal breech birth. A companion article (Hannah 2002) reported some labour complications that led to CS in the group randomised to planned vaginal birth, such as failure to progress in labour Active labour was defined as the presence of contractions <= 5 minutes apart with the cervix dilated to 3 cm or more or 80% effaced. Early labour was defined as any labour that did not meet the definition of active labour Maternal morbidity during the first 6 weeks postpartum was defined as at least 1 of the following: death; postpartum haemorrhage of more than 1500 ml or a need for blood transfusion; dilatation and curettage for bleeding or retained placental tissue; hysterectomy; cervical laceration involving the lower uterine segment (in the case of vaginal birth); vertical uterine incision or serious	CS during early labour: 2/248 (0.8%) CS during active labour: 16/599 (2.7%) <u>Maternal morbidity:</u> Vaginal birth: 13/689 (1.9%), adjusted odds ratio (aOR)*: Reference CS during early labour: 11/248 (4.4%), aOR* 2.41 95% CI 1.07 to 5.46, p=0.03 CS during active labour: 36/599 (6.0%), aOR* 3.33 95% CI 1.75 to 6.33, p<0.001 *Not clear from the article which variables were included in the final analysis <u>Early postpartum depression:</u> Vaginal birth: 0/689 (0%) CS during early labour: 1/248 (0.4%) CS during active labour: 1/599 (0.2%)	of the study as they occurred during or after birth) Comparability: high/low risk of bias (the study did not adjust for any factor for certain outcomes and therefore there is a high risk of bias whereas for other outcomes the study calculated adjusted odds ratios by building a multiple regression model , adding or removing variables using a step-wise approach, thus reducing the risk of bias) Outcome: low risk of bias (assessment of outcome was through medical records; follow-up was long enough for the outcomes to occur; women lost to follow-up were unlikely to introduce bias (a very small number of women did not have relevant data (10 out of 2088) **Other information** In some cases, randomisation to "planned CS" happened when labour had already started.

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
			extension to a transverse uterine incision (in the case of CS); vulvar or perineal haematoma requiring evacuation; deep vein thrombophlebitis or pulmonary embolism requiring anticoagulant therapy; pneumonia; adult respiratory distress syndrome; wound infection requiring prolonged hospital care as an inpatient or outpatient or readmission to hospital; wound dehiscence or breakdown; maternal fever of at least 38.5C on 2 occasionas at least 24 hours apart not including the first 24 hours; bladder, ureteric, or bowel injury requiring repair; genital tract fistula; bowel obstruction; or other serious maternal morbidity as judged by members of the steering committee (masked to allocation group and if possible to mode of birth) Multiple logistic regression analysis was done to determine the adjusted odds ratio of maternal morbidity between modes of birth. A		Therefore, CS during early labour or CS during active labour might still have been considered "planned CS" in the trial

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
			step-wise approach was used to build to multiple regression model, level to enter the model was set a $p<0.05$ and the level to remove from the model was set at $p>0.2$. The variables included maternal age, parity, gestational age at randomisation, maternal diabetes, uterine anomaly, hypertension, previous CS, maternal infection, national perinatal mortality rate of country, duration of membrane rupture, continuous electronic fetal heart rate monitoring, labour induction with oxytocin and/or prostaglandins, labour augmentation with oxytocin and/or prostaglandins, general anaesthesia, epidural analgesia, duration of first stage of labour (defines as the time between onset of active labour and full cervical dilatation), duration of passive phase of second stage of labour (defined as the time between full cervical dilatation and beginning to push), duration of active phase of second stage of labour (defined as time between		

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
			beginning to push and birth), birth weight, fetal presentation at birth, episiotomy, perineal laceration, administration of antibiotics before or during birth, abruptio placenta, cord prolapse, clinical chorioamnionitis, uterine rupture, and experience of the clinician at birth		
Full citation van Loon, A. J., Mantingh, A., Serlier, E. K., Kroon, G., Mooyaart, E. L., Huisjes, H. J., Randomised controlled trial of magnetic-resonance pelvimetry in breech presentation at term, Lancet, 350, 1799-804, 1997 **Ref Id** 396746 **Country/ies where the study was carried out** The Netherlands **Study type** Prospective cohort (secondary analysis from a randomised controlled trial (RCT))	**Sample size** N=189 **Characteristics** Women had a trial of labour based either on pelvimetry results (study group in the RCT) or based on the obstetrician's judgement; manual pelvimetry was permitted (control group in the RCT). Emergency caesarean section after a trial of labour was performed	**Interventions** Emergency CS after a trial of labour (n=63*) Vaginal birth (n=126*) (spontaneous: n=80*; assisted: n=46*) * Numbers calculated by the NGA technical team by adding numbers in the study and control groups of the RCT	**Details** Women were recruited from 7 antenatal centres in the 3 northern provinces of the Netherlands. Progress in labour was assessed with a partograph. Criteria for fetal distress were the occurrence of late fetal-heart-rate decelerations with a diminised baseline variability, persistent fetal bradycardia, and poor blood-gas analysis from a buttock sample. Maternal complications were diagnosed by the referring obstetricians	**Results** **Maternal** <u>Third-degree perineal laceration:</u> Emergency CS (n=63*): 0* Vaginal birth (n=126): 1* <u>Blood loss > 500 ml:</u> Emergency CS (n=63*): 4* Vaginal birth (n=126): 14* <u>Blood loss > 1000 ml:</u> Emergency CS (n=63*): 1* Vaginal birth (n=126): 7* **Neonatal**	**Limitations** Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: high risk of bias (the non-exposed group was drawn from a different population to the exposed group because the exposed group had clinical indications for an emergency CS. These indications could, in turn, be associated with adverse outcomes; however, the exposed and non-exposed groups were both representative of the population of interest; the exposure was ascertained through medical records; outcomes of interest were not present at the start of the

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Aim of the study To evaluate pelvimetry in an RCT **Study dates** Women with breech presentations were recruited between January 1993 and April 1996 **Source of funding** The study was supported by a grant from the Ziekenfondsraad (OG92/006)	because of poor progress in the first or second stage (n=41 and 22 respectively*). In 5 cases of emergency CS due to prolonged first stage, fetal distress was an additional reason. Spontaneous onset of labour: emergency CS (n=63*): 44* versus vaginal birth (n=126*): 83* Augmented onset of labour: emergency CS (n=63*): 11* versus vaginal birth (n=126*): 23* Induced onset of labour: emergency CS (n=63*): 8* versus vaginal birth (n=126): 20* Opioids in labour: emergency CS (n=63*): 12*(opioids in the first stage of			<u>Temporary traumatic lesion of the brachial plexus:</u> Emergency CS (n=63*): 0* Vaginal birth (n=126): 1* * Numbers calculated by the NGA technical team by adding numbers in the study and control groups of the RCT	study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor in relation to the comparison of interest) Outcome: low risk of bias (outcomes were assessed by the referring obstetricians, not blinded to interventions; follow-up was long enough for the outcomes to occur; complete follow-up) **Other information** None

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	labour) versus vaginal birth (n=126): 19* Regional analgesia (spinal/epidural): emergency CS (n=63*): 33* versus vaginal birth (n=126): 1* General analgesia: emergency CS (n=63*): 30* versus vaginal birth (n=126): 0* * Calculated by the NGA technical team by adding numbers in the study and in the control group of the RCT **Inclusion criteria** Women with singleton breech presentations ≥37 weeks of gestation **Exclusion criteria**				

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	Exclusion criteria were an estimated fetal weight greater than 4000g, hyperextension of the fetal head, a known fetal structural defect, a known pelvic or uterine abnormality, previous fetopelvic disproportion, and planned elective CS for reasons other than suspected pelvic contraction. Multiparity was an exclusion criterion unless the referring obstetrician had doubts about a vaginal birth because of previous pregnancy ending in CS, a low-birthweight infant, or a difficult labour				
Full citation	**Sample size**	**Interventions**	**Details**	**Results**	**Limitations**

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Zatuchni, G. I., Andros, G. J., Prognostic index for vaginal delivery in breech presentation at term. Prospective study, American Journal of Obstetrics & Gynecology, 98, 854-7, 1967 **Ref Id** 650450 **Country/ies where the study was carried out** USA **Study type** Prospective cohort **Aim of the study** To evaluate a breech index to select women whose labour should be terminated by caesarean section **Study dates** Women with breech presentations from 1 September 1963 to 30 April 1966	N= 24 caesarean sections N=115 vaginal births **Characteristics** The study authors did not report that women were in labour. However, it is assumed that women were in labour because the study authors report in the abstract of the article that they focus on the usefulness of the index in selecting those women whose labour should be terminated by caesarean section. Moreover, the only options provided by the index in terms of dilatation are either 2 cm, 3	Intervention. Caesarean sections (the article does not report that these were in labour but it is assumed so based on the index and its stated purpose): n=24 Comparator. Vaginal breech birth: n=115 (spontaneous: n=7; partial extraction: n=76; complete extraction: n=32)	No direct attempt was made to influence management for any woman. Factors involved in the scoring system were indicated on work sheets provided to staff upon admission of the woman to the labour suite. Criteria for scoring corresponded to the following schema. Parity: primigravida (score 0) versus multipara (score 1). Gestational age: 39 weeks or more (score 0) versus 38 weeks: (score 1) versus 37 weeks or less (score 2). Estimated fetal weight: over 3,630 g (score 0) versus 3,629-3,176 g (score 1) versus <3,175 g (score 2). Previous breech: none (score 0) versus 1 (score 1) versus 2 or more (score 2). Dilatation: 2 cm (score 0) versus 3 cm (score 1) versus 4 cm or more (score 2). Station: -3 or higher (score 0) versus -2 (score 1) versus -1 or lower (score 2). The study authors suggested that all women with a total score of 3 or lower should have a caesarean section. With a score of 4, careful re-	**Neonatal** <u>Fetal death:</u> Caesarean sections (n=24): 0 Vaginal births (n=115): 1 (this baby had anoxia, convulsions and intracerebral haemorrhage) <u>Brachial palsy:</u> Caesarean sections (n=24): 0 Vaginal births (n=115): 1 <u>Severe neonatal morbidity (anoxia, pneumonia, pneumothorax):</u> Caesarean sections (n=24): 0 Vaginal births (n=115): 2 <u>Severe neonatal morbidity (VII nerve palsy, apneic episodes, convulsions):</u> Caesarean sections (n=24): 0 Vaginal births (n=115): 2	Limitations assessed with the Newcastle-Ottawa Quality Assessment Scale: Selection: low risk of bias (the non-exposed group was drawn from the same population as the exposed group because a low or high score was not necessarily associated with adverse outcomes; the study authors did not report how they assessed exposure but given the study setting it is assumed that this was ascertained through medical records; outcomes of interest were not present at the start of the study as they occurred during or after birth) Comparability: high risk of bias (the study did not adjust for any factor) Outcome: low risk of bias (the study authors did not mention how they assessed outcomes but given the study setting it is assumed this was through medical records; follow-up was long enough for the outcomes to occur; complete follow-up)

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
Source of funding Not reported	cm or at least 4 cm. Baseline characteristics were as follows. Nulliparous: 51 (37%). The study authors reported that women in the study were admitted to the labour suite. Maternal age range: 14 to 43 years. Women over 35 years: n=16. No baseline characteristics stratified by intervention subgroup **Inclusion criteria** Women with breech presentations at term attending the Temple University Health Sciences		evaluation of the woman was recommended and the size of the fetus should be ascertained. If the evaluation was unchanged after this, vaginal birth should be safe. If the score were 5 or higher, there should be no difficulty with vaginal birth	Neonatal mortality and morbidity occurred only in babies with a low score who were born vaginally	**Other information** 4 women in the low-score group received oxytocin and had a vaginal birth. In all cases there was severe morbidity. 13 women in the low-score group received oxytocin and had a caesarean section. There was no fetal morbidity. 11 women in the high-score group received oxytocin for abnormal labour. All had a vaginal birth with no morbidity

Study details	Participants	Interventions	Methods	Outcomes and Results	Comments
	Center during the study period **Exclusion criteria** Preterm births, cases of severe congenital anomalies, prolapsed cord cases and bleeding placental problems. Also, the scoring system could not be applied to women scheduled for elective induction				

1

Appendix F – Forest plots

Intrapartum care for women with breech presenting in labour – mode of birth

No meta-analysis was undertaken for this review and so there are no forest plots.

Appendix G – GRADE tables

Intrapartum care for women with breech presenting in labour – mode of birth

Table 3: Clinical evidence profile for emergency caesarean section versus continuation of labour for women with breech presenting in labour, outcomes for the woman

Quality assessment							Number of women		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS	Continuation of labour	Relative (95% CI)	Absolute	Quality	Importance
Third-degree perineal laceration												
1 (Van Loon 1997)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/63 (0%)	1/126 (0.79%)	RR 0.66 (0.03 to 16.01)	3 fewer per 1000 (from 8 fewer to 119 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Blood loss > 500 ml												
1 (Van Loon 1997)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	4/63 (6.3%)	14/126 (11.1%)	RR 0.57 (0.2 to 1.66)	48 fewer per 1000 (from 89 fewer to 73 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Blood loss > 1000 ml												
1 (Van Loon 1997)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	1/63 (1.6%)	7/126 (5.6%)	RR 0 (0.04 to 2.27)	56 fewer per 1000 (from 53	⨁⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of women		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
										fewer to 71 more)		
Mean blood loss (ml)												
1 (Barlov 1986)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable because SD is not reported in the article	None	23	102	Mean blood loss was 522.7 (range 100 to 1200) ml in the emergency CS group, 255.2 (range 50 to 775) ml in the vaginal birth group. Mean difference: 267.5. However 95% CI is not calculable		⊕⊖⊖⊖ VERY LOW	CRITICAL
Did breastfeed												
1 (Molkenboer 2007)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Serious[3]	None	32/49 (65.3%)	44/91 (48.4%)	RR 1.35 (1.01 to 1.81)	169 more per 1000 (from 5 more to 392 more)	⊕⊖⊖⊖ VERY LOW	IMPORTANT

1 *CI: confidence interval; CS: caesarean section; MID: minimally important difference; RR: risk ratio; SD: standard deviation*
2 *1 High risk of selection bias because the exposed cohort had clinical indications for an emergency CS. These indications could in turn, be associated with adverse outcomes. High*
3 *risk of comparability bias because the study did not adjust for any factor*
4 *2 The quality of the evidence was downgraded by 2 levels because the 95% CI crosses both default MID thresholds*
5 *3 The quality of the evidence was downgraded by 1 level because the 95% CI crosses 1 default MID threshold*

Table 4: Clinical evidence profile for emergency caesarean section versus continuation of labour for women with breech presenting in labour, outcomes for the baby

Quality assessment							Number of babies		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS	Continuation of labour	Relative (95% CI)	Absolute	Quality	Importance
Perinatal mortality												
1 (Collea 1980)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/11 (0%)	0/55 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
1 (Jaffa 1981)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/17 (0%)	0/260 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
1 (Singh 2012)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	7/94 (7.4%)	5/60 (8.3%)	RR 0.89 (0.3 to 2.69)	9 fewer per 1000 (from 58 fewer to 141 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Stillbirth – nullipara												
1 (Alshaheen 2010)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/83 (0%)	0/21 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
Stillbirth – multipara												
1 (Alshaheen 2010)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/30 (0%)	0/76 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
Stillbirth – unstratified by parity												
1 (Bird 1975)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/56 (0%)	0/234 (0%)	-	-	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (De Leeuw 2002)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/38 (0%)	1/132 (0.76%)	RR 1.14 (0.05 to 27.35)	1 more per 1000 (from 7 fewer to 200 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (Zatuchni 1967)	Observational studies	Serious[3]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/24 (0%)	1/115 (0.87%)	RR 1.55 (0.06 to 36.87)	5 more per 1000 (from 8 fewer to 312 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Early neonatal mortality – nullipara												
1 (Alshaheen 2010)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	No serious imprecision	None	1/83 (0%)	5/21 (0%)	RR 0.05 (0.01 to 0.41)	226 fewer per 1000 (from 140 fewer to 236 fewer)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Early neonatal mortality – multipara												
1 (Alsha	Observational studies	Very serious[1]	No serious	No serious indirectness	Very serious[2]	None	0/30 (0%)	3/76 (0%)	RR 0.35 (0.02 to 6.67)	26 fewer per 1000 (from 39	⨁⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
heen 2010)			inconsistency							fewer to 224 more)		
Early neonatal mortality – unstratified by parity												
1 (De Leeuw 2002)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/38 (0%)	0/132 (0%)	-	-	⨁⊖⊖⊖ VERY LOW	CRITICAL
Neonatal mortality												
1 (Bird 1975)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/56 (0%)	2/234 (0.85%)	RR 0.82 (0.04 to 16.94)	2 fewer per 1000 (from 8 fewer to 136 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (Barlov 1986)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/23 (0%)	0/102 (0%)	-	-	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (Gimovsky 1983)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/11 (0%)	1/35 (2.9%)	RR 1.00 (0.04 to 22.95)	0 fewer per 1000 (from 27 fewer to 627 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (Sarno 1989)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/14 (0%)	0/13 (0%)	-	-	⨁⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of babies		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS	Continuation of labour	Relative (95% CI)	Absolute	Quality	Importance
Late neonatal mortality												
1 (De Leeuw 2002)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/38 (0%)	0/132 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
Birth asphyxia												
1 (Alshaheen 2010)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/113 (0%)	2/97 (2.1%)	RR 0.17 (0.01 to 3.54)	17 fewer per 1000 (from 20 fewer to 52 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Requiring resuscitation												
1 (Bird 1975)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Serious[4]	None	1/56 (1.8%)	31/234 (13.2%)	RR 0.13 (0.02 to 0.97)	115 fewer per 1000 (from 4 fewer to 130 fewer)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Cardiorespiratory depression												
1 (Bird 1975)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Serious[4]	None	2/56 (3.6%)	33/234 (14.1%)	RR 0.25 (0.06 to 1.02)	106 fewer per 1000 (from 133 fewer to 3 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Neonatal pulmonary insufficiency necessitating C-PAP												

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
1 (Barlov 1986)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	1/23 (4.3%)	0/102 (0%)	RR 12.88 (0.54 to 306.41)	-	⨁⊖⊖⊖ VERY LOW	CRITICAL
Spontaneous bilateral pneumothorax												
1 (Collea 1980)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/11 (0%)	1/55 (1.8%)	RR 1.56 (0.07-35.91)	10 more per 1000 (from 17 fewer to 635 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Brachial palsy												
1 (Barlov 1986)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/23 (0%)	1/102 (0.98%)	RR 1.43 (0.06 to 34.05)	4 more per 1000 (from 9 fewer to 324 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (Zatuchni 1967)	Observational studies	Serious[3]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/24 (0%)	1/115 (0.87%)	RR 1.55 (0.06 to 36.87)	5 more per 1000 (from 8 fewer to 312 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Brachial plexus lesion or injury												
1 (Alshaheen 2010)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/113 (0%)	3/97 (3.1%)	RR 0.12 (0.01 to 2.35)	27 fewer per 1000 (from 31	⨁⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
										fewer to 42 more)		
1 (Collea 1980)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/11 (0%)	2/55 (3.6%)	RR 0.93 (0.05-18.22)	3 fewer per 1000 (from 35 fewer to 626 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
1 (Van Loon 1997)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/63 (0%)	1/126 (0.79%)	RR 0.66 (0.03 to 16.01)	3 fewer per 1000 (from 8 fewer to 119 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Fractured humerus												
1 (Barlov 1986)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/23 (0%)	1/102 (0.98%)	RR 1.43 (0.06 to 34.05)	4 more per 1000 (from 9 fewer to 324 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
1 (Singh 2012)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/94 (0%)	0/60 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
Fractured clavicle												
1 (Alshaheen 2010)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/113 (0%)	1/97 (1%)	RR 0.29 (0.01 to 6.95)	7 fewer per 1000 (from 10	⊕⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
										fewer to 61 more)		
1 (Barlov 1986)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/23 (0%)	4/102 (3.9%)	RR 0.48 (0.03 to 8.56)	20 fewer per 1000 (from 38 fewer to 296 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (Bird 1975)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/56 (0%)	4/234 (1.7%)	RR 0.46 (0.03 to 8.39)	9 fewer per 1000 (from 17 fewer to 126 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
1 (Singh 2012)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/94 (0%)	0/60 (0%)	-	-	⨁⊖⊖⊖ VERY LOW	CRITICAL
Depressed skull fracture												
1 (Bird 1975)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/56 (0%)	2/234 (0.85%)	RR 0.82 (0.04 to 16.94)	2 fewer per 1000 (from 8 fewer to 136 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Facial palsy												
1 (Capelless 1985)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	1/35 (2.9%)	1/51 (2%)	RR 1.46 (0.09 to 22.53)	9 more per 1000 (from 18	⨁⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
										fewer to 422 more)		
Erb's palsy												
1 (Sarno 1989)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/14 (0%)	1/13 (7.7%)	RR 0.31 (0.01 to 7.02)	53 fewer per 1000 (from 76 fewer to 463 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
1 (Singh 2012)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/94 (0%)	0/60 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
Birth trauma (trapped head)												
1 (Sarno 1989)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/14 (0%)	1/13 (7.7%)	RR 0.31 (0.01 to 7.02)	53 fewer per 1000 (from 76 fewer to 463 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Genital haematoma												
1 (Maier 2011)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	2/39 (5.1%)	3/46 (6.5%)	RR 0.79 (0.14 to 4.47)	14 fewer per 1000 (from 56 fewer to 226 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Cephalic haematoma												

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
1 (Maier 2011)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/39 (0%)	1/46 (2.2%)	RR 0.39 (0.02 to 9.35)	13 fewer per 1000 (from 21 fewer to 182 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Damage to soft tissue and laceration												
1 (Singh 2012)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/94 (0%)	1/60 (1.7%)	RR 0.21 (0.01 to 5.17)	13 fewer per 1000 (from 17 fewer to 70 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Dislocation of the hip												
1 (Singh 2012)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/94 (0%)	0/60 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
Peripheral nerve injury												
1 (Gimovsky 1983)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Not estimable due to 0 events	None	0/11 (0%)	0/35 (0%)	-	-	⊕⊖⊖⊖ VERY LOW	CRITICAL
Severe neonatal morbidity (anoxia, pneumonia or pneumothorax)												
1 (Zatuchni 1967)	Observational studies	serious[3]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/24 (0%)	2/115 (1.7%)	RR 0.93 (0.05 to 18.74)	1 fewer per 1000 (from 17	⊕⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS**	**Continuation of labour**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
										fewer to 309 more)		
Severe neonatal morbidity (VII nerve palsy, apneic episode or convulsions)												
1 (Zatuchni 1967)	Observational studies	Serious[3]	No serious inconsistency	Serious[5]	Very serious[2]	None	0/24 (0%)	2/115 (1.7%)	RR 0.93 (0.05 to 18.74)	1 fewer per 1000 (from 17 fewer to 309 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
NICU admission												
1 (Alshaheen 2010)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	serious[4]	None	2/113 (1.8%)	8/97 (8.2%)	RR 0.21 (0.05 to 0.99)	65 fewer per 1000 (from 1 fewer to 78 fewer)	⨁⊖⊖⊖ VERY LOW	IMPORTANT
1 (Capeless 1985)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	4/35 (11.4%)	4/51 (7.8%)	RR 1.46 (0.39 to 5.44)	36 more per 1000 (from 48 fewer to 348 more)	⨁⊖⊖⊖ VERY LOW	IMPORTANT
1 (Maier 2011)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	5/39 (12.8%)	2/46 (4.3%)	RR 2.95 (0.61 to 14.36)	85 more per 1000 (from 17 fewer to 581 more)	⨁⊖⊖⊖ VERY LOW	IMPORTANT

1 *CI: confidence interval; CS: caesarean section; MID: minimally important difference; NICU: neonatal intensive care unit; RR: risk ratio*
2 *1 High risk of selection bias because the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse outcomes. High*
3 *risk of comparability bias because the study did not adjust for any factor*

2 The quality of the evidence was downgraded by 2 levels because the 95% CI crosses both default MID thresholds
3 High risk of comparability bias because the study did not adjust for any factor
4 The quality of the evidence was downgraded by 1 level because the 95% CI crosses 1 default MID threshold
5 The quality of the evidence was downgraded by 1 level due to an indirect outcome. Apneic episodes and convulsions were not included in the guideline review protocol

Table 5: Clinical evidence profile for emergency caesarean section in early labour versus vaginal birth for women with breech presenting in labour, outcomes for the woman

Quality assessment							Number of women		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS in early labour	Vaginal birth	Relative (95% CI)	Absolute	Quality	Importance
Postpartum haemorrhage >1500 ml												
1 (Su 2007)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	1/248 (0.4%)	1/689 (0.15%)	RR 2.78 (0.17 to 44.25)	3 more per 1000 (from 1 fewer to 63 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Maternal systemic infection, postpartum fever >=38.5°C												
1 (Su 2007)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	2/248 (0.81%)	1/689 (0.15%)	RR 5.56 (0.51 to 61.01)	7 more per 1000 (from 1 fewer to 87 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Maternal morbidity[a]												
1 (Su 2007)	Observational studies	Serious[3]	No serious inconsistency	Serious[4]	Serious[5]	None	11/248 (4.4%)	13/689 (1.9%)	OR[b] 2.41 (1.07 to 5.46)	-	⨁⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of women		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS in early labour	Vaginal birth	Relative (95% CI)	Absolute	Quality	Importance
Early postpartum depression												
1 (Su 2007)	Observational studies	Very serious[1]	No serious inconsistency	Serious[6]	Very serious[2]	None	1/248 (0.4%)	0/689 (0%)	RR 8.31 (0.34 to 203.4)	-	⨁⊖⊖⊖ VERY LOW	IMPORTANT

CI: confidence interval; CS: caesarean section; MID: minimally important difference; OR: odds ratio; RR: risk ratio

1 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse outcomes. High risk of comparability bias because the study did not adjust for any factor

2 The quality of the evidence was downgraded by 2 levels because the 95% CI crosses both default MID thresholds

3 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse outcomes

4 The quality of the evidence was downgraded by 1 level because of an indirect outcome. Maternal morbidity in the study is a composite outcome that includes some outcomes in the guideline review protocol but also some other outcomes

5 The quality of the evidence was downgraded by 1 level because the 95% CI crosses 1 default MID threshold

6 The quality of the evidence was downgraded by 1 level because of an indirect outcome. Early postpartum depression was considered a proxy for women's experiences of labour and birth

a Maternal morbidity defined as 1 or more of the following during the first 6 weeks postpartum: death; postpartum haemorrhage of more than 1500 ml or a need for blood transfusion; dilatation and curettage for bleeding or retained placental tissue; hysterectomy; cervical laceration involving the lower uterine segment (in the case of vaginal birth); vertical uterine incision or serious extension to a transverse uterine incision (in the case of CS); vulvar or perineal haematoma requiring evacuation; deep vein thrombophlebitis or pulmonary embolism requiring anticoagulant therapy; pneumonia; adult respiratory distress syndrome; wound infection requiring prolonged hospital care as an inpatient or outpatient or readmission to hospital; wound dehiscence or breakdown; maternal fever of at least 38.5ºC on 2 occasions at least 24 hours apart not including the first 24 hours; bladder, ureteric, or bowel injury requiring repair; genital tract fistula; bowel obstruction; or other serious maternal morbidity as judged by members of the steering committee.

b Adjusted OR was calculated and reported in the article. It is not clear from the article which variables were included in the final analysis, however, the study considered the following variables in the stepwise multiple logistic regression analysis: maternal age, parity, gestational age at randomisation, maternal diabetes, uterine anomaly, hypertension, previous CS, maternal infection, national perinatal mortality rate of country, duration of membrane rupture, continuous electronic fetal heart rate monitoring, labour induction with oxytocin or prostaglandins, labour augmentation with oxytocin or prostaglandins, general anaesthesia, epidural analgesia, duration of first stage of labour (defined as the time between onset of active labour and full cervical dilatation), duration of passive phase of second stage of labour (defined as the time between full cervical dilatation and beginning to push), duration of active phase of second stage of labour (defined as time between beginning to push and birth), birthweight, fetal presentation at birth, episiotomy, perineal laceration, administration of antibiotics before or during birth, abruptio placenta, cord prolapse, clinical chorioamnionitis, uterine rupture, and experience of the clinician at the birth

Table 6: Clinical evidence profile for emergency caesarean section in early labour versus vaginal birth for women with breech presenting in labour, outcomes for the baby

Quality assessment							Number of babies		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS in early labour	Vaginal birth	Relative (95% CI)	Absolute	Quality	Importance
Stillbirth												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/249 (0%)	6/689 (0.87%)	RR 0.21 (0.01 to 3.75)	7 fewer per 1000 (from 9 fewer to 24 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Neonatal mortality												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/249 (0%)	5/689 (0.73%)	RR 0.25 (0.01 to 4.52)	5 fewer per 1000 (from 7 fewer to 26 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Ventilation required												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/249 (0%)	9/689 (1.3%)	RR 0.15 (0.01 to 2.49)	11 fewer per 1000 (from 13 fewer to 19 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Birth injury												

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS in early labour**	**Vaginal birth**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/249 (0%)	7/689 (1%)	RR 0.18 (0.01 to 3.21)	8 fewer per 1000 (from 10 fewer to 22 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Admission to NICU												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	2/249 (0.8%)	13/689 (1.9%)	RR 0.43 (0.10 to 1.87)	11 fewer per 1000 (from 17 fewer to 16 more)	⨁⊖⊖⊖ VERY LOW	IMPORTANT
Adverse perinatal outcome[a]												
1 (Su 2003)	Observational studies	Serious[3]	No serious inconsistency	Serious[4]	No serious imprecision	None	3/226 (1.3%)	38/630 (6%)	OR[b] 0.21 (0.06 to 0.69)	47 fewer per 1000 (from 18 fewer to 56 fewer)	⨁⊖⊖⊖ VERY LOW	CRITICAL

1 *CI: confidence interval; CS: caesarean section; MID: minimally important difference; NICU: neonatal intensive care unit; OR: odds ratio; RR: risk ratio*
2 *1 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse*
3 *outcomes. High risk of comparability bias because the study did not adjust for any factor*
4 *2 The quality of the evidence was downgraded by 2 levels because the 95% CI crosses both default MID thresholds*

3 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse outcomes

4 The quality of the evidence was downgraded by 1 level because of an indirect outcome. Adverse perinatal outcome is a composite outcome that includes some outcomes in the guideline review protocol but also some other outcomes

a Adverse perinatal outcome was defined as 1 or more of the following: perinatal or neonatal mortality at less than 28 days of age (excluding lethal congenital anomalies); birth trauma, including subdural haematoma, intracerebral or intraventricular haemorrhage, spinal cord injury, basal skull fracture, peripheral nerve injury present at discharge from hospital, or clinically significant genital injury; seizures occurring at less than 24 hours of age or requiring 2 or more drugs for control; Apgar score of less than 4 at 5 minutes; cord blood base deficit of at least 15; hypotonia for a least 2 hours; stupor, decreased response to pain or coma; intubation and ventilation for at least 24 hours; tube feeding for at least 4 days; or admission to NICU for longer than 4 days

b Adjusted OR was calculated and reported in the article. It is not clear from the article which variables were included in the final analysis, however, the study considered the following variables in the stepwise multiple logistic regression analysis: continuous electronic fetal heart rate monitoring, labour induction with oxytocin or prostaglandins, labour augmentation with oxytocin or prostaglandins, epidural analgesia, duration of membrane rupture, duration of first stage of labour (defined as the time between onset of active labour and full dilatation), duration of passive phase of second stage of labour (defined as the time between full dilatation and start of pushing), duration of active phase of second stage of labour (defined as the time between start of pushing and birth), birthweight, type of breech presentation at birth, maternal age, parity, gestational age at randomisation, maternal diabetes, uterine anomaly, hypertension, previous caesarean section, national perinatal mortality rate of country, and experience of the clinician at the birth

Table 7: Clinical evidence profile for emergency caesarean section in active labour versus vaginal birth for women with breech presenting in labour, outcomes for the woman

Quality assessment							Number of women		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS in active labour	Vaginal birth	Relative (95% CI)	Absolute	Quality	Importance
Postpartum haemorrhage >1500 ml												
1 (Su 2007)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	3/599 (0.5%)	1/689 (0.15%)	RR 3.45 (0.36 to 33.09)	4 more per 1000 (from 1 fewer to 47 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Maternal systemic infection, postpartum fever >=38.5 ºC												
1 (Su 2007)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	No serious imprecision	None	16/599 (2.7%)	1/689 (0.15%)	RR 18.40 (2.45 to 138.36)	25 more per 1000 (from 2	⨁⊖⊖⊖ VERY LOW	CRITICAL

Quality assessment							Number of women		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS in active labour	Vaginal birth	Relative (95% CI)	Absolute	Quality	Importance
										more to 199 more)		
Maternal morbidity												
1 (Su 2007)	Observational studies	Serious[3]	No serious inconsistency	Serious[4]	No serious imprecision	None	36/599 (6%)	13/689 (1.9%)	OR[a] 3.33 (1.75 to 6.33)	-	⨁⊖⊖⊖ VERY LOW	CRITICAL
Early postpartum depression												
1 (Su 2007)	Observational studies	Very serious[1]	No serious inconsistency	Serious[5]	Very serious[2]	None	1/599 (0.17%)	0/689 (0%)	RR 3.45 (014 to 84.53)	-	⨁⊖⊖⊖ VERY LOW	IMPORTANT

CI: confidence interval; CS: caesarean section; MID: minimally important difference; OR: odds ratio; RR: risk ratio

1 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse outcomes. High risk of comparability bias because the study did not adjust for any factor

2 The quality of the evidence was downgraded by 2 levels because the 95% CI crosses both default MID thresholds

3 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse outcomes

4 The quality of the evidence was downgraded by 1 level because of an indirect outcome. Maternal morbidity in the study is a composite outcome that includes some outcomes in the guideline review protocol but also some other outcomes

5 The quality of the evidence was downgraded by 1 level because of an indirect outcome. Early postpartum depression was considered a proxy for women's experiences of labour and birth

a Adjusted OR was calculated and reported in the article. It is not clear from the article which variables were included in the final analysis, however, the study considered the following variables in the stepwise multiple logistic regression analysis: maternal age, parity, gestational age at randomisation, maternal diabetes, uterine anomaly, hypertension, previous CS, maternal infection, national perinatal mortality rate of country, duration of membrane rupture, continuous electronic fetal heart rate monitoring, labour induction with oxytocin or prostaglandins, labour augmentation with oxytocin or prostaglandins, general anaesthesia, epidural analgesia, duration of first stage of labour (defined as the time between onset of active labour and full cervical dilatation), duration of passive phase of second stage of labour (defined as the time between full cervical dilatation and beginning to push), duration of active phase of second stage of labour (defined as time between beginning to push and birth), birthweight, fetal presentation at birth, episiotomy, perineal laceration, administration of antibiotics before or during birth, abruptio placenta, cord prolapse, clinical chorioamnionitis, uterine rupture, and experience of the clinician at the birth

Table 8: Clinical evidence profile for emergency caesarean section in active labour versus vaginal birth for women with breech presenting in labour, outcomes for the baby

Quality assessment							Number of babies		Effect			
Number of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Emergency CS in active labour	Vaginal birth	Relative (95% CI)	Absolute	Quality	Importance
Stillbirth												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	0/596 (0%)	6/689 (0.87%)	RR 0.09 (0.01 to 1.57)	8 fewer per 1000 (from 9 fewer to 5 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Neonatal mortality												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	1/596 (0.17%)	5/689 (0.73%)	RR 0.23 (0.03 to 1.97)	6 fewer per 1000 (from 7 fewer to 7 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Ventilation required												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	3/596 (0.5%)	9/689 (1.3%)	RR 0.39 (0.10 to 1.42)	8 fewer per 1000 (from 12 fewer 5o 5 more)	⊕⊖⊖⊖ VERY LOW	CRITICAL
Birth injury												

Quality assessment							Number of babies		Effect			
Number of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Emergency CS in active labour**	**Vaginal birth**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Very serious[2]	None	4/596 (0.67%)	7/689 (1%)	RR 0.66 (0.19 to 2.25)	3 fewer per 1000 (from 8 fewer to 13 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL
Admission to NICU												
1 (Su 2004)	Observational studies	Very serious[1]	No serious inconsistency	No serious indirectness	Serious[3]	None	6/596 (1%)	13/689 (1.9%)	RR 0.53 (0.20 to 1.40)	9 fewer per 1000 (from 15 fewer to8 more)	⨁⊖⊖⊖ VERY LOW	IMPORTANT
Adverse perinatal outcome[a]												
1 (Su 2003)	Observational studies	Serious[4]	No serious inconsistency	Serious[5]	Serious[3]	None	18/528 (3.4%)	38/630 (6%)	OR[b] 0.57 (0.32 to 1.02)	25 fewer per 1000 (from 40 fewer to 1 more)	⨁⊖⊖⊖ VERY LOW	CRITICAL

1 *CI: confidence interval; CS: caesarean section; MID: minimally important difference; NICU: neonatal intensive care unit; OR: odds ratio; RR: risk ratio*
2 *1 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse*
3 *outcomes. High risk of comparability bias because the study did not adjust for any factor*
4 *2 The quality of the evidence was downgraded by 2 levels because the 95% CI crosses both default MID thresholds*
5 *3 The quality of the evidence was downgraded by 1 level because the 95% CI crosses 1 default MID threshold*

4 High risk of selection bias because some of the exposed cohort had clinical indications for an emergency CS. These indications could in turn be associated with adverse outcomes

5 The quality of the evidence was downgraded by 1 level because of an indirect outcome. Adverse perinatal outcome is a composite outcome that includes some outcomes in the guideline review protocol but also some other outcomes

a Adverse perinatal outcome was defined as 1 or more of the following: perinatal or neonatal mortality at less than 28 days of age (excluding lethal congenital anomalies); birth trauma, including subdural haematoma, intracerebral or intraventricular haemorrhage, spinal cord injury, basal skull fracture, peripheral nerve injury present at discharge from hospital, or clinically significant genital injury; seizures occurring at less than 24 hours of age or requiring 2 or more drugs for control; Apgar score of less than 4 at 5 minutes; cord blood base deficit of at least 15; hypotonia for a least 2 hours; stupor, decreased response to pain or coma; intubation and ventilation for at least 24 hours; tube feeding for at least 4 days; or admission to NICU for longer than 4 days

b Adjusted OR was calculated and reported in the article. It is not clear from the article which variables were included in the final analysis, however, the study considered the following variables in the stepwise multiple logistic regression analysis: continuous electronic fetal heart rate monitoring, labour induction with oxytocin or prostaglandins, labour augmentation with oxytocin or prostaglandins, epidural analgesia, duration of membrane rupture, duration of first stage of labour (defined as the time between onset of active labour and full dilatation), duration of passive phase of second stage of labour (defined as the time between full dilatation and start of pushing), duration of active phase of second stage of labour (defined as the time between start of pushing and birth), birthweight, type of breech presentation at birth, maternal age, parity, gestational age at randomisation, maternal diabetes, uterine anomaly, hypertension, previous caesarean section, national perinatal mortality rate of country, and experience of the clinician at the birth

Appendix H – Economic evidence study selection

Intrapartum care for women with breech presenting in labour – mode of birth

See Supplement 2 (Health economics) for details of economic evidence reviews and health economic modelling.

Appendix I – Economic evidence tables

Intrapartum care for women with breech presenting in labour – mode of birth

See Supplement 2 (Health economics) for details of economic evidence reviews and health economic modelling.

Appendix J – Health economic evidence profiles

Intrapartum care for women with breech presenting in labour – mode of birth

See Supplement 2 (Health economics) for details of economic evidence reviews and health economic modelling.

Appendix K – Health economic analysis

Intrapartum care for women with breech presenting in labour – mode of birth

See Supplement 2 (Health economics) for details of economic evidence reviews and health economic modelling.

Appendix L – Research recommendations

Intrapartum care for women with breech presenting in labour – mode of birth

No research recommendations were made for this review.