Although data were collected prospectively in each centre, participants were not registered at inclusion, potentially enabling accusations of bias; furthermore, classification regarding the intended mode of delivery was made retrospectively. In addition, demographic differences existed between the two groups: notably, the planned vaginal birth babies were smaller. The study does not enable an accurate comparison of planned caesarean with breech birth; with a later gestation at planned vaginal birth but all babies alive at inclusion, it examines the effect of strictly managed labour more than the effect of planned elective caesarean delivery after 39^{+0} weeks of gestation.

Evidence level 2++

Elective caesarean section exerts a protective effect on perinatal mortality, as well as short-term, but probably not long-term, morbidity[8] although the effect is smaller than suggested by the TBT. Some of the risk is due to the earlier gestation at which elective caesarean section is performed, while some is due to the elimination of labour which, even for a cephalic baby, can lead to mortality. The excess risk of breech compared with cephalic labour is relatively small (1/1000), and implementation of strict selection and intrapartum management criteria, together with skilled support, may reduce it further.[14] Perinatal mortality is also slightly increased by vaginal birth after caesarean section (VBAC), which nevertheless remains a common option.[22] Any benefit from elective caesarean section must be viewed in the light of the small increase in complications associated with subsequent pregnancies. Furthermore, caesarean birth has been associated with long-term health issues in the offspring.[23]

Evidence level 2+

4.2 *What information should women having breech births be given about their own immediate and future health?*

Women should be informed that planned caesarean section for breech presentation at term carries a small increase in immediate complications for the mother compared with planned vaginal birth.

A

Women should be informed that maternal complications are least with successful vaginal birth; planned caesarean section carries a higher risk, but the risk is highest with emergency caesarean section which is needed in approximately 40% of women planning a vaginal breech birth.

B

Women should be informed that caesarean section increases the risk of complications in future pregnancy, including the risks of opting for VBAC, the increased risk of complications at repeat caesarean section and the risk of an abnormally invasive placenta.

B

Women should be given an individualised assessment of the long-term risks of caesarean section based on their individual risk profile and reproductive intentions, and counselled accordingly.

✓

Maternal outcomes, particularly short term, depend on the category of lower segment caesarean section, with emergency carrying a higher risk than elective. Emergency caesarean section rates with planned vaginal birth vary from 29%[14] to 45%.[15]

Evidence level 2+

A modest short-term increase in maternal morbidity (RR 1.29, 95% CI 1.03–1.61) is reported with planned caesarean section in a meta-analysis of randomised controlled trials.[7] Longer term morbidity in the TBT was similar[24] although other risks have been documented. The risks associated with caesarean section are documented in the RCOG patient information leaflet: *Choosing to have a caesarean section*.[23]

Evidence level 1+

For subsequent pregnancies, having had a planned caesarean (compared with planned vaginal) birth causes a three-fold increase in uterine scarring; more than half of all women with at least one prior caesarean section have another.[25] The risks of blood transfusion, endometritis, hysterectomy and death are increased in women with a previous caesarean section (irrespective of whether they attempt a VBAC) when compared with those who have previously delivered vaginally.[22] The risk of scar rupture during attempted vaginal birth after one caesarean section is approximately 0.5%.[22,26,27] In developing countries, particularly where birth outside hospital is usual and access to healthcare is poor, the effect on maternal outcomes is likely to be considerably greater.[28]

Evidence level 2+

A further maternal issue is that of placenta praevia and placenta accreta,[29] or abnormally invasive placentation, for which prior caesarean delivery is the principal risk factor. The risk of abnormally invasive placentation increases from 0.31% with one prior caesarean section to 2.33% with four[30] and the incidence is rising. The risk is higher after elective compared with emergency caesarean section.[31] This complication can lead to massive haemorrhage, hysterectomy, urinary tract injury and maternal death.

4.3 What information should women having breech births be given about the health of their future babies?

Women should be informed that caesarean section has been associated with a small increase in the risk of stillbirth for subsequent babies although this may not be causal.

C

In a systematic review and meta-analysis, O'Neill et al.[32] compared the risk of stillbirth and miscarriage in a subsequent pregnancy with a previous caesarean or vaginal delivery. Examining data from 1 961 829 pregnancies and 7308 events, they reported an increase in the risk of all stillbirths and unexplained stillbirths (OR 1.47, 95% CI 1.20–1.80). These findings have been disputed:[33] the indication for the caesarean may account for the increase.

Evidence level 2++

Future pregnancies are also at risk of uterine rupture when VBAC is attempted; the risk of delivery-related perinatal mortality after one caesarean is up to 12.9/10 000, much of which is attributable to uterine rupture. Please refer to the RCOG Green-top Guideline No. 45: *Birth after previous caesarean birth*.[22]

5. What factors affect the safety of vaginal breech delivery?

5.1 Antenatal assessment

Following the diagnosis of persistent breech presentation, women should be assessed for risk factors for a poorer outcome in planned vaginal breech birth. If any risk factor is identified, women should be counselled that planned vaginal birth is likely to be associated with increased perinatal risk and that delivery by caesarean section is recommended.

✓

Women should be informed that a higher risk planned vaginal breech birth is expected where there are independent indications for caesarean section and in the following circumstances: C

- **Hyperextended neck on ultrasound.**
- **High estimated fetal weight (more than 3.8 kg).**
- **Low estimated weight (less than tenth centile).**
- **Footling presentation.**
- **Evidence of antenatal fetal compromise.**

The role of pelvimetry is unclear. C

The safety of planned vaginal breech birth is dependent on case selection, operator skill and intrapartum management. There is, however, a paucity of good evidence regarding factors that increase the risks of vaginal breech birth. Traditional contraindications and those which caused women to be ineligible for the TBT included an estimated fetal weight greater than 4 kg, footling breech presentation, an extended neck, 'obstructing' fetal abnormalities and an existing indication for caesarean birth. The lower perinatal mortality and morbidity in the PREMODA study[14] and in the post TBT population-based cohorts[15] are partly attributable to stricter case selection and management. The findings of these studies, therefore, have limited applicability where their inclusion criteria were not met or their management protocols were not followed. Indeed, in a French cohort, composite morbidity and mortality were lower (OR 0.27, 95% CI 0.09–0.85) among units that applied the consensus guidelines.[34] Evidence level 2+

Factors associated with increased perinatal morbidity at vaginal breech birth in the PREMODA cohort included non-European or African origin, gestational age of less than 39 weeks at birth, birthweight less than the tenth centile and annual number of maternity unit births less than 1500.[35] Molkenboer et al.[36] assessed 183 children, born by vaginal breech delivery, at 2 years of age and, from multiple logistic regression, concluded that there was an increased risk of neurodevelopmental delay when the birthweight had been more than 3.5 kg. As the PREMODA study[14] used an estimated weight upper limit of 3.8 kg, the reassuring outcomes of the study cannot be extrapolated for larger babies.

The role of pelvimetry is unclear. Largely abandoned in the UK, it was employed in 82.5% of planned vaginal births in the PREMODA study[14] and van Loon et al.[37] reported that the use of pelvimetry reduced the emergency caesarean section rate. Further evidence is required to more clearly delineate the role of pelvimetry in breech presentation. Evidence level 2−

5.2 *Skill and experience of birth attendant*

The presence of a skilled birth attendant is essential for safe vaginal breech birth. C

Units with limited access to experienced personnel should inform women that vaginal breech birth is likely to be associated with greater risk and offer antenatal referral to a unit where skill levels and experience are greater. ✓

Although largely unproven, the availability of skilled personnel is likely to strongly influence perinatal outcomes. A senior obstetrician was present at 92.3% of all vaginal deliveries in the PREMODA series;[14] similar figures apply to the smaller consecutive case series describing successful vaginal breech birth.[17–21,38] Evidence level 2+

The decline in vaginal breech delivery in the UK has led to a widespread lack of experience which itself threatens the safety of planned, and the unplanned but inevitable, vaginal breech birth. An inability of a unit to reliably provide experienced personnel for the delivery is a contraindication to a recommendation of planned vaginal birth.

5.3 Intrapartum assessment and management of women presenting unplanned with breech presentation in labour

Where a woman presents with an unplanned vaginal breech labour, management should depend on the stage of labour, whether factors associated with increased complications are found, availability of appropriate clinical expertise and informed consent. C

Women near or in active second stage of labour should not be routinely offered caesarean section. ✓

Where time and circumstances permit, the position of the fetal neck and legs, and the fetal weight should be estimated using ultrasound, and the woman counselled as with planned vaginal breech birth. ✓

All maternity units must be able to provide skilled supervision for vaginal breech birth where a woman is admitted in advanced labour and protocols for this eventuality should be developed. ✓

UK data reported that breech presentation at term is not diagnosed until labour in about 25% of women.[39] In some women, labour will be so quick that vaginal breech birth is inevitable and assessment using ultrasound is impossible. Unplanned vaginal breech birth is associated with increased risk,[13] but the data on planned vaginal birth cannot be simply extrapolated to support routine late labour caesarean section.

Evidence level 2+

Where labour is progressing rapidly, there is a balance of risks: attempting caesarean section where the breech is very low is likely to be associated with increased perinatal and maternal risk; assessment should include what is feasible. Attempts at vaginal delivery in theatre with spinal anaesthesia or caesarean section with the breech on the perineum are likely to be associated with both increased perinatal and maternal risk.

6. What is appropriate intrapartum management of the term breech?

There is a paucity of evidence regarding the best management of the breech fetus in labour. Recommendations are based on physiology, best practice experience and the management protocols of series with low complication rates. The limited evidence and expert opinion broadly divides into two groups: a more interventionist approach supported by data from the large PREMODA study[14] and a less medicalised approach[21,40] which is more traditional in the UK. Both strategies advocate close supervision and the not infrequent need for caesarean section or intervention during breech birth.

Evidence level 4

6.1 *Are induction and augmentation appropriate?*

Women should be informed that induction of labour is not usually recommended. Augmentation of slow progress with oxytocin should only be considered if the contraction frequency is low in the presence of epidural analgesia. D

Both induction and augmentation of labour were used in the PREMODA study[14] in 8.9 and 74.1% of vaginal breech births, respectively. This very high rate of augmentation, coupled with a very low incidence of 'slow dilatation', suggests a more prophylactic than a therapeutic role. As a means to treat dystocia, augmentation should usually be avoided as adequate progress may be the best evidence for adequate fetopelvic proportions. However, if epidural analgesia has been used and the contraction frequency is low, its use should not be excluded. Notably, labour augmentation is not supported by many experienced advocates of vaginal breech birth[40] who favour a less interventionist approach. Continuous support is known to reduce labour length and operative delivery with a cephalic presentation.[41]

Evidence level 2–

6.2 *What is the role of epidural analgesia?*

Women should be informed that the effect of epidural analgesia on the success of vaginal breech birth is unclear, but that it is likely to increase the risk of intervention. ✓

There is limited evidence addressing this. However, with a cephalic presentation, a Cochrane meta-analysis[42] concluded that epidural anaesthesia increases the risk of assisted vaginal delivery. As vaginal breech delivery cannot be expedited until its final stages, epidural anaesthesia might increase the risk of caesarean section. Vaginal breech birth is usually easier if a mother is able to bear down effectively and an epidural may interfere with this. A less interventionist approach advocates a calm atmosphere with continuous support as a means to avoid epidural analgesia.[41] With a more interventionist approach,[14] seldom used in the UK, epidural analgesia is less likely to have a detrimental effect.

Evidence level 2–

6.3 *What fetal monitoring should be recommended?*

Women should be informed that while evidence is lacking, continuous EFM may lead to improved neonatal outcomes. D

EFM was employed in the PREMODA study,[14] where excellent results of planned vaginal breech birth are documented. Breech presentation is associated with an increased risk of cord prolapse. During delivery, cord compression as the head enters the pelvis is common; this is likely to be better tolerated by a fetus that is not hypoxic. Equally, good fetal tone enables easier breech birth and is more likely in a nonhypoxic fetus. While good evidence is lacking and higher intrapartum caesarean section rates should be expected, EFM is likely to improve neonatal outcomes.

Evidence level 3

Where EFM is declined, intermittent auscultation should be performed as for a cephalic fetus, with conversion to EFM if any abnormality is detected.

