WHO recommendation on the optimal mode of birth for women in refractory preterm labour

17 November 2015

Recommendation

Routine delivery by caesarean section for the purpose of improving preterm newborn outcomes is not recommended, regardless of cephalic or breech presentation.

(Conditional recommendation based very low-quality evidence)

Publication history

First published: November 2015

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Assessed as up-to-date: November 2015

Remarks

- There is insufficient evidence to support the routine delivery of preterm infants by caesarean section instead of vaginal delivery, regardless of fetal presentation.
- Caesarean section should only be performed for obstetric indications.

Background

Preterm birth, defined as birth before 37 weeks of gestation, is the single most important determinant of adverse infant outcomes, in terms of survival and quality of life. (1) Globally, it is the leading cause of perinatal and neonatal mortality and morbidity. (2) Preterm infants are particularly vulnerable to complications due to impaired respiration, difficulty in feeding, poor body temperature regulation and high risk of infection. (3-5) With the increasing contribution of neonatal deaths to overall child mortality, it is critical to address the determinants of poor outcomes related to preterm birth to achieve further reductions in child mortality. (6-8)

Infant mortality and morbidity from preterm birth can be reduced through interventions delivered to the mother before or during pregnancy, and to the preterm infant after birth. (9) Interventions can be directed at
all women for primary prevention and reduction of the risk of preterm birth (e.g. smoking cessation programme) or aimed at minimizing the risk in women with known risk factors (e.g. progestational agents, cervical cerclage). (10) However, the most beneficial set of maternal interventions are those that are aimed at improving outcomes for preterm infants when preterm birth is inevitable (e.g. antenatal corticosteroids, magnesium sulfate and antibiotic prophylaxis). (9) Special care of the preterm newborn to prevent and treat complications of prematurity is also critical to newborn survival. In high-income countries, reductions in mortality rates in infants that were born preterm have been driven largely by improved care and, more importantly, by appropriate policy changes.

**Methods**

The recommendations were developed using standard operating procedures in accordance with the process described in the WHO handbook for guideline development (11). Briefly, these included (i) identification of priority questions and critical outcomes, (ii) retrieval of the evidence, (iii) assessment and synthesis of evidence, (iv) formulation of recommendations, and (v) planning for the dissemination, implementation, impact evaluation and updating of the guideline.

The scientific evidence underpinning the recommendations was synthesized using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach (12). Up-to-date systematic reviews were used to prepare evidence profiles for the priority questions. WHO then convened a Technical Consultation in May 2014 where an international group of experts – the Guideline Development Group (GDG) – formulated and approved the recommendations based on the evidence profiles.

In November 2014, an online consultation of the GDG was conducted to review and revise the recommendations in the light of the findings of a large implementation trial of antenatal corticosteroids in low-resource countries.

Further information on procedures for developing this recommendation are available [here](#).

**Recommendation question**

For this recommendation, we aimed to answer the following question:

- Among women with refractory preterm labour (P), is a policy of routine caesarean delivery of preterm infants (I), compared with planned vaginal birth (C), effective in reducing adverse newborn outcomes (O)? If so:
  - What is the optimal mode of birth by fetal presentation?
  - What is the optimal mode of birth by gestational age?

**Evidence summary**

**Planned immediate caesarean section versus vaginal delivery for preterm birth**

Evidence on the optimal mode of delivery for the preterm infant was extracted from one Cochrane systematic review of four trials involving a total of 116 women (13).

These trials compared two policies for delivery of the preterm infant: planned immediate caesarean section
(CS) versus vaginal delivery for women with refractory preterm labour with singleton pregnancies. One trial was conducted in Singapore, one in the United Kingdom and two in the USA. One of the trials included women with cephalic presentation only, while three included women with breech presentation only. All women were in labour (experiencing regular contractions) at recruitment, and all were less than 37 weeks pregnant. All four trials were stopped early, due to difficulties with recruitment.

Maternal outcomes

**Severe maternal morbidity:** Women with breech presentation were more likely to experience major postpartum complications in the immediate CS group compared to those in the vaginal delivery group (RR 7.21, 95% CI 1.37–38.08; 3 studies, 78 women). Women with breech presentation and in the CS group were at higher risk of puerperal pyrexia (RR 2.98, 95% CI 1.18–7.53; 2 studies, 51 women). No woman with cephalic presentation (by either mode of delivery) had major complications or any reported maternal morbidity (1 study, 38 women). Overall, there was no significant difference between groups for rates of maternal wound infection (RR 1.16, 95% CI 0.18–7.70; 3 studies 103 women), although for women with breech presentation, the risk of other maternal infection was increased among women in the CS group (RR 2.63, 95% CI 1.02–6.78; 2 studies, 65 women). Another outcome reported in these trials was length of maternal hospital stay: there was no difference between women in the two trial arms in the proportion of women with a hospital stay longer than 10 days (RR 1.27, 95% CI 0.35–4.65; 3 studies, 78 women).

**Timing of birth after trial entry:** Two trials (both recruiting women with breech presentation) reported delivery within 7 days of entry to trials: out of 51 women, all but one had delivered within this time.

Infant outcomes

**Perinatal death:** Perinatal mortality was reported in three trials comparing immediate CS versus vaginal delivery, with data for 89 infants. There was no statistically significant difference between groups (RR 0.29, 95% CI 0.07–1.14).

**Severe neonatal morbidity:** There were no cases of head entrapment in any of the trials, and event rates were low for cord prolapse, with no significant differences between women randomized to immediate CS versus vaginal delivery for this outcome (RR 0.25, 95% CI 0.03–1.92; 4 studies, 116 women). One study with a small sample size reported rates of birth asphyxia: there was no significant difference between groups (RR 1.63, 95% CI 0.84–3.14; 12 infants). There were no significant differences between groups in rates of RDS (RR 0.55, 95% CI 0.27–1.10; 3 studies, 103 women) or neonatal seizures (RR 0.22, 95% CI 0.01–4.32; 3 studies, 77 infants). There were few data on hypoxic ischemic encephalopathy and intracranial pathology and no significant differences between groups for either outcome (RR 4.0, 95% CI 0.2–82.01, 1 study, 12 infants; RR 0.92, 95% CI 0.27–3.14, 4 studies 110 infants, respectively). One study reported birth injury following breech presentation: there was no significant difference between groups for this outcome (RR 0.56, 95% CI 0.05–5.62; 38 infants). There were no significant differences between immediate CS and vaginal delivery for rates of NEC (RR 6.67, 95% CI 0.39–114.78; 1 study, 12 infants), proven neonatal infection (RR 0.76, 95% CI 0.12–4.66; 3 studies, 103 women) or neonatal jaundice (RR 0.92, 95% CI 0.57–1.48; 3 studies, 103 women), although these outcomes were reported infrequently. The number of infants requiring mechanical ventilation and the mean number of days infants used mechanical ventilation were not significantly different (RR 1.87, 95% CI 0.71–4.88 and MD 18.26 days, 95% CI -19.90 to 56.42, respectively; 1 study, 12 infants). There was no significant difference between groups for low infant Apgar score (< 7) at 5 minutes (RR 0.83, 95% CI 0.43–1.6; 4 studies, 115 infants).

**Long-term morbidity:** Abnormal childhood follow-up (not defined) was reported in one trial: there were no significant differences between groups (RR 0.65, 95% CI 0.19–2.22; 38 children).

Optimal mode of birth by gestational age

Subgroup analysis by gestational age was not performed in the Cochrane systematic review due to small
sample sizes. Two of the included trials recruited pregnant women up to 36 weeks of gestation (66 infants), while the other two had upper limits of 32 weeks (12 infants) and 33 weeks (38 infants).

**Severe maternal morbidity:** No differences were observed between caesarean and vaginal birth groups for major postpartum complications according to gestational age.

**Perinatal death:** There were no significant differences in perinatal deaths in infants delivered by planned CS or vaginal birth between 26 and 32 weeks of gestation (12 infants, breech presentation: RR 0.50, 95% CI 0.02–10.34), between 26 and 33 weeks (38 infants, cephalic presentation: RR 0.33, 95% CI 0.03–3.29) or between 28 and 36 weeks (38 infants, breech presentation: RR 0.22, 95% CI 0.03–1.73).

Further information and considerations related to this recommendation can be found in the WHO guidelines, available at:

http://apps.who.int/iris/bitstream/handle/10665/183037/9789241508988_eng.pdf?sequence=1

http://apps.who.int/iris/bitstream/handle/10665/183038/WHO_RHR_15.17_eng.pdf?sequence=1

**Implementation considerations**

- The successful introduction of this recommendation into national programmes and health-care services depends on well-planned and participatory consensus-driven processes of adaptation and implementation. The adaptation and implementation processes may include the development or revision of existing national guidelines or protocols based on this recommendation.
- The recommendation should be adapted into a locally appropriate document that can meet the specific needs of each country and health service. Any changes should be made in an explicit and transparent manner.
- A set of interventions should be established to ensure that an enabling environment is created for the use of the recommendations, and that the behaviour of the healthcare practitioner changes towards the use of this evidence-based practice.
- In this process, the role of local professional societies is important and an all-inclusive and participatory process should be encouraged.

**Research implications**

The GDG identified that further research on the following high-priority question is needed:

- What are the comparative effects and safety of vaginal versus caesarean delivery by gestational age and presentation?

**Related links**

WHO recommendations on interventions to improve preterm birth outcomes (2015) – [full document](#) and [evidence tables](#)
Supporting systematic reviews:

**Alfirevic Z, Milan SJ, Livio S. Caesarean section versus vaginal delivery for preterm birth in singletons. Cochrane Database of Systematic Reviews 2013.**

Other links of interest

- Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors
- Pregnancy, Childbirth, Postpartum and Newborn Care: A guide for essential practice
- WHO Programmes: Sexual and Reproductive health
- Maternal Health
- Infant, Newborn Health

References
