WHO recommendation on the use of active phase partograph with a four-hour action line for monitoring the progress of labour

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Recommendation

Active phase partograph with a four-hour action line is recommended for monitoring the progress of labour. *(Strong recommendation, very low-quality evidence)*

Publication history

First published: May 2014
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Remarks

- The GDG acknowledged the low quality of the supporting evidence but noted that many units in both high- and low-income settings currently use the partograph and, although no clinical benefits in health outcomes were reported in the RCTs, it is a useful tool for providing a pictorial overview of progress, clinical audit, training of health workers and facilitating the transfer of care. These considerations, in addition to the low resource implication of the intervention led the GDG to make a strong recommendation in favour of the partograph.
- The potential benefits of introducing the use of a partograph may be more apparent in under-resourced clinical settings where a standard protocol for labour management is either not used or is inconsistently used. However, the benefits of using the partograph can only be maximized when accompanied by adherence to a standard labour management protocol.
- Considering the variability among women with regard to rates of progress during labour, the GDG placed its emphasis on reducing the likelihood of unnecessary interventions and therefore chose to recommend the four-hour action line partograph rather than those with earlier action lines.

Background

Difficult labour (or dystocia) is characterized by abnormally slow labour progress arising from inefficient uterine contractions, abnormal fetal presentation or position, inadequate bony pelvis or abnormalities of the pelvic soft tissues of the mother.(1, 2) Evidence suggests that up to one third of first-time mothers experience delay in the first stage of labour.(3)

Augmentation of labour is the process of stimulating the uterus to increase the frequency, duration and
intensity of contractions after the onset of spontaneous labour. It has commonly been used to treat delayed labour when uterine contractions are assessed to be insufficiently strong or inappropriately coordinated to dilate the cervix. Labour augmentation has traditionally been performed with the use of intravenous oxytocin infusion and/or artificial rupture of amniotic membranes (amniotomy). The procedure aims to shorten labour in order to prevent complications relating to undue prolongation, and to avert caesarean section. There is evidence that a significant proportion of women with uncomplicated pregnancies are subjected to routine augmentation of labour with oxytocin.(4)

While augmentation of labour may be beneficial in preventing prolonged labour, its inappropriate use may cause harm. Augmentation with synthetic oxytocin may result in uterine hyperstimulation, with adverse effects such as fetal asphyxia and uterine rupture, and thus increase the risk of a cascade of interventions during labour and delivery.(5)

Methods

The recommendation was developed using standardized operating procedures in accordance with the process described in the "WHO handbook for guideline development", guided by the GRADE approach.(6) Outcomes used for this recommendation were aligned with the prioritized outcomes from the WHO recommendations on augmentation of labour (2014).(7)

A Cochrane systematic review was conducted, on use of the partograph as a monitoring tool to identify when intervention becomes indicated during labour.(8) In the review, randomized controlled trials relevant to the key question were screened by review authors, and data on relevant outcomes and comparisons were extracted. Evidence profiles (in the form of GRADE tables) were prepared for comparisons of interest, including the assessment and judgments for each outcome, and the estimated risks.

WHO convened a Guideline Development Group (GDG) meeting on recommendations on augmentation of labour in September 2013, where this recommendation was developed. The GDG comprised of a group of independent experts, who used the evidence profiles to assess evidence on effects on the pre-specified outcomes. GDG members discussed the balance between desirable and undesirable effects, overall quality of supporting evidence, values and preferences of stakeholders, resource requirements, cost-effectiveness, acceptability, feasibility and equity, to formulate the recommendation. Remarks were added to clarify the recommendation, and aid implementation.

Recommendation question

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

- In pregnant women in labour (P), does use of partograph for monitoring the progress of labour (I), compared to no intervention, (C), improve maternal and perinatal outcomes (O)?

Evidence Summary

Evidence on the use of a partograph as a monitoring tool to identify when intervention becomes indicated during labour was extracted from a Cochrane systematic review of six RCTs (> 7000 women).(8) The review examined seven different comparisons, but few data could be pooled in meta-analysis.

Partograph versus no partograph
Two trials conducted in Canada and Mexico involving a total of 1590 women compared partograph with no partograph. In one trial, there were no significant differences in the mean duration (MD) of the first (MD 0.8 hrs, 95% CI -0.06 to 1.66) or second (MD 0 hrs, 95% CI -0.21 to 0.21) stages of labour.

Overall, there was no significant difference in the frequency of caesarean section (RR 0.64, 95% CI 0.24 to 1.70), although findings in the two trials were not consistent. In the Canadian trial, there was no significant difference between groups (RR 1.03, 95% CI 0.82 to 1.28; 1156 women), whereas significantly fewer women in the partograph group had caesarean section in the Mexican trial (RR 0.38, 95% CI 0.24 to 0.61; 434 women). The Mexican trial, however, was at high risk of bias due to poor allocation concealment.

There were no significant differences between groups for the other critical or important maternal and infant outcomes reported: use of epidural (RR 1.01, 95% CI 0.98 to 1.05); oxytocin augmentation (RR 1.02, 95% CI 0.95 to 1.1); instrumental vaginal birth (RR 1.00, 95% CI 0.85 to 1.17); artificial rupture of the membranes (RR 0.99, 95% CI 0.88 to 1.11); low Apgar score at five minutes (RR 0.77, 95% CI 0.29 to 2.06); and admission to special care nursery (RR 0.94, 95% CI 0.51 to 1.75).

Partograph with an alert line only versus one with both alert and action lines

A trial involving 694 women in South Africa compared a partograph with an alert line only with one with both alert and action lines. Women in the alert line only group received what was described as "aggressive" labour management with two-hourly vaginal examinations and oxytocin augmentation once the alert line was crossed. Women in the other group received expectant management with four-hourly vaginal examinations and oxytocin augmentation when the action line (four hrs to the right of the alert line) was crossed. It was unclear whether the findings reflected the use of different types of partograph or other features of labour management.

Women in the alert line only group were significantly less likely to have caesarean section (RR 0.68, 95% CI 0.50 to 0.93). Rates of oxytocin augmentation (RR 0.81, 95% CI 0.62 to 1.05) and instrumental vaginal birth (RR 0.87, 95% CI 0.66 to 1.15) were similar between the groups.

There were insufficient events to detect differences in terms of the infant outcomes reported: perinatal death (RR 7.12, 95% CI 0.37 to 137.36) and low Apgar score at five minutes (RR 7.12, 95% CI 0.37 to 137.36).

Partograph with two-hour versus four-hour action lines

Two trials conducted in the United Kingdom compared partographs with two-hour versus four-hour action lines.

There were no statistically significant differences between the comparison groups for reported critical or important maternal outcomes: caesarean section for all indications (RR 1.06, 95% CI 0.85 to 1.32); caesarean section for fetal distress (RR 1.30, 95% CI 0.86 to 1.96); caesarean section for delay in labour (RR 0.98, 95% CI 0.77 to 1.25); use of epidural (RR 1.04, 95% CI 0.95 to 1.14); instrumental vaginal (RR 0.91, 95% CI 0.80 to 1.03); and postpartum haemorrhage (PH) (RR 1.07, 95% CI 0.90 to 1.26).

There was a modest increase in the number of women receiving oxytocin augmentation in the two-hour partograph group (RR 1.14, 95% CI 1.05 to 1.22; two trials, 3601 women).

There were no significant differences in infant outcomes reported: Apgar score < 7 at five minutes (RR 0.82, 95% CI 0.5 to 1.35); cord pH < 7.1 (RR 0.73, 95% CI 0.44 to 1.22); and admission to special care nursery (RR 0.78, 95% CI 0.46 to 1.31).

Partograph with two-hour versus three-hour action lines

One trial in the United Kingdom compared partograph with two-hour versus three-hour action lines. There were no statistically significant differences between these partograph designs for any of the maternal or infant outcomes reported.

Maternal outcomes: caesarean section for all indications (RR 0.78, 95% CI 0.51 to 1.18); caesarean section for fetal distress (RR 0.96, 95% CI 0.44 to 2.1); caesarean section for delay in labour (RR 0.71, 95% CI 0.42 to 1.19); use of epidural (RR 1.16, 95% CI 0.94 to 1.44); oxytocin augmentation
(RR 1.02, 95% CI 0.85 to 1.21); instrumental vaginal birth (RR 0.93, 95% CI 0.69 to 1.26); and PPH (RR 0.96, 95% CI 0.63 to 1.45).

- Infant outcomes: Apgar score < 7 at five minutes (RR 1.44, 95% CI 0.41 to 5.05); cord pH < 7.1 (RR 0.38, 95% CI 0.07 to 1.96); and admission to special care nursery (RR 3.83, 95% CI 0.43 to 34.12). Other infant outcomes were not reported.

**Partograph with three-hour versus four-hour action lines**

- One trial in the United Kingdom compared partographs with three-hour versus four-hour action lines. There were no statistically significant differences between these partograph designs for most of the maternal and infant outcomes reported.
- The rates of caesarean section for fetal distress or for delay in labour in the two groups were not significantly different (RR 1.77, 95% CI 0.70 to 4.42, and RR 1.68, 95% CI 0.97 to 2.91, respectively). However, in the trial (613 women), overall rate of caesarean section was higher in the three-hour compared with the four-hour action line group (RR 1.70, 95% CI 1.07 to 2.70). Results for other maternal outcomes did not identify statistically significant differences between women cared for using the two partograph designs: PPH (blood loss > 500 ml) (RR 1.03, 95% CI 0.68 to 1.56); use of epidural (RR 1.01, 95% CI 0.80 to 1.27); oxytocin augmentation (RR 1.09, 95% CI 0.91 to 1.30); and instrumental vaginal birth (RR 0.96, 95% CI 0.72 to 1.28).
- There were no significant differences between any of the infant outcomes reported: low Apgar score at five minutes (RR 0.82, 95% CI 0.22 to 3.04); cord pH < 7.1 (RR 2.57, 95% CI 0.5 to 13.17); and admission to special care nursery (RR 0.51, 95% CI 0.05 to 5.65).

**Partograph prompting early versus later intervention**

- The trial conducted in South Africa was pooled with the two trials from the United Kingdom trials in a comparison examining partograph designs prompting earlier versus later intervention. Overall, there were no significant differences between earlier and later intervention for the outcomes reported: caesarean section (RR 0.94, 95% CI 0.67 to 1.31), and instrumental birth (RR 0.9, 95% CI 0.8 to 1.02).

**Partograph with latent phase versus partograph without latent phase**

- One trial conducted in India with data for 743 women compared a partograph design with a latent phase with one without a latent phase.
- Women cared for using a partograph with a latent phase were more likely to have caesarean section for all indications (RR 2.45, 95% CI 1.72 to 3.50) and specifically for fetal distress (RR 4.87, 95% CI 2.83 to 8.37). The difference between the groups in rates of caesarean section for delay was not statistically significant (RR 1.35, 95% CI 0.59 to 3.08).
- The partograph with a latent phase was also associated with increased use of oxytocin augmentation (RR 2.18, 95% CI 1.67 to 2.83). There was no difference between the groups in the frequencies of instrumental vaginal birth (RR 1.04, 95% CI 0.61 to 1.77).
- No significant difference was observed for low Apgar scores at five minutes (RR 0.75, 95% CI 0.21 to 2.63), but infants in the latent phase partograph group were more likely to be admitted to special care nursery (RR 1.84, 95% CI 1.29 to 2.63). Other maternal and neonatal outcomes were not reported.

**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 (including, for example, the availability of augmentation agents and monitoring capacity), 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 did not identify further research priorities on this topic.

**Related Links**

WHO recommendations for augmentation of labour (2014) –[full document](#) and [evidence tables](#)

*Highlights and Key Messages from World Health Organization’s 2014 Global Recommendations.* (April 2015)

**Supporting systematic review:**


**References**
