







WHO next-generation partograph: revolutionary steps towards individualised labour care

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In 1972, two landmark papers in this journal described the partograph,^{1,2} a chart designed to provide finite referral criteria for midwives working in peripheral clinics who needed to refer women in labour to Harare Hospital, Zimbabwe (then Rhodesia). This innovation coincided with influential reports from the National Maternity Hospital in Dublin of the ‘active management of labour’ (early amniotomy, proactive use of oxytocin and one-to-one nursing care) with the objective of achieving birth within a limited time frame.³ The partograph was globally adopted, and has been used as part of the assessment of labour progress for nearly half a century. It was recommended by the World Health Organization (WHO) in the early 1990s as a routine tool for displaying the progress of labour. Despite its global acceptance, utilisation and correct completion rates as low as 31 and 3%, respectively, have been reported.⁴

Following the update of its global recommendations on intrapartum care in 2018,⁵ the WHO initiated a process to

revise the partograph in light of recent evidence, including a new understanding of the individual variability of the progress of labours resulting in good perinatal outcomes, and the fact that many women do not experience a labour that conforms to the average rate on which the partograph design was based.^{6,7} A large study and corresponding systematic reviews published in this journal^{8–10} and subsequent analysis¹¹ failed to find evidence to support the use of a cervical dilatation rate of 1 cm/hour as a screening tool to predict adverse labour outcomes. The new WHO recommendations based on the emerging evidence on normal labour progression, as well as recommendations informed by the global shift towards improving experience of childbirth,⁵ necessitated the design of a new labour monitoring tool called the WHO Labour Care Guide (Figure 1). WHO has also published a corresponding user’s manual to support healthcare providers on how to successfully use the new tool.¹² The Labour Care Guide is distinct

WHO LABOUR CARE GUIDE

Name _____ Parity _____ Labour onset _____ Active labour diagnosis [Date _____]
 Ruptured membranes [Date _____ Time _____] Risk factors _____

		Time	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
		Hours																
		ALERT	ACTIVE FIRST STAGE												SECOND STAGE			
SUPPORTIVE CARE	Companion	N																
	Pain relief	N																
	Oral fluid	N																
	Posture	SP																
BABY	Baseline FHR	< 110, ≥ 160																
	FHR deceleration	L																
	Amniotic fluid	M+++, B																
	Fetal position	P, T																
	Caput	+++																
	Moulding	+++																
WOMAN	Pulse	< 60, ≥ 120																
	Systolic BP	< 80, ≥ 140																
	Diastolic BP	≥ 90																
	Temperature °C	< 35.0, ≥ 37.5																
	Urine	P++, A++																
LABOUR PROGRESS	Contractions per 10 min	≤ 2, > 5																
	Duration of contractions	< 20, > 60																
	Cervix [Plot X]	10																
		9	≥ 2h															
		8	≥ 2.5h															
		7	≥ 3h															
		6	≥ 5h															
	Descent [Plot O]	5	≥ 6h															
		5																
		4																
3																		
2																		
MEDICATION	Oxytocin (U/L, drops/min)																	
	Medicine																	
	IV fluids																	
SHARED DECISION-MAKING	ASSESSMENT																	
	PLAN																	
INITIALS																		

In active first stage, plot 'X' to record cervical dilatation. Alert triggered when lag time for current cervical dilatation is exceeded with no progress. In second stage, insert 'P' to indicate when pushing begins.

INSTRUCTIONS: CIRCLE ANY OBSERVATION MEETING THE CRITERIA IN THE 'ALERT' COLUMN, ALERT THE SENIOR MIDWIFE OR DOCTOR AND RECORD THE ASSESSMENT AND ACTION TAKEN. IF, LABOUR EXTENDS BEYOND 12 h, PLEASE CONTINUE ON A NEW LABOUR CARE GUIDE.
 Abbreviations: Y – Yes, N – No, D – Declined, U – Unknown, SP – Supine, MO – Mobile, E – Early, L – Late, V – Variable, I – Intact, C – Clear, M – Meconium, B – Blood, A – Anterior, P – Posterior, T – Transverse, P+ – Protein, A+ – Acetone

Figure 1. WHO Labour Care Guide.

from previous partograph designs in its approach to labour duration, triggers for clinical interventions and its emphasis on respectful maternity care.

It is anticipated that a departure from the familiar partograph format may provoke anxiety and even antipathy among healthcare professionals. Change is not easy and

should not take place simply for the sake of change. This commentary explores the key concepts that motivated the WHO decision to review and revise the partograph format.

What has not changed?

Table 1 summarises the similarities and changes between the modified WHO partograph and the Labour Care Guide. The fundamental and innovative characteristic of the original 'Philpott chart' was the graphical representation of the progress of labour in terms of women's cervical dilatation and descent of the fetal presenting part, against time.^{1,2} This concept has not changed other than in appearance, and retains its key position in the Labour Care Guide. In addition, formal regular recording of important clinical parameters describing duration and frequency of uterine activity and the wellbeing of the woman and baby, remain. The Labour Care Guide remains a record of clinical rather than ultrasound-based parameters.¹³

Table 1. Similarities and differences between the partograph and the Labour Care Guide

Modified WHO partograph	WHO Labour Care Guide
Similarities	
Graphical representation of the progress of labour in terms of women's cervical dilatation and descent of the fetal presenting part, against time	
Formal regular recording of important clinical parameters describing the wellbeing of the woman and baby	
Differences	
Active phase defined as starting from 4 cm of cervical dilatation	Active phase defined as starting from 5 cm of cervical dilatation
Fixed 1 cm/hour 'alert' line and 'action' lines	Evidence-based time limits at each centimetre of cervical dilatation
No second-stage section	Intensified monitoring in second stage
No recording of supportive care interventions	Explicit recording of labour companionship, pain relief, oral fluid intake and posture
Records strength, duration and frequency of uterine contractions	Records duration and frequency of uterine contractions
No explicit requirement to respond to deviations from expected observations of any labour parameter, other than cervical dilatation alert and action lines	Requires deviations to be highlighted and the corresponding response to be recorded by the provider

What has changed and why?

Briefly, when compared with the previous partograph designs, the Labour Care Guide includes the following changes: the 1 cm/hour 'alert' line and its corresponding 'action' line have been replaced with evidence-based time limits at each centimetre of cervical dilatation during active first stage of labour; the starting point of active first stage of labour is a cervical dilatation of 5 cm (instead of 4 cm or less); it includes a section for monitoring the second stage of labour; it includes a section to assess and promote the use of supportive interventions to improve overall childbirth experience; it no longer records strength of uterine contractions, which is difficult to clinically quantify and standardise; and it requires deviation from expected observations of any labour parameter to be highlighted and the corresponding response to be recorded by the provider.

Graphical display of the limits of 'normal' labour progression

The original partograph uses a line drawn at 1 cm/hour from the first cervical assessment thought to be indicative of active first stage of labour (3 or 4 cm), as the 'alert' or expected normal progress line, and a parallel line 2 hours (or more usually 4 hours) later as the 'action' line to identify prolonged labour. This format was based on the seminal work of Friedman and Kroll, which showed that the average rate of cervical dilatation in primiparous women was biphasic, being slower before 3 cm dilatation and approximately 1 cm/hour after 3 cm.¹⁴ The fundamental flaw of translating this statistical summary of a large number of labours to a template for individual women is that it does not account for the variability in the rates of progression between women. In addition, the fact that the 'action line' threshold for prolonged labour is predetermined for the whole labour does not account for the non-linear progress of individual women's labours. For example, if labour has progressed rapidly and is then arrested, it would take more than 4 hours to then reach the action line. On the other hand, if labour has been slow as the result of inadequate uterine activity and crossed the action line, it may subsequently progress normally but evoke anxiety because of being on the 'wrong' side of the action line, which becomes unhelpful in terms of guiding progress for the rest of the labour.

The revised chart for evaluating labour progress in the Labour Care Guide differs fundamentally in that the guiding parameters for labour progress are dynamic as opposed to being static. Rather than having a fixed-rate limit over the entire active first stage of labour, consideration for intervention is guided by an evidence-based time limit for each centimetre of cervical dilatation, derived from the 95th centiles of labour duration at different centimetre levels in women with normal perinatal outcomes.⁶ As a

result, even if the time to, for example, 9 cm dilatation is unusually fast, the expected limit for progressing from 9 to 10 cm remains the same. As for other parameters in the 'alert' column, if the time to progress from 9 to 10 cm, for example, exceeded 2 hours, then the relevant cervical assessment ('x') would be circled and the steps taken to respond would be documented in the 'plan' section.

The absence of the diagonal labour progress limit lines is the most striking difference between the Labour Care Guide and the partograph. Although the lines have been removed, the parameters remain, in a more current evidence-based format, and there is an explicit requirement for a documented response when these parameters are exceeded.

Definition of active phase of first stage of labour

The original partograph defined the onset of the active phase of first stage of labour as 3 cm dilatation of the cervix, based on the point of inflection on the Friedman curve. Modification of the partograph led to shifting of this point to 4 cm by the WHO.¹⁵ While the 3 or 4 cm thresholds were often described as reflecting Friedman's original work, it is interesting that Friedman recently noted that this was a misunderstanding of his work, and acknowledged that the point of inflection indeed varies from one woman to another.¹⁶ The Labour Care Guide uses 5 cm, a point where the median dilatation rate in low-risk women with no adverse perinatal outcomes was found to exceed 1 cm/hour (i.e. transition to a more rapid cervical dilatation progression).¹⁰ This reduces premature designation of the active phase of labour, which has been a major iatrogenic cause of apparent poor labour progress and unnecessary interventions.^{17,18}

The Labour Care Guide acknowledges that the latent phase of the first stage of labour is problematic to define because it can be identified with certainty only in retrospect. The time of onset is often unclear, and its duration is very variable between women. Premature plotting of suspected latent phase is a potential source of unnecessary intervention inherent in the original design of the partograph, which designated 8 hours for the latent phase. This is avoided in the modified partograph designs and in the Labour Care Guide by only initiating documentation of labour progress once the active phase has been diagnosed.

The second stage of labour

An important limitation of the original partograph design and its modifications is that they do not include the second stage of labour. There is no explicit requirement to continue monitoring the condition of the woman and baby, or progression during the second stage of labour. Increased uterine activity compounded by maternal expulsive efforts make the second stage of labour a particularly critical time, and reduced vigilance at this time may lead to poor outcomes. This deficit has been addressed in the Labour Care

Guide with closer attention to progress and the wellbeing of both woman and baby being required during the second stage.

Supportive intrapartum care

The Labour Care Guide is designed to emphasise the importance of the experiential dimension of childbirth by requiring explicit recording of evidence-based practices that matter not only for women's positive birth experience but also for improving clinical outcomes for women and their newborns. The Labour Care Guide includes assessment of labour companionship, oral hydration, maternal position and mobility, and pain management, with the aim of promoting the use of these evidence-based yet often neglected practices.

Labour monitoring-to-action

As indicated by its name, the Labour Care Guide is much more than a technical tool to monitor labour progress and a woman and her baby's wellbeing. The tool also prompts the comprehensive recordings of maternal vital signs, fetal wellbeing and labour progression, and contains reference values for maternal and fetal observations. To reinforce the care purpose of the tool, there is an explicit requirement to identify any observation that is inconsistent with good care, wellbeing or labour progress by circling it and documenting the clinical or supportive care response in consultation with the woman, prompting early recognition and action to improve the quality of care that the woman and her baby receive. In the 'Assessment' section the caregiver records the overall assessment and any additional findings not previously documented but important for labour monitoring, and in the 'Plan' section the care plan formulated in discussion with the woman is documented. This establishes the Labour Care Guide as a contemporaneous monitoring and response tool, rather than just a labour record that might be completed in retrospect.

Conclusion

Considerable research, knowledge synthesis, consultation, field testing and refinement have gone into the development of the Labour Care Guide.^{19,20} Much future research on its implementation and impact on labour care and outcomes, including women's experiences of care, is needed. We hope that this commentary on the fundamental concepts underpinning its development will reassure healthcare providers that use of the new tool will not detract from, but rather will augment, the purposes of the original partograph. Much has changed in how we provide evidence-based, respectful intrapartum care in the last 50 years, and we hope that the Labour Care Guide has responded to these advances and will encourage best practices that include the promotion of good quality, respectful and compassionate care for all women, newborns and their families.

Disclosure of interests

None declared. Completed disclosure of interests form available to view online as supporting information.

Contribution to authorship

The idea of this commentary was conceived by OTO. GJH prepared the first draft of the article with substantial input by OTO. All authors (GJH, OTO, SB, MBonet, MBucagu, BD, SD, HG, CSEH, VH, TL, BL, DL, PL, FEMcC, RP, ZQ, JPS, MES, PHB, VV, JPV) contributed to the content and development of the article. All authors reviewed and agreed to the final version of this manuscript.

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Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article. ■

References

- Philpott RH, Castle WM. Cervicographs in the management of labour in primigravidae. I. The alert line for detecting abnormal labour. *J Obstet Gynaecol Br Commonw* 1972;79:592–8.
- Philpott RH, Castle WM. Cervicographs in the management of labour in primigravidae. II. The action line and treatment of abnormal labour. *J Obstet Gynaecol Br Commonw* 1972;79:599–602.
- O'Driscoll K, Jackson RJ, Gallagher JT. Prevention of prolonged labour. *Br Med J* 1969;2:477–80.
- Bedada KE, Huluka TK, Bulto GA, Roga EY. Low utilization of partograph and its associated factors among obstetric care providers in governmental health facilities at West Shoa Zone, Central Ethiopia. *Int J Reprod Med* 2020;2020:3738673.
- WHO Recommendations: Intrapartum Care for a Positive Childbirth Experience. Geneva: World Health Organization; 2018.
- Oladapo OT, Souza JP, Fawole B, Mugerwa K, Perdoná G, Alves D, et al. Progression of the first stage of spontaneous labour: a prospective cohort study in two sub-Saharan African countries. *PLoS Med* 2018;15:e1002492.
- Abalos E, Oladapo OT, Chamillard M, Díaz V, Pasquale J, Bonet M, et al. Duration of spontaneous labour in 'low-risk' women with 'normal' perinatal outcomes: a systematic review. *Eur J Obstet Gynecol Reprod Biol* 2018;223:123–32.
- Souza JP, Oladapo OT, Fawole B, Mugerwa K, Reis R, Barbosa-Junior F, et al. Cervical dilatation over time is a poor predictor of severe adverse birth outcomes: a diagnostic accuracy study. *BJOG* 2018;125:991–1000.
- Bonet M, Oladapo OT, Souza JP, Gulmezoglu AM. Diagnostic accuracy of the partograph alert and action lines to predict adverse birth outcomes: a systematic review. *BJOG* 2019;126:1524–33.
- Oladapo OT, Diaz V, Bonet M, Abalos E, Thwin SS, Souza H, et al. Cervical dilatation patterns of 'low-risk' women with spontaneous labour and normal perinatal outcomes: a systematic review. *BJOG* 2018;125:944–54.
- Abalos E, Chamillard M, Diaz V, Pasquale J, Souza JP. Progression of the first stage of spontaneous labour. *Best Pract Res Clin Obstet Gynaecol* 2020;67:19–32.
- WHO Labour Care Guide: User's Manual. Geneva: World Health Organization; 2020.
- Haberman S, Atallah F, Nizard J, Buhule O, Albert P, Gonen R, et al. A novel partogram for stages 1 and 2 of labor based on fetal head station measured by ultrasound: a prospective multicenter cohort study. *Am J Perinatol* 2020. <https://doi.org/10.1055/s-0040-1702989>
- Friedman EA, Kroll BH. Computer analysis of labour progression. *J Obstet Gynaecol Br Commonw* 1969;76:1075–9.
- Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors, 2nd edn. Geneva: World Health Organization; 2017.
- Cohen WR, Friedman EA. Perils of the new labor management guidelines. *Am J Obstet Gynecol* 2015;212:420–7.
- Bailit JL, Dierker L, Blanchard MH, Mercer BM. Outcomes of women presenting in active versus latent phase of spontaneous labor. *Obstet Gynecol* 2005;105:77–9.
- Chuma C, Kihunrwa A, Matovelo D, Mahendeka M. Labour management and obstetric outcomes among pregnant women admitted in latent phase compared to active phase of labour at Bugando Medical Centre in Tanzania. *BMC Pregnancy Childbirth* 2014;14:68.
- Vogel JP, Comrie-Thomson L, Pingray V, Gadama L, Galadanci H, Goudar S, et al. Usability, acceptability, and feasibility of the World Health Organization Labour Care Guide: a mixed-methods, multicountry evaluation. *Birth* 2020;1–10. <https://doi.org/10.1111/birt.12511>.
- Laisser R, Danna VA, Bonet M, Oladapo OT, Lavender T. An exploration of health professional's views of the new WHO Labour Care Guide: a qualitative evaluation. *Afr J Midwifery Womens Health* (in press).