

## TECHNICAL NOTE

# Partograph

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**DOI:** 10.55489/njmr.1222022899

## ABSTRACT

This article briefly describes principle and use of Partograph in obstetrical practices. This article includes objectives and scope of the tool, the WHO partograph model, the principle of partograph use, components of partograph, problems with the who partograph and advantages and disadvantages of partograph use.

**Keywords:** Partograph, WHO, obstetric, Delivery

## INTRODUCTION

The idea of recording the progress of labour on a chart was started by **Friedman** who used a graphic record of cervical dilatation in labour. This approach was further developed and extended by **Philpott**.

**Definition of partograph:** It is a chart on which the salient features of labour are entered in a graphic form and therefore provides the opportunity for early identification of deviations from normal.

“It is a labour graph used to compare the progress of an individual women’s labour in terms of dilatation and fetal descent with expected norms.”

**What is it?** The partograph is a tool that can be used by midwifery personnel to assess the progress of labour and to identify when intervention is necessary. Studies have shown that using the partograph can be highly effective in reducing complications from prolonged labour for the mother (postpartum hemorrhage, sepsis, uterine rupture and its sequelae) and for the new-born (death, anoxia, infections, etc.).

**Who uses it?** Specialist obstetricians, general medical officers, nurses, midwives medical assistants or nurse aides with training in midwifery uses it.

**Why should we use it?** It is used assist in making the correct decision about transfer, caesarean section or other life- saving interventions

**How to use it?** A Partograph must be started only when a women is in labour. In the latent phase (cervix dilatation not more than 2 cm), she should have two or more contractions in 10 minutes, each lasting 20 seconds or more. In the active phase (cervix dilatation more than 3 cm), she should have one or more contractions in 10 minutes, each lasting 20 seconds or more.

## OBJECTIVES AND SCOPE OF THE TOOL

Partograph is designed to reduce prolonged labour and the sequelae of morbidity and mortality for both women and their infants. I also aimed to improve the quality of

care of women in labour and to increase the observation and interpretation skills of the progress of labour by midwifery and medical health personnel. It also encourages timely referral from the periphery.

## THE WHO PARTOGRAPH MODEL

The WHO partograph is a simple tool recommended by WHO to be used in monitoring labour worldwide. It represents in some ways a synthesized and simplified compromise, which includes the best features of several partograph. It consists of four components: Patient information, foetal condition, labour condition and maternal condition.<sup>1,2</sup>

### Patient information

This is a section where patient’s information is recorded. Pieces of this information include patient’s name, parity, hospital number, date and time of admission as well as the time of rupture of the membrane.

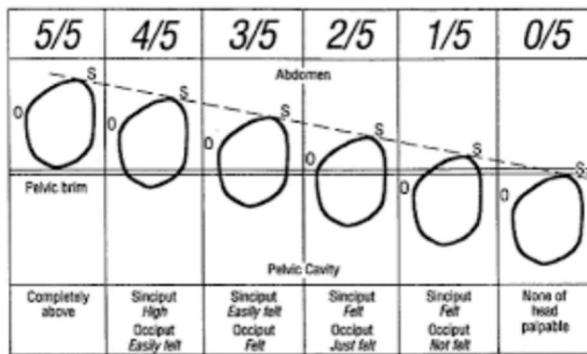
### Foetal condition

There is three Foetal condition or foetal well being is recorded in this section. **Foetal heart rate** is recorded every half hour. The colour of the amniotic fluid is recorded at every vaginal examination and is indicated on the partograph as: I: membrane intact; C: membranes ruptured, clear fluid; M: meconium-stained fluid; and B: blood-stained fluid. **Moulding:** (1) sutures apposed, (2) sutures overlapped but reducible, (3) sutures overlapped and not reducible

### The Labour conditions

This is a component that records the progress of labour. **Cervical dilatation-** This is assessed at every vaginal examination and it is marked with a cross (x). This is plotted on the partograph at 4 cm. **Alert line-** The line starts at 4 cm of cervical dilatation to the point of expected full dilatation at the rate of 1 cm per hour. **Action line-** This is a parallel line drawn 4 hours to the right of the alert line. **Descent-** This refers to the part of the head (divided into 5 parts) above the symphysis pubis. This is shown in

figure 4 below. It is assessed by abdominal palpation. It is recorded as a circle (o) at every vaginal examination. At 0/5, the sinciput (S) is at the level of the symphysis pubis.



**Figure: Descent of presenting foetal head**

Hour- This is the time elapsed since the onset of active phase of labour. Time- Actual time

Contraction- This is charted every half hour, by palpating the number of contractions in 10 minutes and their duration in seconds. They were classified in to three groups 1) Less than 20 seconds; 2) Between 20 and 40 seconds; and 3) More than 40 seconds.

Oxytocin- The amount of oxytocin per volume intravenous fluid in drops per minute every 30 minutes when used. Records of any additional drugs given.

**The Maternal Condition**

Pulse is recorded every 30 minutes and marked with a dot (•). Blood pressure is recorded every 4 hours and marked with arrows. (↓) Temperature is recorded every 2 hours. Protein, acetone and volume are recorded every time urine is passed.

**THE PRINCIPLE OF PARTOGRAPH USE**

The use of partograph in the monitoring of labour is based on the following principles:<sup>3,4</sup>

The latent phase of labour should not be longer than 8 hours, however, in the new model the latent phase has been removed and plotting on the partograph begins in the active phase when the cervix is at least 4 cm dilated to make it simpler and easier to use.

The rate of cervical dilatation is 1cm per hour in active phase of labour.

A lag time of 4 hours between poor progress of labour and the need for intervention is unlikely to compromise the foetus and the mother. This enables patients to be transferred from peripheral clinics to the hospital in sufficient time to avoid risk to mother or foetus.

Vaginal examinations should be performed as infrequently as is compatible with safe practice (once every 4 hours is recommended).

**COMPONENTS OF PARTOGRAPH**

Partograph includes information on Identification data of the patient, Fetal heart rate, Liquor amni, Moulding, Cervicograph (cervical dilatation), Descent of head, Time, Uterine contractions, Oxytocin, Drugs given (IV fluids and oral fluids) and Vital signs (BP, pulse and temperature).

Records are straight forward and objective, both nursing and medical staff can see the progress of labour at a glance. It facilitates handover procedure., It serves as an early warning in case of impending problems. It can predict deviation from normal duration of labour early. So appropriate steps could be taken in time.

Introduction of Partograph in the management of labour has reduced the incidence of prolonged labour and caesarean section rate. There is improvement in maternal morbidity, perinatal morbidity, and mortality.

It has a predictive value. It is possible to estimate the expected time of delivery in case everything is normal.

**PROBLEMS WITH THE WHO PARTOGRAPH**

Although WHO partograph is excellent for use at primary health care level of which Family Physicians are major stakeholders, there are some problems with its use which include the following:

The action line is printed at 4 hours to the right and parallel to the alert line. The period of 4 hours may be too late for a meaningful intervention to reverse the causal factor viewing the action line as the point of definite intervention to correct any slow in progress of labour. The WHO partograph is not a complete record of all aspects of first stage of labour because it does not provide enough space for documenting all findings in latent phase of labour.

Providing space for the record of latent phase of labour may encourage premature intervention in the prodromal aspect of first stage of labour which requires only passive management. The use of the alert line in secondary and tertiary health care centres is not clear as compared to primary health centre where transfer is required when it is crossed. There are no uniform actions recommended for progress crossing the action line and those between the alert and action lines. The WHO partograph is not suitable for efficient management of induced labour.

It defines active phase of labour as cases touching or crossing action line located at 4 hours from the alert line. This causes variability and confusion in the concept, diagnosis and management of prolonged active phase labour. It defines active phase only with reference to cervical OS dilatation. It made no reference to effacement.

It is to be noted that most of these problems resulted from recommendation for the use of partograph in secondary and tertiary health care centres rather than for the peripheral units where it was designed for.

**ADVANTAGES AND DISADVANTAGES OF PARTOGRAPH USE**

Even though the partograph was initially developed for use in developing countries and rural settings, the partograph is central to labour care today and is used by

obstetricians and midwives worldwide in different settings.<sup>5</sup> The advantages and disadvantages of the partograph are being discussed and investigated, both if it should be used and if so, which is the preferred design.<sup>6</sup>

The partograph provides a pictorial presentation of labour and gives a good overview of labour progression. Besides an assessment of the cervical dilatation, it includes observations on effacement, descent of the presenting part and strengths and duration of uterine contractions. Additionally, foetal and maternal conditions are being documented onto the partograph. Foetal observations include the foetal heart rate, position of the baby and presenting part. Maternal observations include baseline information (e.g. age, parity, blood group), vital signs (blood pressure, pulse, temperature), medications (including pain control) and fluid balance. The partograph is accessible for most health care workers in maternity care as it comes in paper and electronic versions. Other reported advantages include its usefulness during handover at shift changes to promote continuity of care and as a tool for teaching student midwives about labour progress.<sup>7</sup>

To use the partograph as intended, to identify risk and to act or intervene when needed, one is reliant on skilled midwives and obstetricians with knowledge of how to use the tool, and capacity to act in accordance with required interventions. In a review of qualitative evidence, birth attendants in low-resource settings reported inadequate training in using the partograph, which led to lack of confidence in using the tool.<sup>8</sup> Health providers have also reported the retrospective completion of partographs, due to fear of litigation. The partograph is used incorrectly in many settings, but even if used correctly, birth attendants report challenges in initiating proper labour management and necessary interventions due to lack of access to resources. In a high-income setting study, researcher found that 42.6% of low-risk women who were treated with oxytocin for augmenting contractions did not meet the criteria for labour dystocia despite that the partograph was used to identify dystocia.<sup>9</sup> It is worth noting that investigating whether birth attendants adhere to the partograph in use is challenging.

Even if the partograph is used as intended, the standardised labour progression monitoring tool leaves little room for individual assessment and personalised management of labour. There is evidence that labour progression patterns differ from Friedman's curve today, still the expected 1 cm/h is used as standard expected progression in most settings. The use of the partograph shows no unambiguously positive effect on outcome for the mother nor the foetus, but represent the only alternative for labour progression monitoring today. One could question if it is possible, or at all meaningful to adhere to a median labour curve for all women, being aware of the complexity of labouring curves, including long labours with positive outcomes.<sup>10</sup>

The lack of resources and knowledge would represent a challenge if care pathways were to be used in labour care, as care pathways also are complex, generate numerous consequences for midwifery practice and represent a standardisation of care. Personalised labour progression

monitoring and care could be a possibility in high-resource settings by developing electronic monitoring programmes designed with artificial intelligence (AI) techniques and machine learning in the future.<sup>10</sup>

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