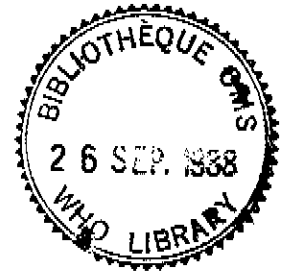




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The Partograph

A MANAGERIAL TOOL FOR THE
PREVENTION OF PROLONGED LABOUR

SECTION I
The Principle and Strategy



The World Health Organization Maternal and Child Health Unit
Division of Family Health
Geneva 1988



THE PARTOGRAPH

SECTION 1

THE PRINCIPLE AND STRATEGY

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INTRODUCTION

Approximately half a million women lose their lives every year because of complications of pregnancy and about 99% of these occur in developing countries. The risk of a woman dying as a result of a complication related to pregnancy in developing countries can be as much as a hundred times that of women in Western Europe or North America. An average of 450 women die for every 100,000 live births in the developing world (1).

Recognizing the unacceptable high maternal mortality, the preventable nature in the majority and the social consequences of a mother's death to the family and children, the Safe Motherhood Conference organized jointly by The World Bank, WHO and the United Nations Fund for Population Activities held in Nairobi in February 1987 concluded with a "call to action". This call demands that health workers involved in the care of mothers and children do take positive action now to reduce maternal mortality and morbidity. Among the actions called for, is the need to ensure that all pregnant women are screened by supervised and appropriately trained non-physician health workers where appropriate, with relevant technology (including partographs as needed), to identify those at risk, and to provide prenatal care and care during labour, as expeditiously as possible (2).

Post-partum haemorrhage and sepsis are the most common causes of maternal death in developing countries, but obstructed labour and ruptured uterus may cause as many as 70% of all maternal deaths in some situations.

Prolonged labour in the developing world is commonly due to cephalo-pelvic disproportion (CPD) which may result in obstructed labour, maternal dehydration, exhaustion, uterine rupture and vesico-vaginal fistula. Protracted labour is more common in primigravid women than in multipara and the complications and effects of CPD differ between them. In countries where CPD is not prevalent, abnormal progress of labour is often due to inefficient uterine action. Universally, less direct consequences of prolonged labour include maternal sepsis, post-partum haemorrhage and neonatal infection.

Early detection of abnormal progress of labour and the prevention of prolonged labour would significantly reduce the risk of postpartum haemorrhage and sepsis and eliminate obstructed labour, uterine rupture and its sequelae.

The partograph, a graphic recording of progress of labour and salient features in the mother and fetus has been used since 1970 to detect labour that is not progressing normally, to indicate when augmentation of labour is appropriate and to recognize cephalo-pelvic disproportion long before labour, becomes obstructed. (3)

The partograph serves as an "early warning system" and assists in early decision on transfer, augmentation and termination of labour. It also increases the quality and regularity of all observations on the fetus and the mother in labour, and aids early recognition of problems with either.

The partograph has been in use in a number of countries, and used extensively in a few (4-16). It has been found to be inexpensive, effective and pragmatic in a variety of different settings including developed and developing countries. It has shown to be effective in preventing prolonged labour, in reducing operative intervention and in improving the neonatal outcome. (4,8,17,18,19,20)

Table 1 illustrates the results than can be achieved using a partograph. Labours lasting more than 24 hours, perinatal mortality and Caesarean Section rates all dropped considerably in these two African studies after the partograph was introduced. More such studies are needed to confirm its value elsewhere.

Table 1

Rates of prolonged labour, Caesarean section and perinatal mortality before and after the introduction of the partograph in labour management

	Zimbabwe (8)		Malawi (17)	
	Before Partograph	After Partograph	Before Partograph	After Partograph
Labour over 24 hours*	13.0	0.6	14.0	3.0
Perinatal mortality*	5.8	0.6	5.3	3.8
Caesarean Section*	9.9	2.6	12.3	9.5

* Expressed as percentage of total deliveries

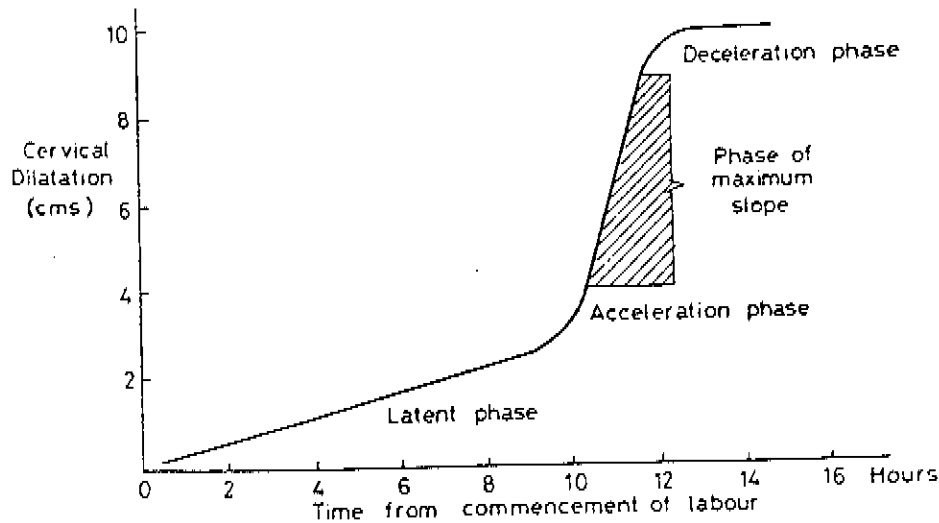
OBJECTIVES

The objectives in producing this information and manual on the partograph are:

- to encourage implementation of the partograph throughout the world with a view to reducing prolonged labour and its sequelae
- to promote further research into its use and benefits.

HISTORY OF THE PARTOGRAPH

E.A. Friedman in 1954 following a study on a large number of women in the USA, described a normal cervical dilatation pattern (see Figure 1) (21).



Friedman's curve showing phase of maximum slope.

Figure 1

Friedman divided labour functionally into two parts. The (early) **latent phase** extends over 8-10 hours and up to about 3 cm dilatation. This was followed by an **active phase** characterized by acceleration from about 3-10 cm at the end of which deceleration occurred. This work has been the foundation on which others have built.

In 1969 Hendricks et al demonstrated that in the active phase of normal labour the rate of dilatation of the cervix in primigravidae and multiparae varies little and that there is no deceleration phase at the end of the first stage of labour (22).

Philpott in extensive studies of primigravidae in Central and Southern Africa, constructed a nomogram for cervical dilatation in his population and was able to identify deviations from the normal and provide a sound scientific basis for the early intervention leading to the prevention of prolonged labour (7). Since then various authors have developed similar nomograms in other geographical areas. None of these have shown significant differences between ethnic groups. (10,23,24,25,26,27,28,29)

THE PARTOGRAPH: THE WHO MODEL

1. Principles

The WHO model of the partograph has been devised by an Informal Working Group which examined most of the available published work on partographs and their design. It represents in some ways a synthesised and simplified compromise including the best features of several partographs (3,4,5,6,9,10,14,26,30,31,32). It is based on the following principles:

1. The active phase of labour commences at 3cm cervical dilatation
2. The latent phase of labour should last not longer than 8 hours
3. During active labour, the rate of cervical dilatation should be not slower than 1cm/hour
4. A lag time of 4 hours between a slowing of labour and the need for intervention is unlikely to compromise the fetus or the mother and avoids unnecessary intervention
5. Vaginal examinations should be performed as infrequently as is compatible with safe practice (4 hourly is recommended)
6. Midwives and other personnel managing labour may have difficulty in constructing alert and action lines and it is better to use a partograph with pre-set lines, although too many lines may add further confusion

The average time in labour after admission to a health institution in the developing world is 5-6 hours (4,15,28,30). In most cases, therefore, not more than 2 vaginal examinations should be necessary.

Table 2 demonstrates how effectively an appropriately placed action line identifies labours where intervention is likely. In those studies listed in table 2, between 3% and 30% of cases studied crossed the action line, a probable reflection on the variety of different partographs in use.

Table 2

Mode of delivery among labours crossing and not crossing action line in Partograph

Place of study	Mode of delivery	Action line not reached*	Action line reached or crossed +
Cameroon (4)	Spontaneous vertex (SVD)	92	49
	Operative vaginal	8	45
	Caesarean Section	0	6
Papua New Guinea Highlands (15)	SVD	91	46
	Operative vaginal	7	23
	Caesarean Section	2	31
Papua New Guinea Urban (5)	SVD	88	19
	Operative vaginal	12	55
	Caesarean Section	0	26
Malawi (17)	SVD	73	46
	Operative vaginal	19	32
	Caesarean Section	8	22
Zimbabwe (8)	SVD	90	28
	Operative vaginal	11	51
	Caesarean Section	0	21

* Figures are percentage of total labours not reaching action line

+ Figures are percentage of total labours reaching or crossing action line.

2. Components

Figure 2 shows the partograph advocated by The World Health Organization. This partograph like others is basically a graphic representation of the events of labour plotted against time in hours. It consists of three components:

- the fetal record,
- the record of the progress of labour
- the maternal record

It can be used for all labours in hospital. In the periphery, it would only be used for low risk labours where spontaneous vaginal delivery is anticipated. High risk patients should be transferred to hospital immediately. The partograph does not replace adequate screening of women on arrival in labour to exclude conditions that require urgent attention or immediate transfer. It is designed to detect deviations from normal which develop as labour progresses

The record of the progress of labour

This part of the graph has as its central feature a graph of cervical dilatation against time. It is divided into a latent phase and an active phase.

The latent phase

The latent phase of labour is from the onset of labour until the cervix reaches 3 cm dilatation. If this phase is delayed for longer than 8 hours in the presence of at least 2 contractions in ten minutes, the labour is more likely to be problematical and therefore, if the woman is in a peripheral unit she should be transferred to hospital. If she is in hospital she needs critical assessment and a decision about subsequent management.

The active phase

1. Once 3cm dilatation is reached, labour enters the active phase.
2. In about 90% of primigravidae the cervix dilates at a rate of 1cm/hr or faster in the active phase.
3. The 'alert line' drawn from 3cm to 10cm represents this rate of dilatation.

Therefore, if cervical dilatation moves to the right of the alert line it is slow and an indication of delay in labour. If the woman is in a peripheral unit she should be transferred to hospital; if in hospital she should be observed more frequently.

4. The 'action line' is drawn four hours to the right of the alert line. It is suggested that if cervical dilatation crosses this line that there should be a critical assessment of the cause of delay and a decision about the appropriate management to overcome this delay.

PARTOGRAPH

Name..... Gravida.... Para.... Hospital No.

Date of admission Time of admission..... Ruptured membranes hrs

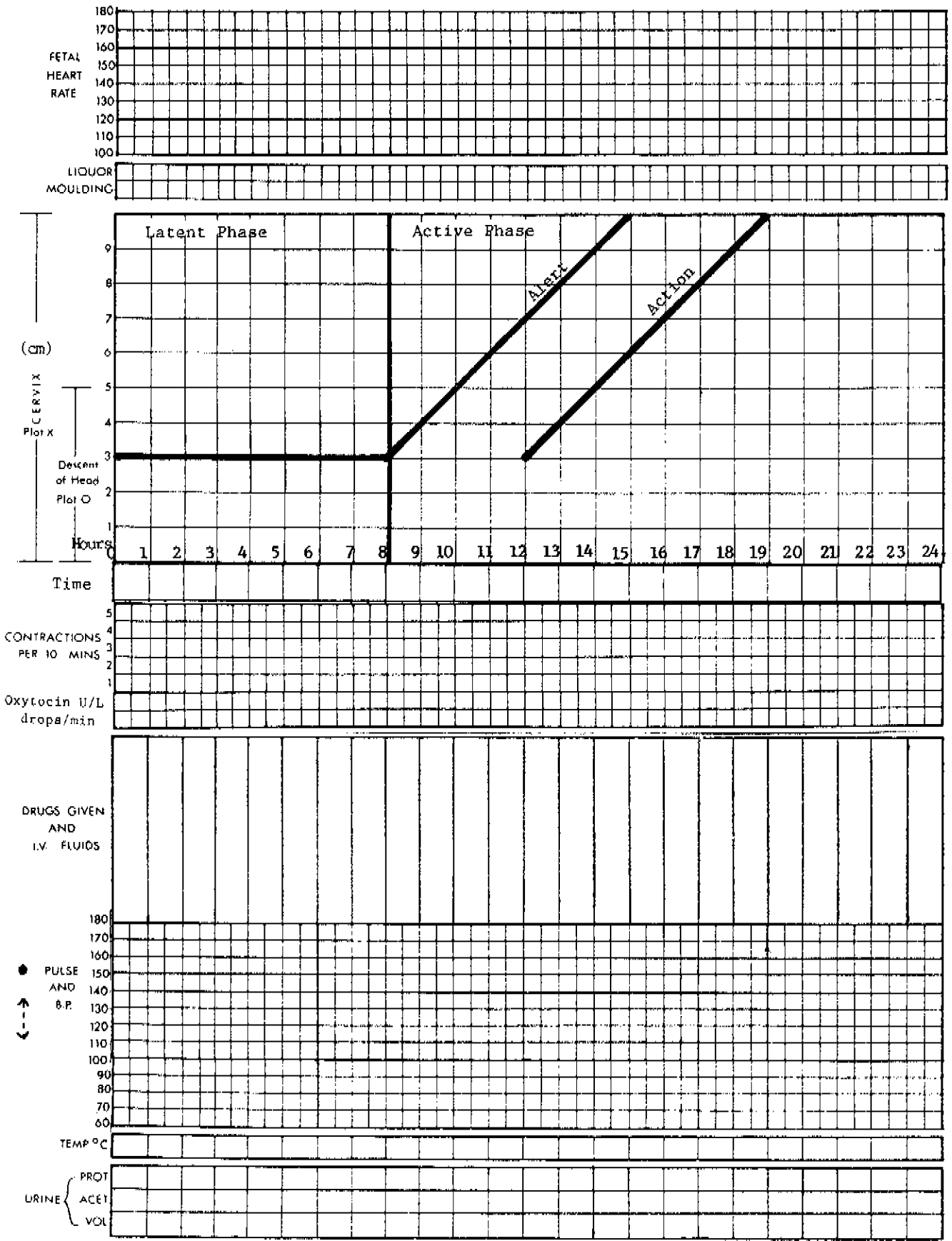


Figure 2

This partograph is designed for use in all maternity settings but has a different level of function at different levels of health care. In a peripheral centre, the critical function is to give early warning that labour is likely to be prolonged and that the woman should be transferred to hospital (alert line function). In the hospital setting, moving to the right of the alert line serves as a warning for extra vigilance but the action line is the critical point at which specific management decisions must be made.

Other observations on the progress of labour are also recorded on the partograph and are essential features in the management of labour.

In particular, it is important to note other features relevant to the progress of labour, ie. the **descent of the fetal head** through the pelvis and the **quality of uterine activity**.

The **fetus** is monitored closely on the partograph by regular observation of the fetal heart and of the liquor.

Regular assessment of the **maternal condition** is achieved by charting maternal temperature, pulse and blood pressure and by regular urinalysis. The partograph also contains a space to chart administration of oxytocin if labour is augmented.

The charting of all these features is described in detail in Section II of the document on the Partograph: The Users Manual (WHO/MCH/88.4).

IMPLEMENTATION OF THE PARTOGRAPH

The implementation of the partograph implies a functioning referral system with essential obstetric functions in place. Its use should also improve the efficiency and effectiveness of maternity services.

The proposed partograph and its accompanying management guidelines can only be used where the woman presents herself to the formal health care system in labour and where staff who fulfill certain minimum training criteria work. These staff must:

1. Have adequate training in midwifery to observe and conduct normal labour and delivery.
2. Be able to perform vaginal examinations in labour and accurately assess cervical dilatation
3. Be able to plot cervical dilatation accurately on a graph against time.

There is evidence (6,33) that midwife-auxiliaries with quite basic training are able to fulfill these functions and it should therefore be possible to introduce the partograph into a peripheral level of formal health care (6,21). In these circumstances, the critical function of the partograph is to indicate when referral is appropriate.

It is, however, essential that the introduction of the partograph is combined with a programme of training in its use and of close supervision, encouragement and follow-up of those using it.

STRATEGY

Despite the fact that the partograph has been described and used since the early 1970's it is still not used universally. The reasons for this are many but include:-

- lack of conviction by decision-makers and some leaders of the profession about its usefulness
- the existence of so many varieties of the partograph - often with conflicting assumptions and recommendations that the potential new user is at a loss as to which one to follow.

In order to overcome the two problems mentioned above the following strategy is recommended:-

- a) A simplified partograph which includes the essential features of most of the partographs currently in use has been drawn up by WHO.
- b) The partograph will be introduced to decision-makers at the Ministries of Health as well as to leaders of the profession in each country especially those in teaching hospitals.
- c) The partograph should be implemented initially in teaching hospitals and referral centres. Its application will then be extended to peripheral maternity units.
- d) Medical and midwifery schools will be encouraged to teach the principles and use of the partograph, and for its inclusion into the curriculum.
- e) Research into all aspects of the application of the partograph will be encouraged. This research should include evaluation of training programmes as well as investigating the impact of the partograph on labour management and on adverse outcomes of labour.

It is realized that in many developing countries the formal health care system does not look after all pregnant women. If our efforts do not go beyond the formal sector it is unlikely that we will influence the existing appalling maternal mortality and morbidity very much. We therefore should make efforts to reach pregnant women outside the formal health care system. This can be done by a variety of ways:

- Traditional birth attendants (TBAs) should be involved as much as possible as agents of change. They should participate in conveying messages to pregnant women and village elders about the need to seek assistance early during pregnancy and labour.
- In those countries where mutual respect exists between trained nurses and TBAs, the latter have been persuaded to refer women in labour not later than 12 hours after they receive them. This experience should be emulated in other countries.
- Other methods of communication should be used as much as possible (eg. village health committees, the radio, church groups, newspapers etc.) to convey to rural communities the message that delayed labour can lead to problems for the mother and her baby and that help should be sought early (within 12 hours of its onset).
- It is also hoped that the improved results in labour management which should result from the use of the partograph will increase the credibility of the formal health care system and encourage more women to attend early in labour.

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INFORMAL WORKING GROUP ON THE
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GENEVA

LIST OF PARTICIPANTS

Dr W.B. Rogers Beasley
Health Sciences
The Rockefeller Foundation
1133 Avenue of the Americas
New York, N.Y. 10036
U.S.A.

WHO SECRETARIAT

Dr B.E. Kwast, FHE/MCH
Dr J. Kierski, FHE/MCH
Dr J.M. Kasonde, HRP

Mrs G. Betts
c/o National Midwifery School
P.C.M. Hospital
Fourth Bay Road
Freetown
Sierra Leone

Dr John Chiphangwi
Consultant Obstetrician/Gynaecologist
P.O. Box 269
Blantyre
Malawi

Dr Olive Frost (Rapporteur)
Noddfa
Strand Walk
Treffynnon (Holywell)
CLWYD CH8 7AN
Wales
Royaume Uni

Mrs Marie Goubran (Rapporteur)
International Confederation of Midwives
10 Barley Mow Passage
London W4 4PH
Royaume Uni

Professor S. Ratnam (Chairman)
Department of Obstetrics and Gynaecology
National University of Singapore
Lower Kent Ridge Road
Singapore 0511
Republic of Singapore