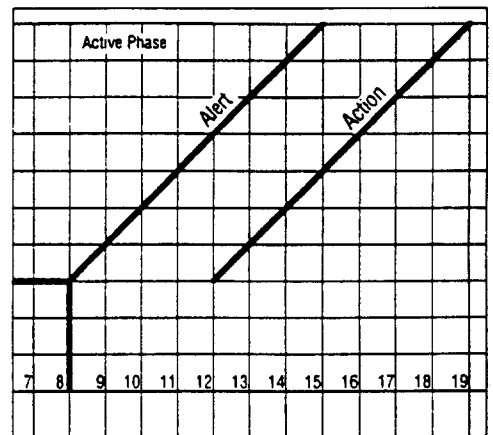


# Preventing Prolonged Labour: a practical guide

## The Partograph Part IV: Guidelines for Operations Research



MATERNAL HEALTH  
AND SAFE MOTHERHOOD PROGRAMME  
DIVISION OF FAMILY HEALTH  
WORLD HEALTH ORGANIZATION  
GENEVA

The World Health Organization is a specialized agency of the United Nations with primary responsibility for international health matters and public health. Through this organization, which was created in 1948, the health professions of some 189 countries exchange their knowledge and experience with the aim of making possible the attainment by all citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life.

By means of direct technical cooperation with its Member States, and by stimulating such cooperation among them, WHO promotes the development of comprehensive health services, the prevention and control of diseases, the improvement of environmental conditions, the development of health manpower, the coordination and development of biomedical and health services research, and the planning and implementation of health programmes.

These broad fields of endeavour encompass a wide variety of activities, such as developing systems of primary health care that reach the whole population of Member countries; promoting the health of mothers and children; combating malnutrition; controlling malaria and other communicable diseases including tuberculosis and leprosy; having achieved the eradication of smallpox, promoting mass immunization against a number of other preventable diseases; improving mental health; providing safe water supplies; and training health personnel of all categories.

Progress towards better health throughout the world also demands international cooperation in such matters as establishing international standards for biological substances, pesticides and pharmaceuticals; formulating environmental health criteria; recommending international non-proprietary names for drugs; administering the International Health Regulations; revising the International Classification of Diseases, Injuries, and Causes of Death; and collecting and disseminating health statistical information.

Further information on many aspects of WHO's work is presented in the Organization's publications.

S A F E M O T H E R H O O D

# Preventing Prolonged Labour: a practical guide

## The Partograph Part IV: Guidelines for Operations Research



MATERNAL HEALTH  
AND SAFE MOTHERHOOD PROGRAMME  
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WORLD HEALTH ORGANIZATION  
GENEVA

P r a c t i c a l G u i d e

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## GLOSSARY

AIDS	Acquired immunodeficiency syndrome
ANC	Antenatal care
CPD	Cephalopelvic disproportion
EPI	Expanded Programme on Immunization
FIGO	Federation of International Obstetrics and Gynaecology
HDP	Hypertensive disorders of pregnancy
HIV	Human immunodeficiency virus
ICM	International Confederation of Midwives
IEC	Information, education and communication
IUD	Intrauterine device
LGV	Lymphogranuloma venereum
MCH	Maternal and Child Health
min	minute
NGO	Nongovernmental organization
PID	Pelvic inflammatory disease
PPH	Postpartum haemorrhage
STDs	Sexually transmitted diseases
SVD	Spontaneous vertex
TB	Tuberculosis
TBA	Traditional birth attendant
UTI	Urinary tract infection
<	Less than
>	More than

Time conversion from 12 hour clock to 24 hour clock

<b>am</b>											
0	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
0	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00

<b>pm</b>											
12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00

## 1. INTRODUCTION

The tragedies of obstructed labour and rupture of the uterus comprise one of the five major causes of maternal mortality and morbidity in developing countries.

The number of maternal deaths due to obstructed labour and/or rupture of the uterus varies between 4% and 70% of all maternal deaths, amounting to a maternal mortality rate as high as 410/100 000 live births. The phenomena of obstructed labour and rupture of the uterus have been described extensively since the early 1950s. The literature suggests that in many countries maternal mortality due to these causes is almost as severe in the 1990s as it was 30 years ago. In addition, significant maternal morbidity is associated with prolonged labour, since both postpartum haemorrhage and infection are less common in women with short labours.

The major constraint to the prevention of prolonged and obstructed labour is the accurate and early recognition of possible cephalopelvic disproportion (CPD) either before or during labour. Particularly in the developing world, all labours should be considered a trial of labour, as cephalopelvic disproportion is the most common reason for intervention in the course of labour. In many societies, in the majority of primigravidae, the fetal head is not engaged at the onset of labour even though the pelvis is adequate. For this reason all labours should be monitored closely in order to identify delay at an early stage.

The partograph acts as an "early warning system" in the early detection of CPD and may be used to assist:

- referral decisions in health centres
- intervention decisions in hospitals
- ongoing evaluation of the effect of interventions.

The partograph has been in use for some years in a number of countries and used extensively in several, with positive feedback that it is an inexpensive, effective, adaptable and visual method of assessing progress (or lack of it) in labour, and in detecting early prolonged or obstructed labour.

It is therefore advocated as a tool to assist in the management of labour in the maternity services of a country.

## 2. BACKGROUND TO OPERATIONS RESEARCH

Although a considerable amount of experience and information on the use of the partograph has been accumulated in the past 15-20 years, it is not in use in a great many countries and there are significant gaps in our knowledge. In particular, there has been little published evidence of the practical application of the partograph in health centres, where many think it may be a particularly useful tool. This operations research protocol offers guidelines on how to introduce the partograph and how to evaluate its impact on labour management and outcome. It should be read in conjunction Parts I-III of this partograph series produced by WHO (WHO/FHE/MSM/93.8, WHO/FHE/MSM/93.9, WHO/FHE/MSM/93.10).

The partograph described in this series has been designed by a WHO working group and is based on pooled experience. It represents the simplest possible compromise based on research in different parts of the world on partographs in use to date. Although this partograph is recommended (and can be supplied by WHO), any hospital or health centre undertaking operations research on the partograph is free to adapt the WHO partograph or use a pre-existing partograph and to evaluate it as appropriate to that setting.

It should, however, be noted that operations research is **not** concerned with the construction of nomograms for a particular population, but with the practical application of the knowledge of partographs gained worldwide to date.

### 3. APPROPRIATE CENTRES FOR OPERATIONS RESEARCH

The partograph can be used by any person trained in midwifery who can perform accurate vaginal examinations to assess cervical dilatation in labour and then accurately plot that dilatation on the partograph. It can therefore be used by specialist obstetricians, general medical officers, nurses, midwives, or medical assistants or nurse aides with training in midwifery. It can be used in health centres or hospitals, but **cannot** be used by birth attendants who cannot perform vaginal examinations or plot the course of labour graphically.

It is recommended that health centres wishing to undertake operations research on the partograph have a minimum of 500 deliveries per year. At least 1000 deliveries are likely to be necessary to accumulate meaningful results and the research should not be undertaken over a period longer than 2 years. However, smaller health centres performing fewer deliveries are encouraged to participate and their results may be pooled. For example, five health centres, each conducting 200 deliveries per year, might feed referrals into a district hospital conducting 1000 deliveries per year. Under these circumstances, the partograph is probably best introduced into the hospital first and then its use expanded to health centre level. This is described in more detail under "Methodology".

Operations research conducted in the situation described above is particularly encouraged, because information on the value of the partograph in making decisions about transferring labouring women is particularly lacking. However, **any** centre wishing to introduce the partograph is encouraged to do so, adapting it as they feel appropriate to their local needs.

This WHO series on the use of the partograph offers guidelines on the management of labour once the action line on the partograph is reached or crossed, in the *User's Manual* and in *The application of the WHO partograph in the management of labour. Report of a WHO multicentre study 1990-1991* (WHO/FHE/MSM/94.4). If managed appropriately, by this point all such cases should be in a hospital with expertise and facilities available to augment labour and/or conduct caesarean section. Precise management will vary from place to place, and research into various possible lines of management can, of course, be carried out in conjunction with that described in this protocol.

#### **4. PROTOCOL OBJECTIVES**

1. To assess whether an education programme for health workers will result in correct application of the partograph.
2. To determine what effect introduction of the partograph in rural health centres has on the rate of referral of women in prolonged or obstructed labour.
3. To determine the effect of the introduction of the partograph on the incidence of prolonged labour, of augmented labour, and of operative delivery.
4. To determine whether appropriate interventions based on the partograph will reduce maternal and perinatal complications.

#### **5. HYPOTHESES BEHIND OPERATIONS RESEARCH PROTOCOL**

1. Nurse-midwives can learn to use the partograph and its correct application in practice.
2. The use of the partograph will result in an appropriate level of referral from health centre to hospital.
3. The use of the partograph in hospital will correctly identify women whose progress in labour is abnormal and who require appropriate intervention.
4. Appropriate referral and correct recognition of abnormal progress in labour will decrease maternal and perinatal complications.

#### **6. METHODOLOGY OF OPERATIONS RESEARCH**

There are six phases of the operations research:

1. Collection of data prior to the introduction of the partograph.
2. Introduction of the partograph by means of a training programme.
3. Evaluation of the training programme.
4. Collection of data after the introduction of the partograph.
5. Analysis of data both before and after introduction of partograph.
6. Dissemination of results and discussion of implications.

## 7. DETAILED METHODOLOGY

### 7.1 Collection of Data Prior to Introduction of Partograph

#### 7.1.1 Method of data collection

This data may be collected retrospectively or prospectively as soon as a health centre is identified for operations research, but before the partograph is introduced. The data available retrospectively may be limited and will vary from centre to centre.

The use of retrospective data is open to two criticisms. Firstly, that it may not be accurate; secondly, that it cannot be contrasted with prospective data because factors **other** than the introduction of the partograph may have changed in the timescale involved and contributed to any change in outcome endpoints. However, it is proposed that the minimum data collected retrospectively should be of such a nature that gross inaccuracies are unlikely. Where doubts exist about the accuracy of retrospective data or none is available, prospective data accumulated **before** the introduction of partograph should be used. If this is necessary, the period studied should not run for more than 1 year prior to introducing the partograph, to allow the total study to be completed within 2 years, and to achieve comparable numbers in each group.

In most health centres or hospitals in the developing world, other substantive changes in labour management over this timescale are unlikely.

#### 7.1.2 Inclusion/exclusion data

Those cases to be **included** for data collection are:

1. Spontaneous labour
2. Singleton pregnancy
3. Gestation of at least 37 completed weeks
4. Vertex presentation
5. No additional complications

Women with the following complications should be **excluded**:

1. Antepartum haemorrhage
2. Breech presentation
3. Multiple pregnancy
4. Premature delivery (before 37 weeks)
5. Pre-eclampsia and eclampsia
6. Elective caesarean section
7. Induced labour

### 7.1.3 Data to be collected

The minimum acceptable data to be collected retrospectively is:

- (a) Total number of deliveries in institution and number of deliveries fulfilling inclusion criteria.
- (b) Total number of cases transferred from lower to higher level of care and number of transfers fulfilling inclusion criteria.

For each case fulfilling the inclusion criteria (above), the following information should be collected:

1. Parity
2. Mode of delivery
3. Labour obstructed (suggested definition: no cervical dilatation over 4 hours despite good uterine activity.)
4. Ruptured uterus
5. Crude neonatal outcome (perinatal mortality)
6. Postpartum haemorrhage (to be defined by investigator)
7. Whether case was transferred or not

Additional data which should be collected retrospectively, if possible from cases fulfilling inclusion criteria.

8. Detailed neonatal outcome (perinatal mortality, Apgar scores at 1 minute and at 5 minutes, intensive care requirements)
9. Incidence of genital tract infection requiring antibiotics within 7 days of delivery
10. Duration of first and of second stages of labour (in institution)
11. Cervical dilatation on admission
12. Number of vaginal examinations in labour
13. Augmentation of labour

In some circumstances it may be possible to construct hypothetical retrospective partographs for subsequent analysis.

## 7.2 Introduction of the Partograph by Means of a Training Programme

### 7.2.1 Background

It is assumed that those who will use the partograph have already been trained in midwifery and in the management conduct of labour. These personnel include specialist obstetricians, general medical officers responsible for labour wards, medical assistants trained in midwifery, nurses, midwives and those MCH aides who have been trained appropriately. Basic abilities necessary to use the partograph include the accurate assessment of cervical dilatation by vaginal examination and a sufficient degree of literacy to graphically record that dilatation at an appropriate place on the partograph.

The *Principles and Strategy* of the partograph and a detailed *User's Manual* are available from WHO (WHO/FHE/MSM/93.8, WHO/FHE/MSM/93.9). A *Facilitator's Guide* is also available (WHO/FHE/MSM/93.10). Different centres may wish to use or adapt their own partograph but the one produced by WHO and described in this series is recommended.

In a health centre without facilities or personnel to perform a caesarean section, the *User's Manual* indicates clear guidelines for the timing of transfer of women with delay in labour to an institution with such facilities (moving to the right of the **alert line**). In hospital, possible courses of action in cases of delayed labour (reaching or crossing the **action line**) are suggested. The protocol for labour management used in the large multicentre study produced excellent results and its use in conjunction with the partograph is recommended though local adaptation may be made.

Similarly, this research protocol is not intended to give guidelines on research into different methods of managing prolonged labour once it has crossed the action line. Individual health facilities may wish to conduct their own research into management at this juncture.

### 7.2.2 Training

The introduction of the partograph should follow an intensive period of training in its use, preferably involving tutors who have used it elsewhere. The training should be theoretical followed by practical examples (as in the WHO *Facilitator's Guide*). It should probably then be introduced to the hospital labour ward on a trial basis with close supervision, so that initial difficulties can be cleared up before adopting it for routine use and research analysis. The use of drawn or modelled circles of cervical dilatation in the labour ward is highly recommended to increase the accuracy of assessment of cervical dilatation (see Annex I of the *User's Manual*).

Ideally, the partograph should first be introduced in a hospital with at least 1000 deliveries per year and facilities and personnel to carry out caesarean section. Midwives (or other appropriate personnel) from health centres may then be brought to the hospital to undergo training in partograph use before returning to their smaller centre. It must be made clear, of course, that their role in health centres is to use the partograph to identify

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women who are at risk of prolonged labour (moving to the right of the alert line), rather than to manage prolonged labour (reaching or crossing the action line) as in hospital.

### 7.2.3 Supervision

This period of training must be followed by a period of supervision of those using the partograph by the person responsible in each area for the conduct of the operations research. This should involve regular visits to those centres using the partograph to discuss problems, check on collection of data, etc.

## 7.3 Evaluation of Training

This is perhaps the most difficult part of the operations research, because much of the evaluations may be subjective. In the end, the best evaluation of the training may come from the hard data on the results of the outcome of labour (described later).

Aspects of training which could or should be evaluated include:

- (a) Accuracy of assessment of cervical dilatation
- (b) Accuracy of plotting of information on partograph
- (c) Whether appropriate action was taken when indicated from the partograph
- (d) Reaction of health workers to the use of the partograph

Points (b) and (c) above can be objectively evaluated and a sample of the partographs from each health facility should be examined in detail to look for inaccuracies or inappropriate management. The reaction of health workers to the partograph can be assessed by formal or informal questionnaires in addition to asking them to fill in sample partographs as in the *WHO User's Manual*.

The accuracy of vaginal examination is the most difficult parameter to assess. All health personnel using the partograph should already have been trained in vaginal examination in labour. During the period of training in the use of the partograph, vaginal examinations should ideally be carried out with a competent supervisor until the trainee is judged to be able to accurately assess cervical dilatation.

## 7.4 Collection of Data After Introduction of the Partograph

This data should be collected prospectively. Ideally, individual results forms should be completed for each woman eligible for inclusion in the study. This avoids later (and often inadequate) retrieval of data from case records, delivery registers, etc. Sample forms can be found in Annex I. A significant sample of actual partographs should also be collected for critical examination.

Cases to be included are described in earlier section 7.1.2 in collection of retrospective data.

Data collected should include the following:

1. Total number of deliveries in an institution during the study period and the number of those deliveries fulfilling inclusion criteria.
2. Total number of cases with a labour-related problem transferred into or out of an institution and the number of those transfers fulfilling inclusion criteria.

For each individual case fulfilling inclusion criteria, the following should be recorded:

1. Place of delivery (health centre or hospital)
2. Parity
3. Maternal height
4. Dilatation of cervix on admission
5. Level of head (fifths palpable abdominally on admission)
6. Duration of ruptured membranes on admission
7. Number of vaginal examinations
8. Rupture of membranes in health facility: time, SRM or ARM, cervical dilatation level of presenting part
9. Length of time in latent phase
10. Whether moved to right of alert line
11. Dilatation when moved to right of alert line
12. Level of head (fifths) when moved to right of alert line
13. Whether crossed or reached action line
14. Dilatation when crossed or reached action line
15. Level of head (fifths) when moved to right of action line
16. Augmentation of labour and at what stage of labour in relation to latent phase, alert line, or action line
17. Duration of first and second stages of labour (in institution)
18. Action taken (if any) when moved to right of alert line or reached or crossed action line
19. Mode of delivery
20. Labour obstructed
21. Uterus ruptured
22. Position on partograph at delivery:
  - in latent phase
  - to left of or on alert line
  - between alert and action lines
  - on or to right of action line
23. Neonatal outcome:
  - stillbirth (fresh or macerated)
  - 1 and 5 minute Apgar scores
  - intensive care
24. Death <8 days; death 8-28 days
25. Postpartum haemorrhage

26. Genital tract infection requiring antibiotics within 7 days of delivery
27. For transferred cases:
  - time in labour before and after transfer
  - time between decision to transfer and actual transfer
  - time in transfer
  - cervix dilatation on transfer
  - number of vaginal examinations before and after transfer

## 7.5 Data Analysis

This may be done locally or centrally (WHO may be able to assist). The data collected both before and after the introduction of the partograph should be presented in such a way that a clear comparison can be made between the outcome of labour before and after the partograph's introduction. Particularly critical comparisons can be made between:

1. Neonatal outcome
2. Maternal morbidity (obstructed labour, ruptured uterus, postpartum haemorrhage, sepsis)
3. Length of time in labour
4. Rates of operative deliveries
5. Proportion of women transferred in labour from a peripheral to a central unit, and the length of time in labour and number of vaginal examinations undertaken in these cases.

In addition, the adequacy of the partograph itself and of the training programme must be analysed.

A suitable sample of partographs must be critically examined for the accuracy of their completion. In particular, it should be noted whether appropriate action was taken when cervical dilatation moved to the right of either the alert line or the action line. Partographs of all cases transferred from a health centre hospital must be examined to see if the transfer was appropriate. (Sample tables showing how these results may be presented are shown in Annex 2.)

Additional useful information may also be available for analysis depending on the completeness and quality of the data collected. It may be possible, for example, to correlate poor progress in labour with slow descent of the fetal head by abdominal palpation, thus creating the basis for a crude partograph for use by traditional birth attendants who cannot perform vaginal examinations.

## 8. ENDPOINTS

At the end of the operations research, it should be possible to state whether or not:

- Midwives and other health personnel can be trained in the use of the partograph and its correct application.
- Prolonged labour is reduced by the use of the partograph.
- Operative delivery rates are affected by the partograph.
- Maternal morbidity and perinatal morbidity and mortality are reduced by the use of the partograph.
- Transfers of labouring women based on an abnormal partograph are appropriate.

## ANNEX 1: SAMPLE DATA COLLECTION FORMS

### 1. Data Collection Prior to Introduction of Partograph

Insert details **only** from singleton pregnancies delivering by vertex of at least 37 weeks gestation who presented in spontaneous labour.

#### 1.1 Essential data

		Yes	No
1.	Parity		
	- Nulliparous		
	- Multiparous		
2.	Transferred in labour		
3.	Mode of delivery		
	- caesarean section		
	- operative vaginal		
	- spontaneous vertex		
	- breech		
	- twins		
	- other		
4.	Labour obstructed		
5.	Uterus ruptured		
6.	Stillbirth:		
	- fresh		
	- macerated		
7.	Postpartum haemorrhage		
8.	Neonatal death less than 8 days		

**1.2 Data to be collected if possible**

9. Cervical dilatation on admission .....  
 10. Number of vaginal examinations in labour .....  
 11. Duration of first stage of labour (in institution) .....  
 12. Duration of second stage of labour .....  
 13. Total time in labour in institution .....  
 14. Labour augmented with oxytocin 

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 15. Postpartum haemorrhage 

--	--

  
 16. Postpartum genital tract infection 

--	--

  
 17. Neonatal outcome 

--	--

  
     - Apgar score 

--	--

  
     - stillbirth (fresh, macerated) 

--	--

  
     - neonatal death less than 8 days 

--	--

  
     - admission to intensive care 

--	--

**2. Data Collection After Introduction of Partograph**

Insert details **only** from singleton pregnancies delivering by vertex of at least 37 weeks gestation who present in spontaneous labour.

1. Parity 

--	--

  
     - Nulliparous 

--	--

  
     - Multiparous 

--	--

  
 2. Maternal height ..... cm  
 3. Dilatation of cervix on admission ..... cm

4. Level of head (fifths) on admission .....  
 5. Duration of ruptured membranes on admission ..... h  
 6. Number of vaginal examinations .....  
 7. Length of time in latent phase .....  
 8. (a) Duration of first stage of labour (in institution) .....  
 (b) Duration of second stage of labour .....  
 (c) Total duration of labour in institution .....

9. Progress in labour

	Yes	No
(a) Remained on or to left of alert line		
Moved beyond alert but not to action line		
Reached action line		

- (b) If moved beyond alert line  
 - what was dilatation? ..... cm  
 - what was level of head? (fifths) .....  
 - what action was taken? .....

- (c) If moved beyond alert line  
 - what was dilatation? ..... cm  
 - what was level of head? (fifths) .....  
 - what action was taken? .....

- (d) SRM or ARM  
 - what was dilatation? ..... cm  
 - what was level of head? (fifths) .....

- what stage on partograph:

	Yes	No
• in latent phase		
• before or at alert line		
• beyond alert line		
• at or beyond action line		

10. (a) Augmentation of labour 

--	--

(b) If yes, augmentation commenced

- in latent phase
- before or at alert line
- beyond alert line
- at or beyond action line


11. Labour obstructed

--	--

12. Uterus ruptured

--	--

13. Mode of delivery

- caesarean section
- operative vaginal
- spontaneous vertex
- breech
- twins
- other


14. Position of last cervical dilatation on partograph at delivery

- in latent phase
- before or at alert line
- beyond alert line
- at or beyond action line


15. Neonatal outcome

(a) Stillbirth

- fresh
- macerated

Yes No


1min 5min

- Apgar score

--	--

Yes No

(b) neonatal death less than 8 days

--	--

(c) Admission to intensive care	<input type="text"/>	<input type="text"/>
16. Postpartum haemorrhage	<input type="text"/>	<input type="text"/>
17. Genital tract infection	<input type="text"/>	<input type="text"/>
18. Maternal death	<input type="text"/>	<input type="text"/>
19. Transfer in labour	<input type="text"/>	<input type="text"/>
If yes, reason for transfer		
- Time in labour before transfer		h
- Time in labour after transfer		h
- Time between decision to transfer and transfer		h
- Time in transfer		h
- Cervical dilatation on transfer		cm
- Level of head (fifths) on transfer		
- No. of vaginal examinations before transfer		
- No. of vaginal examinations after transfer		

## ANNEX 2: SAMPLE RESULTS TABLES FOR OPERATIONS RESEARCH ON THE USE OF THE PARTOGRAPH

These tables are by no means exhaustive and give guidelines only on the presentation of some key issues.

### 1. Evaluation of Training

Grade of labour attendant	Midwife	Nurse	MCH aide
Number of labours attended			
Number (%) with partograph completed			
Number (%) with faults in partograph construction			
Number (%) with inappropriate action on basis of partograph			

2. Evaluation of Partograph as a Management Tool for Labour

Analyse separately for nullipara and multipara and for transferred cases.

COMPONENTS OF MANAGEMENT	PROGRESS IN LABOUR			
	No progress beyond latent phase	Normal active phase	Moved between alert & action line	Reached or crossed action line
Total cases				
Delivery <ul style="list-style-type: none"> <li>- Caesarean section</li> <li>- Operative vaginal</li> <li>- Spontaneous vertex</li> <li>- Breech</li> <li>- Twins</li> <li>- Other</li> </ul>				
Augmented labour				
Number of vaginal examinations <ul style="list-style-type: none"> <li>1-2</li> <li>3-4</li> <li>&gt;4</li> </ul>				

**3. Evaluation of Impact of Partograph on Complications of Labour and Sequelae**

Analyse separately for nullipara and multipara women.

	<b>Before introduction of Partograph</b>	<b>After introduction of Partograph</b>
Total cases (No.)		
Length of labour <12 h 12-24 h >24 h		
Transferred in labour		
Delivery - Spontaneous vertex - Operative vaginal - Caesarean section		
Obstructed labour		
Uterine rupture		
Postpartum haemorrhage		
Genital sepsis		
Perinatal mortality		
Neonatal asphyxia		

# Safe Motherhood Resource list

- Abortion: A tabulation of available data on the frequency and mortality of unsafe abortion.** WHO/FHE/MSM/93.13
- Antenatal care and maternal health: How effective is it? A review of the evidence.** WHO/MSM/92.4. Available in English and French. Sw fr 15; in developing countries Sw fr 10.50.
- Coverage of maternity care: A tabulation of available information (third edition).** WHO/FHE/MSM/93.7.
- Detecting pre-eclampsia: A practical guide – Using and maintaining blood pressure equipment.** WHO/MCH/MSM/92.3.
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- Women's health and the midwife: A global perspective – Report of a WHO/UNICEF/ International Confederation of Midwives (ICM) workshop prior to ICM congress in The Hague, The Netherlands in August 1987.** WHO/MCH/87.5.

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World Health Organization,  
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Complications arising during pregnancy and childbirth cause the deaths of half a million women every year, the vast majority in the developing world. Over 4 million newborn babies die each year, most of them as a result of poorly managed pregnancies and deliveries. Millions more women and babies suffer debilitating and life-long consequences of ill-health.

The World Health Organization seeks to alleviate the burden of suffering borne by women, children and families, through its Maternal Health and Safe Motherhood Programme which seeks to reduce levels of maternal and neonatal mortality and ill-health significantly by the year 2000.

The Organization's activities fall into four main areas:

- technical cooperation with countries in planning, implementing, managing and evaluating national safe motherhood and newborn care programmes;
- epidemiological research into levels and causes of maternal and neonatal mortality and operational research on cost-effective ways of reducing deaths and disabilities;
- strengthening human resources for the provision of essential obstetric care, including development of standard treatment and management protocols, programme planning guidelines and training materials;
- production of advocacy materials and collection, analysis and dissemination of information to provide scientifically sound data on the nature and dimensions of maternal and newborn mortality and morbidity and how change can be brought about.

If you would like to know more about the WHO Maternal Health and Safe Motherhood Programme, write to:

Maternal Health and Safe Motherhood Programme  
Division of Family Health  
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