



## Effect of 2-hour action line on WHO modified Partograph on maternal outcomes: A prospective analysis

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### Abstract

**Background:** World health organization has promoted modified partograph with action line, 4 hours to left of alert line. While others have used various action line 2, 3, or 4 hours to initiate and guide “active management” decisions. Objectives of the study were to evaluate outcome of labour in terms of action line crossed and augmentation of labour and in whom labour has been managed with 2hour vs no-hour action line on WHO modified partograph.

**Methods:** Every 8<sup>th</sup> primigravida mother fulfilling the inclusion criteria was enrolled for the study alternatively for 2 hourly and no partogram reading. Results were compared between Group A, with 50 cases, in whom labour has been managed with WHO modified Partograph with 2-hour action line and Group B, with 50 cases, in whom labour has been managed with that of no action line.

**Results:** The present study shows that more women in 2-hour arm crossed the action line, compared with the no partograph arm, and therefore received more interventions to augment labour. Rate of caesarean section was more in group B than in group A which is statistically nonsignificant.

**Conclusions:** Partograph with 2-hour action line did not show any superiority over that of no partograph line but to be associated with higher incidence of intervention. Further research is required in this field of active management.

**Keywords:** 2-hour action line, partograph, WHO modified partograph

### Introduction

Early detection of abnormal progress and prevention of prolonged labour can significantly reduce maternal morbidity and mortality across the globe. Partograph is an inexpensive essential tool in monitoring the progress of labour. It is a composite graphical record of data (maternal and fetal) during labour entered against time on a single sheet of paper <sup>[1]</sup>.

The partogram was introduced after the classical studies of Emmanuel Friedman (1954) in the USA <sup>[2]</sup> and the pragmatic innovations of Hugh Philpott in Africa <sup>[3, 4]</sup> the important component is the plotting of the progress in labour to assist decision making.

A practical method of managing labour called ‘partograph’ has been evolved over the years. Progress of labour has now been strictly defined by graphical means based upon progressive cervical dilatation. The present study was aimed to evaluate the effect of use of 2-hourly partograph on progress of labour and on delivery outcomes.

### Methods

The hospital-based observational study was carried out in the Department of Obstetrics and Gynaecology at Dr. Rajendra Prasad Government Medical College, Dist. Kangra H.P. over a period of one year. One hundred women, 50 each in 2 hourly (group A) and no partogram (group B) recording. Every 8<sup>th</sup> primigravida mother fulfilling the inclusion criteria was enrolled for the study alternatively for 2 hourly and no partogram reading. Inclusion criteria were pregnant women in spontaneous and induced labor, first stage of labor with cervical dilatation 4 cm, singleton

pregnancy more than 37 weeks gestation, and/or cephalic presentation. The following subjects were excluded if antepartum hemorrhage, breech presentation, multiple pregnancy, cervical dilation >4 cm, and/or premature labor less than 36 weeks.

All the laboring women who satisfied the inclusion criteria and had given their consent to be included into the study were randomly allotted either into, group A (women who were to be monitored in the active phase of labour using modified WHO Partograph; 2-hour), and group 2 (patients whose active labour was not monitored using modified WHO Partograph.) On admission to the hospital, a detailed history to know the exact time of onset of labor pains, or leaking membranes along with a detailed menstrual and obstetrics history was elicited.

After an initial preparation of the patient, examination of the patient was carried out with reference to maternal conditions like height, stature and built. All the vital signs were noted and a detailed systemic evaluation was done. Local examination was directed to know the fetal lie, position, presentation and to know whether the head is floating, fixed or engaged. The rate, regularity and position of the fetal heart rate was noted. Pelvic examination under aseptic precautions was done to know the position, consistency, effacement and dilation of the cervix. The state of membranes, whether intact or ruptured and color of liquor was noted. The partogram was attached to the mother’s case record when patient was admitted in the labor room. Routine neonatal care was given to all newborns of enrolled mothers. APGAR score was noted at 1 minute and 5 minutes. Complete neonatal examination was carried out.

All the neonates with perinatal asphyxia, meconium aspiration syndrome, RDS and admission in the NICU were followed up till discharge to note their outcome.

**Definition**

All the definitions of WHO modified partogram were used for the study purpose.

**Statistical analysis**

Data were expressed as frequency, percentages, mean, and/or standard deviation. Categorical variables were compared using Chi-square test. Quantitative variables were compared using Student t-test. P value <0.05 was considered significant. Statistical analysis was performed using SPSS v21.0.

**Results**

**Association between hourly line and maternal characteristics**

Table 1 shows association between hourly line maternal characteristics. Mean age, booking status, medical illnesses, mode of labor, and mode of delivery were comparable between both groups (P>0.05).

**Table 1:** Association between hourly line maternal characteristics

	Group A (n=50)	Group B (n=50)	P value
Age (years)	26.04±3.17	25.49±2.72	0.190
Booking status, n	42	47	0.110
Medical illness, n			
Gestational diabetes	3	7	0.576
Gestational hypertension	9	7	
IHCP	5	2	
Pre-eclampsia	2	0	
Mode of labor, n			
Spontaneous	41	43	0.585
Augmentation, n	21	38	0.003
Mode of delivery, n			
FTND	40	35	0.418
Instrumental	6	7	
LSCS	4	8	
Neonatal birth weight (g)	2941.47±313.02	2812.43±419.74	0.084

**Table 2:** Action line crossed and need for augmentation

	Group A (n=50)	Group B (n=50)	P value
Action line crossed, n	10	22	0.010
Augmentation, n	21	38	<0.001

**Table 3:** Association between hourly line neonatal characteristics

	Group A (n=50)	Group B (n=50)	P value
Meconium stained, n	4	2	-
Apgar at 5 min, n ≤7	2	4	0.399
IUGR, n	4	6	0.504
NICU admission, n	2	3	0.646

**Action line crossed and need for augmentation**

In our study, 20% patients in group A and 44% patients in group B crossed action line and difference was statistically significant (P=0.010). Augmentation of labor was significantly lower in 2-hourly group in comparison to no partograph (42% vs. 76%; P<0.0001). In group A, oxytocin was used in 10% patients while only ARM was used in 7% patients. In group B, 18% women used oxytocin, 9% used ARM (Table 2).

**Association between hourly line and neonatal characteristics**

In this study, none of the neonatal characteristics such as

type of liquor, Apgar at 5 min, IUGR, NICU admission, and birth weight was significantly associated with 2 or no partograph (P>0.05) (Table 3).

**Discussion**

Although partograms are in widespread use, little research has been undertaken in the form of randomized studies to assess the efficacy of different placement of the action line. As there is little evidence of what makes a labour dysfunctional and no universal consensus for the best time to intervene dysfunctional labour, the debate between active and expectant management of prolonged labour continues. In present study, 20% in 2-hourly group and 44% in no partograph group crossed line which is lower than reported by Sinha et al [11]. WHO observed 52% of women crossed action line in group B as compared to 38% in group A and also than study by Lavender et al [12]. In our study, method of augmentation was significantly better in 2-hourly group. However, in the study by Sinha et al [11], there was no significant difference in both groups.

**Conclusion**

From this study, we concluded that there were not many changes in 2-hour action line over no partograph. The present study is not able to prove superiority of 2-hour action line over no partograph except augmentation.

**References**

- 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 Comnwlth,1972;79:599-602.
- Philpott RH. Graphic records in labour. BMJ,1972;4:163-165.
- Philpott RH, Castle WM. Cervicographs in the management of labour in primigravidae I: the alert line for detecting abnormal labour. J Obstet Gynaecol Br Comnwlth,1972;79:592-598.
- Walkinshaw S. Is routine active medical intervention in spontaneous labour beneficial Contemp Rev Obstet Gynaecol,1994;6:11-17.
- ODriscoll K, Foley M, MacDonald D. Active management of labour as an alternative to caesarean section of dystocia. Obstet Gynecol,1984;63:485-490
- Turner MJ, Webb JB, Gordon H. Active management of labour in primigravidae. J Obster Gynaecol,1986;7:79-83.
- Frigoletto FD, Lieberman E, Lang JM et al. A Clinical Trial of Active Management of Labour. N Engl J Med,1995;333:745-750.
- Thornton J, Lilford R. Active management of labour: current knowledge and research issues. BMJ,1994;309:366-369.
- World Health Organisation. Maternal health and safe motherhood programme. World Health Organisation partograph in management of labour. Lancet,1994;343:1399-1404.
- Dujardin B, De Scamphelire I, Sene H, Ndiaye F. Value of the alert and action lines on the partogram. Lancet,1992;339:1336-1338.
- Sinha D, Shrivastava S, Shrivastava S. A comparative study of 4-hour versus 2-hour action line on who modified partograph. Int J Res Med Sci,2017;5:876-9.
- Lavender T, Firevic ZA, Walkinshaw S. Partogram

action line study: a randomised trial. Br J Obstet  
Gynaecol,1998;105:976-80.