

# The partogram as an instrument to analyze care during labor and delivery

O PARTOGRAMA COMO INSTRUMENTO DE ANÁLISE DA ASSISTÊNCIA AO PARTO

EL PARTOGRAMA COMO INSTRUMENTO DE ANÁLISIS DE LA ASISTENCIA AL PARTO

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## ABSTRACT

Both the World Health Organization and the Brazilian Ministry of Health recommend using the partogram to follow labor. The objective of this study was to analyze the use of obstetrical interventions, the types of delivery, and perinatal outcomes according to zones I, II and III of the partogram. This cross-sectional study was performed with 233 low-risk pregnant women between December 2004 and March 2005 at a public maternity hospital located in the city of Itapeverica da Serra, in the state of São Paulo. Comparative analysis was performed using Chi-square and Fischer exact tests. The practices used in the different partogram zones with statistical significance of ( $p = 0.05$ ) were: bath, movement and walking (zone-III); artificial rupture of the membranes (zone-II) and oxytocin (zone-I). Caesarean sections were performed on 24% of women in zone-III. The interventions occurred at a timely moment, indicating that the partogram is an instrument that can be used as a guide when adopting interventions during labor.

## KEY WORDS

Parturition.  
Medical records.  
Evaluation of results of therapeutic interventions.  
Obstetrical nursing.

## RESUMO

A Organização Mundial da Saúde e Ministério da Saúde do Brasil recomendam o uso do partograma para acompanhamento do trabalho de parto. O objetivo do estudo foi analisar o uso de intervenções obstétricas, tipo de parto e resultados perinatais, segundo as zonas I, II e III do partograma. Estudo transversal realizado com 233 parturientes de baixo risco entre dezembro de 2004 e março de 2005 em uma maternidade pública de Itapeverica da Serra-SP. Foram utilizados os testes Qui-quadrado e Exato de Fischer para análise comparativa, adotando-se o valor de  $p=0,05$ . As práticas utilizadas nas diferentes zonas do partograma com significância estatística ( $p=0,05$ ) foram: banho, movimento e deambulação (zona-III); rotura artificial de membrana (zona-II); ocitocina (zona-I). A cesariana ocorreu em 24,0% das parturientes na zona-III. As intervenções ocorreram em momento oportuno, apontando que partograma pode ser um instrumento norteador para adoção de intervenções no trabalho de parto.

## DESCRIPTORES

Parto.  
Registros médicos.  
Avaliação de resultado de intervenções terapêuticas.  
Enfermagem obstétrica.

## RESUMEN

La Organización Mundial de la Salud y el Ministerio de la Salud de Brasil recomiendan el uso del partograma para acompañamiento del trabajo de parto. El objetivo del estudio fue analizar el uso de intervenciones obstétricas, el tipo de parto y los resultados perinatales, según las zonas I, II y III del partograma. Estudio transversal realizado con 233 parturientas de bajo riesgo entre diciembre de 2004 y marzo de 2005 en una maternidad pública de Itapeverica de la Serra-SP. Fueron utilizadas las pruebas Chi-cuadrado y Exacta de Fischer para análisis comparativo, adoptándose el valor de  $p=0,05$ . Las prácticas utilizadas en las diferentes zonas del partograma con significancia estadística ( $p=0,05$ ) fueron: baño, movimiento y ambulación (zona-III); rotura artificial de membrana (zona-II); y, oxitocina (zona-I). La cesariana ocurrió en 24,0% de las parturientes en la zona-III. Las intervenciones ocurrieron en momento oportuno, apuntando que el partograma puede ser un instrumento orientador para la adopción de intervenciones en el trabajo de parto.

## DESCRIPTORES

Parto.  
Historia clínica del paciente.  
Evaluación de resultados de intervenciones terapéuticas.  
Enfermería obstétrica.

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## INTRODUCTION

The predominant health care model used in births over the last decades is characterized by routine obstetric practices, which are often iatrogenic. Concerns regarding the appropriateness of the technology used in health care are a tendency that stands against the referred model.

The World Health Organization (WHO) recommends using the partogram to follow labor and delivery, with the objective to improve health care and reduce mother and fetal morbidity and death. A 1996 study on the evidence of delivery care referred to the partogram as a practice that has proven useful and its use should thus be encouraged<sup>(1)</sup>.

The partogram consists of a graphic representation of labor and is considered an excellent visual resource to analyze cervix uteri dilation and fetal presentation in relation to time<sup>(2-3)</sup>. It is a communication tool that helps to obtain immediate knowledge about the evolution of labor by simply examining a printed chart, since it should also include information about the fetus' heart rate, uterine dimension, any drugs used, and other important factors that could help avoid extensive descriptive notes.

A study performed in Central Africa<sup>(3-4)</sup> added two lines to the partogram; namely *alert line* and *action line*, which determined the limits to specific partogram zones: zone I, to the left of the alert line; zone II, between the alert and action lines; and zone III, when the action line is crossed. The referred lines permit to identify any abnormal labor evolution and distinguish eutocic labor from dystocic delivery. The authors used the partogram to instruct midwives providing care to home childbirths, so they would recognize that any crossed alert lines were warnings about possible complications during labor and childbirth, so that the parturient woman could be sent to hospital in time.

As a standard procedure, the alert line is traced in the beginning of the active phase of labor. The action line is traced four hours later, parallel to the first line<sup>(3)</sup>. When the partogram is used at the hospital, there is no need for interventions if dilation reaches or crosses the alert line; the only necessary measure is to watch childbirth evolution more closely. Medical interventions, with the purpose of improving the evolution of childbirth and correct any possible dystocia, become necessary when the cervix dilation curve reaches the action line. However, that intervention does not necessarily mean performing a surgical procedure<sup>(5)</sup>.

Therefore, the partogram (containing alert and action lines) helps to establish the conduct to be followed during labor with a normal evolution, as well as to diagnose any changes, identifying and preventing dystocia, changing intuitive conduct into something predictive<sup>(2)</sup>.

This study sought answers for the following questions: How are obstetrical interventions used in relation to the alert and action lines on the partogram? Does the partogram zone in which childbirth occurs affect the type of labor and the conditions of the delivery?

## OBJECTIVE

The objective of this study was to analyze the use of obstetrical interventions, the type of delivery and the perinatal outcomes, according to partogram zones I, II and III.

## METHOD

This cross-sectional study, using retrospective data collection, was performed at the Normal Childbirth Center (NCC) at the Municipal Emergency Room and Maternity Zoraide Eva das Dores, located in the municipality of Itapeverica da Serra, Brazil. The referred municipal hospital delivers care to emergency cases and low-risk childbirths for the local and regional population, including the neighboring cities of Embu-Guaçu, Jquitiba and São Lourenço da Serra.

The maternity units include: NCC, rooming-in and obstetrical surgery center, where forceps deliveries, cesareans and curettages are performed. The maternity was reopened in September 2004 after renovation. Until March 2005, the hospital performed 990 deliveries; 86.1% of which were natural childbirths, 13.2% cesareans, and 0.7% forceps deliveries.

The team that provides care to parturient women at the NCC consists of two obstetrical physicians, one nurse midwife, one neonatologist and two nurse's aides for each 24 hour work shift. Among other duties, nurse midwives must: initiate and complete the partogram, tracing the alert and action lines for women in the active phase of labor; prescribe drugs or alternative medication, according to the established protocol; identify dystocia by interpreting the partogram; require medical evaluations if any changes are identified in mother or fetal health condition; and perform natural eutocic childbirth.

Data collection was performed using the patient forms of women seen at the NCC from December 15, 2004 to March 15, 2005. This period was determined based on the recent implementation of the partogram at the hospital. The data obtained during the three first months after the reopening was not considered because, during that period, the staff was being trained to use the partogram and the service protocols.

During the study period, 499 childbirths occurred at the hospital, of which 233 women (46.7%) met the following inclusion criteria: single pregnancy, live fetus in cephalic

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presentation; gestational age of at least 37 weeks; clear amniotic fluid at hospital admission; childbirth occurred in less than two hours after admission; alert and action lines marked on the partogram; partogram marked correctly according to the model proposed by the Health Ministry (HM)<sup>(5)</sup> (Annex).

The following study variables were used: *mother's age, parity, uterine activity, cervix uteri dilation* (from 1 to 4 and 5 to 9 cm), *condition of the fetal membranes* (preserved or ruptured), *phase of labor* (latent or active), *bathing* (if occurred or not, to 1, 2 or 3 baths during labor), *walking* (if occurred or not, to 1, 2 or 3 walks during labor), *movements* (if occurred or not, to 1, 2 or 3 exercises on the ball, standing/squatting, staying in a squatting position and pelvic swing), *partogram zone* (I, II and III), *type of rupture* (artificial or spontaneous), *oxytocin, episiotomy, position during childbirth* (semi-sitting or side-lying), *type of delivery* (natural and cesarean), *mother or fetal indications for cesarean section, resuscitation* (artificial ventilation, heart massage and drug use), *Apgar score* (evaluated in the first and fifth minutes of life, with scores ranging from one to ten), *gestational age* (measured in complete weeks using the somatic Capurro method, shortly after birth) and *mother-child contact* (contact between newborn and mother immediately after childbirth).

Descriptive analysis of the data was performed (presented as tables). Qualitative variables were analyzed using *Pearson's Chi-Square and Fischer's Exact* tests. Statistical significance was considered for  $p < 0.05$ . Data processing was performed using SPSS 10.0 for Windows.

This study was approved by the local Ethics Committee (Comitê de Ética do Seconci-SP) and by the Municipal Health Council of Itapeverica da Serra on November 11 2004.

## RESULTS

As for the women's age, it was observed that 57 (24.4%) were 19 years old or younger and 57.9% were younger than 25 years. Their ages ranged between 14 and 40 years, with an average of 24.1 years (s.d.=5.8).

The women's clinical-obstetrical conditions were evaluated at the moment of admission, and it was found that 92 (39.5%) were nulliparous. Among the 141 women who had a history of previous childbirths, 22 (9.4%) had had cesarean deliveries. At the moment of admission, 183 (78.5%) women presented uterine activity; most (149; 63.9%) were admitted in the active phase of labor and the others (84; 36.1%) in the latent phase. As for the conditions of fetal membranes, 161 (69.1%) women presented preserved fetal membranes, whereas 72 (30.9%) were admitted with their water broken.

The analyzed interventions (Table 1) revealed there was a statistically significant association with the zone in which childbirth occurred ( $p < 0.05$ ). Higher frequency rates were found for childbirths occurring in zones II and III, and for the interventions: bath, movements, and ambulation. Women with childbirth in zone III received bath (71.4%), movements (85.2%) and ambulation (85.7%) interventions more than once.

**Table 1** - frequency of baths, movements and walking during labor and childbirth according to the zone in which childbirth occurred - Itapeverica da Serra - 2004 to 2005

Intervention	Zone in which childbirth occurred								p-value*	
	I		II		III		Total			
	N	%	N	%	N	%	N	%		
<b>Bath</b>										
0	24	18.0	4	5.1	-	-	28	12.0		
1	71	53.4	24	30.4	6	28.6	101	43.3	<b>0.001</b>	
>1	38	28.6	51	64.6	15	71.4	104	44.7		
<b>Total</b>	133	100	79	100	21	100	233	100		
<b>Movement</b>										
0	18	13.6	3	3.8	3	14.3	24	10.3		
1	28	21.0	14	17.7	-	-	42	18.0	<b>0.001</b>	
>1	87	65.4	62	78.5	18	85.2	167	71.7		
<b>Total</b>	133	100	79	100	21	100	233	100		
<b>Walking</b>										
0	19	14.3	9	11.5	-	-	28	12.0		
1	50	37.6	19	24.4	3	14.3	72	31.0	<b>0.009</b>	
>1	64	48.1	50	64.1	18	85.7	132	57.0		
<b>Total</b>	133	100	78	100	21	100	233	100		

\* Chi-Square test

The comparative analysis between the obstetrical interventions and the zone in which childbirth occurred shows there was a statistically significant difference only for the type of rupture ( $p < 0.002$ ) and when using oxytocin ( $p = 0.010$ ).

Artificial membrane rupture was performed more among women with childbirth in zone II (62; 92.3%) and zone III (13 – 76.5%). Oxytocin was used more among women with childbirth in zone III (16; 76.2%) (Table 2).

**Table 2** - Frequency of obstetrical interventions according to the zone in which childbirth occurred - Itapecerica da Serra - 2004 to 2005

Intervention	Zone in which childbirth occurred						p-value*
	I		II		III		
	N	%	N	%	N	%	
<b>Type or rupture**</b>							
Artificial	50	63.3	60	92.3	13	76.5	<b>&lt;0.002</b>
Spontaneous	29	36.7	5	7.7	4	23.5	
<b>Total</b>	79	100	65	100	17	100	
<b>Oxytocin</b>							
No	72	54.1	48	60.8	5	23.8	<b>0.010</b>
Yes	61	45.9	31	39.2	16	76.2	
<b>Total</b>	133	100	79	100	21	100	
<b>Episiotomy***</b>							
No	91	70.5	43	59.7	7	43.8	0.055
Yes	38	29.5	29	40.3	9	56.3	
<b>Total</b>	129	100	72	100	16	100	
<b>Position at childbirth***</b>							
Side-lying	45	34.9	22	30.6	9	56.2	0.150
Semi-sitting	84	65.1	50	69.4	7	43.8	
<b>Total</b>	129	100	72	100	16	100	

\*Chi-square test. \*\* Excluded 72 women admitted with water broken. \*\*\* Excluded 16 women who underwent cesarean section

According to the data from Table 3, the differences found between the type of delivery and the zone in which it oc-

curred are statistically significant ( $p < 0.001$ ). The frequency of cesareans was only 3.0% in zone I and 24.0% in zone III.

**Table 3** - Type of delivery according to the zone in which it occurred - Itapecerica da Serra - 2004 to 2005

Type of Delivery	Zone in which the delivery occurred						p-value*
	I		II		III		
	N	%	N	%	N	%	
Natural	129	97.0	72	91.0	16	76.0	<b>&lt;0.001</b>
Cesarean	4	3.0	7	9.0	5	24.0	
<b>Total</b>	133	100	79	100	21	100	

\*Chi-square test - (N=233)

Tables 4 and 5 show the data regarding newborns (RN).

Most NB presented good vital signs at birth, with an Apgar score of at least 7 in the first and fifth minutes of life (respectively, 222 – 95.3% and 230 – 98.7%) in the three

partogram zones. The comparative analysis between the partogram zones did not show any statistical significance in terms of the Apgar score in the first or the fifth minute of life. No Apgar scores lower than 7 were found in zone III, neither in the first nor in the fifth minute.

**Table 4 -** Apgar score of newborns' first and fifth minutes of life, according to the zone in which the delivery occurred - Itapeperica da Serra - 2004 to 2005

Apgar score	Zone in which the delivery occurred						p-value*
	I		II		III		
	N	%	N	%	N	%	
<b>1<sup>st</sup> minute</b>							
<7	4	3.0	7	8.9	-	-	0.149
≥7	129	97.0	72	91.1	21	100	
<b>Total</b>	133	100	79	100	21	100	
<b>5<sup>th</sup> minute</b>							
<7	1	0.8	2	2.5	-	-	0.667
≥7	132	99.2	77	97.5	21	100	
<b>Total</b>	133	100	79	100	21	100	

\* Fisher's exact test - (N=233)

**Table 5 -** NB resuscitation, according to the zone in which the delivery occurred - Itapeperica da Serra - 2004 to 2005

Resuscitation	Zone in which the delivery occurred						p-value*
	I		II		III		
	N	%	N	%	N	%	
Yes	2	1.5	4	5.1	-	-	0.260
No	131	98.5	75	94.9	21	100	
<b>Total</b>	133	100	79	100	21	100	

\* Fisher's exact test - (N=233)

No statistically significant differences were found regarding NB resuscitation and the zones in which the deliveries occurred.

Early mother-child contact was more frequent among parturient women who gave birth in zone I (126 – 59.4%), compared to births that occurred in zones II and III, showing a statistically significant difference (p= 0.046).

## DISCUSSION

Results show that the study population consisted mainly of young nulliparous women. The clinical-obstetric conditions presented by the subjects imply that most were admitted at a timely moment to initiate the partogram, since 63.9% were in the active phase of labor. The criteria used to characterize the active phase were cervix uteri dilation of more than 4 centimeters and the presence of uterine activity<sup>(6)</sup>.

The clinical difficulty to determine with precision the beginning of labor and the active phase are limiting factors to compare studies on partogram utilization<sup>(7)</sup>.

The records on the partogram should start being made soon after the active phase initiates because, according to the Health Ministry's handbook: *Delivery, miscarriage and puerperium: humanized women care* starting the partogram

in the latent phase of labor could imply unnecessary and iatrogenic interventions<sup>(5)</sup>. Therefore, the criteria to admit women for labor and delivery care should consider the beginning of the active phase of labor, as long as there are no other mother or fetal conditions that imply the need for earlier control.

In contrast, the partogram can be started at the moment of admission to better follow the evolution of labor, but the alert and action lines should be traced only when the active phase begins.

Non-pharmacological methods, such as immersion baths or showers, movements like changing positions and walking, and other interventions can be used during labor to reduce painful sensations and thus stimulate the progress of labor<sup>(8-9)</sup>.

Studies that monitored the practices performed during labor do not present any information on the prevalence of using showers, movements, and walking during labor. This is probably due to the fact that the studied practices have already been incorporated in the countries where the health care model preserves the physiology of labor and avoids unnecessary hospitalizations.

The most recent review on the characteristics of health care in birth centers in developed countries, performed by

the National Epidemiology Perinatal Unit (NPEU) in the United Kingdom, does not present any data on the referred practices<sup>(a)</sup>.

In Brazil, although the birth health care model is changing, the referred practices remain subjects of interest for researchers and professionals, since they are important resources for changing medical-model health care practices. Therefore, in addition to the benefits obtained, the referred practices also offer an opportunity to remove women from the inertia condition of being in bed and encourage them to walk, shower, or move around, which can be a strategy for services that seek to change the characteristics of health care.

The justification for why movement and walking act as stimuli for labor is that both favor the decompression of the large vessels – aorta abdominal and inferior vena cava – increasing uterine blood flow and promoting more effective uterine contractions<sup>(1,8)</sup>.

Although showers do not appear to be the most efficient method for pain relief, compared to baths, they can be useful for the women's relaxation and permit to be in different positions than when bedridden.

Changing positions also alternates the relationship between force and gravity, uterine contractions, and pelvic positions thus stimulating the evolution of labor and reducing pain, though studies are not sufficient to prove this justification<sup>(8)</sup>.

In this study, it was observed that the ratio at which the interventions (bathing, moving, walking) were used increased as the phases of labor advanced into zones II and III. This result shows that the professionals used the partogram as a criterion to indicate the conducts during the delivery. It should be noted that the showers, for most women, lasted longer than 30 minutes.

The comparative analysis showed statistically significant differences ( $p < 0.05$ ) when these three interventions were grouped by frequency: none, once and more than once. Therefore, for most women who bathed at least once (53.4%), performed more than one movement series (65.4%) and more than one period of walking (48.1%), delivery occurred in zone I of the partogram (Table 1).

On the other hand, it is observed that women whose delivery occurred in zones II and III had higher frequency rates of bathing, moving and walking. This implies that these practices were used more frequently as the delivery crossed the alert line and became closer or crossed the action line, in agreement with the need to stimulate the progress of labor or provide pain relief or management.

Other measures are often used to avoid any delay in the progress of labor, such as amniotomy, oxytocin infusion or a combination of both<sup>(1)</sup>. The present study results,

with 76.6% of cases performing artificial rupture or fetal membranes, show that this prevalence is similar to that found in a previous study<sup>(6)</sup> performed in the same city, in which amniotomy was performed in 74.6% of women admitted to the NCC. As for the use of oxytocin, the results were different: with 76.2% women using oxytocin against 44.5% in the referred study.

Few studies have made a relationship between amniotomy and the partogram. A study performed in the United States<sup>(10)</sup> showed that artificial rupture of fetal membranes in the active phase of labor increased from 3% to 18.8% in 20 years (1980-2000).

There was a statistical difference ( $p < 0.001$ ) regarding the partogram zone in which the artificial rupture of fetal membranes was performed, with higher rates in zones II and III (Table 2). The fact of using this practice in zones II and III indicated the professionals' intention of stimulating labor before it was close to or crossed the action line.

It is worth emphasizing that, since the studied maternity involved low-risk deliveries, the choice was to perform a timely artificial rupture of fetal membranes (between seven and eight centimeters of dilation), in case it did not occur spontaneously. Therefore, if the presence of meconial fluid is confirmed, a closer control of fetal vital signs is performed and there is enough time to prepare the team to receive the NB and provide transfer, if necessary, considering that the hospital does not have a neonatal intensive care unit.

A clinical trial<sup>(11)</sup> compared mother and perinatal results with and without using the partogram, and found no differences in relation to cesarean sections, labor duration, use of oxytocin, amniotomy, epidural anesthesia, Apgar scores and admission to neonatal intensive care unit.

A systematic review<sup>(12)</sup> performed in the Cochrane library analyzed 6,187 women and showed there were no statistically significant differences between cesarean rates (RR=0.64 CI 95% 0.24-1.70); instrumental delivery, (RR=1.00 CI 95% 0.85-1.17); Apgar score less than seven in the fifth minute (RR=0.77 CI 95% 0.29-2.06) with and without using the partogram.

A study<sup>(13)</sup> showed that amniotomy and oxytocin interventions were used in half the deliveries that crossed the alert line (zone II) and among the parturient women in which none of the interventions were performed; however, 44.0% of them crossed the action line (zone III), against 26.0% of parturient women who had performed the intervention. The study found that the partogram is practical, efficient, showing the timely moment for the intervention.

In this study, the rate of oxytocin use in zone I was higher than in zone II. Zone I is the partogram area that should present fewer interventions, considering that, in this zone, the evolution of labor is within physiological parameters. There was a statistically significant difference between the partogram zones for the use of oxytocin ( $p = 0.010$ ). Oxyto-

<sup>(a)</sup> Data available at <http://www.npeu.ox.ac.uk/birthcentrereview/> Accessed on: 01/11/2008

cin use was greater among women whose delivery occurred in zones I and III (45.9% and 76.2%, respectively) (Table 2).

The justification presented in this study for frequent oxytocin use in zone I can be associated with the recent implementation of the NCC at the hospital, because obstetrical physicians and nurses are still *attached* to the interventionist model in birth care, despite the hospital's instructions that interventions should be based on the women's needs.

As for episiotomy, in general, there is considerable inconsistency in the rates around the world, with lower rates related to deliveries performed in extra-hospital environments and other factors pointing at these variations, such as: type of health care provider; service characteristics; regional differences; and, above all, the institutional policies adopted in relation to its selective or liberal use. Nulliparity and the scarcity of studies that evaluate the unnecessary use of this intervention are a determinant factor for maintaining high episiotomy rates<sup>(6)</sup>.

The present study shows that episiotomy was performed in 35% of parturient women. It is worth stressing that the studied population is of low risk. In other studies, the rates for this procedure are: 43.5% among nulliparous women in Brazil<sup>(14)</sup>; 15.7% in Germany<sup>(15)</sup>; 3.8% in home deliveries assisted by midwives in Canada<sup>(16)</sup>. In contrast, the data regarding women assisted in an intra-hospital environment indicate 54.8% among Germans<sup>(15)</sup> and 57.0% among Americans<sup>(17)</sup>.

Although the episiotomy variable did not show any statistically significant difference between the zones where the delivery occurred, the p value was very close to the alpha of 0.05 used in this study. Therefore, it should be stressed that, different from amniotomy and oxytocin use, the lowest rates for episiotomy were found in zone I (29.5%) and zone II (40.3%).

According to WHO<sup>(1)</sup>, episiotomy should not be performed as a routine procedure. There is no sufficient data to support that its liberal use is beneficial. Controlled studies showed that the restricted use of episiotomy results in a lower risk of posterior perineal trauma, a smaller need for sutures, fewer postpartum complications, such as perineal pain, dyspareunia or incontinence, in addition to not showing any difference regarding risks for severe vaginal or perineal trauma.

As expected, the analysis of type of delivery and partogram zone showed there was a statistically significant difference between these variables ( $p < 0.001$ ), with more cesareans occurring in zone III (24.0%) and more natural deliveries in zone I (97.0%) (Table 3).

These results are similar to those found in a previous study<sup>(4)</sup>, which showed high rates of vaginal deliveries

(89.7%) in zone I and of cesarean sections in zone III (20.6%). Another study, performed in China<sup>(18)</sup>, obtained higher rates (50.0%) for cesarean sections when compared to the present study results for deliveries that crossed the action line.

As per the HM<sup>(5)</sup>, when the graph records are made within the hospital environment, there is no need for immediate interventions after crossing the alert line, though closer care regarding the clinical evolution of labor becomes necessary.

In a prospective observational study<sup>(19)</sup> performed with 3,935 low-risk primiparous women in ten British maternities, it was observed that institutions that had printed protocols regarding the use of the partogram had lower rates of cesarean sections performed due to fetal distress (OR=0.49; CI= 99%: 0.30-0.81).

Results about the NBs' vital signs in the first and fifth minutes of life indicated that most obtained an Apgar score of at least seven in the three partogram zones, with no statistically significant difference, and only one case of cesarean due to fetal distress.

As for episiotomy, in general, there is considerable inconsistency in the rates around the world, with lower rates related to deliveries performed in extra-hospital environments.

The findings showed that six NBs required resuscitation; two of which were born in zone I and four in zone II of the partogram (Table 5). Although the crossing between NB resuscitation and the type of delivery was not included in the results section, it should be stressed that, regarding the four NBs resuscitated in zone II, one was born by cesarean in the first hour, due to acute fetal distress, and the others were born in the fourth hour – two by natural delivery and one by cesarean due to a prolonged pelvic period. This shows how important it is for the team to take close care regarding the need to intervene when the clinical evolution of labor becomes closer to or crosses the action line<sup>(5)</sup>.

Results concerning the need for resuscitation found in the previously referred study<sup>(13)</sup> showed that 9.8% of the 100 cases that crossed the alert line had a four-times higher relative risk for neonatal resuscitation (CI=95%: 2.3-7.1;  $p < 0.0001$ ) and about five times the risk for perinatal mortality (CI=95%: 1.8-15.6;  $p < 0.01$ ). Cases in which the delivery occurred in zone II had four times more resuscitations than the group in zone I (IC=95%: 2.1-7.6;  $p < 0.01$ ). However, the NBs that were born in zone III presented a relative risk for fetal mortality about nine times higher (CI=95%: 2.8-34.7;  $p < 0.001$ ) when compared to those that remained in zone I.

No neonatal resuscitation cases were found in zone III and there were no deaths in the present study population. There was no statistically significant difference in the resuscitation of NBs between the zones in which the deliveries occurred, although the validity of the tests used to verify those differences in the present study is limited,

because there were very low rates of negative neonatal outcomes.

At the studied maternity, early contact between mother and NB is adopted for babies with good vital signs. Results show that skin-to-skin contact occurred in more than 80% of births. Comparative analysis showed a lower rate of skin-to-skin contact among NBs born in zone III, but with a p-value ( $p=0.046$ ) very close to the alpha used in this study.

Over the last two decades, skin-to-skin contact has been encouraged to favor the interaction between mother and child so as to develop the psychological aspects of the child regarding the development of maternal identity. This initial contact offers protection and support, promoting the feeling of being welcomed, and helps to develop an identity of a more loving and less violent individual.

It is confirmed that using the partogram improves the quality of delivery care, since it permits to identify dystocia and make logical and effective interventions<sup>(5)</sup>.

As stated in the introduction section, using the partogram with alert and action lines makes it easier to establish conducts to be used during labor with a normal evolution, as well as to diagnose any changes, identifying and preventing dystocia, changing intuitive conduct into a precise action<sup>(1,5)</sup>.

The authors of a recent systematic review<sup>(12)</sup> stated that it was not possible to recommend the routine use of the partogram. However, it was stressed that this evidence can be used as a basis for discussions between health care providers and the women. It was also stated in the review that more evidence is needed to establish the efficacy of using the partogram.

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## FINAL CONSIDERATIONS

The present study data are a contribution to obtain more detailed knowledge regarding the use of the partogram, an instrument that, despite being recommended by the WHO since 1994, has not been much used at maternity and natural birth centers in both hospital and extra-hospital environments. This study was performed at a maternity in the municipality of Itapecerica da Serra, which recently implemented a Normal Childbirth Center. This change in the health care model made professionals change their practices, adapting them to the proposed model. Therefore, in some situations, it was observed that the professionals did not make a decision to intervene, as shown in cases of a prolonged active phase of labor, which most likely occurred as a consequence of their not performing amniotomy in zone II of the partogram.

Conversely, unnecessary interventions were performed because of the professionals' *attachment* to the interventionist model, especially regarding their random use of oxytocin in zone I of the partogram. This becomes worse because most obstetrical physicians and nurses working by this model also work at other maternities, whose model is completely different from the humanized care proposition. This makes it difficult to adjust conducts to meet the particular needs of each woman, despite having an instrument that guides the use of interventions.

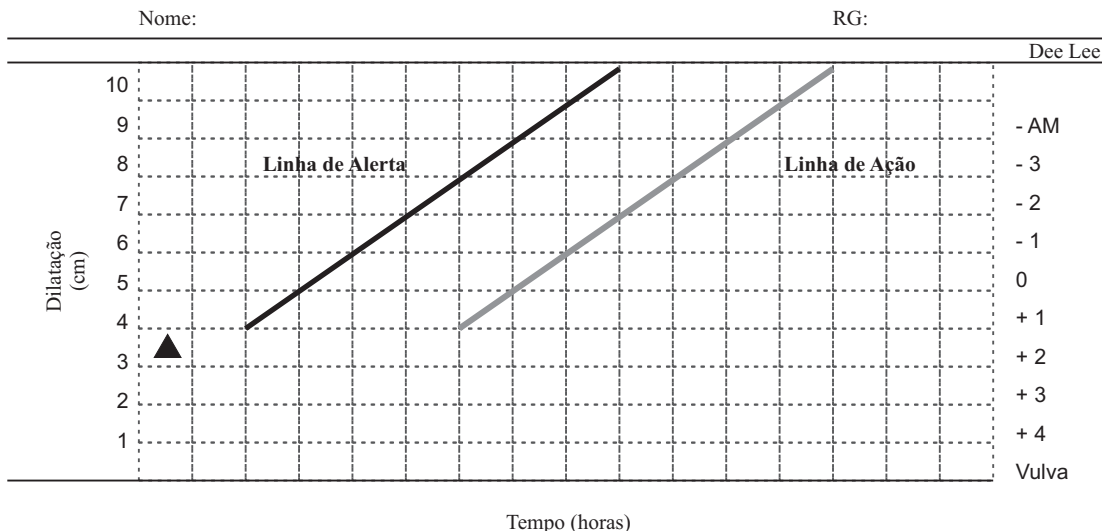
The present study results are noticeable because most of the practices performed occurred at a timely moment, in agreement with the partogram zones defined by the alert and action lines. This shows that the partogram is, in fact, an instrument that guides the use of labor and delivery interventions.



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ANNEX

Partogram with alert and action lines.



Source: Brasil. Ministério da Saúde. Secretaria de Políticas da Saúde. Parto, aborto e puerpério: assistência humanizada à mulher. Brasília; 2001.