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## Duration of Latent Phase Labour According to Parity

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### Summary:

In [1955 Friedman's](#) graphical analysis of 500 labours showed that the mean latent and active phases of labour were shorter in multiparas (5.3 and 2.2 hr, respectively) compared with nulliparas (8.6 and 4.9 hr, respectively). This accepted criteria (Friedman's Curve) for assessing the normal progression of labour has however been re-examined in the context of modern obstetrics.

[Koontz, W L; Bishop, E H](#) (1982) reported that the average duration of latent phase in nulliparous and multiparous women to be 6.4 and 4.8 hours, respectively, and is not influenced by maternal age, birth weight, or obstetric abnormalities.

The ([Zhang, Landy et al 2010](#)) study which examined the records of a total of 62,415 parturients with singleton term gestations (spontaneous onset of labour, vertex presentation, vaginal delivery and normal perinatal outcomes) found that in the case of both nulliparous and multiparous women, labour took on average more than 6 hours to progress from 4 to 5 cm dilation and more than 3 hours to progress from 5 to 6 cm. It concluded that nulliparous and multiparous women appear to progress at a similar pace before 6 cm dilation. However, it observed that labour accelerated much faster after 6 cm dilatation in multiparous than in nulliparous women.

The [Gurewitsch ED, Diament P, Fong J, et al;](#) (2002) study observed that grand multips (para 5 and over) have a longer latent phase of labour than either nulliparous or lower-parity multiparous women, but thereafter begin to dilate more rapidly.

### 1. Contemporary patterns of spontaneous labor with normal neonatal outcomes.

**Author(s):** Zhang J; Landy HJ; Branch DW; Burkman R; Haberman S; Gregory KD; Hatjis CG; Ramirez MM; Bailit JL; Gonzalez-Quintero VH; Hibbard JU; Hoffman MK; Kominiarek M; Learman LA; Van Veldhuisen P; Troendle J; Reddy UM; Zhang, Jun; Landy, Helain J; Branch, D Ware

**Source:** Obstetrics & Gynecology; Dec 2010; vol. 116 (no. 6); p. 1281-1287

**Publication Date:** Dec 2010

**Publication Type(s):** Academic Journal

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

**Abstract:**Objective: To use contemporary labor data to examine the labor patterns in a large, modern obstetric population in the United States. Methods: Data were from the Consortium on Safe Labor, a multicenter retrospective study that abstracted detailed labor and delivery information from electronic medical records in 19 hospitals across the United States. A total of 62,415 parturients were selected who had a singleton term gestation, spontaneous onset of labor, vertex presentation, vaginal delivery, and a normal perinatal outcome. A repeated-measures analysis was used to construct average labor curves by parity. An interval-censored regression was used to estimate duration of labor, stratified by cervical dilation at admission and centimeter by centimeter. Results: Labor may take more than 6 hours to progress from 4 to 5 cm and more than 3 hours to progress from 5 to 6 cm of dilation. Nulliparous and multiparous women appeared to progress at a similar pace before 6 cm. However, after 6 cm, labor accelerated much faster in multiparous than in nulliparous women. The 95 percentiles of the second stage of labor in

nulliparous women with and without epidural analgesia were 3.6 and 2.8 hours, respectively. A partogram for nulliparous women is proposed. Conclusion: In a large, contemporary population, the rate of cervical dilation accelerated after 6 cm, and progress from 4 cm to 6 cm was far slower than previously described. Allowing labor to continue for a longer period before 6 cm of cervical dilation may reduce the rate of intrapartum and subsequent repeat cesarean deliveries in the United States.

## **2. Normal cervical effacement in labor**

**Author(s):** Rhoades J.S.; Stout M.J.; Roehl K.A.; Tuuli M.G.; Macones G.A.; Cahill A.G.

**Source:** American Journal of Obstetrics and Gynecology; Jan 2017; vol. 216 (no. 1)

**Publication Date:** Jan 2017

**Publication Type(s):** Journal: Conference Abstract

**Abstract:** OBJECTIVE: Recent studies have redefined the normal labor curve based on progressive cervical dilation in the modern obstetric population. However, modern norms for cervical effacement in labor have not been defined. We sought to estimate the natural history of cervical effacement in labor and the expected effacement for given cervical dilations. STUDY DESIGN: This is a secondary analysis of a prospective cohort study of all term (>37 weeks), vertex, singletons who reached 10 cm of cervical dilation from 2010 to 2014. Detailed cervical examination data was collected on each patient. Interval-censored regression was used to estimate the median number of hours between changes in effacement (measured in centimeters [cm]), and to estimate the median effacement at a given cervical dilation. Each analysis was stratified by parity and labor type (spontaneous compared to induced or augmented). RESULTS: There were 7,407 patients included in the analysis, 2,970 (40.1%) were nulliparous and 2,349 (31.7%) had spontaneous labor. Multiparous patients had faster effacement from 1 to 0.5 cm and 0.5 to 0 cm than nulliparous patients, however nulliparous patients had effaced significantly more at lower cervical dilations. Patients in spontaneous labor had faster effacement, until 0.5 to 0 cm when patients who were induced or augmented had an equal rate of effacement as those in spontaneous labor (Table). Patients in spontaneous labor were significantly more effaced at each centimeter of cervical dilation from 1 to 8 cm than those who were induced or augmented. At 9 and 10 cm, the median effacement was 0 cm for both groups. Overall, the median time to efface from one centimeter to the next ranged from 0.4 to 2.6 hours, however the 95th percentiles encompassed over 17 hours to efface from one centimeter to the next for nulliparas. CONCLUSION: There is a wide range in the normal length of time for the progression of cervical effacement in labor. However, by 8 cm of cervical dilation, 95% of patients have completely effaced to 0 cm and longer cervixes are abnormal. (Table Presented).

**Database:** EMBASE

## **3. Impact of cervical effacement and fetal station on progress during the first stage of labor: A biexponential model**

**Author(s):** Quincy M.M.E.; Flood P.D.; Weng C.; Shafer S.L.; Smiley R.M.; Mirza F.G.

**Source:** American Journal of Perinatology; Oct 2014; vol. 31 (no. 9); p. 745-751

**Publication Date:** Oct 2014

**Publication Type(s):** Journal: Article

**Abstract:** Objective To develop a model that uses cervical effacement, fetal station, and parity to predict progress during the first stage of labor. Study Design This was a secondary analysis of a cohort of 1,128 parturients delivering after 34 weeks. Timed cervical exams from each patient were fit with a biexponential model. Methods for consideration of fetal station, cervical effacement and parity were developed and validated. Results The biexponential model fit the data in an unbiased

manner with a median absolute prediction error of 1.1 cm. Although nulliparous women had slower active labor, they did not differ from multiparous women in their rate of latent labor or the cervical dilation at which they transitioned to active labor. In addition, nulliparous women began laboring with a more effaced cervix (45 vs. 31%) and lower fetal station (-2.8 vs. -3.2). Conclusion We validated a biexponential model for labor progress using a large mixed parity cohort. We demonstrated that parity and initial fetal station add important clinical information that can be used to make a labor model more accurate. As such, parity and fetal station can be utilized in such structural models to predict normal labor progress and potentially identify abnormalities in labor progress. A© 2014 by Thieme Medical.

**Database:** EMBASE

#### **4. Normal progress of induced labor**

**Author(s):** Harper L.M.; Caughey A.B.; Odibo A.O.; Roehl K.A.; Zhao Q.; Cahill A.G.

**Source:** Obstetrics and Gynecology; Jun 2012; vol. 119 (no. 6); p. 1113-1118

**Publication Date:** Jun 2012

**Publication Type(s):** Journal: Article

Available in print at [Patricia Bowen Library and Knowledge Service West Middlesex university Hospital](#) - from Obstetrics and Gynecology

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

**Abstract:**Objective: To compare the normal labor progress of women whose labor was induced with that of women who labored spontaneously. Methods: A retrospective cohort study of all consecutive women admitted for labor at 37 weeks or more of gestation from 2004-2008 who reached the second stage of labor. Women whose labor was induced and women whose labor was augmented were compared with women who labored spontaneously without augmentation. Results were stratified by parity. Univariable and multivariable analyses were performed; interval censored regression was used to estimate the median time spent to progress 1 cm in dilation and the total time from 4-10 cm dilation by parity. Results: Of 5,388 women in the cohort, 2,021 spontaneously labored, 1,720 were augmented, and 1,647 were induced. After adjusting for race, obesity, macrosomia, and Bishop score, women who were induced had a significantly longer total time in labor than women who labored spontaneously (median [95 percentile] in hours for nulliparous women: 5.5 [16.8] induced compared with 3.8 [11.8] spontaneous; for multiparous women 4.4 [16.2] induced compared with 2.4 [8.8] spontaneous). However, median time to progress 1 cm dilation in active labor (6 cm or greater) was similar in induced and spontaneous labor. The time to progress 1 cm dilation in latent labor (less than 6 cm) was significantly longer in women who were induced compared with women who experienced spontaneous labor. Conclusion: The latent phase of labor is significantly longer in induced labor compared with spontaneous labor, although the active phase of labor (greater than 6 cm) is similar between the two groups. Arrest diagnoses before 6 cm in women undergoing induction should be made cautiously. © 2012 by The American College of Obstetricians and Gynecologists. Published by Lippincott Williams & Wilkins.

**Database:** EMBASE

## 5. Changes in labor patterns over 50 years.

**Author(s):** Laughon, S Katherine; Branch, D Ware; Beaver, Julie; Zhang, Jun

**Source:** American journal of obstetrics and gynecology; May 2012; vol. 206 (no. 5); p. 419

**Publication Date:** May 2012

**Publication Type(s):** Research Support, N.i.h., Intramural Journal Article

**Abstract:**The objective of the study was to examine differences in labor patterns in a modern cohort compared with the 1960s in the United States. Data from pregnancies at term, in spontaneous labor, with cephalic, singleton fetuses were compared between the Collaborative Perinatal Project (CPP, n = 39,491 delivering 1959-1966) and the Consortium on Safe Labor (CSL; n = 98,359 delivering 2002-2008). Compared with the CPP, women in the CSL were older ( $26.8 \pm 6.0$  vs  $24.1 \pm 6.0$  years), heavier (body mass index  $29.9 \pm 5.0$  vs  $26.3 \pm 4.1$  kg/m<sup>2</sup>), had higher epidural (55% vs 4%) and oxytocin use (31% vs 12%), and cesarean delivery (12% vs 3%). First stage of labor in the CSL was longer by a median of 2.6 hours in nulliparas and 2.0 hours in multiparas, even after adjusting for maternal and pregnancy characteristics, suggesting that the prolonged labor is mostly due to changes in practice patterns. Labor is longer in the modern obstetrical cohort. The benefit of extensive interventions needs further evaluation. Published by Mosby, Inc.

**Database:** Medline

## 6. Factors affecting the latency period in patients with preterm premature rupture of membranes.

**Author(s):** Test, Gidon; Levy, Amalia; Wiznitzer, Arnon; Mazor, Moshe; Holberg, Gershon; Zlotnik, Alexander; Sheiner, Eyal

**Source:** Archives of gynecology and obstetrics; Apr 2011; vol. 283 (no. 4); p. 707-710

**Publication Date:** Apr 2011

**Publication Type(s):** Journal Article

Available in full text at [Archives of Gynecology and Obstetrics](#) - from Springer Link Journals

**Abstract:**The objective of the study was to assess the factors affecting the latency period in woman with preterm premature rupture of membranes (PPROM) and evaluate morbidity associated with prolonged latency. A population-based retrospective study including all women with PPRM (prior to 37 weeks' gestation) during the years 1998-2008 was conducted. Comparison of the latency period was conducted by the Mann-Whitney U test since the latency period was not normally distributed (most delivered in 24 h). Multivariable logistic regression model was constructed to find independent factors associated with prolonged latency period (>72 h). During the study period, there were 1,399 singleton deliveries of patients with PPRM; 24.6% (345) occurred prior to 34 weeks' gestation. The duration of the latency period was significantly longer among woman with PPRM before 34 weeks as compared to PPRM after 34 weeks' gestation (5.78 vs. 2.02 days; p 35). Using a multivariable analysis, the following factors were significantly associated with latency period >72 h: lower gestational age (weeks, OR = 0.8, 95% CI 0.77-0.84; p 72 h) was significantly associated with chorioamnionitis (OR = 2.095, 95% CI 1.44-3.04; p < 0.001) and oligohydramnios (OR = 3.041, 95% CI 1.43-6.45; p = 0.004) but not with placental abruption (OR = 0.854, 95% CI 0.41-1.78; p = 0.674) or perinatal mortality (OR = 1.2, 95% CI 0.6-2.2; p = 0.556). The duration of the latency period is inversely associated with gestational age. Nulliparity is associated with lower latency period. Prolonged latency is a significant risk factor for chorioamnionitis.

**Database:** Medline

## 7. Variability in rate of cervical dilation in nulliparous women at term

**Author(s):** Incerti M.; Locatelli A.; Ghidini A.; Ciriello E.; Consonni S.; Pezzullo J.C.

**Source:** Birth (Berkeley, Calif.); Mar 2011; vol. 38 (no. 1); p. 30-35

**Publication Date:** Mar 2011

**Publication Type(s):** Journal: Article

**Abstract:** Cervical dilatation is commonly documented on a partogram indicating the expected rate of progress of labor. Although deviations from such a line can be used to indicate abnormal progress, what constitutes the "normal" rate of cervical dilation is still largely unknown. The objectives of this study were to assess the variability of the rate of cervical dilation in nulliparous women and to determine whether the rate of labor was independent of dilation on admission. We analyzed a cohort of consecutive nulliparous women with spontaneous labor at term and singleton fetuses in cephalic presentation. Exclusion criteria were gestational age less than 37 weeks, induction of labor, or the presence of a uterine scar. Management of labor was standardized using set protocols of care. Active labor was diagnosed as regular contractions every 10 minutes or less, lasting more than 40 seconds, with cervical effacement more than 80 percent and dilation of 2 cm. Vaginal examinations were performed by a dedicated midwife every 2 hours. Amniotomy was performed for slow progress or arrest of dilation over 2 hours. Oxytocin was administered for arrest of cervical dilation for 2 hours with membranes ruptured. Data pertaining to cases ending in cesarean delivery were included up to the time of cesarean section. The study sample comprised 1,119 women at 39.7 +/- 1.1 weeks with an average duration of labor of 4.1 +/- 2.4 hours. The rate of oxytocin use was 27 percent and of epidural analgesia 5 percent. The rate of oxytocin use was inversely related to cervical dilation on admission. Cesarean delivery was performed in 6 percent of women. Duration of labor at each centimeter of cervical dilation on admission showed a broad distribution (e.g., at 4 cm: median = 5.5, range: 0.8-12.5 hr). The rate of labor progression (expressed as the slope of the dilation-vs-time curve) was approximately 1.5 cm/hr, and it was essentially independent of cervical dilation on admission ( $r = 0.034$ ,  $p = 0.267$ ). A deceleration phase seemed to be present toward the end of the active phase of labor (approximately 9 cm). In our setting, the rate of labor in nulliparous women at term was highly variable, and it did not appear to be affected by cervical dilation on admission. © 2010, Copyright the Authors. Journal compilation © 2010, Wiley Periodicals, Inc.

**Database:** EMBASE

## 8. What is the Slowest-Yet-Normal Cervical Dilation Rate Among Nulliparous Women With Spontaneous Labor Onset?

**Author(s):** Neal J.L.; Lowe N.K.; Patrick T.E.; Cabbage L.A.; Corwin E.J.

**Source:** JOGNN - Journal of Obstetric, Gynecologic, and Neonatal Nursing; 2010; vol. 39 (no. 4); p. 361-369

**Publication Date:** 2010

**Publication Type(s):** Journal: Review

Available in full text at [Journal of Obstetric, Gynecologic, and Neonatal Nursing](#) - from John Wiley and Sons

**Abstract:** Objective: To integrate research literature that has provided insights into the cervical dilation rate that may best describe the slowest-yet-normal dilation rate among nulliparous women when beginning with criteria commonly associated with active labor onset. Data Sources: A literature search from 1950 through 2008 was conducted using the Medline electronic database, reference lists from identified articles, and other key references. Study Selection: Research reports

written in English with a focus on the cervical dilation and/or labor duration of low-risk, nulliparous women with spontaneous labor onset. Data Extraction: Classic and contemporary research literature was reviewed and organized under the following subheadings: Friedman Studies, Partograph Studies, Active Management of Labor Studies, Additional Studies. Data Synthesis: An integrative review of the literature approximated the slowest-yet-normal cervical dilation rate for nulliparous women when beginning with criteria commonly associated with active labor. Conclusions: The slowest-yet-normal linear dilation rate approximates 0.5 cm/hour for low-risk, nulliparous women with spontaneous labor onset when starting at dilatations traditionally associated with active labor onset. However, this linear rate must be evaluated judiciously in light of the physiological acceleration of dilation that occurs during typical labor. Given this, cervical dilation for this population is likely slower than 0.5 cm/hour in earlier active labor and faster in more advanced active labor. Faster dilation expectations (e.g., 1 cm/hour) likely contribute to an overdiagnosis of dystocia ("slow, abnormal progression of labor") in contemporary practice and, subsequently, to an overuse of interventions aimed at accelerating labor progress. © 2010 AWHONN, the Association of Women's Health, Obstetric and Neonatal Nurses.

**Database:** EMBASE

### **9. "Active labor" duration and dilation rates among low-risk, nulliparous women with spontaneous labor onset: a systematic review.**

**Author(s):** Neal, Jeremy L; Lowe, Nancy K; Ahijevych, Karen L; Patrick, Thelma E; Cabbage, Lori A; Corwin, Elizabeth J

**Source:** Journal of midwifery & women's health; 2010; vol. 55 (no. 4); p. 308-318

**Publication Date:** 2010

**Publication Type(s):** Research Support, Non-u.s. Gov't Research Support, N.i.h., Extramural Journal Article Review

Available in full text at [Journal of Midwifery and Women's Health, The](#) - from John Wiley and Sons

**Abstract:** Laboring women are often admitted to labor units under criteria that are commonly associated with the onset of active-phase labor (i.e., cervical dilatation of 3-5 cm in the presence of regular contractions). Beginning with these criteria through complete dilatation, this systematic review describes labor duration and cervical dilation rates among low-risk, nulliparous women with spontaneous labor onset. Studies published in English (between 1990 and 2008) were identified via MEDLINE and CINAHL searches. Data were abstracted and weighted "active labor" durations (i.e., from 3-5 cm through complete dilatation) and linear dilation rates were calculated. Eighteen studies (n = 7009) reported mean "active labor" duration. The weighted mean duration was 6.0 hours, and the calculated dilation rate was 1.2 cm per hour. These findings closely parallel those found at the median. At the statistical limits, the weighted "active labor" duration was 13.4 hours (mean + 2 standard deviations) and the dilation rate was 0.6 cm per hour (mean - 2 standard deviations). These findings indicate that nulliparous women with spontaneous labor onset have longer "active" labors and therefore slower dilation rates than are traditionally associated with active labor when commonly used criteria are applied as the starting point. Revision of existing active labor expectations and/or criteria used to prospectively identify active phase onset is warranted. Copyright 2010 American College of Nurse-Midwives. Published by Elsevier Inc. All rights reserved.

**Database:** Medline

## **10. Length of the first stage of labor and associated perinatal outcomes in nulliparous women.**

**Author(s):** Cheng YW; Shaffer BL; Bryant AS; Caughey AB

**Source:** Obstetrics & Gynecology; Nov 2010; vol. 116 (no. 5); p. 1127-1135

**Publication Date:** Nov 2010

**Publication Type(s):** Academic Journal

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

**Database:** CINAHL

## **11. The natural history of the normal first stage of labor**

**Author(s):** Zhang J.; Troendle J.; Mikolajczyk R.; Sundaram R.; Beaver J.; Fraser W.

**Source:** Obstetrics and Gynecology; Apr 2010; vol. 115 (no. 4); p. 705-710

**Publication Date:** Apr 2010

**Publication Type(s):** Journal: Article

Available in print at [Patricia Bowen Library and Knowledge Service West Middlesex university Hospital](#) - from Obstetrics and Gynecology

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

**Abstract:**Objective: To examine labor patterns in a large population and to explore an alternative approach for diagnosing abnormal labor progression. Methods: Data from the National Collaborative Perinatal Project were used. A total of 26,838 parturients were selected who had a singleton term gestation, spontaneous onset of labor, vertex presentation, and a normal perinatal outcome. A repeated-measures analysis was used to construct average labor curves by parity. An interval-censored regression was used to estimate duration of labor stratified by cervical dilation at admission and centimeter by centimeter. Results: The median time needed to progress from one centimeter to the next became shorter as labor advanced (eg, from 1.2 hours at 3-4 cm to 0.4 hours at 7-8 cm in nulliparas). Nulliparous women had the longest and most gradual labor curve; multiparous women of different parities had very similar curves. Nulliparas may start the active phase after 5 cm of cervical dilation and may not necessarily have a clear active phase characterized by precipitous dilation. The deceleration phase in the late active phase of labor may be an artifact in many cases. Conclusion: The active phase of labor may not start until 5 cm of cervical dilation in multiparas and even later in nulliparas. A 2-hour threshold for diagnosing labor arrest may be too short before 6 cm of dilation, whereas a 4-hour limit may be too long after 6 cm. Given that cervical dilation accelerates as labor advances, a graduated approach based on levels of cervical dilation to diagnose labor protraction and arrest is proposed. © 2010 by The American College of Obstetricians and Gynecologists. Published by Lippincott Williams & Wilkins.

**Database:** EMBASE

## **12. Factors affecting the duration of the latency period in preterm premature rupture of membranes.**

**Author(s):** Melamed, Nir; Hadar, Eran; Ben-Haroush, Avi; Kaplan, Boris; Yogev, Yariv

**Source:** The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Nov 2009; vol. 22 (no. 11); p. 1051-1056

**Publication Date:** Nov 2009

**Publication Type(s):** Journal Article

Available in full text at [Journal of Maternal-Fetal and Neonatal Medicine, The](#) - from Taylor & Francis

**Abstract:**To investigate the natural course of preterm premature rupture of membranes (PPROM) at 1 cm (HR = 0.65, 95% CI = 0.52-0.83), fetal growth restriction (HR = 2.94, 95% CI = 1.24-6.94) and nulliparity (HR = 1.28, 95% CI = 1.12-1.63) were significantly associated with shorter duration of the latency period. In this study, we have identified several predictive factors for the duration of the latency period in cases of PPRM. This information may assist clinicians in risk stratification and in providing consultation for women presenting with PPRM prior to 34 weeks of gestation.

**Database:** Medline

### **13. Pattern of cervical dilatation among parturients in Ilorin, Nigeria**

**Author(s):** Ijaiya M.A.; Aboyeji A.P.; Fakeye O.O.; Balogun O.R.; Nwachukwu D.C.; Abiodun M.O.

**Source:** Annals of African Medicine; Sep 2009; vol. 8 (no. 3); p. 181-184

**Publication Date:** Sep 2009

**Publication Type(s):** Journal: Article

Available in full text at [Annals of African Medicine](#) - from ProQuest

**Abstract:**Objective: To evaluate the pattern of cervical dilatation in live singleton pregnancies with spontaneous onset of labor and to compare any differences among nulliparas (Para 0) and multiparas (Para 1). Material and Methods: Descriptive statistics are presented for 238 consecutive labor patients with spontaneous onset, > 37 weeks gestation, live singleton pregnancy and who had spontaneous vertex delivery at the University of Ilorin Teaching Hospital, Nigeria, from May 2004 to June 2004. Pre-labor rupture of membrane and referred cases were excluded. Results: The mean cervical dilatation on presentation and duration of labor before presentation in labor ward among nulliparas were 5.40 cm and 6.66 hours; and among multiparas, 6.45 cm and 5.15 hours, respectively, the overall mean being 6.12 cm and 5.63 hours, respectively. The average time spent to achieve full cervical dilatation from time of arrival in labor ward was longer in nulliparas (4.80 hours) than in multiparas (3.60 hours) (t test not significant;  $P > 0.05$ ). Overall mean total length of first stage of labor was 9.36 hours, while the total length of first stage of labor was 11.03 hours and 8.53 hours for nulliparas and multiparas, respectively (difference is significant; t test  $P < 0.05$ ). No significant correlation existed between rate of cervical dilatation and maternal age, gestational age and fetal size. Conclusion: It is evident from this study that higher the parity the shorter the length of first stage of labor; however, significant difference existed only in the first half of first stage of labor between nulliparas and multiparas. Mean rate of cervical dilatation was greater than the WHO-specified and Philpott's lower limit of 1 cm/h in active phase of labor.

**Database:** EMBASE



#### **14. Factors associated with the length of the latent phase during labor induction.**

**Author(s):** Grobman, William A; Simon, Charla

**Source:** European journal of obstetrics, gynecology, and reproductive biology; Jun 2007; vol. 132 (no. 2); p. 163-166

**Publication Date:** Jun 2007

**Publication Type(s):** Journal Article

**Abstract:**To evaluate the factors that are associated with the length of the latent phase during labor induction in nulliparous women. During a 6-month period, all nulliparous women with a viable fetus of at least 36 weeks gestation who underwent induction of labor were identified. Demographic and intrapartum data were abstracted from the medical record. In an effort to understand the association of different factors with the length of the latent phase, both univariable and multivariable analyses were employed. The median length of the latent phase for the women available for analysis (N=397) was 384 min with an interquartile range of 240-604 min. In univariable analysis, a greater maternal age, a medical indication for induction, and unripe cervical status at admission (assessed by either modified Bishop score or use of cervical ripening agents) were significantly associated with a latent phase of at least 12 h. In multivariable analysis, the only variables that continued to be independently associated with a latent phase of at least 12 h were modified Bishop scores of 0-2 (adjusted odds ratio 42.0, 95% confidence interval 9.7, 183.2) and 3-5 (adjusted odds ratio 9.3, 95% confidence interval 2.1, 40.9). A woman's modified Bishop score at admission for labor induction, but not other risk factors typically associated with cesarean, is associated with length of the latent phase.

**Database:** Medline

#### **15. The impact of parity on course of labor in a contemporary population**

**Author(s):** Vahratian A.; Troendle J.F.; Zhang J.; Hoffman M.K.

**Source:** Birth; Mar 2006; vol. 33 (no. 1); p. 12-17

**Publication Date:** Mar 2006

**Publication Type(s):** Journal: Article

Available in full text at [Birth](#) - from John Wiley and Sons

Available in full text at [Birth: Issues in Perinatal Care](#) - from EBSCOhost

**Abstract:**Background: Few studies have examined in depth the labor progression of multiparas to determine if there is any additional impact of being parous beyond the first birth. The objective of this study was to determine the effect of parity on labor progression in contemporary obstetric practice. Methods: Our sample consisted of all low-risk women who delivered a term, live-born infant from January 2002 to March 2004 at a single institution in Delaware, United States (n = 5,589). The median duration of labor by each centimeter of cervical dilation was computed for parity = 0 (n = 2,645); parity = 1 (n = 1,839); parity = 2 (n = 750); and parity = 3 + (n = 355). Results: Multiparas had a significantly faster labor progression from 4 to 10 cm (293, 300, and 313 min, respectively, for parity = 1, parity = 2, and parity = 3 +), compared with nulliparas (383 min for parity = 0), as well as a shorter second stage of labor. However, no significant differences were found in duration of the active phase or the second stage of labor among multiparas. Conclusions: Additional childbearing appears to have no effect on the progression of labor among multiparous subgroups. The difference in duration of the active phase between nulliparas and multiparas is substantially smaller in a contemporary population. © 2006, Copyright the Authors.

**Database:** EMBASE

### **16. Progress of first stage of labour for multiparous women: an observational study**

**Author(s):** Lavender T.; Hart A.; Walkinshaw S.; Campbell E.; Alfirevic Z.

**Source:** BJOG : an international journal of obstetrics and gynaecology; Dec 2005; vol. 112 (no. 12); p. 1663-1665

**Publication Date:** Dec 2005

**Publication Type(s):** Journal: Article

Available in full text at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from John Wiley and Sons

**Abstract:**As there is no universal definition of 'normal' labour, diagnosing prolonged labour is inherently difficult. Simple charts (partograms) are used to aid this process; however, there are little empirical data on which to base such charts. Therefore, we monitored 403 multiparous women, in the first stage of labour with uncomplicated term pregnancies, in a midwife-led unit. They had vaginal examinations every 2 hours, and we modelled rates of cervical dilatation for all women, either to the end of the first stage of labour or to the point of transfer for intervention. Overall, the median rate of dilatation was 1.9 cm/hour and the 5th percentile was 0.5 cm/hour. There was a weak positive correlation between initial dilatation and rate of dilatation ( $r=0.2$ ). Individualised computer-based partograms incorporating some of the factors that affect progress might prove useful in the future.

**Database:** EMBASE

### **17. Reevaluation of Friedman's Labor Curve: a pilot study**

**Author(s):** Cesario S.K.

**Source:** Journal of obstetric, gynecologic, and neonatal nursing : JOGNN / NAACOG; 2004; vol. 33 (no. 6); p. 713-722

**Publication Date:** 2004

**Publication Type(s):** Journal: Article

Available in full text at [Journal of Obstetric, Gynecologic, and Neonatal Nursing](#) - from John Wiley and Sons

**Abstract:**OBJECTIVE: To reevaluate the average length of each phase/stage of labor for multiparous and primiparous women in North America who received no regional anesthesia or oxytocin augmentation or induction, to describe a range of labor lengths associated with good childbirth outcomes, and to determine if there is a consensus among labor and delivery nurse managers responding to the survey regarding the need to revise Friedman's Labor Curve. DESIGN: This pilot study used a descriptive and anonymous cross-sectional survey design. Surveys were mailed to 500 maternity care agencies in the United States, Canada, and Mexico with a return rate of 17.8% ( $n = 89$ ). Each participating agency was asked to submit five patient cases to be included in the analysis. SAMPLE AND SETTING: The sample of patient cases ( $n = 419$ ) was drawn from randomly selected maternity care agencies throughout North America representing all sizes of agencies and geographic locations. The cases submitted for analysis represented women 14 to 44 years of age with varying ethnicities who received no regional anesthesia or oxytocin augmentation or induction. Twenty-three percent of the women in the sample ( $n = 97$ ) were primigravidas. RESULTS: The average length of labor for primiparous and multiparous women today is similar to the average length of labor described by Friedman in 1954. However, a wider range of "normal" was found in cases included in

the current study. Primiparous women remained in the first stage of labor for up to 26 hours and the second stage of labor up to 8 hours with no adverse effects to mother or infant. Multiparous women remained in the first stage of labor for up to 23 hours and the second stage of labor for up to 4.5 hours with good birth outcomes. In addition, 87.6% of nurse managers responding to the survey believed that Friedman's Labor Curve should be revised to meet the needs of current patient populations, technological advances, and nursing responsibilities. **CONCLUSIONS:** This study suggests that the parameters to determine if a labor is progressing satisfactorily may need to be expanded. With the availability of technology to assess maternal and fetal well-being, labor should be allowed to progress past the rigid 2-hour time limit for the second stage of labor artificially imposed on women in some childbirth settings. More emphasis should be placed on the nursing assessment techniques used to reassure the family and health care practitioners that labor is progressing safely and the nursing interventions that may have an impact on the length of each stage of labor.

**Database:** EMBASE

### **18. Maternal and fetal risks associated with prolonged latent phase of labour.**

**Author(s):** Maghoma, J; Buchmann, E J

**Source:** Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; Jan 2002; vol. 22 (no. 1); p. 16-19

**Publication Date:** Jan 2002

**Publication Type(s):** Journal Article

Available in full text at [Journal of Obstetrics and Gynaecology](#) - from Taylor & Francis

**Abstract:** A pregnancy cohort study was undertaken to assess the fetal, maternal and obstetric risks associated with the prolonged latent phase of labour. One hundred and fifty cases (latent phase >8 hours) were compared with 100 controls (latent phase <8 hours). Data were collected from hospital records. There were more nulliparas in the case group (73% vs. 39%;  $P < 0.0001$ ). Cases required oxytocin augmentation (62% vs. 17%;  $P < 0.0001$ ) and caesarean section (29% vs. 6%;  $P < 0.0001$ ) more frequently than controls. Thick meconium staining of the liquor was more frequent in cases (15% vs. 5%;  $P < 0.05$ ), as were 5-minute Apgar scores less than 7 (17% vs. 3%;  $P < 0.001$ ) and admission to the neonatal unit (22% vs. 1%;  $P < 0.0001$ ). Prolonged latent phase is associated with increased risks for obstetric intervention and poor fetal outcome. The optimal management of prolonged latent phase is still unknown and requires further study by means of randomised controlled trials.

**Database:** Medline

### **19. Risk factors and outcome of failure to progress during the first stage of labor: A population-based study**

**Author(s):** Sheiner E.; Hallak M.; Mazor M.; Levy A.; Feinstein U.

**Source:** Acta Obstetrica et Gynecologica Scandinavica; 2002; vol. 81 (no. 3); p. 222-226

**Publication Date:** 2002

**Publication Type(s):** Journal: Article

Available in full text at [Acta Obstetrica et Gynecologica Scandinavica](#) - from John Wiley and Sons

**Abstract:** Background. One of the major indications for Cesarean section (CS) is failure of labor to progress. This study was aimed at defining obstetric risk factors for failure of labor to progress during the first stage, and to determine pregnancy outcome. Methods. A population-based study comparing all singleton, vertex, term deliveries between the years 1988 and 1999 with an unscarred uterus, complicated with failure of labor to progress during the first stage with deliveries without non-progressive labor (NPL). Multiple logistic regression analysis was performed to investigate

independent obstetric risk factors associated with failure of labor to progress during the first stage. Results. Failure to progress during the first stage of labor complicated 1.3% (n = 1197) of all deliveries included in the study (n = 92918), and resulted in CS. Independent risk factors for failure of labor to progress during the first stage, using a multivariable analysis, were premature rupture of membranes (PROM; OR = 3.8, 95% CI 3.2-4.5), nulliparity (OR = 3.8, 95% CI 3.3-4.3), labor induction (OR = 3.3, 95% CI 2.9-3.7), maternal age > 35 years (OR = 3.0, 95% CI 2.6-3.6), birth weight > 4 kg (OR = 2.2, 95% CI 1.8-2.7), hypertensive disorders (OR = 2.1, 95% CI 1.8-2.6), hydramnios (OR = 1.9, 95% CI 1.5-2.3), fertility treatment (OR = 1.8, 95% CI 1.4-2.4), epidural analgesia (OR = 1.6, 95% CI 1.4-1.8) and gestational diabetes (OR = 1.4, 95% CI 1.1-1.7). Although newborns delivered after failure of labor to progress during the first stage had significantly higher rates of Apgar scores lower than 7 at 1 and 5 min as compared with the controls (18.2% vs. 2.1%; P < 0.001 and 1.3% vs. 0.2%; P < 0.001, respectively), no significant differences were noted between the groups regarding perinatal mortality (0.3% vs. 0.4%; P = 0.329). Maternal anemia and accordingly packed cells transfusion (47.4% vs. 22.8%; P < 0.001 and 5.6% vs. 1.0%; P < 0.001, respectively) were higher among pregnancies complicated with failure of labor to progress during the first stage as compared with the controls. Conclusions. Major risk factors for failure of labor to progress during the first stage were PROM, nulliparity, induction of labor and older maternal age. Indications for labor induction should be carefully evaluated in order to decrease the rate of operative deliveries.

## 20. Labor in the grand multipara.

**Author(s):** Lyrenäs, Sven

**Source:** Gynecologic and obstetric investigation; 2002; vol. 53 (no. 1); p. 6-12

**Publication Date:** 2002

**Publication Type(s):** Journal Article

Available in full text at [Gynecologic and Obstetric Investigation](#) - from ProQuest

**Abstract:** To assess delivery time and the frequency of dystocia in grand multiparous (GMP) and grand grand multiparous (GGMP) women. Labor records from 272 women with parity 4-8 (GMP) and 56 women with parity 9 or higher (GGMP) were retrospectively reviewed regarding duration of labor and the occurrence of dystocia. As a comparison, data from 263 women with parity 1-3 (LMP) and 87 nulliparas (NP) was used. Duration of labor, defined as time from admission of the laboring woman to delivery of the infant, lasted in median 2.0, 2.3 and 3.1 h in LMP, GMP and GGMP, respectively. There was no difference in mean cervical dilatation on admission in multiparous women. In GGMP, the presenting part was more frequently positioned above the pelvic inlet at time of admission. In multiparous women admitted during the latent phase, the active phase of labor lasted in median 3.7 h in GMP and 4.7 h in GGMP, significantly longer than 2.9 h in LMP. During the active phase of labor, GGMP experienced arrest of cervical dilatation more frequently than the LMP. In parous women, there was a positive relationship between parity and duration of the active phase of labor as well as the duration of labor. Infant's birth weight increased by parity. Duration of the active phase of labor increased after the fourth child. Failure of descent of the presenting part during the first stage of labor in addition to arrest of cervical dilatation was associated with a high cesarean section rate in the GMP woman. Copyright 2002 S. Karger AG, Basel

**Database:** Medline

## **21. Reassessing the labor curve in nulliparous women.**

**Author(s):** Zhang, Jun; Troendle, James F; Yancey, Michael K

**Source:** American journal of obstetrics and gynecology; Oct 2002; vol. 187 (no. 4); p. 824-828

**Publication Date:** Oct 2002

**Publication Type(s):** Research Support, U.s. Gov't, Non-p.h.s. Journal Article Research Support, U.s. Gov't, P.h.s.

**Abstract:**Our purpose was to examine the pattern of labor progression in nulliparous parturients in contemporary obstetric practice. We extracted detailed labor data from 1329 nulliparous parturients with a term, singleton, vertex fetus of normal birth weight after spontaneous onset of labor. Cesarean deliveries were excluded. We used a repeated-measures regression with a 10th-order polynomial function to discover the average labor curve under contemporary practice. With use of an interval-censored regression with a log normal distribution, we also computed the expected time interval of the cervix to reach the next centimeter, the expected rate of cervical dilation at each phase of labor, and the duration of labor for fetal descent at various stations. Our average labor curve differs markedly from the Friedman curve. The cervix dilated substantially slower in the active phase. It took approximately 5.5 hours from 4 cm to 10 cm, compared with 2.5 hours under the Friedman curve. We observed no deceleration phase. Before 7 cm, no perceivable change in cervical dilation for more than 2 hour was not uncommon. The 5th percentiles of rate of cervical dilation were all below 1 cm per hour. The 95th percentile of time interval for fetal descent from station +1/3 to +2/3 was 3 hours at the second stage. Our results suggest that the pattern of labor progression in contemporary practice differs significantly from the Friedman curve. The diagnostic criteria for protraction and arrest disorders of labor may be too stringent in nulliparous women.

**Database:** Medline

## **22. The labor curve of the grand multipara: does progress of labor continue to improve with additional childbearing?**

**Author(s):** Gurewitsch, Edith D; Diament, Paul; Fong, Jill; Huang, Guan-hua; Popovtzer, Aron; Weinstein, Daniel; Chervenak, Frank A

**Source:** American journal of obstetrics and gynecology; Jun 2002; vol. 186 (no. 6); p. 1331-1338

**Publication Date:** Jun 2002

**Publication Type(s):** Multicenter Study Journal Article

**Abstract:**Our purpose was to test the hypothesis that progress of labor slows as parity exceeds 4 by comparing labor curves of grand multiparous women (para 5 and over) (GMs) with those of nulliparous and lower-parity multiparous women. Retrospective cohorts of spontaneously laboring, vertex-presenting, term GMs who were admitted to two medical centers during the period from January 1990 through June 1995 were randomly computer-matched to a nulliparous and a lower-parity multiparous control subject, matched for age, hospital, and year of delivery. Cervical examination data were graphed retrospectively from the time of full dilatation. Curves were compared by pairwise likelihood ratio tests, by using a random effects model to adjust for obstetric interventions, with significance set at  $P < .05$ . Pregnancies in 1095 GMs, 1174 lower-parity multiparous women, and 908 nulliparous women were studied. GMs exhibit a longer initial phase of labor than either nulliparous women or lower-parity multiparous women, begin to dilate rapidly at a greater dilatation than nulliparous women, and experience acceleration of labor at a rate no faster

than lower-parity multiparous women. The average labor curve of GMs resembles that of nulliparous women before dilatation of 4 cm is attained, then transitions to the typical curve of the lower-parity multiparous women until dilatation of 6 cm is attained and thereafter is indistinguishable from that of the lower-parity multiparous women ( $P < .001$ ). Once parity exceeds 4, progress of labor slows. "Poor progress" beyond dilatation of 4 cm should not be considered abnormal for a GM, because she is likely still in the latent phase until dilatation of 6 cm is attained. Nor should she be expected to progress through her active phase any faster than lower-parity multiparous women.

**Database:** Medline

### **23. Active contractions of the cervix in the latent phase of labour.**

**Author(s):** Rudel D; Pajntar M

**Source:** British Journal of Obstetrics & Gynaecology; May 1999; vol. 106 (no. 5); p. 446-452

**Publication Date:** May 1999

**Publication Type(s):** Academic Journal

Available in print at [Patricia Bowen Library and Knowledge Service West Middlesex university Hospital](#) - from British Journal of Obstetrics and Gynaecology (BJOG)

**Database:** CINAHL

### **24. Factors predicting successful labor induction**

**Author(s):** Watson W.J.; Stevens D.; Welter S.; Day D.

**Source:** Obstetrics and Gynecology; Dec 1996; vol. 88 (no. 6); p. 990-992

**Publication Date:** Dec 1996

**Publication Type(s):** Journal: Article

Available in print at [Patricia Bowen Library and Knowledge Service West Middlesex university Hospital](#) - from Obstetrics and Gynecology

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

**Abstract:**Objective: To evaluate maternal parity, the sonographic measurement of cervical length, and the five components of the Bishop score to determine which factors best predict the length of latent-phase labor in women undergoing labor induction. Methods: Cervical position, cervical consistency, cervical effacement, cervical dilation, station of fetal presenting part, maternal parity, and sonographic measurement of cervical length were studied prospectively in 109 women undergoing labor induction. A multiple regression model was used to determine which factors best predict the length of latent-phase labor. Results: A model using these seven factors was predictive in determining the number of hours of latent-phase labor ( $F = 32.1$ ,  $P < .001$ ). Backward stepwise multiple linear regression indicated that only cervical dilation independently predicted the length of latent-phase labor. There was a significant correlation between the clinical assessment of cervical effacement and the sonographic estimation of cervical length, ( $r = -0.523$ ,  $P < .001$ ). Conclusion: Only cervical dilation appears to predict the length of latent-phase labor. The sonographic evaluation of cervical length and maternal parity do not add significant independent information.

**Database:** EMBASE

**25. Partogram of a grand multipara: Different descent slope compared with an ordinary parturient**

**Author(s):** Juntunen K.; Kirkinen P.

**Source:** Journal of Perinatal Medicine; 1994; vol. 22 (no. 3); p. 213-218

**Publication Date:** 1994

**Publication Type(s):** Journal: Article

**Abstract:**Partograms of 42 grand multipara women (mean 10 previous deliveries) were analyzed and compared with the partograms of nulli- or second-/thirdpara women. All these full-term pregnancies were normal and the vaginal deliveries were spontaneous and non-instrumental. The grand multiparas had the shortest duration of the latent phase and the second stage of the delivery, but the active slope of the cervical dilation was in all groups same, on the average 2.8 cm hour. The station of the presenting part of the fetus remained in the grand multipara group significantly higher than in the other parturients for the whole first stage of labor. During this delayed descent the normal rotation of the fetal head from occiput transverse to occiput anterior position was delayed and fetuses were often delivered in a low transverse head position. The cephalopelvic disproportion need not be the most obvious reason for a slow descent in a grand multipara delivery, but slow descent can be caused by the physiological changes due to the great number of previous pregnancies.

**Database:** EMBASE

**26. Labor in the gravida with 10 or more years between pregnancies.**

**Author(s):** Brooks, G G; Lewis, D F; Gallaspy, J W; Thompson, H; Dunnihoo, D R

**Source:** The Journal of reproductive medicine; Apr 1992; vol. 37 (no. 4); p. 336-338

**Publication Date:** Apr 1992

**Publication Type(s):** Journal Article

**Abstract:**It has been suggested that women who have had a pregnancy interval of 10 or more years would have prolonged labor in pregnancies after the first, as do primigravidas. In a series of 94 multiparas with 10 or more years between pregnancies and 63 age-matched, multiparous controls, there was no significant difference in the length of the latent phase of labor or of the first, second and third stages of active labor in the two groups. The concept of a "physiologic primigravida" in these cases should be abandoned.

**Database:** Medline

**27. The duration of labor in primiparas undergoing vaginal birth after cesarean delivery.**

**Author(s):** Harlass, F E; Duff, P

**Source:** Obstetrics and gynecology; Jan 1990; vol. 75 (no. 1); p. 45-47

**Publication Date:** Jan 1990

**Publication Type(s):** Journal Article

**Abstract:**The purpose of this retrospective investigation was to evaluate the duration of labor in women having a trial of labor after a previous low transverse cervical cesarean delivery for dystocia. We specifically sought to determine whether these patients experienced a labor similar to that of the nulliparous or multiparous woman. During the study period, 73 women who had previously

undergone a cesarean for dystocia had a successful trial of labor. We matched each study patient to two controls. One control was nulliparous and the second was a woman who had undergone a previous uncomplicated vaginal delivery. Thirty-six study patients had had a cesarean in the latent phase of labor (group I), 29 in the active phase of labor (group II), and eight in the second stage of labor (group III). With the exception of group I patients, the first and second stages of labor were similar to those of nulliparous control patients. Patients in group I had a significantly longer first stage of labor than did the nulliparous controls. There was no significant difference in oxytocin requirements among the three groups. We conclude that primiparous women who have had a previous cesarean delivery for dystocia have a duration of labor similar in length or longer than that of nulliparous women.

**Database:** Medline

## **28. Characteristics of normal labor**

**Author(s):** Kilpatrick S.J.; Laros Jr. R.K.

**Source:** Obstetrics and Gynecology; 1989; vol. 74 (no. 1); p. 85-87

**Publication Date:** 1989

**Publication Type(s):** Journal: Article

**Abstract:**The length of the first and second stage of labor was evaluated in 6991 women with singleton gestations at 37-42 weeks with vertex presentation. All patients delivered spontaneously without the use of oxytocin. Four study groups were created on parity and whether conduction anesthesia was used. The mean lengths and limits (95th percentile) for the first stage of labor, respectively, were as follows: nulliparas: no anesthesia - 8.1 and 16.6 hours, conduction anesthesia - 10.2 and 19.0 hours; multiparas: no anesthesia - 5.7 and 12.5 hours, conduction anesthesia - 7.4 and 14.9 hours. Similar data for the second stage were as follows: nulliparas: no anesthesia - 54 and 132 minutes, conduction anesthesia - 79 and 185 minutes; multiparas: no anesthesia - 19 and 61 minutes, conduction anesthesia - 45 and 131 minutes. These statistical parameters are useful for defining when a labor becomes abnormal and intervention should be considered.

**Database:** EMBASE

## **29. Duration of labor. An analysis of influencing factors.**

**Author(s):** Nesheim, B I

**Source:** Acta obstetricia et gynecologica Scandinavica; 1988; vol. 67 (no. 2); p. 121-124

**Publication Date:** 1988

**Publication Type(s):** Journal Article

**Abstract:**9703 labors at Akershus Central Hospital during the period January 1979 to January 1984 were analysed to see which factors influenced the duration of labor. Median duration was 8.2 h for nulliparas, 5.3 h for multiparas. Parity greater than one had no influence on duration. Induced labors were 1.9 h (nulliparas) and 1.4 h (multiparas) shorter than those with spontaneous onset. Stepwise linear regression showed that duration of labor was positively correlated with the weight of the infant, duration of pregnancy, weight gain and prepregnant weight. It was negatively correlated with mother's height. Mother's age did not influence duration of labor. Occiput posterior presentation and extensions of the head prolonged labor in nulliparas, but not in multiparas, while breech presentation had no influence.

**Database:** Medline



### **30. Transition from latent to active labor.**

**Author(s):** Peisner, D B; Rosen, M G

**Source:** Obstetrics and gynecology; Oct 1986; vol. 68 (no. 4); p. 448-451

**Publication Date:** Oct 1986

**Publication Type(s):** Journal Article Research Support, U.s. Gov't, P.h.s.

**Abstract:**The transition from the latent to the active phase of labor, as defined by Friedman, was studied in all noncomplicated patients over a four-year period. Mothers studied were in spontaneous labor with a singleton fetus in the vertex position with intact membranes at admission. The independent variables were the parity and vaginal examination data, and the dependent variable was the rate of cervical dilation. The transition from latent to active labor was recorded and stratified by the cervical dilation where it occurred in a sample population consisting of 1060 nulliparous and 639 primiparous or multiparous women. There were no differences between nulliparous and multiparous patients. Less than 50% of labors became active by the time the cervix had reached 4-cm dilation. By 5 cm, 74% of labors were active. However, when protracted and arrested labors were eliminated, 60% of the patients had reached the latent-active transition by 4 cm and 89% by 5 cm. We concluded that once a normal patient has reached 5 cm, she should be in the active phase of labor. If not, there is a high probability of labor dystocia.

**Database:** Medline

### **31. Latent phase of labor in normal patients: a reassessment.**

**Author(s):** Peisner, D B; Rosen, M G

**Source:** Obstetrics and gynecology; Nov 1985; vol. 66 (no. 5); p. 644-648

**Publication Date:** Nov 1985

**Publication Type(s):** Journal Article Research Support, U.s. Gov't, P.h.s.

**Abstract:**The vaginal examination data (dilation, station, and time) were examined from 2845 consecutive uncomplicated patients who were admitted in early labor to Cleveland Metropolitan General Hospital between January 1, 1979 and December 31, 1982, using data from the computer database of the Perinatal Clinical Research Center. The length of the latent phase of labor was calculated in 2479 of these patients to form the study group. Individual effects of parity and the cervical dilation on the length of the latent phase of labor resembled Friedman's results from 20 years ago. Furthermore, the average and prolonged lengths of the latent phase confirmed that labors have not changed appreciably in 20 years. However, multivariable analysis and standard stepwise regression on all of the vaginal examination data revealed that the largest influence on the length of latent labor was the admitting cervical dilation. Parity had only a small effect when cervical dilation was controlled. Thus, a multiparous patient may progress as slowly as a primiparous patient if they both are admitted with a low cervical dilation.

**Database:** Medline

### **32. Characteristics and significance of the latent phase in the outcome of labor among Nigerian parturients.**

**Author(s):** Ayangade, O

**Source:** Journal of the National Medical Association; Jun 1984; vol. 76 (no. 6); p. 609-613

**Publication Date:** Jun 1984

**Publication Type(s):** Journal Article

Available in full text at [Journal of the National Medical Association](#) - from National Library of Medicine

**Abstract:**The characteristics and significance of the latent phase in labor among 716 West African parturients were studied. A wide variation in duration (1 to 70 hours) of this phase was noted. A consistent correlation was found between the duration of the latent phase and subsequent events, such as the duration of the active phase, duration of ruptured membranes, and the total modes of delivery. This correlation holds true to all parities even when latent phase duration is within normal limits. No difference was noted in the incidence of abnormal latent phase between the primigravida and the multigravida. Although these findings have potentially useful but limited application, the significant correlation with Apgar score at 1 minute and the association of larger breeches with prolonged latent phase are sufficient predictive indices of great value to the obstetrician in the prompt management of such labors.

**Database:** Medline

### **33. Predictive value of cervical dilatation rate in primipara and multipara labour**

**Author(s):** Agrawal N.R.; Tiwari P.

**Source:** Asia-Oceania journal of obstetrics and gynaecology / AFOG; Jun 1983; vol. 9 (no. 2); p. 143-149

**Publication Date:** Jun 1983

**Publication Type(s):** Journal: Article

**Database:** EMBASE

### **34. Management of the latent phase of labor.**

**Author(s):** Koontz, W L; Bishop, E H

**Source:** Clinical obstetrics and gynecology; Mar 1982; vol. 25 (no. 1); p. 111-114

**Publication Date:** Mar 1982

**Publication Type(s):** Journal Article

**Abstract:**1. Iatrogenic causes of prolonged latent phase such as sedation, narcotic analgesia, and epidural anesthesia should be avoided during the latent phase. 2. Cesarean delivery is not appropriate management solely for failure to progress in latent phase. 3. Multiparas in latent phase with favorable cervixes should be treated with oxytocin stimulation. 4. Multiparas with unfavorable cervixes and most nulliparas should be treated with therapeutic rest when they become exhausted during a long latent phase, without regard to an arbitrary time table. 5. Characteristics of latent phase in induced labors are undefined. 6. Management of latent phase in the presence of ruptured membranes should take into consideration the total clinical picture, including gestational age, presentation, and risk of infection and other pertinent factors.

**Database:** Medline

### **35. Duration of labour with spontaneous onset**

**Author(s):** Bergsjø P.; Bakketeig L.; Eikhom S.N.

**Source:** Acta Obstetrica et Gynecologica Scandinavica; 1979; vol. 58 (no. 2); p. 129-134

**Publication Date:** 1979

**Publication Type(s):** Journal: Article

**Abstract:** Among 2,242 women with spontaneous onset of labour, the median duration of labour for those delivered vaginally was 8.25 hr in para 0, 5.5 hr in para I and 4.75 hr in para 2+ mothers. In the parity groups 0, 1 and 2+ 90% had delivered within 16.25 hrs, 10.5 hrs and 10.75 hrs, respectively, while 10% of para 0 labours lasted less than 4 hrs, 10% of para 1 labours less than 2.25 hrs and finally 10% of para 2+ labours less than 2 hr. In the first stage of labour the latent phase (cervical dilatation less than 4 cm), was nearly 2.5 times as long as the active phase (cervical dilatation 4-10 cm). The second stage (cervical dilatation 10 cm-birth) had a median duration of 16 min in para 0 and approximately 10 min in para 1+ mothers. The length of the latent and active phases and the second stage for para 1+ mothers was 60-70% of that of para 0 mothers. The length of the latent and active phases and the second stage for para 1+ mothers was 60-70% of that of para 0 mothers. In individual mothers there were weak correlations between the length of the phases and stages. For example, the length of the latent phase appeared to be a relatively poor predictor of the length of the active phase of labour. However, selection bias may have weakened these correlations somewhat.

**Database:** EMBASE

### **36. Predictive value of cervical dilatation rates in labor in multiparous women**

**Author(s):** Evans M.I.; Lachman E.; Kral S.; Melmed H.

**Source:** Israel Journal of Medical Sciences; 1976; vol. 12 (no. 12); p. 1399-1403

**Publication Date:** 1976

**Publication Type(s):** Journal: Article

Available in full text at [Israel Journal of Medical Sciences](#) - from Free Access Content

**Abstract:** A modified version of Philpott's partogram, previously used by us to analyze patterns of labor in primiparous and grand multiparous women in Israel, was applied to multiparous women. The results for labor in multiparous women closely resemble those found for primiparous and grand multiparous labors. The rate of cervical dilatation, as measured early in the active phase of labor [initial rate (IR)], is an accurate indicator of the outcome of labor. Ninety eight percent of all multiparas with an IR of cervical dilatation of 0.75 cm/h or greater delivered spontaneously. Sixty two percent of women with an IR of less than 0.75 cm/h required an assisted delivery or cesarean section. Mean IR of cervical dilatation for spontaneous deliveries, assisted deliveries, and cesarean sections were, respectively, 1.53, 0.67, and 0.46 cm/h. No significant differences were observed among different population groups. Cervical dilatation rates among all parities appeared similar. The only major difference was in dilatation rates for assisted delivery in primiparas, which were faster than in labors in multiparous or grand multiparous women.

**Database:** EMBASE

**37. A reappraisal of the duration of labor.**

**Author(s):** Agboola, A; Agobe, J T

**Source:** Obstetrics and gynecology; Dec 1976; vol. 48 (no. 6); p. 724-726

**Publication Date:** Dec 1976

**Publication Type(s):** Journal Article

**Abstract:**The mean, median, and modal durations of labor have been established following a prospective study of 602 consecutive labors. The mean duration of labor for primiparae was 14.92 hours, while the median and modal durations were 13.20 and 9.66 hours, respectively. The corresponding figures for multiparae were 10.02, 9.28, and 7.80 hours, respectively. There was a statistically significant difference in the mean duration of labor in the 2 groups of patients (P less than 0.001). A significant positive correlation has been observed between the duration of the first stage of labor and the second stage of labor (P less than 0.001), and this might be of clinical importance. It has been suggested that the median and modal durations of labor may be more representative and informative than the mean or average.

**Database:** Medline

**38. Dysfunctional labor. I. Prolonged latent phase in the nullipara.**

**Author(s):** FRIEDMAN, E A; SACTLEBEN, M R

**Source:** Obstetrics and gynecology; Feb 1961; vol. 17 ; p. 135-148

**Publication Date:** Feb 1961

**Publication Type(s):** Journal Article

**Database:** Medline

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## Strategy 142002

#	Database	Search term	Results
1	Medline	(latent ADJ2 (labour OR labor)).ti,ab	156
4	Medline	("pre labour" OR "pre labor" OR prelabour OR prelabor).ti,ab	988
5	Medline	(early ADJ2 (labor OR labour)).ti,ab	996
6	Medline	(1 OR 4 OR 5)	2091
7	Medline	exp "TIME FACTORS"/	1078446
8		(6 AND 7)	206
9	Medline	(1 AND 7)	36
10	Medline	exp GRAVIDITY/ OR exp PARITY/	23412
11	Medline	(1 AND 10)	36
12	Medline	(5 AND 10)	68
13	Medline	(5 AND 7)	104
14	Medline	(multipar* OR nulpari*).ti,ab	11461
15	Medline	(10 OR 14)	31965
16	Medline	(13 AND 15)	19
18	Medline	("LABOR, OBSTETRIC").ti,ab,af	27972
19	Medline	(7 AND 15 AND 18)	320
20	Medline	(latent).ti,ab,af	61043
21	Medline	(19 AND 20)	15

22	EMBASE	(latent ADJ2 (labour OR labor)).ti,ab	78
23	EMBASE	exp PARITY/	33976
24	EMBASE	(22 AND 23)	15
25	EMBASE	(early ADJ2 (labor OR labour)).ti,ab	1004
26	EMBASE	(23 AND 25)	52
27	EMBASE	*PARITY/	3976
28	EMBASE	*LABOR/	15733
29	EMBASE	exp "TIME FACTOR"/	5350
30	EMBASE	(27 AND 28 AND 29)	0
31	EMBASE	(27 AND 28)	69
32	EMBASE	exp TIME/	512023
33	EMBASE	(27 AND 28 AND 32)	12
34	EMBASE	**"LABOR STAGE 1"/	331
35	EMBASE	(27 AND 34)	4
36	EMBASE	(multipar* OR nulpari*).ti,ab	23588
37	EMBASE	(34 AND 36)	21
38	EMBASE	exp "UTERINE CERVIX DILATATION"/	3860
39	EMBASE	(27 AND 38)	14
40	EMBASE	(36 AND 38)	136
41	EMBASE	exp PARITY/	33976
42	EMBASE	(latent OR latency).ti,ab	157906

43	EMBASE	(32 AND 41 AND 42)	10
44	Medline	(cervi* ADJ2 dilat*).ti,ab	3046
45	Medline	(15 AND 44)	390
46	Medline	(7 AND 45)	123
47	Medline	exp "LABOR ONSET"/	3593
48	Medline	(7 AND 15 AND 47)	202
49	Medline	((preactive OR "pre active") ADJ2 (labour OR labor)).ti,ab	3
50	EMBASE	((preactive OR "pre active") ADJ2 (labour OR labor)).ti,ab	5
51	CINAHL	((preactive OR "pre active" OR laten*) ADJ2 (labour OR labor)).ti,ab	51
52	CINAHL	exp "TIME FACTORS"/	75172
53	CINAHL	(51 AND 52)	10
54	CINAHL	exp PARITY/	2831
55	CINAHL	(51 AND 54)	5
56	CINAHL	exp "CERVIX DILATATION AND EFFACEMENT"/	523
57	CINAHL	(54 AND 56)	38
58	CINAHL	exp "LABOR STAGE, FIRST"/	305
59	CINAHL	(54 AND 58)	36
60	CINAHL	("pre labour" OR "pre labor" OR prelabour OR prelabor).ti,ab	256
61	CINAHL	(early ADJ2 (labor OR labour)).ti,ab	227

62	CINAHL	(60 OR 61)	1261
63	CINAHL	(52 AND 62)	34