

Factors Associated With Perineal Lacerations During Childbirth

By

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ABSTRACT

TITLE: Factors Associated With Perineal Lacerations During Childbirth

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This is a retrospective descriptive study with a convenience sample of 368 home births. The researchers examined what factors, in the absence of episiotomy, are associated with perineal lacerations during childbirth. The study's major outcome variable was perineal lacerations. Pre-existing variables were divided into three groups. Maternal factors included maternal delivery position, parity, maternal hematocrit, length of second stage, perineal massage, maternal age, maternal weight gain in pregnancy, history of a previous laceration, and a history of a previous episiotomy. Infant related factors included position of the baby at delivery, infant weight at delivery, presence of nuchal arm, and a composite variable comprised of those factors which increased the size of the passenger at delivery. The practitioner related variable was year of delivery.

The sample included 307 multiparous and 61 primiparous women in a low risk home birth practice in rural Oregon. They were primarily white, and were between the ages of 16 and 42 years.

Methodology: Information was gathered from statistical summary sheets of all births in the midwifery practice between 1979 and 1995. Either a chi-square analysis or Fisher's Exact test was done on each of the pre-existing variables and the seriousness of laceration.

Major Findings: The only preexisting variable found to be associated with increased severity of perineal lacerations was primiparity. It appeared from this study that the primary factor associated with a decrease in the seriousness of perineal lacerations was the stretching of perineal tissue prior to the current delivery. This could be accomplished either by increased parity, a previous laceration (but not a previous episiotomy), or the performance of prenatal massage. The performance of prenatal perineal massage was beneficial for preventing perineal lacerations during childbirth for primiparas and multiparas with one previous episiotomy. The early practice of prenatal perineal massage was associated with decreased severity of lacerations as compared to perineal massage begun late in the prenatal period. Another finding of this study was that third and fourth degree lacerations were virtually absent in this study, in which episiotomies were not done for maternal indications. Thus, the performance of episiotomy to prevent serious lacerations during childbirth does not seem to be indicated.

Limitations: Subjects in this study were primarily Caucasian, low risk, highly motivated home birth clients, preventing generalizability to the wider birthing population. This study was a non-randomized retrospective descriptive study. The midwives were not blinded to knowledge of which women had performed prenatal perineal massage and which had not. There was a lack of quantification and specification of the amount, quantity, and technique of prenatal perineal massage reportedly used by women in this study.

Implications for Practice: Primiparous women and women of low parity who had an episiotomy in their previous birth should be counseled in the association of early prenatal perineal massage with decreased severity of perineal lacerations during childbirth. Episiotomies done to prevent serious perineal lacerations during childbirth do not seem to be indicated.

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Introduction

There is perhaps no single part of the female body closer to the midwife's heart than the few centimeters of tissue between the introitus and the anus. The perineum, the triangular piece of muscle and skin presenting the last obstacle of passage for the fetus, has been argued over, obsessed over, pressed in, pulled out, massaged, oiled, tugged up, pushed down, heated, injected and alas, incised in an ongoing controversy which is traceable to the days of Aristotle.

This centuries old debate subsided during the early 1900's, when episotomy gained wide-spread acceptance as the treatment modality of choice for prevention of perineal lacerations. Routine incising of the perineum, however, has recently fallen into disfavor in the medical literature and many of the old techniques of perineal care are being reexamined. The purpose of this study is to examine the question of what factors, in the absence of episotomy, are associated with laceration of the perineum during childbirth.

Historical background

At the end of the nineteenth century, the medical literature reported a laceration rate of 10-90% for primigravidas and 5-15% for multigravidas (Clarke, 1889; Broomall, 1878; Manton, 1885; Wilcox, 1885). Moreover, the literature was replete with debate over the efficacy of various delivery techniques for protection against perineal tearing (Goodell, 1871; Dewees, 1889). Goodell describes the controversy as follows:

There are those who make pressure upon the perineum to retard the head; those who make pressure to accelerate its advance; those who deny that any such effects can thus be produced; and those who conscientiously use support because something must be done. Again; there are those who direct all the pressure at the fourchette; others who reprehend this and as carefully guard the posterior perineum; and yet others who will not touch the perineum on any account. Further there are those who push the perineum backwards; and those who for equally plausible reasons, push it forwards. Some dilate the sphincter vaginae; some the sphincter ani; and some who plug it up. Some place their hands transversely across the perineum; some longitudinally, with the fingers looking upwards; some

longitudinally, with the fingers looking downwards; some who attack it with their knuckles. Some scoop out the head with the vectis; other drag it out by the ears; and yet others who rely on the forceps. Finally there are those who use the right hand and those who swear by the left hand. Some who advocate a folded napkin; some an unfolded napkin; and others again who frown down upon all napkins, folded or unfolded (Goodell, 1887, p.53).

Deweese writes at the turn of the century that, "He who preserves the integrity of a perineum which is in peril, shows more skill and consummates higher art than he who successfully repairs a perineum which has been torn." (Deweese, 1889, p.804) He further states, "The question of the proper management of the perineum during labor is no longer dwelt upon in our schools as formerly; indeed, in some it is not taught at all, the direction being, 'if the head be delayed, place the forceps and pull it through; a few stitches will make it all right.' How different this from the instructions imparted in my Alma Mater" (Deweese, 1889, p. 804). Deweese digresses to discuss his venerable teacher who "reflected the conscious responsibility and anxious interest which should be felt by everyone who assumes to aid the physiological act of parturition, at the moment when the future happiness and comfort of a suffering woman is depending upon a tear or no tear," and who held, "How long should you hold your position here? I answer one hour, two or three hours if needed, until this head is extruded and this perineum saved. Remember the law: every perineum will properly distend if time be given to prevent rupture" (Deweese, 1889, p. 805).

By the end of World War II, most deliveries moved from the home to the hospital setting. As DeLee's (1920) and Pomeroy's (1918) papers arguing the benefits of routine episiotomy began to gain widespread acceptance, debate over various perineal protection techniques faded from the medical literature. The best protection for the perineum was the deliberate incising of the perineum, the episiotomy, which became the new standard of care (Pomeroy, 1918; DeLee, 1920). The proposed benefits of episiotomy were numerous. Primarily, episiotomies were believed to prevent third or fourth degree lacerations (DeLee, 1920; Barter, Parks and Tyndel, 1960; Gainey, 1955; Beynon, 1957). Secondly, they

were supposed to prevent damage to the integrity of the pelvic floor and thus prevent problems such as rectocele, cystocele, vaginal-rectal fistulas, and prolapsed uteri in the future (Delee, 1920; Aldrich and Wooton, 1935). Thirdly, they were believed to prevent possible brain damage by shortening second stage and alleviating the "battering -ram" effect (Delee, 1920; Harrar, 1919; Flew, 1944). Finally, episiotomies were believed to be easier to repair and less likely than lacerations to become infected and breakdown (Delee, 1920). Although its technique continued to be debated (Thacker and Banta, 1983), the justification and safety of episiotomy was not questioned in the literature until the emergence of the natural childbirth movement in the 1970's and 1980's.

The consumer driven interest in natural childbirth techniques led to a questioning of all of the accepted protocols of the hospital birth process. In response, scholars, researchers, and care providers began to re-examine the question of the efficacy and the necessity of episiotomy, and scientific journals published studies reopening the debate. Whereas prior inquiry centered around techniques of episiotomy, new research sought justification for the major benefits previously cited for the routine use of episiotomy.

The new data and analyses were quite clear, however. No scientific data could be found in the literature or in new studies to justify routine use of episiotomy for any of the traditionally accepted reasons. As opposed to preventing third and fourth degree tears, episiotomies were found in numerous studies to have a strong correlation with the deeper lacerations (Borgatta, Piening, and Cohen, 1988; Fischer, 1975; Thorp and Bowes, 1989; Harrison, Brennan, & North, 1984; Gass, Dunn, & Stys, 1986; Sleep, Grant, Garcia, Elbourne, Spencer, & Chalmers, 1984). Other studies showed episiotomies associated with damage to the pelvic floor with consequent increases in fistulas, incontinence, postpartum pain, and dyspareunia (Caldeyro-Barcia, 1978; Larsson, Platz-Christensen, Bergman, & Wallsternsson, 1991; McGuinness, Norr, & Nacion, 1991). Thacker et. al.'s (1983) review of eight additional studies concluded that, "there continues to be a lack of scientific data" (p. 329) on the topic of episiotomy's protective efficacy in the area of

pelvic floor integrity. Infection, rather than being prevented by episiotomy, was found to be a recognized complication of the procedure (Giglio, Germany, and Roberts, 1965; McGuinness et al, 1991) and contributed to the American maternal mortality rate due to necrotizing fasciitis and clostridial myonecrosis (Ewing, Smale, and Elliot, 1979; Golde & Ledger, 1977, Thacker and Banta, 1983). Shy & Eschenbach (1979) found that 20% of maternal mortality from 1969-1977 in King County, Washington was related to infections from episiotomy. Thacker (1983) concluded that, "...the infections that result from episiotomy do cause a measurable although poorly quantified amount of maternal morbidity" (p. 333). Concerning the issue of the shortening of second stage, literature was consistent in acknowledging the actual shortening of the time interval, but was equally consistent in the lack of any evidence to show that this shortening decreased brain damage in infants not previously compromised in first stage (Caldeyro-Barcia, 1979; Wood, Ng, Hounslow, and Benning, 1973; & Cohen, 1977). Further, the literature discussed the link between the shortening of second stage and shortening of the time necessary to properly stretch the pelvic floor to prevent damage, concluding that although episiotomy may indeed reduce the length of second stage, in the absence of infants compromised in first stage, this shorter second stage had deleterious effects on the integrity of the pelvic floor (Kitzinger & Simpkin, 1984). Numerous researchers, reviewing the literature on the benefits and risks of the procedure, concluded that research justifying routine episiotomy was entirely lacking (Thacker et. al., 1984; Kitzinger et. al., 1984; Klein, Gauthier, Jorgensen, Robbins, Kaczorowski, Johnson, Corrivear, Wastreich, Waghkorn, Gelfand, Guralnick, Laskeyl & Joshi, 1992; Larsson, et. al., 1991; Rockner, Wahlberg & Olund, 1989; Needham and Sheriff, 1983; Gordon and Logue, 1985; & Bowe, 1981).

The debate at this point became concerned with the identification of situations in which episiotomies could be avoided. A number of studies were conducted by nurse-midwives addressing this question (Bowe, 1981; Nodine and Roberts, 1987; Dunn, 1984;

Schrag, 1979; Fischer, 1979; & Avery and Burket, 1986). These studies had conflicting results (see Appendix A-Chart- attached).

Review of the literature

Although the issue of what factors contribute to perineal tearing has been debated for over 100 years (Thacker et al, 1983; and Dewees, W.B., 1889) current research still does not resolve the issue. Several studies in the nurse-midwifery literature have attempted to address this problem, but the results of the reported research are conflicting.

There are numerous variables which have been investigated to date. These include maternal age, parity, infant weight, fetal presentation, maternal weight gain, anemia, maternal position at delivery, previous episiotomy, prenatal perineal massage, and length of second stage.

Although this study is an investigation of home birth statistics and will not look at episiotomy, epidural anesthesia, induction or augmentation of labor with pitocin, or use of forceps, studies which investigated these variables have been included for purposes of a complete review of the literature. Of these four variables, the three most commonly identified in the literature as having a significant effect on increasing perineal lacerations, especially third and fourth degree, are epidural anesthesia, forceps, and midline episiotomies (Legino, et. al, 1988; Fischer, 1979; Nodine, et. al., 1987; Avery, et. al., 1986; Shiono, Klebanoff, & Carey, 1990; Reading, Sledmere, Cox, and Campbell, 1982; Harrison, et. al., 1984; Larsson, et. al., 1991; Rockner, et. al., 1984; Thorp, et. al., 1989).

Of the eight studies in which epidural anesthesia was examined, a significant association with perineal laceration was identified (Legino, et al., 1988; Nodine, et. at., 1987; Harrison et. al., 1984; Larsson et. al., 1991; Rockner, et. al., 1989), while a weak association was found in the seventh study (Fischer, 1979). Forceps deliveries and midline episiotomies were each cited by six different studies as being significantly associated with increases in perineal lacerations (Legino, et. al., 1988; Fischer, 1979; Avery et. al., 1986;

Shiono, et. al., 1990; Reading, et. al., 1982; Harrison, et. al., 1984; Larsson, et. al., 1991; Rockner, et. al., 1989; Thorp, et. al., 1989).

Induction/augmentation was identified in two studies as being associated with increased perineal lacerations (Legino, et. al., 1988; Rockner, et. al., 1989). One additional study showed no evidence of any increase in lacerations (Sleep, et. al., 1984).

Excluding the aforementioned four variables of episiotomy, epidural anesthesia, forceps, and induction/augmentation of labor, the biggest predictor of women at risk for perineal lacerations in labor has been found to be parity. Nulliparity or low parity were cited in seven studies as related to increases in lacerations (Legino, et. al., 1988; Larsson, et. al., 1991; Thorp, et. al., 1989; Dunne, 1984; Nodine, et. al., 1987; Roberts, et. al., 1989; Shiono, et. al., 1990). Multiparity was found related to lacerations in one study (Sleep, et. al., 1984). Fischer (1979) found first and second degree lacerations related to multiparity while third and fourth degree lacerations related to low parity.

Age, specifically less than twenty years, was cited in two studies as contributing to lacerations (Legino, et. al., 1988; Fischer, 1979). In two other studies it was found to have no statistical significance (Dunne, 1984; Nodine, et. al., 1987).

With regard to the relationship between fetal weight and perineal trauma, there were again conflicting data. Three studies showed large babies (>3400 gms.) as being significantly related to lacerations (Roberts, et. al., 1989; Shiono, et. al., 1990; Thorp, et. al., 1989), while five found no increased trauma with larger babies (Legino, et. al., 1988; Dunne, 1984; Nodine, et. al., 1987; Larsson, et. al., 1991; Rockner, et al., 1989).

The occiput posterior position of the fetus was significant in the two studies which addressed fetal position (Roberts, et. al., 1989; Shiono, et. al., 1990). Low maternal weight gain was significant in two studies (Fischer, 1979; Shiono, et. al., 1990), while one study found no difference in perineal outcome with low weight gain (Nodine, et. al., 1987). Maternal hematocrit was significant in one study (Fischer, 1979) but not in another (Nodine, et. al., 1987). Maternal position during labor (particularly with use of birth chair)

was cited as being significantly associated with more lacerations in two studies (Sleep, et. al., 1984; Nodine, et. al., 1987), but was not shown to have any effect in another (Roberts, et. al., 1989). Having had a previous episiotomy seemed to increase the likelihood of perineal lacerations of future deliveries in one study (Kitzinger & Walters, 1981), but none of the other studies addressed this issue. In the only study which investigated prenatal perineal massage, Avery, et. al. (1986) found the technique to decrease the incidence of perineal lacerations significantly.

Of the five studies that addressed fetal compromise due to prolonged second stage in women who did not have an episiotomy, none found any statistical differences between the Apgar scores of these infants as compared to infants of women with episiotomies (Sleep, et. al., 1984; Bowe, 1981; Harrison, et. al., 1984; Larsson, et. al., 1991; Rockner, et. al., 1989). The conclusion was drawn that allowing a woman to deliver over an intact perineum posed no threat to the infant, even when it increased length of second stage.

In summary, there appears to be a confusing correlation between perineal lacerations and the other factors addressed in the literature. Most researchers found the relationship between perineal lacerations and nulliparous women, while one associated this condition with multiparous women. Epidural anesthesia, forceps delivery, and episiotomy (especially midline) are also consistently positively correlated with perineal lacerations. The research is divided on age (less than twenty years), infant weight, maternal weight gain, maternal anemia, maternal position during labor, and length of second stage as being significant contributing factors associated with perineal lacerations. There does not appear to be any difference in fetal well-being as reflected by the Apgar scores, between the babies of women who have had an episiotomy to shorten their second stages and those who have been allowed to deliver at their own pace.

Since the 1920's, most hospitals have continued to have a 60%-80% episiotomy rate for primigravidas (Legino, et al., 1988), even though fewer than 50% of cases register any indications on the hospital record (i.e. fetal distress, imminent laceration, etc.) for an

episiotomy (Thacker et. al., 1983; Harrison, et al., 1984). Moreover, despite the fact that each of the above cited studies looked at factors influencing lacerations, they were all contaminated by the ever present influence of the episiotomy itself. Episiotomy continued to be performed whenever the practitioner assumed that laceration might occur (incidences in these studies ranged from in 30%-80%); therefore a serious gap in the literature exists concerning perineal management without the mitigating influence of episiotomy. The use of episiotomy when a tear was anticipated effectively precluded the pure investigation of factors associated with laceration.

Another problem inherent in the literature on this subject is the issue of definition. Some studies defined intact perineum as any tissue not sustaining a second, third, or fourth degree tear, regardless of whether an episiotomy (a surgical break in the perineum) was performed or not. Other studies defined intact as anything not requiring sutures, whether the tear was first degree or deeper. Thus laceration meant different things in different studies. No study defined laceration as a break in the perineal tissue, regardless of the degree of the laceration.

Moreover, practitioner delivery technique was not reviewed in the majority of studies. There was no control for practitioner training, technique or orientation. Although they evaluated a number of births, researchers examined deliveries which were attended by a multitude of different types of practitioners, employing various delivery techniques, practicing in multiple settings. This confounding variable of practitioner consistency may well have obscured the study of actual factors associated with perineal lacerations. When considered at all, however, this issue was dismissed in most studies as uncontrollable. A notable exception in the literature was a recent study by nurse-midwives Lydon-Rochelle, Albers & Teaf (1995) who studied the effects of alternative techniques commonly used by midwives to support the perineum and prevent lacerations. They found that the use of hot compresses and perineal massage with lubricating oils were associated with increased risk of perineal lacerations during delivery.

A serious gap exists in the literature regarding the incidence of perineal laceration after episiotomy with a previous birth. Scar tissue is contracted, does not stretch as well as normal tissue (Meeker, 1991) and has a tensile strength weaker than that of normal tissue (Ketchum, 1979). Theoretically, scar tissue from a previous episiotomy would not be able to withstand the increased demands of subsequent deliveries and would predispose a woman to future perineal lacerations. Although Sleep, et. al, (1984) found a positive relationship between multiparity and perineal lacerations, the relationship between tensile strength of scar tissue and subsequent laceration was not investigated. Indeed, no research directly studying this phenomenon could be located in the literature.

In conclusion, review of the literature on the subject of factors associated with perineal lacerations is less than satisfying. Methodological design problems of the studies may account for the plethora of conflicting results. The literature is conflicting in definition, muddled by the confounding variables of birth attendant technique and orientation, and obfuscated by the interjection of episiotomy. The following study will examine the issue of laceration defined as a break in the integrity of the perineal tissue, while controlling for practitioner technique, and performance of episiotomy.

Midwifery Practice Model

Midwifery practice emphasizes the delivery of a healthy baby to a healthy mother through the minimization of care giver interference with the normal processes of labor. Although episiotomy is not eliminated when the natural course of delivery is deemed to be in conflict with the main goal of a healthy baby and a healthy mother, this conflict is seen to occur in a very small segment of the population. Within this conceptual view of birth, an intact perineum is seen as an optimal outcome for the mother. The intact perineum minimizes blood loss, swelling, pain, and dyspareunia (Larsson, et. al., 1991; Sleep, et. al., 1894; Reading, et. al., 1982; Harrison, et. al., 1984; Head, 1989) in the postpartum period. It is during this critical period that the mother and baby are establishing life long

patterns of attachment. Mother and partner are both adjusting to the maturational crisis of parenthood, and simultaneously trying to reestablish some semblance of normalcy in their intimate sexual relationships. To this end, episiotomy is viewed as an artificial interference of unproven benefit. As such, it was performed by the practitioners in this study only when there was a fetal indication.

Moreover, many midwives believe that most of the lacerations which occur during the normal delivery process are generally shallow and superficial, often requiring no repair (Head, 1989), and only rarely extending into second degree laceration status. Given the choice of an episiotomy or the usual superficial perineal laceration, the midwives in this study chose the laceration.

Conceptual framework

The research question is "Is there a relationship between the fourteen variables described and perineal lacerations in a spontaneous vaginal delivery?" The fourteen variables can be conceptualized as maternal, fetal, and practitioner factors. For the mother these factors are: age, parity, weight gain in pregnancy, final prenatal hematocrit, position at delivery, length of second stage of labor, history of previous episiotomy, history of previous laceration, and prenatal perineal massage. Variables investigated for the infant include: weight of the infant, position of the fetus at delivery, nuchal arm, and an aggregate category including factors increasing the size of the passenger. Association of practitioner experience with perineal integrity was assessed by examining the year of the birth to see if the incidence of intact perineum increased with length of practitioner practice.

Perineal laceration was defined as laceration status at delivery. Lacerations were rank ordered in terms of no laceration, first degree, second degree, third degree, and fourth degree lacerations.

The variable of delivery technique which was uncontrolled in much of the literature will be controlled in this study. The two midwives who performed the deliveries have

virtually the same delivery technique. Both encouraged the mother to find a delivery position of comfort and to change that position when progress is not noted. Perineal massage with olive oil was employed as the head descended towards the pelvic floor. Hot compresses were routinely applied to support the perineum when the head began to crown, except in those few precipitous deliveries when there was no time to do so. Downward pressure was applied to the head as it emerged to prevent extension before the occiput delivered in the anterior position, thus allowing delivery of the smallest possible diameter through the introitus. It is acknowledged that this delivery technique is in itself a factor which may influence perineal lacerations. These techniques, however, were employed consistently by the midwives in this study population, and thus must be considered controlled variables for the purposes of this investigation.

Based upon the review of the literature, the following research question was asked: Is there a relationship between the occurrence of perineal laceration and the maternal variables of age, parity, weight gain in pregnancy, final prenatal hematocrit, position at delivery, length of second stage of labor, history of previous episiotomy, history of previous laceration, prenatal perineal massage, the fetal variables of weight of infant, position of the fetus at delivery, presence of a nuchal arm, and the aggregate factor of variables which increase the size of the passenger during delivery, and the practitioner variable of year of delivery.

Methodology

Design

The following is a retrospective descriptive study with a convenience sample of 368 women delivering without episiotomies in the home birth practice of two Oregon midwives. The purpose of this study was to show the relationships between the variables and no attempt was made to infer causal relationships between the studied variables and perineal lacerations. Although there was no randomization in this study, a typical problem identified with retrospective studies, there was no need for a control group since all subjects received the same treatment and episiotomies were rarely performed. Faulty interpretation of study results, another problem identified with ex post facto studies, is minimized in this project, as statistical information was gathered from medical records and assessment of laceration was made at the time of occurrence with two person verification.

Sample

This study looked at women delivered by the Mid-Valley Midwives between 1979 and 1995. The sample included 307 multiparous and 61 primiparous women, who were primarily white. Their ages ranged from 16 to 42. All women had low risk pregnancies as defined by the Oregon Midwifery Council Risk Factor Assessment, and thus delivered singleton babies, with a cephalic presentation, and a gestational age of between 37 and 43 weeks. The sample excluded the handful of births in which an episiotomy was performed as well as those births which were transported to the hospital when high risk conditions developed.

The sample included both rural and urban women, from a wide range of socio-economic backgrounds and incomes, varying from below poverty level to affluent. Both midwives attended the vast majority of the births, although a different midwife may have

been in attendance as an assistant on the few occasions when one of the two study midwives was ill or on vacation.

Variables

Fourteen variables relating to mother, baby, and practitioner were investigated. For the mother these were: age, parity, weight gain in pregnancy, final prenatal hematocrit, position at delivery, length of second stage of labor, history of previous episiotomy, previous laceration, and prenatal perineal message. Variables investigated for the infant included: weight of the infant, position of the fetus at delivery, nuchal arm, and an aggregate variable of factors which increase to size of the passenger at delivery. Year of the birth was tabulated to see if the incidence of intact perineum increased with length of practice.

Perineal laceration was given the rank ordered measurement described above with the use of two examiner verification.

Definitions

1. Perineal lacerations: (Fischer, 1979)

a. First degree lacerations include tears of the vaginal mucosa, fourchette, and or skin of the perineum, but not the underlying tissues.

b. Second degree lacerations are tears of the vaginal mucosa, fourchette, skin and muscles of the perineal body, but not the anal sphincter.

c. Third degree lacerations include the superficial tissues, the muscles of the perineal body, and the anal sphincter, but not the rectal mucosa.

d. Fourth degree lacerations involve tears into the rectal mucosa.

2. Maternal positions: (Nodine et. al., 1987)

a. Sims position is a semi-prone position with the client on her side with no elevation of the upper torso except for a pillow under the head. (Although Nodine and

Roberts stipulated that the client be on her left side, in this study, the client could be on either side. Further the client's upper leg was held by an assistant.)

b. Lithotomy position is a position in which the client is on her back with her head and shoulders flat (except for a pillow under her head) and with legs flexed but not in stirrups. (In this study, the clients legs were held tightly flexed by assistants.) This position was used by the current researchers in those cases in which the client had a narrow pelvic arch, or in those cases in which the fetus was not progressing past the pelvic arch.

c. Semi-Fowler (semi-sitting) is a birth position in which the woman's back is elevated 30-45 degrees (in this study the legs were flexed with the soles of the feet flat on the bed).

d. Squatting is a birth position in which a woman's feet are on the floor or other surface with the knees bent, and she is in an upright position, supporting her weight with her legs.

e. Standing is a birth position not defined by Nodine and Roberts. In this study standing is a position in which the mother is erect on the floor or bed and is supported by assistants as needed.

f. Hands and knees is a birth position in which a woman's hand and knees are flat on the floor or other surface with body weight equally distributed between the four limbs.

3. Parity:

In this research, parity is defined as the number of babies beyond the age of twenty weeks gestation born to a mother. Nodine in her study defines it more strictly as the number of pregnancies carried to term (37 weeks gestation or more) by the gravida.

4. Position of the baby at delivery:

For the purposes of this paper, position of the baby at delivery is defined as occiput anterior or occiput posterior. No breech deliveries were performed by the researchers.

5. Hematocrit:

Hematocrit is defined as the last hematocrit obtained in the pregnancy, usually at 28 weeks. In cases in which this 28 week hematocrit was exceedingly low, and it was repeated later in the pregnancy after prophylactic iron was taken, the last recorded hematocrit was used.

6. Length of second stage:

Length of second stage is defined as the amount of time from complete dilatation to delivery of the baby.

7. Perineal massage:

Perineal massage was presented with both verbal explanation and follow-up written instruction to all clients of these researchers at the time of initial interview. At each prenatal visit clients were asked whether or not they had done perineal message during the interval since their previous visit. Perineal massage, for the purposes of this study was categorized as performed if the client responded positively on least three separate occasions during the prenatal period. (refer to Appendix C)

8. Age:

Age is defined as maternal age at the time of delivery.

9. Maternal weight gain:

Maternal weight gain is defined as the difference between the prepregnancy weight and the weight documented at the time of the last prenatal visit.

10. History of previous episiotomy:

History of previous episiotomy is defined as a surgical incision of the perineum in a past vaginal delivery.

11. Nuchal arm:

Nuchal arm is defined as the presence of a fetal hand at or superior to the fetal neck at the time of delivery.

12. Year of birth:

Year of birth is defined as the calendar year in which the birth occurred.

13. Weight of baby:

Weight of baby is defined as the weight in pounds and ounces that the baby weighed immediately after birth.

14. Previous laceration:

Previous laceration is defined as a tear in the perineal tissue in the absence of an episiotomy in a previous birth.

15. Factors which increase the size of the passenger at delivery:

Factors which increase the size of the passenger at delivery are defined as presence of a nuchal arm or persistent occiput posterior presentations at delivery or babies weighing nine pounds or greater.

Data Collection

Data on the above mentioned maternal and infant variables was retrieved from the medical records of each client. Prior to 1994 the information obtained was summarized on the Oregon Midwifery Council Statistical Form (see Appendix D). This is a standardized data collection tool developed by the Cascade Midwives' Association and was used by each midwife certified by the Council. In 1994, the State of Oregon Board on Direct Entry Midwifery required statistical data to be collected on the Midwives' Alliance of North America's Statistical Data Collection Form (see Appendix E). Information recorded on the data collections forms was compiled by the primary midwife in conjunction with the assistant at the birth, thus assuring two person verification of all data including the extent of any laceration. These two forms were used by researchers to retrieve information for this study. Although the forms themselves are different, information collected on the variables to be studied is identical.

All births attended by the Mid Valley Midwives between 1978 through 1995 were included in this study if they were completed at home and they did not include an

episiotomy. Hospital transports (11%) were excluded since delivery by different practitioners using different techniques presented confounding variables, and the use of episiotomy was routine in the hospital. The handful of Mid-Valley Midwives' home births in which an episiotomy was performed (0.03%) was excluded, since a major attempt of this study was to eliminate the mediating influence of the episiotomy.

Confidentiality

The original records are part of the medical records of a private midwifery practice and are covered by patient/practitioner confidentiality. No one other than the midwifery care providers and the researchers had access to them.

Incidences for each of the fourteen variables examined were calculated from the statistical analysis sheets (included in Appendixes C and D of this study) filled out on each birth by the two midwives. These sheets were already numbered and separated from the medical files. An attempt was made to retrieve any missing data from the corresponding medical charts.

The summary forms were then renumbered randomly with the original numbers removed so that no possible tracing from the original summary forms would be possible. The original summary forms were returned to the care providers.

Limitations

It is acknowledged that the exclusion of the hospital transports may represent a threat to internal validity in that this exclusion may cause a skewing effect for some of the variables considered. Presumably transports would include a disproportionate number of variables, for example larger babies, which could confound the data. Since the sample is defined as women delivering without an episiotomy, however, and since episiotomies were routinely performed at the hospitals of transport, births which did not occur at home were an exclusion criterion.

The subjects in this study were primarily Caucasian. Lydon-Rochelle, et.al., (1995) has recently indicated statistically significant differences in the incidence of perineal lacerations between Caucasian, Hispanic, Asian and Afro-American populations. The convenience nature of this home birth study precludes examination of perineal tearing as it relates to a multiethnic population, although Lydon-Rochelle, et. al., (1995) suggests a higher laceration rate in Caucasian populations. This lack of multi-ethnicity prevents generalization of the study findings to populations other than Caucasian women.

Another problem in comparison of outcomes of this study with other studies is the problem of definition. Some studies include first degree lacerations as perineal trauma. Other studies define only those first degree lacerations that required suturing as a laceration. Additional studies do not include first degree lacerations regardless of suturing, reporting only second, third and fourth degree as "non-intact perineum." A further issue is the classification of periurethral and labial splits. The literature contains references to these lacerations as first degree (Dunne, 1984). For the purposes of this study, any tear in the perineum beyond a mucous split was counted as a laceration whether it required suturing or not. Although no periurethral lacerations were sustained in this study population, labial splits were classified as first degree. The single sulcus tear in this study was grouped in the second degree or greater category.

Home birth statistics are compiled on normal vaginal deliveries. Serious anemias for instance, are automatically eliminated from examination. Home birth requirements excluded women with hematocrits of less than 30%. Therefore anticipated relationships between anemia and perineal lacerations found in other studies (Fischer, 1979) could not be examined adequately in this analysis.

Retrospective studies contain inherent limitations. For instance, data on some variables of interest were missing from charts. Also there were areas in which bias could have been introduced in the recording of data. These include extent of perineal laceration and prenatal perineal massage. Attempts were made to minimize the effect of bias in the

recording of these two variables. Using the definitions above, extent of perineal laceration was determined by two midwives examining each perineum. In terms of perineal massage, self reports in and of themselves have potential for bias. However, performance of perineal massage in this study was recorded during the prenatal period, and not retrospectively, minimizing recall bias. The other variables of interest were more concrete in nature and therefore less subject to bias of the recorders or the study population.

Retrospective studies cannot show causal relationships, but rather examine associations of factors, thereby directing future prospective studies. Identification of the existing relationships throughout the seventeen year span of this study however, is of primary importance due to the unique nature of the data base. No other study was found in the literature in which the mitigating influence of episiotomy was eliminated.

Analysis

Frequency tables were done on the fourteen pre-existing variables, as well as on the variable called "degree of laceration." A chi square was also done on each of these fourteen preexisting variables and the degree of laceration. These pre-existing variables are:

- a. Parity
- b. Delivery position of mother
- c. Length of second stage
- d. Prenatal perineal massage
- e. Previous episiotomy
- f. Maternal weight gain
- g. Presence or absence of a nuchal arm
- h. Position of baby at delivery
- i. Maternal age
- j. Previous lacerations
- k. Hematocrit

- l. Birth weight of baby
- m. Year of birth
- n. Factors which increase size of passenger

Further analyses were also done as indicated.

Results

An intact perineum was found in 70% (n = 254) of all births in this study population. First degree or labial lacerations (n= 89) occurred in 24% of births, while second degree lacerations (n = 22) occurred in 6% of births. There was one sulcus laceration (.03%) and one third degree laceration (0.03%). There were no fourth degree lacerations and no periurethral lacerations. Of the fourteen chi squares done between the preexisting variables and degree of laceration, five appeared to be significant.

Seriousness of Lacerations Between Primiparas and Multiparas

Primiparas had significantly more serious lacerations than multiparas. (P<.0001) In the first chi square done to investigate this difference, perineal lacerations were divided into three groups: 1) intact perineum, 2) first degree or labial lacerations and 3) second or third degree lacerations. This analysis (see table 1A) was statistically significant. (P<0.0001) However, since the minimum expected frequency was 3.8 and 1 of the 6 cells had an expected frequency of less than 5, it was possible that the results of this chi square may not have been valid.

Table 1A

Seriousness of Lacerations Between Primiparas and Multiparas

	<u>Primiparas (n= 60)</u>	<u>Multiparas (n=306)</u>
Intact Perineum	30 (50%)	224 (73%)
First or Labial	16 (27%)	73 (24%)
Second or Third	14 (23%)	9 (3%)

$$\chi^2 = 37.249 (P < 0.0001)$$

To improve the credibility of these results, another chi square was done in which the lacerations were divided into only two groups: 1) intact perineum or first degree lacerations and 2) second or third degree lacerations. This categorization ensured sufficient numbers in each cell to maintain statistical integrity and was thought not to violate the clinically important distinction sought *i.e.* to distinguish between no or minor lacerations

and serious lacerations. Analysis with only two categories demonstrated continued statistical significance. ($p < 0.0001$)

Table 1B

Seriousness of Lacerations between Primiparas and Multiparas (Collapsed Data)

	Primiparas (n=60)	Multiparas (n=306)
Intact or First Degree	46 (77%)	297 (97%)
Second or Third Degree	14 (23%)	9 (3%)

Fisher's Exact 2-tailed test ($P < .0001$)

Seriousness of Laceration Between Women Using The Squatting Position and Women Using Other Positions For Delivery

Women who used the squatting position for delivery had significantly more serious lacerations than women who used other positions ($P < .0018$). As in the previous analyses, when the degree of lacerations was divided into 3 groups: 1) intact perineum, 2) first degree or labial lacerations, and 3) second or third degree lacerations, the chi square resulted in a significant P value. ($P < 0.002$) But again there was some concern about the credibility of the statistic because of the small number ($n = 8$) in one of the cells. These results are found in Table 2A.

Table 2A

Seriousness of Lacerations Between Women Using The Squatting Position and Women Using Other Positions for Delivery

	Squat (n= 57)	Other (n= 282)
Intact Perineum	31 (54%)	207 (73%)
First and Labial Lacerations	18 (32%)	64 (23%)
Second and Third Degree Lac.	8 (14%)	11 (4%)

$\chi^2 = 12.679$ ($P = 0.0018$)

Consequently, the seriousness of lacerations was again re-categorized into two groups as was done in the previous analyses. The re-analysis resulted in a P-value of 0.007. These results are found in Table 2B.

Table 2B**Seriousness of Lacerations Between Women Using The Squatting Position and Women Using Other Positions for Delivery (Collapsed Data)**

	<u>Squat (n=57)</u>	<u>Other (n=282)</u>
Intact and First Degree	49 (86%)	271 (96%)
Second or Third Degree	8 (14%)	11 (4%)

Fisher's Exact 2-tailed test (P=0.007)

Seriousness of Lacerations Between Women Whose Second Stages Were < 20 Minutes and Women Whose Second Stages Were 20 Minutes or Longer

Women whose second stage was less than 20 minutes had significantly less serious lacerations than women whose second stage was 20 minutes or longer. (P<0.0003) These results are found in Table 3.

Table 3**Seriousness of Lacerations Between Women Whose Second Stage Was < 20 Minutes and Women Whose Second Stage Was 20 Minutes or Longer**

	<u>< 20 Minutes (n=259)</u>	<u>20 Minutes or Longer (n=105)</u>
Intact Perineum	187 (72%)	65 (62%)
First or Labial Lacerations	64 (25%)	25 (24%)
Second or Third Degree	8 (3%)	15 (14%)

$\chi^2 = 15.993$ (P= 0.0003)

Seriousness of Lacerations Between Women Who Reported Performance of Prenatal Perineal Massage and Those Who Did Not

Women who reported prenatal perineal massage had significantly fewer serious lacerations than women who did not do the massage. (P<.0002) These results are found in Table 4.

Table 4**Seriousness of Lacerations Between Women Who Reported Performance of Prenatal Perineal Massage and Those Who Did Not**

	<u>Massage (n=269)</u>	<u>No massage (n=93)</u>
Intact Perineum	203 (76%)	50 (50%)
First and Labial Laceration	55 (20%)	32 (34%)
Second Degree or Greater	11 (4%)	11 (12%)

$\chi^2 = 17.073$ (P = 0.0002)

No statistical significance was found using chi square analysis for any of the remaining variables. These variables included occurrence of nuchal arm, position of baby at delivery, hematocrit, age of mother, birth weight of baby, maternal weight gain, previous laceration, and year of birth. For the variable previous episiotomy, the sample size of multiparous women with one previous birth who had an episiotomy in that birth and who proceeded to have second or third degree lacerations in the current birth was too small to infer an association between the variable and perineal lacerations in this second birth. A trend was noted however, (in this study 8% more women with previous episiotomies had perineal lacerations than women who did not have a previous episiotomy) that supported the assumption by Kitzinger et. al., (1984) that episiotomy did in fact predispose women to more serious lacerations in subsequent births. A larger sample size in future studies would be necessary to further test this assumption.

After the initial analyses, it was clear that a number of other analyses were indicated. For instance, the initial analysis had shown that a highly significant correlation existed between length of second stage and laceration, with significantly fewer lacerations among women having shorter second stages. Concern was raised over the issue of the influence of primiparity. Primiparous women generally have longer second stages than multiparous women, and perhaps the effects of parity were being tested. When length of second stage was reexamined while controlling for parity, significance was lost for an association between length of second stage and seriousness of laceration.

Squatting position was then reexamined. Women in this study used the squatting position primarily to shorten a long second stage. Most women began pushing in a semi-Fowlers position and repositioned themselves only when descent was slow. The question of the inadvertent measurement of parity again emerged since primiparous women would classically have had longer second stages, and would consequently have squatted more frequently than multiparous women. For a third time, statistical significance was lost when the variable of squatting position was reexamined through the filter of parity.

A third question also surfaced. No statistical significance had been found for an association between laceration and any of the factors which increased the size of the passenger (nuchal arm, occiput posterior presentation, or size of baby). There were however, a very small number of babies who presented with either a nuchal arm (n=28) or occiput posterior position (n=13). A fourteenth variable was then created combining all the factors investigated which would theoretically increase the passenger size (i.e., any baby presenting with a nuchal arm or in the occiput posterior position or weighing more than nine pounds). One hundred patients fell into this category. There was no statistically significant association between the combined factors which increased the size of the passenger and an increase in the seriousness of perineal lacerations.

Further, the original analyses had shown that women who used perineal massage suffered less serious lacerations than women who had not practiced the massage. (See Table 4) Because this was a major question of the research, the data for this analysis were studied intensively. The specific question which emerged as the data were analyzed was "Which women benefited from the perineal massage?" It seemed plausible that perineal massage, which is thought to be helpful in stretching the tissues before birth, might be more effective in some situations than in others.

A comparison of primiparous women who had and had not reported performance of prenatal perineal massage might be expected to show a significant difference. It might also be expected that multiparous women who had only one previous birth would benefit from prenatal perineal massage. Stretching would also seem to be effective in this study's sample of multiparous women with previous episiotomies, again because those with previous episiotomies presumably had less perineal stretching than those without episiotomies. It would further seem logical that multiparous women with one previous birth with a laceration, as opposed to an episiotomy in that birth, would not show an association between prenatal perineal massage and laceration in the second birth due to maximal stretching of the perineal tissues in that prior birth. (Multiparous women with

only one previous birth were investigated since the amount of their previous perineal stretching would presumably be more similar than a comparison of women who had had different numbers of previous babies, and consequently different amounts of perineal stretching.) Finally, it would also seem logical that multiparous women with more than one previous birth (i.e. for this study parity two through nine) would not show an association between prenatal perineal massage and severity of laceration, since perineal stretching from multiple vaginal deliveries would have left little room for improvement.

All of these issues were important to investigate in order to refine the original questions and give indications for which groups of women this clinical intervention would be most effective. To further explore these questions, the seriousness of the lacerations were compared between the following groups:

1. Primiparous women who did and did not report performance of prenatal perineal massage.
2. Multiparous women with one previous birth who did and did not report performance of prenatal perineal massage.
3. Multiparous women with only one previous birth with an episiotomy who did and did not report performance of prenatal perineal massage.
4. Multiparous women with only one previous birth with a previous laceration who did and did not report performance of prenatal perineal massage.
5. Multiparous women with a parity of two through nine who did and did not report performance of prenatal perineal massage.

An incidental question arose when the frequency data suggested that there might be a difference between the laceration rate of women attended by Midwife A and those by Midwife B. Consequently, this comparison was also made.

6. Seriousness of lacerations between women attended by Midwife A and Midwife B.
- The following results were found in making these comparisons:

Seriousness of Lacerations Between Primiparas Who Reported Prenatal Massage and Those Who Did Not

Primiparous women who reported performance of prenatal perineal massage had significantly fewer serious lacerations than those primiparous women who did not perform the massage. These results are found in Table 5.

Table 5

Seriousness of Lacerations Between Primiparas Who Reported Prenatal Perineal Massage and Those Who Did Not

	<u>Massage (n= 45)</u>	<u>No Massage (n= 12)</u>
Intact, First Degree, and Labial Lacerations	39 (87%)	5 (41%)
<u>Second and Third Degree</u>	<u>6 (13%)</u>	<u>7 (58%)</u>

Fisher's Exact 2-tailed Test (P= 0.003)

Seriousness Of Lacerations Among Multiparous Women With Only One Previous Birth Who Reported Prenatal Perineal Massage and Those Who Did Not

Multiparous women with only one previous birth who reported performance of prenatal perineal massage had significantly fewer serious lacerations than similar multiparous women who did not report performance of the massage. These results are found in Table 6.

Table 6

Seriousness of Lacerations Between Multiparous Women With Only One Previous Birth Who Reported Prenatal Perineal Massage and Those Who Did Not

	<u>Massage (n= 84)</u>	<u>No Massage (n= 45)</u>
Intact, First Degree, and Labial Lacerations	81 (96%)	39 (87%)
<u>Second or Third Degree</u>	<u>3 (4%)</u>	<u>6 (13%)</u>

Fisher's Exact 1-tailed test (P=0.0465)

Seriousness of Lacerations Between Multiparous Women with One Previous Birth, With Previous Episiotomy, Who Reported Prenatal Perineal Massage in the Subsequent Birth, and Those Who Did Not

Multiparous Women (1 previous birth) who had a previous episiotomy and who reported performance of prenatal perineal massage in the subsequent birth had significantly higher rates of intact perineum than those who did not. These results are found in Table 7.

Table 7

Seriousness of Lacerations Between Multiparas (one previous birth) With Previous Episiotomy Who Reported Prenatal Perineal Massage and Those Who Did Not

	<u>Massage (n=53)</u>	<u>No massage (n=17)</u>
Intact perineum	34 (64%)	6 (35%)
First Degree or Greater Lacerations	19 (35%)	11 (65%)
Fisher's exact 2-tailed (P=0.05)		

There was no significant association between performance of prenatal perineal massage and seriousness of laceration for multiparous women with one previous birth, who had a laceration in that birth. In addition, there was no significant association between reported performance of prenatal perineal massage and seriousness of lacerations for multiparous women of parity two through nine.

Seriousness of Lacerations Between Women Attended By Midwife A and Those Attended By Midwife B.

Women attended by Midwife A had significantly fewer serious lacerations than those attended by Midwife B. These results are found in Table 8.

Table 8

Seriousness of Lacerations Between Women Attended by Midwife A and Women Attended by Midwife B

	<u>Midwife A (n= 233)</u>	<u>Midwife B (n= 133)</u>
Intact Perineum	174 (75%)	80 (60%)
First and Labial Laceration	49 (21%)	40 (30%)
Second Degree or Greater	10 (4%)	13 (10%)
$\chi^2=9.474$ (P=0.0088)		

Discussion

There were three statistically significant findings in this study. First, primiparous women were more likely to have serious perineal lacerations during childbirth than multiparous women. All other variables in this study which originally appeared to be associated with an increase in the severity of perineal lacerations (i.e., maternal age < 20 years, squatting position, and length of second stage greater than twenty minutes) when controlled for parity, were not found to be associated with an increase in the seriousness of perineal lacerations.

The results of this study regarding the association of low parity with the frequency of lacerations are consistent with findings in the literature (Legino, et. al., 1988; Larsson, et. al., 1991; Thorp, et. al., 1989; Dunne, 1984; Nodine, et. al., 1987; Roberts, et. al., 1989; Shiono, et. al., 1990) indicating that primiparous women suffer more severe lacerations than multiparous women. Fisher (1979) also found a relationship between low parity and an increase in the rate of third and fourth degree lacerations. Although the number of third and fourth degree lacerations was so low in this study that statistical comparisons between parity could not be made, it is interesting to note that the findings of this study do share the same trend, i.e., 23% of the primiparas in this study suffered second and third degree lacerations while only 3% of the multiparous women did.

The second statistically significant finding of this study was that the practice of prenatal perineal massage is associated with a reduction in the seriousness of perineal lacerations for the study group as a whole ($P=0.03$) as well as for a number of smaller subgroups. It appears that this intervention is associated with a reduction in perineal lacerations in primiparous women ($P=0.05$), multiparous women with one previous birth ($P= 0.045$), and specifically multiparous women with one previous birth who had an episiotomy with that birth ($P=0.05$). In fact, the only groups for which the massage was not associated with a reduction in the rate of perineal lacerations were multiparous women

of parity greater than one and multiparous women with one previous birth who had a perineal laceration with that birth.

Given these findings, it appears that a positive association with perineal lacerations during childbirth is found with perineal tissue which has not previously been subjected to stretching. This unstretched tissue would be found in primiparous women, as well as multiparous women who had an episiotomy in their first birth. Although the sample size in this study was too small to show an association between previous episiotomy and laceration in the subsequent birth, the women with a previous episiotomy who reported performance of prenatal massage during their second pregnancy had significantly fewer serious lacerations than those who did not. Although prenatal perineal massage was associated with a decrease in the seriousness of subsequent lacerations for women with previous episiotomies, the same was not true for women with previous lacerations. It could be inferred from this that episiotomy prevents the full stretching of the perineal tissue, whereas a laceration is tantamount to over-stretching of the perineal tissue, thereby precluding improved outcome from subsequent massage. Similarly, multiparous women of parity two through nine have likely experienced maximal perineal stretching from multiple vaginal deliveries and were likewise not helped by subsequent stretching from prenatal perineal massage.

An additional positive finding during secondary analysis of this study was that data showed that women attended by Midwife B had significantly more serious lacerations than those attended by Midwife A. Both midwives believed they practiced essentially the same way, had trained together and had about the same amount of experience. This is a particularly significant finding since Midwife A attended 64% of the total births in this study, versus 36% of the study's births attended by Midwife B. In order to investigate the meaning of this finding, further analyses were done.

One question investigated in secondary analysis was whether this practitioner difference might be due to the influence of confounding factors, originally thought to

increase the seriousness of laceration rates. In an effort to discover whether this difference could be accounted for by these other variables (i.e., primiparity, length of second stage, age of mother < 20 years, or delivery position of the mother), chi squares were done on each of these variable differences between the midwives. None differed significantly between the two practitioners. The only difference that the investigators could find between the practice of the two midwives was that Midwife A introduced prenatal perineal massage from the onset of prenatal care, while Midwife B introduced it at 28 weeks gestation.

The question then arises "If the practice of perineal prenatal massage is associated with less severe lacerations, what would be the optimum time to start it?" Common clinical thought is that if started too early, women will lose motivation before delivery. Yet if future prospective studies show that maximum effect of prenatal perineal massage is dependent upon the early onset of its practice, this information would be useful for clinical practice.

The only study located in the literature which addressed prenatal perineal massage was a small (n= 20) prospective randomized study conducted by Avery (1986) who controlled for age, parity, race, marital status, gestational age, and fetal weight, but was not blinded to group assignment. She found that women who practiced prenatal perineal massage at least four times per week during the last six weeks of pregnancy had a lower incidence of episiotomy and lacerations than those who did not. The findings in the current study support Avery's (1986) association of prenatal perineal massage with a decrease in the severity of laceration, but differ as to the appropriate timing of the initiation of the practice.

The association of prenatal perineal massage with lacerations is controversial. For purposes of acceptance into the midwives' home birth practice, this study population was considered low risk. In general patients were highly motivated to have home deliveries. It is likely that this generally high level of motivation existed for all women in this study, not

just for those who did perineal massage. It is possible, however, that performance of prenatal perineal massage could reflect an even higher level of motivation for the group which did the massage than was true for the group which failed to do the massage. This higher level of motivation itself could have resulted in fewer lacerations due to compliance in diet, general overall care of the mother, and more attention paid to instruction during delivery. For this reason, the authors attempted to look at a few of these issues, to ferret out any confounding variables which could be associated with higher levels of motivation in those clients who performed perineal massage. The quantitative data available to the researchers to evaluate potential motivating factors included size of baby, hematocrit, and maternal weight gain, which are often thought to be indices of maternal nutritional status. Chi square analyses on these variables revealed no statistically significant association between any of these motivational factors in women who reported performance of prenatal perineal massage and those who did not, and the seriousness of laceration experienced by the mother. Regardless of whether it was the direct influence of prenatal perineal massage or the general motivation of those who did the massage, women whose perineal tissue had not been previously stretched, who performed prenatal perineal massage had significantly fewer serious lacerations.

If this finding is supported by other prospective research, it would seem to have very important clinical implications. Asking women to perform prenatal perineal massage is not now a commonly accepted intervention. Confirmation of these findings would show prenatal perineal massage to be a useful intervention, and it would seem reasonable to advocate it for appropriate women as an early part of routine prenatal care. Further research would seem warranted in this area not only to confirm these findings but to refine them.

One limitation of this study relates to the quantification of performance of prenatal perineal massage. Clients were asked at each prenatal visit whether or not they had been practicing prenatal perineal massage. Forms were checked "yes" or "no" at each visit. If

clients said they performed the massage on at least three separate antenatal visits, that client was categorized into the group who reported performance of perineal massage. Clients indicating less frequent performance of the massage were categorized as women who had not performed prenatal perineal massage. There is no record of the number of times per week prenatal perineal massage was performed, although the written instruction sheet (Appendix E) said to perform the massage daily for at least five minutes. Further studies need to examine the questions of the timing of the onset of massage, the amount of time devoted to massage per week, choice of lubricant, and other variations in technique.

A third important finding of this study confirms one that has already been reported throughout the literature, but has not found its way into common practice, i.e., that episiotomies are not a useful way of preventing lacerations in the current delivery. In many practices episiotomies are used routinely to prevent lacerations, particularly in primiparous women. In this study there were very few episiotomies (0.03%), yet the laceration rate was far less than those reported in the literature (30-80% from the various studies).

The rate of intact perineums in this study population was 70%. This is substantially higher than that reported in the literature of 28% to 58% (Lydon-Rochelle, et al, 1995). There are several factors inherent in this study population which could account for the high rate of intact perineums and low rate (6%) of second degree and higher lacerations. These include the preclusion of episiotomies for maternal indications, a higher ratio of multiparas to primiparas (307 vs. 61), patience of the midwives, and an emphasis on prenatal perineal massage.

The incidence of episiotomies recorded in the literature ranges from 30 %-80 % (Thacker & Banta, 1983). Moreover, the literature shows that the incidence of third and fourth degree lacerations are associated with episiotomies. Fischer (1979) found that third and fourth degree lacerations were related to both median and mediolateral episiotomies. Shiono, et. al. (1990) reported "women with midline episiotomies were nearly 50 times more likely, and women who had mediolateral episiotomies were over 8 times more likely

to suffer severe lacerations than women who did not undergo an episiotomy" (pp. 765). Thorp, et. al.(1989) also found episiotomies increased third and fourth degree laceration rates. In this study, episiotomies were performed for fetal indication only (0.03%). Second degree lacerations were associated with 6%, while third degree lacerations were associated with 0.003% of the births. There were no fourth degree lacerations in this study population. Episiotomies are by definition at least second degree breaks in perineal body integrity, as they incise the perineal muscle. Since episiotomies performed for maternal indications are performed primarily to prevent greater tearing, this study, which had an intact or first degree laceration rate of 92% with second degree lacerations accounting for only 6% of all births, casts doubt on the efficacy of the procedure to prevent lacerations in normal spontaneous deliveries. This conclusion is supported by other researchers including Thacker et. al. (1983) who found a total "lack of scientific data to support the use of episiotomy" (pp. 333), and Gass, et al (1986) who concluded "the number of patients benefiting from the procedure was... 6%, with the nonepisiotomy patient having fewer lacerations than the episiotomy patient 78% of the time" (pp. 240).

Primiparous women in this study had intact perineums and first degree laceration rates of 68% and second degree or greater laceration rates of 32%, while multiparas had intact perineums or first degree laceration rates of 96% and second or greater degree laceration rates of 4%. Table 9 compares these results to what is found in the literature in other studies.

Table 9

Comparison of This Study to Others Indicating Rates of Intact Perineums and First Degree Lacerations

	<u>Primiparas</u>	<u>Multiparas</u>
Data from Present Study	68%	96%
Data from Other Studies	10-44%	70%

There may be a number of explanations for this difference. Certainly possible explanations must include any differences in this unique sample and more typical women in

the United States. To explore this issue, an in depth comparison between women in this study and other women in the same state (Oregon) was made. A review of the records of Vital Statistics for the State of Oregon for 1994 show that of the 41,832 live births recorded in that year, 40% were born to primiparous women. In this study population, 16% of the birthing women were primiparas. Although the percentages of intact perineum compare favorably to the percentages reported in the literature, the disparity between the relatively low number of primiparas in this sample and that of the general population may be reflected in the overall low total laceration rate reported in this study. Despite the fact that this may explain the overall decreased rate of lacerations in this study, it does not explain the difference in both primiparas and multiparas. Other possible explanations include midwifery care, nutrition, massage, self-care, and general good health. Furthermore, it is difficult to compare intact perineum rates in this study to rates in other studies due to the ongoing confounding issue of episiotomies in the studies cited in the literature.

In addition to these findings a number of negative findings were also important. These will be discussed in the light of other information in the literature. The twelve variables included in this part of the discussion are: previous laceration, delivery position, length of second stage, maternal weight gain, presence or absence of a nuchal arm, position of the baby at delivery, hematocrit, birth weight of baby, year of birth, maternal age of mother, previous episiotomy, and an aggregate of factors assumed to increase the diameter of the perineum (i.e., birth weight > 9 pounds or occiput posterior position at delivery or nuchal arm).

Previous Laceration: The incidence of previous lacerations in this population was 25%. Statistics for previous lacerations in the general population was not available. There was no statistical significance between the rate of laceration of women with previous lacerations and those without. No other studies were found which examined this factor.

Delivery Position of Mother: Delivery positions used by women in this study were:

semi-Fowlers	60%
squat	17%
Sims	8%
standing	8%
hands and knees	4%
lithotomy	3%

The researchers were unable to locate any statistics which reported generalized frequency of delivery positions used during childbirth. It is probable, however, that even in the 1990's, "lithotomy is the most prevalent delivery position in obstetrics" (Carr, K., in Kitzinger et. al., Eds., 1984, p. 51) .

It has been reported that the lithotomy position has been linked to an "increased need or incidence of episiotomy and perineal lacerations" (Roberts, et. al., p. 186). In this study there was no statistical significance found for an increase in lacerations with the use of the lithotomy position, although this may only reflect the low incidence of its use in this population (3%). In fact, when controlled for parity, this study was unable to identify any delivery position associated with greater or lesser degrees of lacerations.

Length of Second Stage: The average second stage for primiparas in the general population is 59 minutes, and for multiparas is 19 minutes (Cunningham, MacDonald, Gant, Leveno, & Gilstrap, Eds. 1993). The average second stage for primiparas in this study was 47 minutes, and 14 minutes for multiparas, similar to that in the general population. Similarly, although our original data agreed with Fischer's (1979) conclusions regarding the effect of the length of second stage on the seriousness of lacerations, when this factor was controlled for parity, no association was found. Length of second stage was found to be a reflection of parity. Dunne's study (1984) also investigated the effects of length of second stage on laceration rates and reported different findings; she reported

that the second stage was shortest for women experiencing lacerations (average 33 minutes) and longest (average 54 minutes) for women who received an episiotomy. She thought that maintenance of an intact perineum (average 34 minutes, very similar to those experiencing lacerations) was more related to control of the perineum by the practitioner. This analysis of perineal lacerations, however, is flawed in that the confounding variable of the episiotomy precludes the true understanding of what would have happened to the perineum had the incision not intervened. Moreover, no study was located in the literature which controlled length of second stage for parity.

Maternal weight gain: Vital Statistics for Oregon for the year 1994 reported a median maternal weight gain range of 26-30 pounds. Median weight gain range in our sample was 25-35 pounds which is similar to the range of the Oregon general population.

No statistical significance was found when investigating the relationship of maternal weight gain and perineal lacerations. This finding is different from the findings of Fischer (1979) who found that third and fourth degree lacerations were found most often in women gaining >30 pounds, first and second degree lacerations were found most often in women who gained < 10 pounds, and intact perineums were found most often in women who gained 20-29 pounds. It is not clear from Fischer's report how she decided on this particular division of weight gain nor how many subjects were in each group. In order to make this study population more comparable to Fischer's, a chi-square analysis was done using her weight gain groupings. The results reflected no association between maternal weight gain and the seriousness of lacerations in women in the current study.

Presence or absence of a nuchal arm: The presence of a nuchal arm in our population occurred in 7% of births (n = 28). No data could be found relating to incidence of nuchal arm in the general population, nor could other studies be found which studied this factor. In this study there was no statistical relationship between the presence of a nuchal arm and perineal laceration.

Position of the baby at delivery: It is difficult to estimate the number of babies in the general population who were delivered in the occiput posterior position. Although Oxorn (1986) states that the incidence of occiput posterior babies is estimated to be between 15% and 30%, it is unclear whether he refers only to babies who actually deliver in a posterior position or also includes those who are posterior during much of the labor, but who rotate to an anterior position for the actual delivery. Cunningham et. al., (1993) estimates that <10% of all babies who are posterior during labor eventually deliver in the posterior position. If Oxorn's postulate of 15%- 30% actually refers to the babies who are posterior during labor, then Cunningham's statement that less than 10% of those result in an actual posterior delivery would indicate that approximately 1.5%- 3% of babies are actually delivered in a persistent posterior position. This is obviously a very rough estimate and the 3.8% (n = 13) of babies in this study who delivered in an occiput posterior position is probably fairly representative of the general population. No statistical significance between occiput posterior deliveries and perineal lacerations was found in this study; however, the number of posterior deliveries in this study was so small that it was unlikely to provide sufficient statistical power to have found an association if it had existed.

Hematocrit: Cunningham et. al. (1993) report a mean hematocrit in third trimester of 33 %. The mean hematocrit of this sample was 35 %, with a range of 29.3 % to 43 %. There was no statistically significant association found between hematocrit and perineal lacerations in this study population. This supports the findings of Nodine, et. al. (1987) who looked at hematocrit < 30 %, 31-35 %, and > 36 % and found no significant relationship between hematocrit and lacerations. Fischer (1979), however, reported a relationship between women with severe anemia (< 30 %) and perineal lacerations, presumably related to poor nutritional status. She found no relationship between mild or no anemia and lacerations. The present study, which examined perineal lacerations in home birth clients, included primarily low risk women (and one woman with a hematocrit

under 30 %). Therefore, any relationship between severe anemia and perineal lacerations could not be considered.

Birth weight of baby: The mean size of the babies in this study population was 8.2 pounds. The mean size of the babies reported in the Statistical Abstract for the United States in the 1994 was 7.8 pounds. In this study there was no significant association found between weight of infant and perineal laceration. This finding is in conflict with the findings of Fischer (1979) who reported intact perineum rates and third and fourth degree lacerations evenly distributed between infant weights, but first and second degree lacerations occurring more frequently in babies > 3500 grams. Roberts, et. al. (1989) also found greater percentages of intact perineums and fewer laceration rates with babies < 3500 grams. Shiono, et. al. (1990) reported that intact and first degree lacerations were associated with smaller babies (averaging 3148 grams), while third and fourth degree lacerations were found more often in larger babies (averaging 3310 grams). Thorp, et. al. (1989) found the most severe lacerations related to nulliparous women delivering babies > 3400 grams. Nodine et. al. (1987) reported that women delivering the largest and the smallest babies had the highest episiotomy rates, while women delivering mid-size babies (2500-2999 grams) had the highest rate of intact perineums. Similar to the reports of this study, both Dunne (1984) and Rockner, et. al. (1989) found no statistical significance between infant size and degree of lacerations.

Again, the issue of the use of episiotomy in the above studies, confounds the comparison of these studies to the current research. The conflicting findings of the aforementioned studies point to the need for further prospective research.

This study's findings related to size of baby (that there was no statistical significance found between size of the baby and the severity of perineal lacerations) are consistent with other findings relating to increased size of the passenger as it affects perineal laceration (i.e., presence of nuchal arm and persistent posterior presentation). This observation was magnified by the fact that the sizes of the babies in this study were larger

than those of the general population. To investigate this observation a new variable was created combining three factors associated with an increase in the diameter of the perineum.

Factors which increase the diameter of the perineum: Since the number of babies presenting in the occiput posterior position or with nuchal arms was relatively small, these categories were combined with the category of babies larger than 9 pounds to create a new variable of aggregate factors increasing the size of the passenger. This new category contained one hundred cases. Again, no statistical significance was found associating this new variable with lacerations of the perineum. It may be reasonable to assume, therefore, that factors other than diameter of the passenger are responsible for lacerations.

Year of Birth: This factor was examined to determine if the individual midwives in this study demonstrated fewer lacerations with more experience. The issue of the experience level of the practitioner was not one discussed in the literature. No statistical significance was found in this study to support the hypothesis that perineal lacerations could be related to the experience level of the midwives.

Maternal Age: This factor was broken down into two groupings: age less than 20 years, and age 20 years or greater. Initial analysis revealed an association between maternal age less than 20 years and an increase in perineal lacerations, which agreed with the findings of Legino (1988) and Fischer (1979); but when controlled for parity this association was lost. Legino (1988) and Fischer's (1979) findings might be explained by the fact that they did not control for parity. The secondary analysis of this study agrees with the findings of Nodine (1987) and Dunne (1984) who found no association between maternal age and perineal lacerations.

Previous Episiotomy: The association between previous episiotomy and seriousness of lacerations in the subsequent birth was not found to be statistically significant in this study. However, there was an eight percent increase in perineal lacerations in second births among those multiparous women who had an episiotomy with their first birth compared with those multiparous women who either had an intact perineum

or a perineal laceration with their first birth. The sample population was too small to confirm an association between previous episiotomy and increase in subsequent perineal lacerations, but it did suggest one. The only reference to this variable in the literature is by Kitzinger et. al.(1984), who suggest a causal relationship between previous episiotomy and lacerations in future births. A prospective study with a larger sample size controlling for episiotomy and parity is indicated to investigate the trend suggested by this study.

Summary

This retrospective study of 368 women delivering at home sought to investigate factors associated with perineal lacerations during childbirth. Fourteen individual variables were investigated. The review of the literature in this field revealed conflicting data with regard to the association of each of these variables and perineal lacerations. Researchers for this study reviewed prenatal summary sheets for these 368 deliveries. Chi square analysis and Fishers exact 2-tailed tests for association were used to analyze the data.

The only factor found in this study to be associated with increases in perineal lacerations was primiparity. The performance of prenatal perineal massage was associated with decreased lacerations for primiparas, and multiparas with one previous episiotomy. Moreover, in this study, those women who began the prenatal perineal massage early in their prenatal course had decreased lacerations as compared to those women who began prenatal perineal massage at 28 weeks. Prenatal perineal massage was not found to be associated with decreasing seriousness of lacerations for multiparous women with increased parity greater than one, or for multiparous women with lacerations as opposed to episiotomies in their previous birth. It appears that the primary factor associated with a decrease in seriousness of perineal lacerations during childbirth is the stretching of the perineal tissue prior to the delivery. This could be accomplished either by increased parity, prenatal perineal massage, or a previous laceration.

There would appear to be many clinical applications of the findings of this study. Primiparity may be a predictor for increased perineal lacerations. If prospective studies confirm this finding, these women should be counseled in the protective benefits of prenatal perineal massage and encouraged to start regular performance of it early in the prenatal course. Further, women with low parity who had an episiotomy in their previous birth should also be counseled to perform early prenatal perineal massage.

Finally, episiotomies were not performed in this study for maternal indications. Whereas episiotomies are traditionally performed to prevent more serious perineal lacerations, this study found that third and fourth degree lacerations were virtually absent in the sample population. Thus, the performance of an episiotomy to prevent serious perineal lacerations during childbirth does not seem to be indicated.

Limitations of this study include a non randomized retrospective study design, the exclusion of statistics of women who were transported to the hospital for childbirth, a lack of multi-ethnicity in the study population preventing generalization beyond the Caucasian, rural, home birth population, and a lack of quantification and specification of the amount, quantity, and technique of prenatal perineal massage used by women in this study. Other difficulties encountered included comparison of this study population to the study populations in the literature review because previous studies did not control for parity or influence of episiotomy. Furthermore, at time of delivery, midwives in this study were not blinded to knowledge of which women had reported performance of prenatal perineal massage and which had not.

This study suggests several areas for future research. These include studies with an expanded population looking at episiotomy in a previous birth as a predictive factor for laceration in a subsequent delivery, studies expanded to multi-ethnic, urban, and hospital birth populations. Also indicated are prospective, randomized, blinded studies exploring quantification, timing, and technique of prenatal perineal massage.

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APPENDIX A

FACTORS ASSOCIATED WITH PERINEAL LACERATION

CHART

APPENDIX B

INSTITUTIONAL REVIEW BOARD

LETTER



**OREGON
HEALTH SCIENCES UNIVERSITY**

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Institutional Review Board/Committee on Human Research

DATE: May 22, 1995

TO: Susan Jacoby, RN, BSN SN-FAM
Kate Davidson, RN, BA, MAT

FROM: Heidi Moore, Administrative Assistant *H Moore*
Committee on Human Research, OHSU L-106

RE: Project Title: Factors Associated with Perineal Lacerations
During Childbirth.

This confirms receipt of the above mentioned research study proposal. It is my understanding that this study involves the study of existing data, documents, records, pathological specimens, or diagnostic specimens that are publically available or recorded in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It therefore falls under category #4 of the federal regulations (45 CFR Part 46.101 (b)) and is considered to be exempt from review by the Committee on Human Research.

This study has been put into our exempt files, and you will receive no further communication from the Committee concerning this study. However, if the involvement of human subjects in this study changes, you must contact the Committee on Human Research to find out whether or not those changes should be reviewed. If possible, please notify the Committee when this project has been completed.

Thank you for your cooperation.

APPENDIX C

PERINEAL MASSAGE

CLIENT INSTRUCTION FORM

PERINEAL MASSAGE

Perineal massage is a technique used to increase the possibility of giving birth without an episiotomy. It stretches the tissues of the vagina and surrounding area, resulting in less resistance to the birth of a baby, and less need to cut into the tissue to make room for the birth. If the muscles of the pelvic floor are relaxed, there will be less resistance. Doing the massage helps a woman identify those muscles and learn to relax them in response to pressure. Massaging the oil into the perineum may soften the tissue, again reducing the resistance and the need for an episiotomy.

INSTRUCTIONS

The massage should be done daily for at least five minutes.

Either you, your husband, partner or friend can do the massage.

You may wish to begin the massage after bathing since the tissues are more relaxed.

~~Wheat germ oil, available at health-food stores, is recommended by some people, but other vegetable oils could be substituted.~~

Make yourself comfortable, lying in a semi-seated position against some pillows.

The first few times you do this, take a mirror and look at your perineum so you know what you are doing. You will be able to associate what you see (opening of the vagina) with the sensation of relaxation.

Identify your Kegel muscle and contract it. Look into the mirror and see how the opening of your vagina closes. Now, insert your finger into your vagina and feel how "tight" the walls of your vagina are. Relax your Kegel muscle. Breathe abdominally, allowing your tummy muscles to relax and even "pouch" out a bit. See how your perineum buldges forward and how the opening to the vagina enlarges. Feel how relaxed and open the vagina is. Move your fingers around the opening of your vagina and see how far you can stretch the opening. (Gentle is the word!) NEVER PUSH OR BEAR DOWN WHEN YOU DO THIS EXERCISE. SIMPLY RELAX AND THINK "OPEN".

Dip your fingers into the oil and rub it into the perineum and lower vaginal wall.

Doing the massage: If you are doing the massage yourself, it is probably easiest to use your thumbs. Your partner can use his index fingers. Put your fingers 3 inches into the vagina and press toward the rectum. Maintaining steady pressure, slide your fingers upward along the sides of the vagina, moving them in a rhythmic U or sling type movement. This movement will stretch the vaginal tissue (mucosa), the muscles surrounding the vagina, and the skin of the perineum. In the beginning, you will feel tight, but with time and practice, the tissue will relax and stretch.

Concentrate on relaxing your muscles as you apply pressure.

As you become comfortable massaging, use enough pressure until the perineum just begins to sting from the tension you apply. You will later recognize this stinging sensation as the baby's head is being born and your perineum stretches around it.

If you have any questions after trying the massage, please contact your childbirth educator or birth attendant.

-Adapted from Schrag, Kathryn, CNM.
 "Maintenance of Pelvic Floor Integrity During Childbirth."
Journal of Nurse-Midwifery 24:6
 November/December 1979.

QUESTIONS

Why is perineal massage important?

Perineal massage will help you be more aware of your body so you are better able to cooperate with your body when you give birth. Perineal massage can help you avoid a laceration or episiotomy.

But won't I be all stretched out if I don't have an episiotomy?

The muscles important in keeping your pelvic organs in their proper position and the muscles important in sexual response are located deep in the vagina. The Kegel muscle is the important one in this group. Generally an episiotomy will only cut the tissues surrounding the vagina and the muscles nearest the surface. Doing perineal massage will help you relax so the Kegal muscle is less likely to be injured. Doing perineal massage and Kegal exercises will result in a healthy Kegal muscle that will give way as the baby's head moves down the vagina. An unhealthy Kegal muscle is more likely to get in the way and be injured or worse yet, cut.

I've heard that episiotomies are done to prevent tears; I don't want to tear. What should I do?

It is not uncommon for an episiotomy to extend farther. There is no evidence that episiotomies prevent tears. If a tear seems imminent, an episiotomy can change the direction of the tear. The best ways of preventing tears are; good nutrition, careful choice of birth attendant (it takes skill to avoid episiotomies!), avoiding the "flat on-the-back-feet-in-stirrups" position for birth, and a woman who is able to cooperate with the sensations of birth by relaxing and OPENING her bottom to allow her baby to come out. Perineal massage practiced at home before labor begins, is your best way of learning to cooperate with your body.

APPENDIX D

OREGON MIDWIFERY COUNCIL

STATISTICAL DATA COLLECTION FORM

EGON MIDWIFERY COUNCIL: Case reviewed in: Local peer group -- OMC Mtg.

Midwife's Name _____ Case # _____

Mom's Age _____ Spon.AB _____ Ind.AB _____ Live Births _____ SB _____

Married--Single--Cohabit--UNK Highest Grade: Mom _____ Dad _____
 HB Reasons _____ Prev.Home: yes -- no Has ins.: yes -- no
 NP--Nuchal hand--Compress--Slow Del--Massage [Per.Mass: self-- Y--N--NC]
 Mom's pos. for del. # _____ Dist. from Hosp. _____

Hx infant > 9 lbs. Hx Birth Damaged Baby Uncertain EDD
 < 12 mths betw. EDD's Hx Sign. Cong. Anomalies BP >= Dias. 90 or Sys 140
 Hx Forceps-Vac. Extr. Hx Fetal Death > 20 wks Hx Uterine Incision
 Hx Baby < 37 wks. Hx C/SEC Hx Rh sensitization
 Hx Ante Hemorr. Hx Pre-eclampsia Hx Shoulder Dystocia
 Hx Postp. Hemorr. Hx Neonatal Death- 1st 28 days.
 Hx Ser. Dis.: Heart--Embolism--Chr. Lung--Renal--Endocrine--Psych--Diabetes

Other: _____
 DURING PRENATAL CARE:

Hx Genital Herpes--Gen. Herpes this Preg. --w/in 2 wks. labor Gest. Diab.
 SE: >140 or >90 2 visits; BP >150 or >100 Hyperemesis ~~Inc. Cervix~~
 Malpres > 36 wks --Mult. Gest. --SMOKE: < half PPD--1/2 to 1 PPD-->= 1 PPD
 ROM < 37 wks. --Labor < 37 wks--Threatened Prem. Labor--Rh Sens. --IUGR
 Oligo or Hydramnios--S/S PIH --Previa--Abruptio--Other bleeding
 Ser. Dis. (see list) _____ Ser. Emot. Prob. _____

Subs. Abuse _____ Prescr. Meds _____

Infections _____ This Preg: SAB--FIUD--Mole--Missed AB

Other: _____
 AMNIO --ULTRASOUND--BSST--OCT--NST--EXT. VERSION

Total Mat Wt Gain: _____ 1st day LMP _____ EDD _____
 Consultation/Evaluation by another practitioner? Yes--No--Type _____

Why: _____

Last hematocrit _____ at _____ weeks.

Prenatal Care Began (wks. since LMP) _____ # of visits _____

Woman referred prenatally for delivery by another practitioner? Yes--No

Reason(s): _____

Referred to: _____ Referred: _____

_____ wks since LMP Mon/Year

1. If referred: Mat. Mortality: Yes--No--Unknown C/SEC: Yes--No--Unknown
 Fetal or Neonatal Mortality: Yes--No--Unknown
 _____ * * * * *

2. ROM: _____ hrs. _____ min. before birth. SROM--AROM Color at ROM _____

3. Amn. Fluid _____ Mec. 1st App.: FROM--1st st--2nd st--Birth

4. 1st: Latent _____ Active _____ 2nd stg. _____ 3rd stg. _____

5. Baby posterior during labor: YES - NO -POS. not DET. Pres. _____

6. Frimp: head engaged (approx. 0 sta.) prior to labor: Yes--No--UNK

At initial labor exam: Yes--No--Unk

17. SUBS. to Ind. (w/in 24 hrs) _____

Subs. to Augment _____

18. During Labor: Pre-ecl. Abn. Bleeding 02 at home Vac. Ext. at home
 Hydram. Oligo Temp >100.4 Mat. Exh. Var. Decels below 100 bpm. 1st-2.
 Tachycardia > 30 min End st. decels below 100: # of min. _____ Ambul
 Bradycardia or Late Decels unresp.: 1st stg -- 2nd stg Highest BP _____

Other _____

19. Trans. during labor: Yes--No _____ AMBUL--FORCEPS--VE--PIT AUG -- C/SEC _____

If trans, Last home check: _____ station _____ cm. _____ % eff.

Reason for trans.: _____

20. Prev. epis _____ Prev. lac _____ Perineal Lac. 0 1 2 3 4 Peri U Labi
 minimal
 AM
 Stit _____ Epis _____ Blood loss _____ TOB _____ PM DOB _____

21. 3rd-4th STAGE: Incomp. Membranes Manual Removal at home IV's at hom
 P -- E -- M Mom: 02 at home Port. of Plac. retained Cerv. Laceration
 Signs of Shock Sig. Rise in BP S/S Amnionitis Catheterized Ambu

Other _____

22. Sex _____ Weight _____ lbs. _____ oz. Apgar: 1 min _____ 5 min _____ 10 min _____

23. Cord around neck: Yes -- No -- UNK _____ Shoulder Dystocia: none-mild-mod-se

24. Is gest. age by exam cons. with dates? Yes -- No. If no: _____

25. BABY: Lethargy Abn. neuro signs Inability to Nurse Hypoglycemia
 Hypothermia Cyanosis Mec. in resp. sys. RDS Seizures Trans. Tachypnea
 Delee-- Blow by 02-- Mask-- Bag-- Mouth to Mouth-- CPR-- Laryngo

Other: _____

26. BABY: Injuries _____ Anomalies _____

27. Transport after delivery: Mom _____ Baby _____ Both _____ By Ambul. _____

Reason _____ Hrs. in hosp. _____

Treatment: _____

If trans. for Mat. Hemorr: Meds -- IV Fluids -- Blood -- Man. removal -- D & C
 28. JAUNDICE: Physiol -- Blood Test -- 1st 24 hrs. -- Lights -- Hosp -- Transfusion
 29. POSTPARTUM: MOM (up to 28 days past birth)

Persistent or Severe Depression Thrombophlebitis Prolapsed Cervix
 Mastitis Uterine Infection Inf. Laceration Site Late Postp. Hemorr.

Other: _____

30. Still nursing at 4 wks? YES--No--UNK If no: how long? _____ Supp: _____

31. POSTPARTUM: BABY (Up to 28 days past birth)
 Neonatal Death Failure to Gain Weight Neonatal Infection
 Eye Infection Eye Proph: Yes--No--UNK Type _____
 PFU: Yes--No--Unk Vit. K: Yes--No--UNK Circumcized: Yes--No--Unk--Girl
 Baby seen by MD--RN--ND--DC--None For: Norm. Newborn Exam-- Other

Other: _____

APPENDIX E

MIDWIVES' ALLIANCE OF NORTH AMERICA

STATISTICAL DATA COLLECTION FORM

Please note: In general code: 1=yes, 0=no, 7= don't know, blank=does not apply.

DEMOGRAPHIC

Midwife Code (1) _____
 Midwife's Code for identifying this birth (1) _____

Clients municipality _____
 (2)
 Population (1=city > 1,000,000), 2-city > 850,000,
 3=town > 10,000, 4=small town (< 10,000) 5=small _____

Postal (ZIP) Code _____

Mother's Age _____
 Last grade of high school completed _____
 Post secondary education (years) _____
 Occupation _____
 Ethnic origin (1=Caucasian, 2=African or
 Caribbean, 3=Native American, 4=Asian,
 5=Other _____
 Special group (1=Hispanic, 2= _____
 Natural hair color (1=brown, 2=black,
 3=blond _____

Partner status at time of birth (1=married couple,
 2=unmarried couple, 3=female partner, 4=separated
 or divorced, 5=single, 6=couple, marital status not
 known, 7=other _____

Partner's age _____
 Last grade of high school completed _____
 Post secondary education (years) _____
 Occupation _____ (3) _____

Family socioeconomic level (midwife's evaluation)
 (1=low, 2=medium, 3=upper) _____

PREVIOUS PREGNANCY AND DELIVERY

Number of previous:
 pregnancies _____
 miscarriages (4) _____
 induced abortions _____
 stillbirths (4) _____
 live births _____

Number of previous:
 home births _____
 caesarean sections _____
 VBAC's _____
 postpartum hemorrhages _____

Other previous pregnancy or delivery
 concern(s) _____
 (1=gest < 37 weeks, 2= < 42 weeks,
 3=hypertension, 4=breech, 5=
 pre/eclampsia, 6=IUGR, 7=birth defect,
 8=shoulder dye.

9=other _____

PRESENT PREGNANCY CONCERNS

Maternal problems (5) _____
 (1=pregnancy-induced hypertension, 2=chronic
 hypertension, 3=pre-eclampsia, 5=gestational diabetes,
 6=diabetes mellitus 7=persistent anemia, 8=Rh
 sensitized, 9=other _____

Infection _____
 (1=genital herpes, 2=chlamydia, 3=urinary tract infection,
 4=yeast, 5=gonorrhea, 6=other _____

Bleeding in trimester _____
 (1=light, 2=heavy)
 defect diagnosed in utero (_____)
 3=intrauterine death, 4=other _____

Midwife perceives emotional/social problems (6) _____
 (specify and describe in margin of this form)

BREECH AFTER 28 WEEKS GESTATION

1st time breech noticed _____
 (week of gest. from LMP)
 Last time breech _____
 (week of gest. from LMP)

PRENATAL CARE

Week (from LMP) any prenatal care began _____
 Week (from LMP) midwife prenatal care
 began _____
 Prenatal classes _____
 (1=this preg., 2=other preg., 3=both)

Two most important reasons for choosing (7) _____
 intended place of birth (as stated by mother)
 (1=desire for natural birth, 2=effect on baby, 3=control,
 4=social pressure, 5=cost, 6=safety, 7=family unity,
 8=atmosphere, P=partner preference, H="high risk",
 9=other _____

Number of prenatal visits
 with a midwife _____
 estimated with G.P. _____
 estimated with obstetrician _____

Payment (1=client paid, 2=Blue Cross/Shield,
 3=commercial insurance, 4=HMO (other prepay),
 5=Champus, 6=Medicaid, 7=universal government health
 insurance 8=other) _____

<p>PRENATAL DETAILS</p> <p>Mother's height feet _____ inches _____ (or estimate)</p> <p>Mother's pre-pregnancy weight (lbs) _____ Weight gain during pregnancy (lbs) _____</p> <p>Method of conception (1=coitus, 2=artificial insemination, 3=in vitro, 4=other) _____</p> <p>Ultrasound (# of times each trimester) 1st _____ 2nd _____ 3rd _____</p> <p>Other prenatal testing _____ (1=triple screen, 2=chorionic virus sampling, 3=AFP, 4=amniocentesis, 5=biophysical profile, 6=non-stress test, 7=GTT, 8=random glucose, 9=other) _____</p> <p>Tobacco, Alcohol or Recreational Drugs _____</p> <p>Mother smoked cigarettes during pregnancy _____ Number of months _____ Average # of cigarettes per day _____</p> <p>Alcohol during pregnancy _____ Average number of drinks per month _____</p> <p>Marijuana/THC/hashish _____ (1=occasional, 2=regular)</p> <p>Other illegal drugs _____ (1=occasional, 2=regular) Drug type (1=cocaine, 2=other) _____</p> <p>Prescription drugs in pregnancy _____ (1=antibodies, 2=antifungals, 3=antiemetics, 4=antihypertensives, 5=other (specify) _____)</p> <p>Mother's overall nutrition in pregnancy (midwife's assessment) (1=excellent, 2=good, 3=fair, 4=poor) _____</p> <p>Diet in pregnancy _____ (1="meat & potatoes", Primary) (2=whole foods and meat, 3=junk food, Secondary) (4=ovo-lacto vegetarian, 5=vegan vegetarian, 6=macrobiotic=other _____)</p> <p>Mother restricted carb intake to limit weight gain _____</p> <p>Herbs to ease labor (last 5 weeks) (1=daily, 2=less often) _____</p> <p>Activity level during majority of pregnancy _____ (1=very active, 2=active, 3=sometimes active, 4=sedentary)</p>	<p>Perineal Massage or Stretching Estimated # of times during 3rd trimester _____</p> <p>Mother reports a history of sexual abuse _____ (1=yes before puberty, 2=yes after puberty, 3=before and after puberty, 4=mother prefers not to answer, 5=midwife did not ask)</p> <p>Risk Factors why a home or out-of hospital birth was not or could not be initiated, or was outside of home birth protocol. Answer for all clients. (8) _____ <input type="checkbox"/></p> <p>Reasons: _____ <input type="checkbox"/> (1=pre-term/post-term, 2=breach or malpresentation, 3=multiple birth, 4=hypertension, 5=anomia, 6=diabetes, 7=pre-eclampsia/eclampsia, 8=placenta previa/abruptio, 9=other (specify) _____)</p> <p>Woman stopped using this midwife for primary care before labor began (4) _____</p> <p>Reasons _____ (1=miscarriage, 2=referral for complications, 3=client moving, 4=client chose birth center, 5=client chose hospital, 6=changed midwives, 7=cost, 8=stillbirth, 9=other _____)</p> <p>Gestation when midwife primary care stopped (9) _____</p> <p>LABOR AND DELIVERY FACTORS</p> <p>Midwife _____ Birth # _____</p> <p>Delivery Factors Preterm labor (< 37 weeks) _____ Compound presentation (15) _____ Should dystocia _____ (1=minor, 2=moderate, 3=severe) # of resolution techniques tried _____ Most effective tech (_____)</p> <p>Fetal bradycardia (prolonged FHT < 110) _____ Fetal tachycardia (prolonged FHT > 160) _____</p> <p>Late or deep decels (1=1st stage, 2=2nd, 3=1 & 2) _____</p> <p>Midwife thinks emotional or social factors may have affected course of labor (write details on separate page) _____</p> <p>Cord problems _____ (1=only 1 or 2 vessels, 2=very short, 3=around neck tightly, 4=around neck 2 times, 5=cord prolapse, 6=other _____)</p>
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<p>Place of birth _____ (1=home, 2=freestanding birth center, 3=hospital birth room, center or "LDR", 4=hospital separate lab/del/rec, 5=hospital OR, 6=other _____)</p> <p>Midwife's role in hospital (if applicable) _____ (1=primary care giver, 2=doctor's assistant, 3=labor coach, 4=midwife's assistant, 5=not present, 6= _____)</p> <p>Length of Labor</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Total time:</td> <td style="width: 10%;">Days</td> <td style="width: 10%;">Hours</td> <td style="width: 10%;">Minutes</td> </tr> <tr> <td>Early labor (11)</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>1st stage (12)</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2nd stage</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3rd stage</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table> <p>Approximate total time the woman in labor had _____ <small>midwife present before birth</small> _____ <small>midwife present only before birth</small> _____ <small>midwife present after birth</small> _____</p> <p>Amount of time before birth membranes ruptured _____</p> <p>Actual time of birth _____ Hour Minute AM/PM</p> <p>Plateaus, reversals, anterior lip or pushing before full dilation</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 10%;">Dilation</td> <td style="width: 10%;">Hours</td> <td style="width: 10%;">Minutes</td> </tr> <tr> <td>1st stage plateau</td> <td>_____ cm</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2nd stage plateau</td> <td>_____ cm</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3rd stage plateau</td> <td>_____ cm</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4th stage plateau</td> <td>_____ cm</td> <td>_____</td> <td>_____</td> </tr> </table> <p>Cervical reversal (from what on to what on) _____ to _____ Hours: Minutes</p> <p>Anterior to longer than 1 1/2 hours (13) Pushing before full dilation 3rd stage plateau (full dilation & no pushing) (14)</p> <p>Positions and Mobility</p> <p>Positions of potential concern Stage 1 _____ Occurring during active labor Stage 2 _____</p>	Total time:	Days	Hours	Minutes	Early labor (11)	_____	_____	_____	1st stage (12)	_____	_____	_____	2nd stage	_____	_____	_____	3rd stage	_____	_____	_____		Dilation	Hours	Minutes	1st stage plateau	_____ cm	_____	_____	2nd stage plateau	_____ cm	_____	_____	3rd stage plateau	_____ cm	_____	_____	4th stage plateau	_____ cm	_____	_____	<p>(1=posterior, 2=breech, 3=head deep transverse, 4=transverse lie, 5=acynclitiam, 6=face and brow)</p> <p>Baby's position at delivery _____ (1=anterior, 2=posterior, 3=frank breech, 4=footing breech, 5=complete breech, 6=head deep transverse, 7=transverse lie, 8=face, 9=brow)</p> <p>Mother's mobility during labor Stage 1 _____ Stage 2 _____ (1=mother changed positions frequently, 2=mother didn't choose to take many positions, 3=movement restricted by anesthetic or attachments, 4=movement restricted by staff)</p> <p>Mother's final delivery position _____ (1=semi-sitting, 2=hands & knees, 3=squatting, 4=standing, 5=on side, 6=on back, 7=stirrups, 8=birthing stool, 9=deBy birth stool, M=McRoberts (thigh hyperflexion), 10=other _____)</p> <p>Underwater birth _____</p> <p>Labor and Birth Procedures</p> <p>Induction, Augmentation or IV _____ (1=pitocin, 2=prostag, 3=nipple stimulation, 4=castor oil, 5=art rupture of membrane < 5 cm, 6=art rupture of membrane >= 5 cm, 7=stripping of membranes, 8=intercourse, 9=other _____) By midwife _____ By physician _____</p> <p>Time until labor started (hours) Augmentation _____ By midwife _____ (use induction codes) _____ By physician _____ I.V. initiated (stage) _____</p> <p>Other Procedures During Labor</p> <p>Number of vaginal examinations _____ Doppler use Stage 1 _____ Stage 2 _____ (1=1st stage, 2=2nd stage, 3=1st and 2nd stage)</p> <p>Use of water Stage 1 _____ Stage 2 _____ (0=none, 1=bath, 2=shower, 3=Jacuzzi, 4=other _____)</p>
Total time:	Days	Hours	Minutes																																						
Early labor (11)	_____	_____	_____																																						
1st stage (12)	_____	_____	_____																																						
2nd stage	_____	_____	_____																																						
3rd stage	_____	_____	_____																																						
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1st stage plateau	_____ cm	_____	_____																																						
2nd stage plateau	_____ cm	_____	_____																																						
3rd stage plateau	_____ cm	_____	_____																																						
4th stage plateau	_____ cm	_____	_____																																						

<p>Drugs _____ (1=analgesics, 2=tranquilizers, 3=sedatives, 4=alcohol, 5=other _____)</p> <p>Medicinal herbs (specify) _____ (1= _____)</p> <p>Other procedures _____ (1=body massage, 2=enema, 3=catherization, 4=other _____)</p> <p>Nourishment during active labor _____ (1=nothing, 2=only clear fluids or jello, 3=other fluids, 4=solid food)</p> <p>Perineal Care</p> <p>Active perineal guidance _____ in 2nd stage (0=midwife remained passive, 1>manual support, 2=massage, 3=compresses, 4=oils/lubricants, 5=verbal guidance, 6=other _____)</p> <p>Episiotomy _____ (1=medio lateral by physician, 2=median, physician, 3=medio lateral, midwife, 4=median, midwife)</p> <p>Perineal tear & degree _____ (0=no tear, 1=1st, 2=2nd, 3=3rd (into anisphincter), 4=4th (into rectal mucosa))</p> <p>Episiotomy or tear repair _____ (0= no repair)</p> <p>Local anesthetic for repair: _____</p> <p>Labial tear _____ (1=slight, 2=required suture)</p> <p>Clitoral/urethral tear _____ (1=slight, 2=required suture)</p> <p>Cervical laceration _____ (2=required suture, 3=extensive)</p> <p>Hospital or Birth Center Procedures</p> <p>Electronic fetal monitoring _____ (1=internal, 2=external, 3=both)</p> <p>Fetal scalp sample _____</p> <p>Cord blood gases _____</p> <p>Anaesthesia _____ (1=epidural, 2=general, 3=pudendal block, 4=entonox, 5=other _____)</p> <p>Forceps _____ (1=outlet, 2=low, 3=mid, 4=rotation, 5=other _____)</p> <p>Vacuum extraction _____</p> <p>Caesarean section _____</p>	<p>Reason(s) for C-section _____ (1=failure to progress, 2=fetal distress, 3=meconium, 4=not vertex lie, 5=maternal exhaustion, 5=other _____)</p> <p>Midwife considers C-section necessary _____ (0=no, 1=yes, 2=possibly, 3=probably)</p> <p>Appars (hospital staff assessment) _____ 1 minute _____ 5 minutes _____</p> <p>Transport From Planned Home Birth or Planned Birth Center Birth _____</p> <p>Did the midwife consider transport an emergency? _____</p> <p>Transport by _____ (1=car, 2=ambulance, 3=other)</p> <p>Labor stage at transport _____ (1=first, 2=second, 3=third, 4=postpartum)</p> <p>Length of time before or after that decision to transport was made (hrs/mins) _____</p> <p>Reason(s) for transport _____</p> <p style="text-align: right;">Primary reason _____ Secondary reason _____</p> <p>(1=failure to progress, 2=sustained fetal distress, 3=malpresentation, 4=thick meconium, 5=abruptio/praevia, 6=hemorrhage, 7=retained placenta, 8=maternal exhaustion, 8=baby's condition, 9=other _____)</p> <p>Midwife and clients reception at hospital _____ (1=supportive, 2=indifferent, 3=unsupportive, 4=hostile)</p>
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<p>Other complications _____ <input type="checkbox"/> (1=shock, 2=uterine prolapse, 3=placenta previa, 4=abruptio placenta, 5=hematoma, 6=embolism, 7=ruptured uterus, 8=anaesthesia complications, 9=other)</p> <p>Meconium _____ Single when meconium noticed _____ <input type="checkbox"/> Density _____ <input type="checkbox"/> (1=thin, 2=moderate, 3=thick) Consistency _____ <input type="checkbox"/> (1=particulate, 2=well dissolved) Color _____ <input type="checkbox"/> (1=yellow, 2=light green, 3=dark green, 4=brown, 5=color darkened during labor)</p> <p>Blood Loss _____ Prophylactic to avoid hemorrhage _____ <input type="checkbox"/> (1=oxytocin, 2=shepherd's purse, 3=other _____)</p> <p>Estimated blood loss _____ <input type="checkbox"/> (milliliters) or cups (use 2 decimals - e.g. 1.00, 2.25)</p> <p>Action(s) taken _____ <input type="checkbox"/> for blood loss (1=fundal massage, 2=nipple stimulation, 3=external bimanual-compression, 4=internal bimanual comp, 5=IV fluid, 6=blood transfusion, 7=other _____)</p> <p>Drugs _____ <input type="checkbox"/> (1=pitocin, 2=methergrine, 3= _____) Herbs: (1= _____) D & C _____ <input type="checkbox"/></p> <p>NEWBORN DATA (First 4 Hours)</p> <p>Number of babies _____ (complete this page for each baby) Sex (1=girl, 2=boy) _____ Birthweight grams _____ OR lbs. _____ ozs. _____</p> <p>Apgar 1 minute _____ (midwife's assessment) 5 minute _____</p> <p>Any critical evidence that baby is preterm _____ Any critical evidence that baby is postterm _____ Stillbirth _____ (1=death before labor, 2=during labor) Birth defects (16) _____ (1=minor, 2=serious, 3=life threatening) Specify _____</p>	<p>Procedures:</p> <p>Resuscitation _____ (1=suction on the perineum, 2=DeLee, 3=bulb suctioning, 4=tactile stim., 5=oxygen, 6=ambubag, 7=mouth to mouth, 8=chest compressions, 9=intubation, R=respirator, W=wall)</p> <p>Eye prophylaxis _____ (1=silver nitrate, 2=erythromycin (lotycin), 3=sterile water, 4=other _____)</p> <p>Vitamin K given _____ (1=oral, 2=IM)</p> <p>Immediate Neonatal Complications _____</p> <p>Complications _____ (1=respiratory distress, 2=meconium aspiration, 3=IUGR, 4=metabolic (hypoglycemia, hypocalcemia), 5=prematurity, 6=seizures, 7=birth injuries, 8=other _____)</p> <p>DELIVERY OF PLACENTA AND MEMBRANES</p> <p>Cord clamped _____ (1=immediately (before pulsing stopped), 2=after pulsing stopped, 3=after placenta delivered, 4=other _____)</p> <p>Cord clamped # of minutes after birth _____ Mother's position waiting to deliver placenta _____ (1=lying down, 2=standing, 3=squatting, 4=sitting, 5=hands & knees, 6=several positions)</p> <p>Method _____ (1=maternal effort, 2=controlled cord contraction, 3>manual removal, 4=D&C)</p> <p>Membranes appear: _____ (1=complete, 2=incomplete)</p> <p>Placenta appears: _____ (1=complete, 2=incomplete)</p> <p>Anatomical variations of placenta _____ (1=infarct, 2=calcium deposits, 3=succenturiate, 4=accreta, 5=other _____)</p> <p>Postpartum Care and Breastfeeding</p> <p>Number of postpartum visits with midwives _____ Estimated postpartum visits: other caregivers _____</p> <p>Number of weeks breastfed in first 6 weeks _____ Number of weeks before any supplement _____ (7 -> 8 weeks)</p> <p>Circumcision in first 6 weeks _____</p>
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<p>Infants Health in First 6 Weeks</p> <p>Newborn health problems _____ in first 5 weeks (1=jaundice beyond normal physiologic level, 2=sepsis/infection, 3=respiratory distress, 4=failure to thrive, 5=premature/immature, 6=seizures, 7=birth trauma, 8=other _____ (specify) _____)</p> <p>Jaundice level if measured _____ (mmol/liter)</p> <p>Newborn hospitalized in first 6 weeks _____ Number of days in neonatal intensive _____ care unit</p> <p>Number of days in newborn hospitalized _____ in first 6 weeks</p> <p>Reason _____ (1=born there, 2=baby's condition, 3=mother's condition)</p> <p>Baby's problem(s) _____ (Use newborn health problems)</p> <p>Newborn died in first 6 weeks of life _____ No. of days after birth that _____ death occurred</p> <p>Underlying cause of death _____ (1=birth effects, 2=prematurity, 3=other (specify) _____ (Provide details about death on separate page)</p> <p>Mother's Health in First 6 Weeks</p> <p>Postpartum Infections _____ (1=yeast, 2=delayed perineal healing/infection, 3=breast, 4=urinary tract, 5=uterine, 6=thrombophlebitis (> 100,4 after first 24 hours)</p> <p>Other Postpartum _____ Complications _____ (1=later hemorrhaged (after 24 hours), 2=hypertension, 3=cervical/uterine prolapse, 4=hematoma, 5=pulmonary embolism, 6=thrombophlebitis, 7=eclampsia, 8=anemia (<10 mg), 9=other (specify) _____)</p> <p>Postpartum depression _____ (1=moderate, 2=severe)</p> <p># of days mother hospitalized _____ in first 6 weeks</p> <p>Maternal Death _____ Underlying cause _____ (Please provide details about death on separate page)</p>	<p>Infants and Mother's Health in 6 Weeks</p> <p>Infant _____ (1=good, no problems, 2=residual problems)</p> <p>Mother _____ (1=good, no problems, 2=residual problems)</p> <p>Form Completion</p> <p>Form filled out by: (Initials) _____</p> <p>Date majority of forms filled out: _____ (date/month/year)</p> <p style="text-align: center;">LABOR AND BIRTH SUMMARY</p> <p>Intended Birth Place, Gestation, Attendants</p> <p>Midwife Code _____ Birth # _____</p> <p>Planned during pregnancy to have birth (10) _____ (1=home birth, 2=birth center birth, 3=hospital birth)</p> <p>Began labor intending to deliver _____ (1=at home, 2=in birthing center, 3 in hospital)</p> <p>Referral after first assessment in labor _____ Gestation _____ Weeks Days Midwife's best estimate before birth based on all available information.</p> <p>Mother certain about dates _____ (1=yes, 2=fairly, 3=no)</p> <p>Attendants at labor and birth</p> <p>During labor _____ During birth _____ (1=mother's partner, 2=midwife, 3=2nd midwife, 4=midwife apprentice, 5=friends, 6=children age 1-4, 7=children 5-8, 8=other family members, 9=FP or GP, N=Nurse, B=Obstetrician, S=other.</p> <p>Labor Summary</p> <p>Date of Birth: _____ Day Month Year</p>
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