

Outcomes of Three Birthing Rooms

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For women who are prescreened to be at low risk, the birthing room located in a hospital can provide a home-like environment as well as proximity to the regular obstetrical unit in case of an unforeseen complication. Charts of 356 pairs of infants and mothers who were admitted to birthing rooms at three different hospitals were reviewed. The average age of the mother was 25.9 years. Approximately 20 percent of the women had complications requiring their transfer from the birthing room. Fifteen required a cesarean section. The mean Apgar scores of infants born to all women admitted to the birthing room (including those who were subsequently transferred) were 7.7 at one minute and 8.8 at five minutes. Neonatal complications included meconium aspiration (1), sepsis (1), a question of sepsis (1), congenital heart disease (1), and transient tachypnea of the newborn (1). Four infants and one mother required readmission. Although mothers were prescreened to be at low risk, complications did arise for both mother and infant that made proximity to the regular obstetrical and neonatal units advantageous.

Many women and men today are asking for greater responsibility for and participation in the birth of their children. Some have opted for home births, and indeed, the literature is replete with accounts of these.¹⁻⁴ Many medical personnel express doubts as to the safety of home births and wonder why women would choose this method when a safer delivery could be accomplished within the confines of an established hospital obstetrical unit.

In an attempt to bridge the gap between home birth and traditional hospital obstetrical delivery, birthing rooms or alternative birthing centers have been established in all parts of the country in the past several years.⁵⁻⁹ These rooms are designed to provide a more home-like atmosphere and to allow the husband or other support person to remain with the mother during her labor and delivery. The mothers are prescreened to be at low risk for

obstetrical complications and are required to attend prenatal education classes. The rooms are located in or near a hospital so that in the event of any unforeseen complication, the mother or infant can be transferred to the traditional obstetrical or pediatric unit. The birthing room can also facilitate early interaction between infants and parents, the importance of which has been written about extensively.¹⁰⁻¹³

The "ideal" study regarding birthing rooms, a controlled prospective comparison of outcomes of women prescreened to be at low risk who delivered in both the birthing room and regular labor and delivery area, has yet to be done. The logistics involved in doing this kind of study are formidable, and only descriptive information has been published.

Kerner and Ferris¹⁴ found that about 20 percent of patients prescreened for a birthing center in San Francisco developed complications during labor and delivery. Faison et al¹⁵ also described an approximately 20 percent transfer rate at an out-of-hospital facility in New York. Rollins et al¹⁶ discussed the program of the University of California

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Davis Medical Center, Sacramento, where of 230 patients accepted for the program, only 162 completed it. Goodlin¹⁷ described the outcomes of 500 births at an alternate birth center at the University of California Davis Medical Center; he found higher complication rates for babies born in the delivery room, but higher complication rates for mothers who delivered in the alternate birth center. DeJong and colleagues¹⁸ described an out-of-hospital birth center where antepartum or intrapartum hospital referral was necessary for 28 percent of the patients. Noncompliance with the transfer criteria was associated with untoward outcome.

At the time that several of these studies were being completed, the data for this paper were being gathered. It is a retrospective descriptive study of the outcomes of three birthing rooms and gives further support to the fact that although women may be prescreened to be at low obstetrical risk, complications may arise that require emergency medical intervention.

Methods

Permission was obtained from three hospitals with birthing rooms to do a retrospective study of outcomes of birthing rooms by means of a chart review. Each hospital kept a log book of their birthing room deliveries. The charts of the mother and the infant were reviewed, and the data were coded for keypunching on a standard form. Statistics were collected from the inception of the birthing rooms to December 1979. Hospital 1 is a private 250-bed hospital in which both obstetricians and family physicians do obstetrics. Medical students rotate through here occasionally, but residents do not train here. Its birthing room opened in October 1978. Hospital 2 is a private 350-bed hospital also staffed by obstetricians and family physicians, as well as some midwives. Family practice residents do a great deal of their obstetrical training here. Its birthing room opened in June 1979. Hospital 3 is a university-based 300-bed hospital that is an intermountain high-risk referral center, although a birthing room was instituted in February of 1979 for low-risk patients. University staff obstetricians, midwives, and occasionally private obstetricians do deliveries here, and labor and delivery are staffed by obstetrical and family practice residents.

Criteria for admission to the birthing room included prenatal supervision by a licensed physician or nurse midwife, no findings suggestive of increased risk of complications, the presence of a support person, attendance at prepared childbirth classes, and participation in the hospital's orientation program. The patient also had to be aware that she could be transferred to the regular labor and delivery area if complications arose and had to sign an informed consent form accepting the risks involved. The infant's physician had to be agreeable to the criteria for the care of the newborn.

Tables 1 through 4 delineate high-risk factors and criteria for early maternal and infant discharge. These criteria were basically the same among the hospitals, although slight variations in hospital policies are indicated by parentheses.

Results

Included in the study were 356 pairs of mothers and infants (hospital 1, $n = 203$; hospital 2, $n = 46$; hospital 3, $n = 107$). Six pairs were not included in the 356 pairs because either the mother's or the infant's chart could not be located. It should be noted that data on each specific item were not always available in the charts so that the numbers do not always add up to 356.

The following data include the results of all women admitted to the birthing room as initially prescreened to be low risk and include those who were subsequently transferred out of the birthing room to labor and delivery because of complications.

Ninety primiparas and 265 multiparas were admitted to the birthing rooms, with the average age being 25.9 years. An obstetrician, family physician or general practitioner, or nurse midwife attended each delivery. Fetal monitoring was usually done by intermittent doptone or auscultation; however, 108 women had either an external or scalp monitor used during the delivery. The average length of the first stage of labor ($n = 217$) was 8.56 hours, the average second stage ($n = 232$) lasted 37 minutes, and the average third stage ($n = 335$) lasted 6.5 minutes. Seventy-three of 356 had some form of anesthesia or analgesia in labor, and 290 of 356 had some in delivery. One hundred thirty women had spontaneous rupture of their membranes, whereas 174 had artificial rupture ($n = 304$). Low forceps were used in 15 deliveries,

Table 1. High-Risk Factors Excluding Admission to the Birthing Room*

- Social Factors
 - Fewer than 3 (5) prenatal visits
 - Primipara (younger than 17 years) or older than 33 years (35 years)
 - Multipara older than 40 years
- Pre-existing Maternal Disease
 - Chronic hypertension
 - Moderate to severe renal disease
 - Heart disease class II to IV
 - History of eclampsia
 - Diabetes mellitus
 - Anemia
 - Tuberculosis
 - Chronic or acute pulmonary problem
 - Psychiatric disease requiring major tranquilizer
 - (Any symptom or abnormal laboratory value suggestive of undiagnosed disease)
- Previous Obstetric History
 - (Previous stillbirth)
 - Previous cesarean section
 - Rh sensitization
 - Multiparity greater than 5 (8)
 - Previous infant with respiratory distress syndrome at same gestational age
- Present Pregnancy
 - Pre-eclampsia
 - Gestational age less than 37 weeks or more than 42 weeks
 - Multiple pregnancy
 - Abnormal presentation
 - Third trimester bleeding or known placenta previa
 - Rupture of membranes at more than 24 hours
 - Estimated fetal weight less than 5 lb or more than 9 lb (9 lb 5 oz)
 - Contracted pelvis
 - Pelvic pathology
 - Induction
 - (Treatment with reserpine, lithium, or magnesium)
 - (Spinal anesthesia)
 - (Positive stress test)
 - Any other maternal illness that would increase the risk to the mother or her infant

*Information in parentheses indicates slight variations in criteria among the hospitals, ie, not all hospitals may specify that which is within the parentheses

Table 2. High-Risk Factors Developing After Admission Requiring Transfer to Labor and Delivery*

- Low hemoglobin or hematocrit
- Temperature > 37.8° (38°) C or 100° (100.4°) F
- Significant variation of maternal blood pressure
- Deeply stained meconium in the amniotic fluid
- Abnormal fetal heart rate or pattern
- Labor > 24 hours
- Arrest of labor in the active phase
- Second stage of labor > 2 hr primigravida > 1 hr multigravida
- Significant vaginal bleeding
- Development of any factor that requires continuous fetal heart rate monitoring
- Any labor pattern or maternal or fetal complication requiring greater diagnosis or treatment than can be done in the birthing room

*Information in parentheses indicates slight variations in criteria among the hospitals

and midforceps in 10 deliveries. Fifty-seven women had neither a laceration nor an episiotomy. Estimated blood loss was less than 250 mL for 43 percent of patients and less than 500 mL for 94 percent of patients.

Approximately 20 percent of the women were transferred out of the birthing room (Table 5), and several had complications including bleeding (5), fever (3), retained placenta (2), and atonic uterus (1).

Data on the outcomes of infants revealed the average birthweight of the infants to be 3,514 g. (This is the average weight of infants born to all mothers admitted to the birthing room, including those who were eventually transferred out.) Mean Apgar scores at one and five minutes were 7.7 and 8.8, respectively. (Data include Apgar scores of all infants born to all mothers admitted to the birthing room, including those who were eventually transferred out.) Most infants were resuscitated by the bulb (283) or DeLee suction (227), although 62 had some oxygen administered, one received continuous positive airway pressure, three were intubated, and nine had their vocal cords checked. Only a small number of infants needed to be transferred; reasons included need for phototherapy (7), congenital heart disease (1), meconium aspiration (1), sepsis (1), and transient tachypnea of the newborn (1). Four infants had to be readmitted after being discharged; one had bronchiolitis at 2

Table 3. Criteria for Early Maternal Discharge*

- No Medical Complications
- No Antepartum or Intrapartum Obstetrical Complications
 - Length of labor less than 30 hr primigravida or less than 24 hr multigravida
 - Ruptured membranes in less than 24 hr
 - Perineum with episiotomy or laceration of \leq third degree
 - Blood loss less than 500 cc
 - Spontaneous delivery (or low forceps)
- Postpartum Course
 - Vital Signs: Temperature $< 38^{\circ}$ C
 - Pulse < 100 beats/min
 - Blood pressure $> 90/60$ mmHg, $< 140/90$ mmHg
 - Firm fundus
 - Hematocrit > 32 (35 percent) or hemoglobin > 10.5 g/dL (12.5 g/dL)
 - Able to care for self and baby
 - Able to void adequately
 - RHO-gam eligibility determined and given
 - Plan for assistance at home for at least two days

*Information in parentheses indicates slight variations in criteria among the hospitals

Table 4. Criteria for Early Infant Discharge*

1. Not less than 12 hr postpartum, birthweight more than 5 lb (less than 9.5 lb)
2. Vital signs stable
 - Temperature 36.5° to 37.5° C
 - Pulse 100 (110) to 160 beats/min
 - Respirations 30 (35,40) to 60/min
3. Normal physical examination
4. (Hematocrit 45 to 65 percent; Dextrostix 45 mg glucose/dL blood or more)
5. (Blood type, Coombs test shows no evidence of incompatibility)
6. (No complication requiring additional observation)
7. Feedings attempted (completed; good suck)
8. (Mother must demonstrate ability to handle and care for infant)
9. Birth certificate complete
10. (Infant should have voided and stooled)
11. (Home visit by nurse practitioner on day after delivery)
12. Follow-up visit (3 days) postpartum

*Information in parentheses indicates slight variations in criteria among the hospitals

weeks of age, one had respiratory distress at 2 days of age with a question of pneumonia, one needed phototherapy, and one needed an ex-

change transfusion. There was one maternal readmission for endometritis. More than one half of the women and infants stayed one day or less.

Table 5. Maternal Transfer During Labor or Delivery

Reason for Transfer	Number (n=356)
Cesarean section	15
Meconium-stained amniotic fluid	5
Prolonged stage 1 labor	13
Prolonged stage 2 labor	5
Fetal bradycardia	7
Late or deep decelerations	5
Forceps rotation	6
Pre-eclampsia	6
Persistent posterior cervical lip	2
Elevated temperature (39.3°C orally)	1
Manual removal of placenta	1
Postpartum hemorrhage	1
Prolonged rupture of membranes	1
Desired anesthesia	6
Postpartum tubal	2
Desired to stay longer	50

Comment

The birthing room is a reasonable alternative for those parents who desire the privacy and comfort of a home-like environment and the safety and security afforded by proximity to the regular obstetrical and neonatal units. Because birthing rooms are becoming increasingly popular, data on outcomes from birthing rooms are important. This retrospective study involved the outcomes of 356 mothers who were prescreened and admitted to the birthing room during labor. Ages of the 266 women were between 21 and 30 years; 90 were primigravidas. In spite of careful prescreening, complications requiring transfer arose for both the mothers and the infants. Fifteen women required a cesarean section. Six women developed pre-eclampsia. Seven women required a forceps rotation. One woman needed manual removal of the placenta. Apgar scores of infants born to all women admitted to the birthing rooms (including those subsequently transferred) were a mean of 7.7 at one minute and a mean of 8.8 at five minutes. Four infants required readmission after discharge, and one mother required readmission. Over 50 women wished to stay longer than the allotted time period; 199 mothers stayed less than 24 hours.

Several other descriptive studies of birthing

rooms were carried out during the time frame of this study. Rollins' study,¹⁶ done in California, noted a 15 percent intrapartum and postpartum transfer rate, while several New York studies noted a 20 percent transfer rate, similar to that found here. In all studies, unforeseen complications arose that required more sophisticated medical care. All of these studies are descriptive, yet are important in terms of providing data on birthing room outcomes, since a prospective study is not yet available.

It is impossible to predict what will happen during a woman's labor and delivery despite careful prescreening. A birthing room offers the opportunity to low-risk women to have a home-like delivery, yet be near to a unit where the necessary staff and emergency equipment are located in the event of an unforeseen complication.

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