Four Years' Experience with Home Birth by Licensed Midwives in Arizona

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Abstract: In 1978, Arizona began licensing lay midwives under regulations designed to maintain adequate standards of care for women desiring a home birth. During four years of this program, 3 per cent of home birth clients were hospitalized for complications and another 15 per cent received postnatal outpatient care, primarily for second degree lacerations. Five per cent of the newborns required medical care after delivery; half of these were hospitalized. Complications declined over the period due to increased experience, close supervision, and continuing education. (*Am J Public Health* 1983; 73:641–645.)

Introduction

The small but vocal home birth movement begun in the 1970s has sparked a resurgence of interest in midwifery in the United States. The movement has by-passed the institutionalized medical care delivery system. "Lay" midwives, also referred to as "empirical", "spiritual", or "natural" midwives, are either self-taught or have attended one of the approximately 12 unaccredited schools.[1] They have no national organization to establish training standards and codes of professional practice. Their legal status depends on individual state laws.[2]

Legislation, passed in 1957, gave the Arizona Department of Health Services responsibility for licensing and supervising lay midwives in that State. About 25 women were licensed based on evidence of sufficient knowledge and skill to assure reasonable safety for clients. As these midwives aged and as their minority clientele in rural areas and poor barrios became more acculturated to modern obstetrical techniques, the demand for midwife licensing virtually ceased. Between 1959 and 1977, only four midwives were licensed. A rise in requests beginning in 1976 prompted the Health Department to adopt new rules and regulations in January 1978.[3]

The new rules and regulations require that each applicant for a license show evidence of training in midwifery. Without specifying a particular program, the rules and regulations do specify that the content of the training include information on state laws and regulations, aseptic techniques, observational skills, and management of emergency situations and clinical coursework in care of maternity patients and newborns. The applicant also must have observed a minimum of ten births and delivered a minimum of 15 women under the direct supervision of a licensed physician, licensed midwife, or certified nurse-midwife. The rules further specify that the course of instruction cover the conditions under which the midwife has the responsibility to call a physician or transfer a mother and/or infant to a hospital.*

Each applicant must pass with a minimum score of 80 per cent a three-part qualifying examination administered by the Arizona Department of Health Services. The examination consists of a written test, an oral examination of clinical judgment, and a clinical examination of midwifery skills.**

The rules and regulations** regarding the practice of licensed midwifery in Arizona are similar to those of other state health departments in the second quarter of the twentieth century.[4–6] The midwives may accept only low-risk clients with prearranged back-up medical care. They may not administer drugs, medications, or herbs or perform any operative procedure other than clamping and severing the umbilical cord. Their clients must be examined by a physician or other practitioner supervised by a physician during the last trimester.

Arizona's Midwives

Individuals who made application for licensure prior to the formal adoption of the new rules and regulations were

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*The maternal conditions include, but are not limited to, preeclampsia intrapartum or postpartum infection, abnormal presentation, multiple gestation, abnormal vaginal bleeding before or after delivery, dysfunctional labor pattern, prolonged or premature rupture of membranes, signs of fetal distress, maternal exhaustion, retained placenta, laceration repair, and any other indication of maternal problems. Infant conditions requiring medical consultation or intervention include but are not limited to respiratory distress, pre or postmature infant, congenital anomalies, abnormal cry or color.

**Details are available on request to authors.

TABLE 1—Characteristics of 1,449 Midwifery Clients Accepted for Care, 1978 to 1981, in Arizona

Characteristics	Per Cent
Maternal Age	
15–19	6
20–24	37
25–29	38
30–34	15
35–50	4
Unknown (11)	....
Gravida	
1	20
2	34
3	22
4	12
5+	12
Unknown (4)	....
Parity	
0	33
1	34
2	18
3	8
4	4
5–8	3
9+	1
Prenatal Visits to Midwife	
Less than 5	16
5–9	38
10–12	31
13 or More	15
Unknown (18)	....

TABLE 2—Indications for Transfer[a] Prior to Delivery among 1,449 Midwifery Clients Accepted for Care, 1978 to 1981, in Arizona

Indications for Transfer	Number
Labor Complications	
Prolonged First Stage	64
Prolonged Second Stage	24
Prolonged Rupture of Membranes	29
Maternal Indications	
Preeclampsia	8
Bleeding	13
Elevated Temperature	1
Fetal Indications	
Premature Labor	14
Multiple Gestation	2
Meconium Staining	22
Fetal Distress	20
Malpresentation	
Unengaged Head	17
Not Vertex	14
Other Indications (Including non-medical)	25
Total Indications	253
Total Clients Transferred (14 per cent)	206

[a] The indication for transfer categories are not mutually exclusive due to women with multiple indications.

allowed to take the qualifying examination without meeting the other requirements. Thirteen of these applicants eventually passed and joined in practice the four midwives licensed under the old "granny" laws. Nine others were licensed under the new regulations by the end of 1981.

All of the 26 midwives are women. Most are between the ages of 25 and 35 and many attribute their strong feelings about the home birth to their own experience with birth. In other ways, they are a diverse group of women. Some are drawn to midwifery because of traditional religious beliefs while others are part of the "counter-culture." Some practice in remote rural areas, but most remain in or near the metropolitan areas. Seven are registered nurses including one with a master's degree in maternal and child health, two nurse-practitioners, and two British nurse-midwives. Two others are licensed practical nurses. One of the registered nurses and seven others attended the Arizona School of Midwifery which operated between 1977 and 1981.

Extent of midwifery practice varies considerably. One midwife, practicing independently, averages 10 births per month. Three others, working as a team, deliver 12 to 16 births per month.*** The rest of the midwives have considerably smaller case loads due to family responsibilities and a desire to spend a great deal of time with each client in prenatal education and establishing a good rapport for home birth. When fully active in their practice, two of them deliver three to four births per month and eight deliver two to three births per month.‡ Many of the midwives, including almost all of those in charge of less than two deliveries per month, work as part of a labor and delivery team of two or three licensed midwives or licensed midwives and student midwives. The team approach provides more experience than is indicated by the number of cases for which they have primary responsibility.

The Clients

As can be seen in Table 1, most of the clients accepted for care by the licensed midwives were in the optimum age range for childbearing. Two-thirds had previously given birth and all received prenatal supervision from their midwife. Many received additional supervision from medical personnel beyond the single third trimester examination required by law. Data collected in 1980 and 1981 indicated that 39 per cent had four or more medical visits.

Transfer Prior to Delivery

Fourteen per cent of the 1,449 clients were transferred to a hospital for delivery. The rate was much higher for

***These three midwives deliver most of their births in a birthing center in Utah and only submit records to Arizona's Bureau of Maternal and Child Health for the 10 to 12 home births they deliver each year in Arizona. Only the Arizona births are included in the analysis of outcomes.

‡Two others were not licensed until the latter part of 1981 and one, who maintains an Arizona license, practices only in Nevada.

TABLE 3—Maternal Outcomes of 1,243 Midwife-Assisted Home Births, 1978–81, in Arizona

Maternal Outcomes	% 1978 N = 261	% 1979 N = 308	% 1980 N = 347	% 1981 N = 327	Total % N = 1,243
First Stage of Labor					
Less than Nine Hours	71	71	76	78	74
Nine to 13 Hours	16	20	16	15	17
13 to 19 Hours	10	7	5	4	6
More than 19 Hours	3	2	3	2	2
Unknown					
Second Stage of Labor					
Less than 1/2 Hour	46	51	66	64	58
1/2 to One Hour	30	30	19	22	25
One to 1½ Hours	12	8	7	7	9
1½ to Two Hours	8	8	4	6	6
More than Two Hours	4	3	4	1	3
Unknown					
Third Stage of Labor					
Less than 1/4 Hour	38	60	78	80	66
1/4 to 1/2 Hour	40	28	18	17	25
1/2 to 3/4 Hour	15	8	2	2	6
3/4 to One Hour	5	2	1	1	2
More than One Hour	2	2	2	1	2
Unknown					
Estimated Blood Loss					
Less Than 500 ml	85	91	92	69	89
500 to 999 ml	14	8	6	9	9
1,000 or More	1	1	2	2	2
Unknown					
Complications Requiring Postpartum Medical Care	29	18	14	16	18

nulliparous women (28 per cent versus 7 per cent), and for the small portion of women who gained over 50 pounds (32 per cent versus 13 per cent). Indications for transfer are given in Table 2.

Maternal Outcomes

There were 1,243 midwife-assisted home births in Arizona during 1978–81, less than 1 per cent of Arizona's 191,378 live births during these four years. Table 3 shows that the length of labor declined and the estimated blood loss decreased in midwife-assisted home births. Only 16 per cent of the women in 1981 required the care of a physician after a home birth compared to 29 per cent in 1978, due largely to a decrease in second degree lacerations, the major cause of postpartum maternal transfers (Table 4). Transfers for laceration repair decreased from 22 per cent in 1978 to 7 per cent by 1980.

Postpartum transfers were higher for first time mothers. Twenty-six per cent of these women received medical care compared to 6 per cent of multigravidae. Overall, 18 per cent of the women giving birth at home during the four years were attended subsequently by a physician; 15 per cent of these women were admitted to a hospital. These postpartum hospitalizations constituted less than 3 per cent of all women who delivered at home.

Newborn Outcomes

During the four-year period, 87 per cent of the infants delivered at home by the licensed midwives weighed between 2,500 and 3,999 grams. Only 3 per cent had an Apgar score less than seven at five minutes. There is some evidence that newborn outcomes improved over the four years; the proportion scoring seven or more on the Apgar assessment at one minute increased from 69 per cent in 1978 to 86 per cent in 1981.

Five per cent of the newborns were transferred for medical care based on the indications given in Table 5. The most common complication was respiratory distress following shoulder dystocia or tight nuchal cord. Almost half of the newborns transferred were admitted to a hospital, resulting in a hospitalization rate of 2 per cent for home births.

There have been two neonatal deaths and three fetal deaths during the four years. One infant died of congenital heart and lung anomalies incompatible with extra uterine life and the other died of a congenital diaphramatic hernia. The first fetal death occurred during a breech delivery managed in the home without medical consultation. The midwife involved in this delivery and in the delivery of the baby with heart and lung anomalies was licensed under the old "granny" law. Her license was suspended for violation of several rules and regulations.

Another midwife's license was revoked following a fetal

TABLE 4—Indications for Maternal Transfer[a] after Home Birth among 1,243 Midwifery Clients, 1978–1981

Maternal Complications after Home Birth	Number Transferred with Indication	Number Admitted to Hospital
Postpartum Hemorrhage	34	16
Postpartum Hemorrhage with Shock	5	5
Uterine Atony	10	6
Retained Placenta	29	12
Retained Placental Fragments or Membranes	12	4
Elevated Temperature	6[b]	2
Multiple Gestation	2[c]	1[c]
Other	13	6
Laceration		
First Degree	16	3
Second Degree	151	9
Third Degree	8	2
Fourth Degree	0	0
Total Indications for Medical Care	286	
Total Home Birth Women Requiring Medical Care (18 per cent)	231	34

[a] The indications for transfer categories are not mutually exclusive due to women with multiple indications.
[b] Two were due to dehydration.
[c] A physician saw one of the clients within 12 hours before delivery and did not diagnose multiple gestation.

TABLE 5—Indications for Newborn Transfer[a] among 1,245[b] Home Births, 1978–1981

Newborn Complications	Number	Number Admitted To Hospitals
Congenital Anomalies		
Congenital Heart Anomaly	1	1
Congenital Diaphramatic Hernia	1	1
Oomphalocele	1	1
Abnormal Cord Vessels	1	0
Respiratory Distress	18	11
Apgar Less than 7 at 5 Minutes	11	8
Postmaturity	2	1
Meconium Staining	2	2
Polycythemia[c]	1	0
Jaundice[d]	10	5
Other[e]	14	3
Total Indications for Medical Care	62	
Total Newborns Requiring Medical Care (5 per cent)	58	27

[a] The indications for transfer are not mutually exclusive due to newborns with multiple indicators.
[b] The difference between the number of home births and home birth women is due to two sets of twins.
[c] Twin to twin transfusion.
[d] Found on required postpartum home visit.
[e] Other includes transient tachypnea, persistent fetal circulation, suspected sepsis and possible meconium aspiration, and accompanying the mother for medical care.

death in which she falsely reported a heartbeat in order to allow her client to deliver at home. Subsequent examination of the stillborn indicated fetal death four to 24 hours prior to delivery. This and a pattern of reports of violations of the rules and regulations led the Bureau of Maternal and Child Health to take action.

The cause of the third fetal death was unknown. A fetal heart was heard late in the second stage of labor. Attempts by the midwife and paramedics to resuscitate the baby failed.

Discussion

The most serious limitation of this analysis is the lack of complete information on the outcomes of the 206 cases transferred to a hospital before delivery. All of the licensed midwives accompany the women they transfer to the hospital where they usually are met by the back-up physician with whom they have been in contact. Their role after their client has been admitted varies depending on both the nature of the obstetrical problem and the attitude of hospital personnel toward licensed midwives. Sometimes they are allowed to stay with their client as a childbirth coach and source of information on the pregnancy; sometimes they are not allowed past the waiting room. In either case, the midwives do not have access to the hospital records containing specific information on outcomes. We do know that there have been no maternal or newborn mortalities among the transferred cases, however.

The improved outcomes of home births have been achieved by increased experience, close supervision, and continuing education. The Bureau of Maternal and Child Health regularly distributes materials on clinical practice, such as journal articles and March of Dimes teaching modules. The Bureau has also sponsored or cosponsored a number of workshops for the midwives conducted by obstetricians, neonatologists, neonatal nurse-practitioners, and pediatricians. In addition to these programs, which all licensed midwives attended, many have attended the annual Perinatal Update educational programs conducted by the Arizona Perinatal Trust.

The licensed midwives have begun to assume some responsibility for their own continuing education. With help from the Bureau of Maternal and Child Health, they have arranged for a number of their own workshops on such topics as resuscitation, pelvic examinations, and physical assessment of the female patient.

When the unaffiliated Arizona School of Midwifery closed due to financial difficulties and faculty burn-out, the Bureau of Maternal and Child Health worked with a nonmetropolitan community college to obtain vocational training funds from the State to establish a demonstration program in midwifery training. The two-year certificate program began in the fall of 1981. Twenty-three students are enrolled currently. The program has made its clinical workshops available to all licensed midwives.

Several problems continue to impede the functioning of licensed midwifery in the State. In some communities, midwives still have difficulty finding medical personnel to provide the routine prenatal screening and back-up care for emergencies that is required by law. Physicians often cite the fear of increased malpractice liability or their personal opposition to home births as their reasons for failing to cooperate with licensed midwives.

In 1979, the Arizona Perinatal Program agreed to provide midwives access to its 24 hour emergency consultation hot line staffed by perinatologists and neonatologists in each of the three major geographic areas in the State. If transport is required, consultants arrange for the appropriate mode and provide care at the regional center.

In 1979, the Arizona Department of Health Services also appointed an Advisory Committee to the Midwife Licensing Program to try to improve communication between the health care providers and licensed midwives. The committee includes an obstetrician, a family practice physician, a certified nurse-midwife, a neonatal nurse-practitioner, a consumer and three midwives. The members have developed guidelines for the clinical practice of midwifery and for the clinical education programs.‡‡ They also have assisted in the qualifying examination process and in the investigation and evaluation of complaints against midwives.

The Advisory Committee has begun considering revision of the rules and regulations for the practice of licensed midwifery. Among the contemplated changes is the addition of administrative guidelines for lapsed renewals, for disciplinary action, and for reinstatement. The committee has proposed increasing the number of supervised births required before obtaining a license. The midwives want the legal right to do emergency episiotomies, to administer a single dose of an antihemorrhagic drug, and to suture minor lacerations. The Bureau of Maternal and Child Health supports the first two proposals by the midwives as well as allowing licensed midwives to perform heel sticks to do the mandatory metabolic screening and to monitor for hypoglycemia in newborns. However, the Bureau and the Advisory Committee do not support the midwives' desire to repair even minor lacerations. The Bureau has suggested that a minimum number of births per year be required for license renewal but the Advisory Committee opposes the proposal on the grounds that doctors and nurses do not have minimum practice requirements.

The major problem now facing the licensing program is maintaining standards. In the last two legislative sessions there has been an organized campaign to deregulate midwifery, which has been opposed by the Bureau of Maternal and Child Health and by the licensed midwives. An amended bill passed during the 1981/1982 session provides for a one-year grace period during which a provisional license can be given to individuals who pass the qualifying examination and can document successful assistance at 15 births without completing the educational requirements detailed in the 1978 rules and regulations.

‡‡Available on request to authors.

An attempt by the Bureau of Maternal and Child Health to require that the 15 births be supervised did not succeed. Four of the 22 applicants for the first examination during the grace period passed the qualifying examination. All four had attended or are attending one of the midwifery schools but have been unable to finish their program due to family responsibilities or geographic distance. Two other examinations will be offered during the year. Thirty-one applicants have signed up for the second examination.

The temporary reduction in education requirements and supervised training may have a negative effect on outcomes. While postpartum maternal and newborn hospitalization and newborn outpatient care rates were below 3 per cent in each year of the licensing program, postpartum maternal outpatient transfers ranged from 23 per cent in the first year to 10 per cent in the latter two years after the midwives participated in the educational programs sponsored by the Bureau of Maternal and Child Health. Moreover, transfer rates varied among midwives and part of this variation was related to training. For example, among those with ten or more births, postpartum maternal transfers for outpatient care ranged from zero to 33 per cent.‡‡‡ Several of the self-taught, non-nurse midwives who were licensed based only on the qualifying examination had postpartum maternal outpatient transfer rates at the upper end of this range. These midwives no longer practice in the State. The remaining four midwives with this background have transfer rates similar to the midwives trained in nursing and/or at the unaffiliated Arizona School of Midwifery.

Arizona's experience illustrates that home births can be a safe alternative for low-risk pregnancies if they are attended by an adequately trained practitioner, even if that practitioner is not a physician. Arizona's experience also illustrates the difficulties in maintaining standards of care in a political climate of deregulation.

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‡‡‡The effect of a midwife's training and experience on home-birth outcomes, manuscript in preparation.