

Quality & Safety of Direct Entry Midwifery Practice in the U.S.

This document reviews the literature addressing the quality and safety of care provided by direct entry midwives (DEMs) in the U.S. Direct entry midwifery is a generic term that includes a wide range of practitioners who enter the profession of midwifery through routes other than nursing education. While in the past most were apprentice-trained, there has been a recent trend toward credentialing DEMs following more standardized educational preparation.

Despite a plethora of published papers on related topics, there are very few studies that isolate DEM practice as a variable. The outcomes documented in the literature are mixed, with some investigators reporting better than average outcomes among women attended by direct entry midwives, while others document better outcomes provided by physicians and/or nurse-midwives. It is difficult to draw a conclusion from these studies, since they are few in number, have a number of design problems, provide limited information regarding the multiplicity of educational models for preparing DEMs, and often do not address the most current models. For those who are seeking evidence to support a particular model of education or regulation for DEMs, it is clear that more definitive research is needed on the relationship between educational pathways and clinical outcomes.

Background

The American College of Nurse-Midwives (ACNM) is a national professional association representing more than 7,000 certified nurse-midwives (CNMs), certified midwives (CMs) and students preparing to become CNMs and CMs. ACNM has been involved in setting standards for the practice of nurse-midwifery in the United States (U.S.) for more than 50 years, accrediting education programs and developing a certification mechanism that is now recognized by the federal government and all 50 states. The outcome of CNMs practicing in the U.S. has been documented in more than 20 studies in peer-reviewed journals dating back to a 1928 study in the *American Journal of Obstetrics and Gynecology*.¹

During this same period, there has also been a myriad of DEMs practicing in the U.S. The multiplicity of terms applied to DEMs reflects the evolution of the profession and the variation in educational background and licensure status of those midwives: Lay midwives, apprentice trained midwives (ATMs) and certified professional midwives (CPMs) who are certified by the North American Registry of Midwives.² There are also significant variations in scope of practice for DEMs which potentially impact the outcomes of care, ranging from limitations on practice sites to requirements for physician involvement.

After examining international models and grappling with the issue of appropriate standards for midwifery education in the U.S., in 1996 ACNM chose to apply its experience with CNMs to establish a distinct category of direct entry midwife, the certified midwife (CM)³. The CM educational and certification requirements were designed to guarantee to the public the same degree of competency found in the CNM. Certified midwives complete prerequisite health science requirements, are graduates of the same accredited, university-affiliated midwifery education program as nurse-midwives, earn a minimum of a baccalaureate degree, adhere to the same professional standards as CNMs, and have successfully completed the

¹ American College of Nurse-Midwives, *Resources and Bibliography: Quality and Effectiveness of Nurse-Midwifery Practice*, 1999. Available at www.midwife.org.

² American College of Nurse-Midwives, *Direct Entry Midwifery: A Summary of State Laws and Regulations*, 1999.

³ For more information about the CM a free *Resource Packet: Certified Midwifery* may be obtained by calling or emailing the Professional Services Department at ACNM.

same national certification exam (American Midwifery Certification Board, Inc., formerly ACNM Certification Council, Inc.) as CNMs.

Now that ACNM has established an education and certification process for direct entry midwives, we are often approached by students, researchers, policy makers, the media and our members, with questions about the safety and effectiveness of direct entry midwives. Both the CPM and the CM are relatively new DEM credentials, and as yet, while research is underway, no data on outcomes are available for either provider. However, ACNM believes there is every reason to expect that the quality and safety of CMs will equal that of CNMs because of the equivalencies described above.

This document reviews the literature on outcomes of care published in peer-reviewed journals. It only includes *original* research relating to midwives practicing in the U.S. who are not CNMs. Since the issue of educational preparation has been central to the debate regarding direct entry midwifery in the U.S., when information was available about the educational preparation of the DEMs studied, it was included in the review. International studies and articles that were largely descriptive or editorial in nature were excluded.

The Limitations of Published Research on Outcomes of Care Provided by Direct Entry Midwives

Not unlike most research conducted on outcomes of pregnancy and childbirth, studies that examine the outcomes of direct entry midwives are limited in their design. Randomized, controlled studies raise ethical and feasibility problems with regard to pregnant women, so there is always a certain element of self-selection among the populations being studied. Therefore, many studies are retrospective investigations using data collected for clinical rather than research purposes.

Furthermore, since the majority of births attended by direct entry midwives occur in private residences, most of the literature that includes data on direct entry midwives primarily examines the safety of home birth. Since the main focus of these studies has been the place of birth, and not the birth attendant, few details are provided about the education and clinical preparation of the midwives in attendance. Authors often, however, have noted the need for well-trained attendants who can appropriately screen women for home birth and ensure continuity of care for women who need transfer to the hospital. It is also essential to distinguish between planned and unplanned home births; studies that fail to do so are not appropriate for evaluating the safety of home birth or direct entry midwives.⁴

Finally, there are limitations in the data sources. Some studies rely on self-reporting by the birth attendant, which may result in biased data or conclusions. Studies that rely on birth certificate data may be flawed by under-reporting or miscoding, such as the inclusion of student nurse-midwives in the category of “other midwife,” or the outcomes of physicians, CNMs, and other midwives may be grouped into one category, making it difficult to isolate the outcomes by provider type.

It should also be noted that many studies have been conducted on the outcomes of direct entry midwives who are educated and practice *outside* the U.S. While these studies may be reassuring, it is not appropriate to draw conclusions from these studies with regard to expected outcomes in the U.S. unless it can be determined that the education and certification requirements for midwives in those countries are similar to those being evaluated here. For example, in England, midwives complete a three-year education program at an institution of higher education which results in the granting of a diploma or degree. Since not all direct entry midwives in the U.S.

⁴ The safety of out-of-hospital births in the U.S. is addressed at length in Chapter 10 of Rooks JP. *Midwifery & Childbirth in America*. Philadelphia, Temple University Press, 1997

have the same level of education and clinical preparation, one cannot assume that their outcomes will be similar to those of midwives in England. In addition, transnational comparisons are confounded by major differences in access to care, population characteristics and differences in perinatal collection.

Relevant Literature

From a list of 80 possible references, nine studies from peer-reviewed journals were identified that isolate outcomes of care by direct entry midwives in the U.S. They are listed in ascending chronological order.

Mehl LE, Peterson GH, Whitt M, Hawes WE. Outcomes of elective home births: a series of 1,146 cases. *Journal of Reproductive Medicine* 1977; 19:281-290

The outcomes of 685 intended home births attended by physicians were compared to those of 461 attended by lay midwives during the period 1970-1975, based on a review of the medical charts of five home delivery services in Northern California. Rates of medical complications, perinatal morbidity and mortality for the midwife-attended home births were comparable to those of the physician-attended home births. The authors noted that their findings “suggest that in a self-selected, medically screened, low-risk population, home delivery with medical facility back-up can be a reasonable alternative to hospital delivery.” Information on education and/or training was included for only one of the eleven lay midwives in the study and noted to be “self-acquired through reading and experience.”

Mehl LE, Ramiel J, Leininger B, Hoff B, Kronenthal K, Peterson G. Evaluation of outcomes on non-nurse midwives: matched comparisons with physicians. *Women & Health* 1980; 5:17-29.

Compares the outcomes documented through a retrospective chart review of 421 planned home births attended by “experienced, trained” midwives in Santa Cruz, California with outcomes of 421 births drawn from a pool of 8,000 planned hospital births attended by physicians in Marin County, California and in Madison, Wisconsin between 1970 and 1975. The births were matched based on the demographic and other risk characteristics associated with the mothers. The authors conclude, “midwives at home did as well as physicians in hospitals for low-risk cases.” The midwives studied were not formally trained, but had 2 or more years experience attending a minimum of 50 births as the primary birth attendant and 50 births in a training capacity with a more experienced midwife.

Burnett CA, Jones JA, Rooks J, Chen CH, Tyler CW, Miller CA. Home delivery and neonatal mortality in North Carolina. *JAMA* 1980; 244:2741-2745

This study contrasted outcomes of 934 planned home deliveries attended by lay midwives and other birth attendants in North Carolina with those of 250 unplanned home deliveries attended by all birth attendants during the period 1974-76. Data sources included vital records from the state and questionnaires/interviews completed by county health department staff. Outcomes for planned home deliveries were significantly better than those for unplanned home deliveries. The neonatal mortality rate for planned home deliveries attended by physicians was zero; the rate for lay midwives was 4/1000. During the same period, the neonatal mortality rate for all hospital births was 12/1000. The authors did not provide any information on the education or training of the lay midwives, although they did note that all lay midwives included in the study had ten or more years of experience as midwives.

Sullivan DA, Beeman R. Four years experience with home birth by licensed midwives in Arizona. *Am J Pub Hlth* 1983; 73:641-645

This study of 1,449 midwifery clients accepted for care between 1978 and 1981 reports outcomes of care provided by 26 licensed midwives (LMs). Of that number, at least half were also trained as nurses. The LMs were required to pass a state examination and to document evidence of training in midwifery.

The self-reported outcomes of births attended by LMs improved over the four year period, which the authors attribute to new requirements for licensure, i.e., “increased experience, close supervision, and continuing education.” However, the outcomes are not compared with those of the general population having births attended by other providers, or to births in any other setting by any other type of provider, during the same period.

Hinds MW, Bergeisen GH, Allen DT. Neonatal outcomes in planned v. unplanned out-of-hospital births in Kentucky. *JAMA* 1985; 253:1578-1582

This study of 809 out-of-hospital births from 1981-1983, based on data obtained from the state Center for Health Statistics and a questionnaire completed by mothers who experienced out-of-hospital births, examined the difference in birth outcomes between planned and unplanned out-of-hospital births. Planned out-of-hospital births were subcategorized into those attended by a physician and/or nurse, a lay midwife, and a relative, friend or other. Among all planned births, including the subcategory of lay midwife attendant, there were significantly fewer low birth weight (LBW) births than expected. Statistical power for evaluating neonatal mortality was too low, though there were no neonatal deaths in the lay midwife category. It is not specified if the nurse category includes CNMs. This study highlights the importance of differentiating between planned and unplanned out-of-hospital births, as well as the difficulty in studying a rare event such as neonatal mortality as an outcome measure.

Schramm WF, Barnes DE, Bakewell JM. Neonatal mortality in Missouri home births, 1978-1984. *Am J Pub Hlth* 1987; 77:930-935.

This study, based on data reported to the state Bureau of Vital Records, compared neonatal mortality after 3,067 home births to 525,645 physician-attended hospital births. Births were categorized by planning status as well as by the level of training of the attendant. The authors categorized physicians, CNMs and Missouri Midwives Association (MMA) midwives in a “higher level of training” category and defined “lesser trained attendants” as non-MMA recognized midwives and other, unidentified providers. The authors did not specify what type of education or training was obtained by the MMA-recognized midwives. Though the relative risk of neonatal deaths for planned home births was 2 to 1, nearly all of the excess mortality occurred in association with lesser trained attendants.

Durand AM. The safety of home birth: The Farm Study. *Am J Pub Hlth* 1992; 82:450-453.

Outcomes of intended home births for 1,707 women attended by lay midwives during the period 1971-1989 were compared with those of 14,033 women attended for in-hospital birth by physicians in 1980. The data were obtained through a retrospective review of medical records. After controlling for various prenatal risk factors, the outcomes for low-risk births attended by lay midwives were generally better than those attended by physicians, as indicated by perinatal death, low five-minute Apgar scores, labor complications, and assisted delivery. There is no discussion of the education or training of the lay midwives studies, although the author indicates that the midwives adhere to prenatal care standards “modeled to the recommendations of ACOG.”

Janssen PA, Holt VL, Myers SJ. Licensed midwife-attended, out-of-hospital births in Washington state: are they safe? *Birth* 1994; 21:141-148.

The outcomes of out-of-hospital births attended by licensed midwives (LMs) from 1981 to 1990 in Washington state were compared with those of CNMs and physicians. Based on birth certificate data matched for relevant demographic and obstetric characteristics, the outcomes of 6,944 out-of-hospital births attended by LMs were compared to the outcomes of 23,596 physician attended in-hospital births and 14,777 CNM attended in-hospital and 4,054 out-of-hospital births. The outcomes of LMs compared favorably with those of CNMs and physicians when controlling for various antepartum risk factors. The authors note that Washington has a state licensing program for midwives with academic requirements

that meet international standards of midwifery care set by the International Confederation of Midwives and the International Federation of Gynaecology and Obstetrics. To be eligible to sit for the licensing exam, midwives are required to have attended a state-accredited education program that is at least three years in duration and that includes specific curricula. The authors note that “education of birth attendants influences practice outcomes” and remark that the high level of preparation of LMs in Washington may be responsible for low rates of adverse outcomes in their practice.

Mehl-Madrone L, Madrone MM. Physician- and midwife-attended home births: Effects of breech, twin and post-dates outcome data on mortality rates. *J Nurse-Midwifery* 1997; 42:91-98.

This study used medical chart audits and/or self-reported data to assess the effect of attending breech, twin, and post-date pregnancies on home birth outcomes. Data were collected on a convenience sample of home births attended by physicians from 1969 to 1981 and by apprentice-trained midwives (ATMs) from 1970 to 1985. ATMs, as defined by the investigators, are midwives who do not have a formal midwifery education and who practice outside of the International Confederation of Midwives (ICM) definition. Though the perinatal mortality rate for births attended by ATMs was 14/1000 and the rate for physicians was 5/1000 (a statistically significant difference), the differences disappeared when high risk cases were eliminated. While noting that self-reported data by ATMs may bias the results in their favor and cautioning that findings should not be generalized to current ATM practice, the higher perinatal mortality rate among births attended by ATMs leads the authors to raise concern about the “overconfident” approach that some ATMs have taken when attending these high risk births at home.

The following three studies include information about the outcome of care provided by “other midwives,” but do not isolate their outcomes from those of other practitioners:

Simmons R, Bernstein S. Out-of-hospital births in Michigan, 1972-79: Trends and implications for the safety of planned home deliveries. *Public Health Reports* 1983; 98:161-170.

Based on state vital statistics data, this study examined trends in approximately 4,300 out-of-hospital births and documented a decline in physician attendance at home births and a corresponding increase in home births attended by other providers. The study did not distinguish between births attended by CNMs, PAs, RNs or other types of midwives, nor were outcomes compared by type of birth attendant.

Koehler NU, Soloman DA, Murphy M. Outcomes of a rural Sonoma county home birth practice: 1976-1982. *Birth* 1984; 11:165-170

This descriptive study of 741 births attended by both a physician and a lay midwife with a home birth practice in Sonoma County was based on provider self-reported data. The perinatal mortality rate and c-section rates for the home birth practice are considerably lower than the community average. Since a physician attended all births, it is not possible to isolate the outcomes of the midwives alone.

Declercq ER. Where babies are born and who attends their births: findings from the revised 1989 United States Standard Certificate of Live Birth. *Obstet Gynecol* 1993; 81:997-1004.

Data from over four million births were used to compare adequacy of prenatal care and birth weights for mothers and babies cared for by physicians, CNMs and “other midwives” in hospitals, birth centers and residences. This study highlights potential difficulties with misclassification of birth certificate data, as the “other midwife” category included direct entry midwives as well as student nurse-midwives (SNMs) and CNMs. For hospital births and birth center births, mothers attended by CNMs had higher rates of prenatal care and lower rates of low birth weight babies than did women attended by other midwives. For residential births, CNMs provided a greater degree of prenatal care, while “other midwives” had lower incidences of low birth weight babies than either physicians or CNMs.

Since some SNMs and CNMs were incorrectly included in the “other midwife” category, the outcomes of direct entry cannot be isolated.

Revised 11/28/05

The ACNM “QuickInfo” series was developed by the Department of Professional Services to respond to common inquiries, summarizing ACNM resources regarding a particular topic, as well as listing selected literature and a variety of other resources. Your feedback is welcomed; contact Professional Services at (240) 485-1800 or info@acnm.org.