|  |
| --- |
| American College of Community Midwives |
|  | **�*Outcomes of Planned Home Birth In Washington State�*** **University of Washington School of Public Health****and Community Medicine, Seattle Washington;** **Jenny W. Y. Pang, MD, MPH James D. Heffelfinger, MD;****Greg J. Huang, DMD, MSD; Thomas Benedetti, MD, MHA****& Noel S. Weiss, MD, Dr. PH****August 2002****Updated: Thursday, 15 June 2006 02:35 -0400** |   |
| A Comprehensive Review & Critique on the Pang-Benedetti Study on Home-based Birth \*\*  |

* [One Page Synopsis: How asking the wrong questions give you the wrong answers](http://docs.google.com/ACOG_HmBirth_synopsis_Aug02.htm)

Topic by topic navigational links

* [Introduction](#gjdgxs)
* [Abstract of Pang-Benedetti Study](#_30j0zll)
* [A Closer Look](#_1fob9te)
* [Australian Study](#3znysh7)
* [Original Wash. State Study](#2et92p0)
* [Major Home Birth Studies Reviewed](#tyjcwt)
* [Cesarean Revisited ~ OB.Gyn.News](#3dy6vkm)
* [Point by Point Critique of Methods & Data](#1t3h5sf)
* [Birth Certificate Data](#4d34og8)
* [Limitations & Problems](#2s8eyo1)
* [Missing Data on PPH & Respiratory Distress](#17dp8vu)
* [473 Premies](#3rdcrjn)
* [30 Min Rule Resuscitation](#26in1rg)
* [Zero Respiratory Distress](#lnxbz9)
* [Questions for Further Study](#35nkun2)
* [Fatal Flaw - the Shadow Side](#1ksv4uv)
* [Missing Operative Rates](#44sinio)
* [Peter Schlenzka's Study ~ The Safety of Childbirth Alternatives](#2jxsxqh)
* [A Plain English Example](#z337ya)
* [Conclusion and Citations](#3j2qqm3) (unfinished)
* [Abstract of Original Washington State Study](#4i7ojhp)
* [The Bottom Line ~ a system in which the physiological management of labor & birth is the norm](#1y810tw)

Synopsis ~ How Asking the wrong questions gives you the wrong answers!

**~** The Pang-Benedetti study appears to have been designed to mislead and to artificially create a media "event" to generate flattering publicity for obstetricians and hospital birth by making home-based birth care appear dangerous. Perhaps this is a misguided effort to neutralize the extensive media coverage of deaths in hospital patients as a result of medical mistakes, antibiotic-resistant infections and adverse drug reactions. Why we put healthy women and babies into such a bio-hazardous environment is a source of wonderment. However, two wrongs do not make a right.

The authors of  this study distorted and misrepresented research on the safety of midwifery and home birth, substituted "educated guesses" for factual data, used "soft" data to arrive at "hard" conclusions and skimmed off the operative complications from the hospital group before calculating the complication rate for the hospital cohort. They came to global conclusions based on extremely narrow criteria that included (by their own admission) missing and misclassified data. They ignored an astronomical rate of upstream medical interventions (such as Pitocin-accelerated labors, narcotic use, epidurals, episiotomies and admission of babies to neonatal intensive care). They likewise ignored all the subsequent down-stream complications associated with the high operative rate in planned hospital births, especially those in post-cesarean pregnancies. Efficacy was obviously not part of their equation.

I must assume that all this slight of hand was a desperate attempt to distract us from asking the really important questions -- is interventionist hospital care **safe** for healthy women with normal pregnancies? Is it scientific and evidence-based? Is it cost-effective? Does it meet the practical needs (emotional and developmental as well as long term safety) of mothers and babies? If we have a national emergency, such as a bio-terrorism attack or a �dirty bomb�, will it be appropriate to take up 20% of our entire medical and surgical resources to provide maternity care to healthy mothers and normal babies while our loved one suffer unattended in the hospital parking lot? Do we want to hospitalize healthy women and normal babies under such circumstances, exposing them to small pox, anthrax or sarin nerve gas? Is it wise to a have a national maternity care system in which doctors only know how to numb mothers up with drugs and anesthesia and then suck, pluck or cut the baby out with instruments or surgery?

To keep the public continually distracted and derailed from these topics, there has been a virtual media blitz in the last couple of years reporting on "research" that claims to have scientifically established the dangers of natural labor in post-cesarean pregnancies (VBAC), the so-called "silent epidemic" of normal vaginal birth and now that of community-based midwifery. Simultaneously with this campaign to eliminate normal birth, organized medicine has been actively promoting and idealizing the elective or "maternal choice" Cesarean (and daylight obstetrics!) as better and safer for all while lobbying for a return to "Once a Cesarean, always a Cesarean". If you want to eliminate normal birth you have to eliminate its advocates and guardians -- the midwives -- and then belittle and question the respectability of midwifery consumer groups like  *Citizens for Midwifery* and the  *International Cesarean Awareness Network (*ICAN). Organized medicine's favorite *modus operendi* has always been biased research (or a prejudiced rendition of it in the lay press) and a plan to denigrate everything associated with midwives, physiological management and the families who choose home-based maternity care.

This is what happens when all oversight and public accountability is removed from an "expert" system -- a phenomonon recently brought to light in the Enron / Author Anderson / World.com accounting scandal. The vast majority of Americans don't understand the stock market or high finance accounting and are not personally affected enough to want to do the necessary "home work". We all trusted (wrongly it turns out) that unbiased 'experts' within these systems would be honest and that some how, somewhere, someone "in the know" was watching and would report any wrong-doings. The same lack of public knowledge applies to normal childbirth, the 'expert' system of obstetrics and relative medical research. It is especially true for the technical language and statistical principles used in studies published on the relative safety or risks of various obstetrical interventions and philosophies of normal childbirth care. Our assumptions that somebody somewhere is watching and holding people accountable for the truth certainly was not true for those that benefited from the manipulations of stock market data. Unfortunately it also is not true for interventionist obstetrics and those that benefit from the manipulation of  its research. It is an expert system dominated by its own self interests, without adequate public accountability and no critical oversight by the media.

The authors of  this study used three major (and many minor) methods to manipulated the data, which included a hidden agenda in the research design and poor scientific methods, such as missing and misclassified data. First they took note of observations from a 1996 Washington State study on licensed midwives and planned home birth that identified an unusual number of neonatal deaths from congenital malformations. This was the result of **choices by pregnant women not to utilize genetic testing and/or not to abort babies with birth defects**. Then the study authors designed a research project to make it appear as if the cause of these neonatal deaths was the danger of "planning" a home birth and that if these same women had instead "planned" a hospital birth, twice as many of their babies would have lived.

It is true that babies with congenital heart disease (which accounted for 5 deaths from birth defects) are easier to manage when they are born in a large hospital with a cardiac specialist immediately present. However, this argument could then be used to force all pregnant women to have extensive genetic testing (which is not always accurate) and to require that all deliveries occur only in big medical centers with 24-7 coverage by pediatric cardiologists. The take-home message is that aborting "defective" fetuses is an excellent strategy for shaving a few tenths of a percent off the perinatal mortality statistics for obstetrician-attended hospital births, since only live births are counted while terminated pregnancies are not. By using these dubious numbers the subsequent bragging rights is likewise an excellent strategy for gaining media attention by claiming to have proved the superiority of interventionist obstetrics for healthy women. Left to its own "merits" interventionist obstetrics always fails to provide superior results.

The second major manipulation in the �*Outcomes of Planned Home Birth In Washington State�*  study was the core premise of the research combined with its core method -- a study of safety based on intended place of birth conducted in a state that does not keep track of that information. This study should never have been entitled "*Planned Home Birth*" because this characteristic could not be accurately quantified. The birth registry in Washington State does not record "Intended Place of Birth". It is not an "intended" home birth when the midwife assesses the mother at the onset of active labor and, detecting a potential or actual problem (bleeding, meconium, heart rate irregularities, etc), recommends immediate hospitalization. It is not an intended home birth when a premature baby delivers precipitously as the midwife walks in the front door. However, the Pang-Benedetti method -- based on assumptions instead of verifiable facts -- counts both of these circumstances as "planned" home births, even though one of the deliveries did not even occur at home. One wonders why anyone would plan to use birth certificate data from a state that does not collect information on �intended� place of birth as the foundation for a study on birth outcomes relative to "intended" place of birth? (If you are confused it is because they want it to be confusing.) Since when does an "educated guess" based on a series of unsupported assumptions replace accurate data, especially when talking about such a small data set -- 12 neonatal deaths out of 6,133 birth? That is a ratio of 6,133 to 0**.**02 or 2/10th of one percent.

And last but not least, they sealed this sweet deal by excluding operative deliveries from the hospital cohort. By not counting the inevitable complications (infection, maternal hemorrhage, depressed baby, intracranial bleeding, etc) associated with planned hospital birth -- a 30% forceps / vacuum extraction / Cesarean section rate, compared to 5% for planned home births -- they came very close to being able to claim perfection -- less than one neonatal death per 1000 (actually 0.75**:** 1000). The CEOs of several infamous corporations (Enron, Author Anderson, World.com, etc) would instantly recognize the 'creative' accounting strategy -- ignore negative numbers, count the positives four or five times and sweep everything embarrassing under the rug. Irrespective of these machinations, a half dozen "fatal" methodological flaws renders their conclusions invalid for any purpose other than documenting the differences in choices made by families who choose community based birth services with a licensed midwife in the state of Washington. With this data they could design public services announcements on informed choice and potential benefits of genetic testing aimed at this small subgroup of parents-to-be.

As usual, the issue of �home birth� is a really red herring -- that is, a topic that distracts us from the more important and more obvious issue which is the quality of care received by the 99% of women who choose to labor and give birth in hospitals or, due to medical circumstances, must labor and give birth in hospitals. The US spends more money on maternity services than *any other country in the world*, yet we have next to the lowest vaginal birth rate and are 22nd (third from the bottom) in perinatal mortality out of 25 developed countries. Shame on us. This is a very subtle or "soft" form of institutionalized violence against women and babies. In addition to the outrageous cost and other inefficiencies, there are multiple problems with the current interventionist system that beg for correction. We pray that the American College of Obstetricians and Gynecologists will rise enthusiastically to this occasion.

The issue before the public is not actually the relative safety of home birth but the relative risks of "standard" interventionist hospital obstetrics for healthy women. **It is hospital birth that is not "safe" and it is hospital birth that must be rehabilitated.** The real story, from an investigative journalist's point of view, is why organized medicine has embarked on a smear campaign focused on all forms of normal or natural birth. What are the hidden economic advantages and egocentric or professional agendas for doing this? How exactly are they 'cooking the books' so that a plethora of "junk science" can be spoon fed to an uncritical media?

The problem with contemporary obstetrical care in the US is the uncritical acceptance of an unscientific method -- interventionist care for healthy women. Speaking for mothers, midwives and other consumer advocates, our goal is to require physicians of all classes (GPs, FPs and OBs) to learn, teach and utilize the physiological management of labor and birth for all healthy women, regardless of the setting (home, hospital or independent birth center) for labor and delivery.

|  |  |  |  |
| --- | --- | --- | --- |
|   |   |   |   |

Clearly the answer to these problems is *not* home birth midwifery. The **challenge, as always, is to improve our hospital-based maternity care system**. This requires that medical educators learn and subsequently teach the principles of physiological management  to all categories of professional caregivers. It compels us to utilize physiological management and evidenced-based practice parameters for all normal labors and births, regardless of whether the birth attendant is a doctor or a midwife. This includes "patience with nature", non-drug pain management and " right use of gravity". To achieve this we must "normalize" normal labor and birth services by staffing our L&D units with certified nurse- midwives who are empowered and supported in providing the midwifery model of care as the "standard of care" for healthy women.

|  |  |  |  |
| --- | --- | --- | --- |
|   |   |   |   |

We must integrate community-based midwifery into the health care system a valid and respectable choice for healthy women and provide (without prejudice) essential and preventative medical services to home birth families, especially mothers who transfer into the hospital during labor. All of these corrections and improvements need to be done in conjunction with substantive changes in our national maternity care policies that underlie the provision of these services and the reimbursement of its careproviders by third-party payors and government programs.

Organized Medicine and Media Manipulation --

All that glitters is not gold....

by Faith Gibson, LM, CPM

\*\* Citations and "Conclusions" section unfinished

"work in progress" (8/22/02)

A most troubling example of biased obstetrical research combined with media sensationalism is a story that made its way through the newspapers in the US in the late spring and summer of 2002. It concerned an unpublished study by five Washington state researchers presented at a meeting of the American College of Obstetricians and Gynecologists. It was given wide circulation by the Reuters health news service and subsequently picked up by the New York Times. One of the study�s authors, Dr Thomas Bennedetti, is an obstetrician who has been a consultant and spokesman for the American College of Obstetricians and Gynecologists (ACOG) for many years. He is responsible for developing technical guidelines for the organization�s 40,000 members. His work defines the �standard of care� in court for management of shoulder dystocia and other aspects of obstetrical practice. I met Dr Benedetti at one such presentation at a �Grand Rounds� held for the Stanford University hospital obstetrical department.

The headline in the Reuters� news service article (May 8, 2002) by Jacqueline Stenson cryptically encapsulated everyone�s worst fears, stating �**Home Births Linked to More Infant Deaths**�. In typical sensationalized newspaper style, the first sentence in the story followed with the chilling news that **�Twice as many infant deaths occurred during home births than with hospital deliveries�**.

|  |  |  |
| --- | --- | --- |
|  |   |   |

People look at this picture of mom and newborn baby taken a few minutes after a home birth and think "oh no, this sweet baby could have died  -- why its worth anything to avoid such a tragedy". The problem is that medicalized hospital care actually is not "safer". For healthy women, it often  introduces hazards where none existed before.

Irrespective of this sobering reality, the Reuter newspaper story hooked the reader with the mental image of babies dying and then managed in less than 20 words to equate the words �home birth� with a doubling of infant mortality, while hospital delivery, by contrast, was portrayed as twice as safe. For economy of phrase and dramatic impact, this newspaper style is hard to beat. Regardless of the merits of the original research however, this salacious presentation created �junk� science.

Most people only skim the headlines of a news story or read no more than the first few sentences. Without access to the actual published paper and having no expertise in deciphering the complex statistical methods used to arrived at these conclusions, the lay public has absolutely no way to tell good science from bad. In general, people just assume that doctors (i.e., PhD researchers) are telling the truth, the whole truth and nothing but the truth. This particular study purports to have identified and scientifically documented that healthy women are making a fundamentally dangerous choice for themselves and their babies if they plan to labor at home and, if the labor is normal, give birth at home under the professional care of physicians and midwives. Simultaneously the study claims to have established that interventive hospital obstetrics makes low-risk childbirth safer.

These conclusions were, of course, couched in terms of a public services announcement, as if everyone involved in the project was either a totally unbiased researcher or a public spirited citizen with no vested interested of any kind in the outcome. The Reuters article liberally quotes the 1979 anti-home birth policy of the American College of Obstetricians (reaffirmed in 1999), which officially maintains that childbirth anywhere but an acute-care hospital setting is unsafe. Until recently, ACOG insisted on using undifferentiated birth certificate data from late miscarriages and precipitous premature births at home as �proof� that home birth was �five times more risky� than hospital birth. In fact, no study (including this one) has ever established that medicalized hospital care for healthy women improved outcomes. Undaunted by these facts, ACOG�s favorite characterization of home-based birth care is �the earliest form of child abuse�. Unfortunately, none of this heavily weighted political bias was mentioned in the various newspaper articles. Instead the Washington State study was presented as validation that ACOG�s policy is based on solid research data and has *nothing* to do with the issue of economic competition between midwifery and medicine.

This research on the �safety� of community-based midwifery care was developed and conduced exclusively by medical doctors without input from midwives or other home birth practitioners. The study contrasted newborn outcomes for normal pregnancies and medically uncomplicated labors who delivered at 34 or more weeks of gestation (7 1/2 months), using data from birth certificates, infant death certificates and selected hospital records. The Planned Home Birth cohort was a total of 6,133 babies. The specific number delivered at home by healthcare professionals was 5,854; those intending to be delivered at home and transferred to the hospital were 279 � a transfer rate of about 4%. These outcomes were compared to 10,593 hospital births involving healthy women. This included a total of 472 premature babies (born between 34 and 37 weeks). Excluding these premature births, there were only 6,052 in the �intended� home birth category. In the planned hospital delivery group a total of 18 babies died (1.7 per 1000) and in the planned home birth cohort there were 20 mortalities (3.3 per 1000). As a matter of general information, the overall perinatal mortality rate in the US, which includes premature babies and congenital malformations, is approximately 7 deaths per 1000 live births.

In those cases of neonatal morbidity or mortality associated with �planned home birth�, the vast majority of mothers included in this study were transferred to the hospital during labor. While this statistical data was not provided in these authors, the pre-delivery hospitalization rate was 88% in the other studies of planned home births done in Washington State during the same time frame (1989-94). In addition to the already small statistical difference between the two groups, the study identified 5 neonatal deaths (0**.**82 per 1000) in the planned home birth group that were the result of congenital cardiac disease and 3 babies (0**.**49 per 1000) who died of other major congenital anomalies. If the 8 fatal malformations are subtracted from the total of 20, it leaves 12 deaths in 6000-plus births or a mortality rate of 2 per 1000 in the planned home birth cohort. This is consistent with virtually every other study of home-based birth services by trained attendants with appropriate screening and access to medical services.

Unfortunately, this research and the subsequent newspaper reports added a great deal of heat to the debate but absolutely no light. It does nothing to lead us in a direction that facilitates a truthful examination of facts of both home and hospital-based birth services and fully informed patient consent relative to the choices made by the family in each setting. We are lead to believe that the issue is the healthy woman�s right to determine the type and circumstances of her care, which is seen by the obstetrical profession to be in conflict with the right of a normal baby to be �well-born�. However, no study on the relative safety of �intended birth settings� would be complete unless it accounted for all the relevant factors. This would include the accuracy of data and methods used and the relative rate of surgical delivery for planned hospital birth that is 3 to 5 times higher as well as all the down-stream consequences and complications of operative interventions associated with planned hospital birth, such as subsequent infertility or perinatal death in a future post-cesarean pregnancy.  The real question is whether hospital care for normal birth is safe.

### Abstract of the published paper � Obstetrics and Gynecology, August, 1, 2002

�*Outcomes of Planned Home Birth In Washington State�* University of Washington School of Public Health and Community Medicine, Seattle Washington; Jenny W. Y. Pang, MD, MPH James D. Heffelfinger, MD; Greg J. Huang, DMD, MSD; Thomas Benedetti, MD, MHA & Noel S. Weiss, MD, Dr. PH

**Objective:** To compare neonatal mortality and very low 5-minute Apgar scores (< 3) of planned home births with a comparable population of hospital births.

**Methods:** We examined birth registry information from Washington State during 1989-1996 on uncomplicated singleton pregnancies of at least 34 weeks� gestation that either were delivered at home by a health professional (N = 5854) or were transferred to medical facilities after \*\*attempted delivery at home (N = 279) [\*\*see note below]. These intended home births were compared with births of singletons planned to be born in hospitals.

**Results:** Infants of planned home deliveries were at increase risk of neonatal death (adjusted relative risk [RR] 1.99, 95% confidence interval [CI] 1.06, 3.73), and Apgar score no higher than 3 at 5 minutes (RR 2.31, 95%% CI 1.29, 4.16). These same relationships remained when the analysis was restricted to pregnancies of at least 37 weeks� gestation. Among nulliparous women only, these deliveries were associated with an increased risk of prolonged labor (RR 1.73, 95% CI 1.28, 2.34) and postpartum bleeding (RR 2.76, 95% CI CI 1.74, 4.36).

**Conclusion:** Planned home births in Washington State from 1989 to 1996 were associated with higher infant mortality rate and a higher incidence of very low 5-minute Apgar scores.

###  A Closer Look  - More Light, Less Heat

|  |  |
| --- | --- |
|   | It is unfortunate that the researchers and newspaper journalists made *no mention* of the hundred or more excellent studies published in the English language that explore the question of relative safety between hospital and home settings for healthy childbearing women with uncomplicated singleton pregnancies and access to appropriate medical care. The vast majority of these studies reached a *very contradictory conclusion* -- a perinatal mortality rate for normal babies that is equal to or greater than hospital-based care.  |

In spite of a wealth of information from prior studies the Pang-Benedetti authors only cited 4 of them as background for their thesis. The opening paragraph refers to a study by Burnett, *et al* (North Carolina, 1980) as upholding the conclusions of their study (i.e*., increased* *neonatal mortality for planned home births*) when in fact, the North Carolina study validated that lay midwifery care (with a perinatal mortality rate of 3 per 1000) was safer than both unattended home birth (perinatal mortality rate of 60 to 120 per 1000) or 1980 hospital delivery mortality rate (then 12 per 1000). Another study specifically mentioned in the Pang & Benedetti research was done in Missouri in 1980, a place that does not have state-regulated midwifery for home-based care. There are so many important differences in the characteristics between these two cohorts of childbearing women, their access to medical services and of the professional standards of midwives providing care to them and the effect of the passage of time (more than 20 years) that this study is not appropriate for this research.

Of this tiny group of 4 studies, only one was both current (1998) and extensive � an  Australian study that identified an increased perinatal loss of 1.6 fold for home labor or birth but *only for pregnancies that were already identified as higher risk or included a complication.* For the vast majority of home birth practitioners in the US, these risk factors � twins, breeches, compromised post-date pregnancies and those with significant meconium in the amniotic fluid during labor -- would automatically risk the mother out for home birth. However, what I considered particularly interesting in the Australian study was the opinion stated in the introduction to the study:

|  |  |  |
| --- | --- | --- |
|   | "Despite decades of political and academic debate, the relative merits of home versus hospital birth  **remains unproven.** This is likely to remain so. Comparisons that are sufficiently unbiased and large enough to address crucial safety issues are unlikely to be forthcoming [1,2]. Although home and hospital offer different benefits for birth, neither has �standard care� characteristics. In fact **the range from safe to unsafe practice may be wider within each location that it is between them**.  Addressing what constitutes safe practice at home may be a more pivotal concern than attempting to quantify the theoretical differences attributable to place of birth." \*\*emphasis added |   |

This sentence �the range from safe to unsafe practice may be wider within each location that it is between them� and �addressing what constitutes safe birth practice at home� are really the crux of the "home birth" issue.

Also the data on in the Australian study  **appropriately defined planned home birth as a birth that �at the *onset of labor* was intended to occur at home�.**  This makes a real difference in separating �quality of care� issues from random numbers as well as acknowledging the perspective of community-based midwifery practice, which is distinctly different than hospital-based services. From a midwifery perspective the only criticism of this Australian study is that the data was somewhat old � taken from records of births between 1985 and1990. There have been a lot of improvements in midwifery care in the last 12 years. Other substantial differences were the inclusion of fetal deaths and a large number of physician-attended home births. Many researchers have noted a higher level of bad outcomes when physicians provided home birth services as doctors often try to manage high risk situations at home that midwives would not attempt. Doctors also tend to inappropriately medicalize women in non-medical circumstances (for instances, giving IV Pitocin or using forceps at home).

Unfortunately, the Washington State study did not acknowledge the important differences between the Australian research (such as twins or breech) and their criteria nor include this type of helpful information (for example, the increased problems of meconium aspiration in post-dates pregnancies). They also did not discuss nor identify the impact of those known risk factors in their study. We do not know if (or how many) of the 12 deaths in the planned home birth group occurred in labors that were immediately identified as high risk at the onset of labor and transfer immediately (i.e., no intention to give birth at home). It is this type of information that would make the study useful, permitting midwifery providers to identify and correct any problems revealed.

In the last decade, as more states passed direct entry Midwifery Practice Acts and established state licensing laws, community midwives have moved closer to the center of the spectrum in regard to their interface with conventional medical care. Midwives are much more likely to recommend technological  testing (for example, prenatal and post-dates ultrasound and non-stress tests (NSTs) and women are more likely to agree these days than in times past. Through the miracles of computer technology and miniaturization, electronic equipment is available to community midwives such as a laptop-sized electronic fetal monitor. This permits midwives to routinely perform NSTs after 41 weeks and/or to use EFM episodically at home on a post-dates mom in early labor if there is any question of fetal well-being. These new portable EFMs even allow the electronic tracing to be sent as a fax to the hospital perinatalogist for evaluation. The same miracle of miniaturization makes portable pulse oximetry available to home birth practitioners so that a baby who does not �pink up� immediately can be monitored and transported in a timely manner if necessary. While this is not yet the statistical norm for the majority of midwives (nor desired by the majority of home birth families), there are a surprising number of both who take advantage of this opportunity to offer (or experience) a more main-stream version of home-based birth services.

Professionally licensed midwives providing community-based birth care are currently trained, skilled and equipped at a level relatively equivalent to the capacities of the nursing staff in community hospitals. Small and medium hospitals do not normally have 24-7 �in house� surgical or neonatology coverage. This means that L&D nurses must independently discover or recognize a problem or urgent need for obstetrical help and then call the doctors in from their homes (or offices). The nurses must be equipped and able to respond and stabilize the mother/unborn or newborn baby for up to 30 minutes while awaiting the arrival of the medical team. Professional midwifery in the 21st century  has the same capacity to monitor the progress of labor and the well being of the baby as is the standard of care in smaller hospitals. Midwives are equipped with the same emergency drugs and IV fluids, oxygen and neonatal resuscitation equipment and the same skills. Like L&D nurses, community midwives also have to cope with a lag time of 10 to 30 minutes, during which time the physician is notified and mother is transferred to the hospital where the doctor will take over care. **To mothers and babies, it does not matter whether they are in the hospital waiting 30 minutes for the doctor and surgical team to be called in from home or the mother laboring at home is transferred to the hospital where a physician is waiting to provide medical care.**

|  |  |
| --- | --- |
| The  Original Study: �**Planned Home Births  --****Outcomes Among Medicaid Women****in Washington State** |  |

A most astonishing absence in the Pang-Benedetti research was its relationship with the original Washington State study of planned home births entitled: �**Planned Home Births  -- Outcomes Among Medicaid Women in Washington State**, by Laurie Cawthon, MD, MPH July 1996; Washington State Department of Social and Health Services�. This important and relevant piece of research, which did include the participation of both nurse and licensed midwives, was never acknowledged, cited, referred to or refuted in the Pang-Benedetti study. The original Washington State study used the same state birth registry for 6 out of the 8 years covered by the Pang-Benedetti study.  Conclusions by the Washington State Department of Social and Health Services by Dr Laurie Cawthon are contradictory to the Pang-Benedetti study. I quote Cawthon, *et al*: �The result of this study are consistent with a large body of literature which has documented the safety of planned home birth for low risk women when attended by a trained provider�. The *Executive Summary* of the original defines the nature of its inquiry:

�This study describes birth outcomes, maternal characteristics and prenatal care for women with planned home births who gave birth between 1989 and 1994. Women with home births are compared to other women who received prenatal care from licensed midwives and gave birth in birthing centers or in hospitals.  These groups are compared to the general Medicaid population of women who gave birth. �. Women who received prenatal care from licensed midwives were assumed to be planning (or at least considering) home birth�.

�Women who delivered at home and received prenatal care from licensed midwives were typically low risk with respect to established risk factors for adverse birth outcomes: they were mostly white, older, married non-smokers and highly educated. Many of the same �factors may predict successful home delivery.�

Using the *Kotelchuck Adequacy of Prenatal Care Index* as a measure, this study found that the proportion of women with adequate or better than average prenatal care was substantially higher for home birth and birth center groups. The study was complimentary to the quality of care provided by licensed midwives in Washington state as documented by Medicaid billing and data birth registry, noting:

�The are the very low rates of poor birth outcomes among women delivering at home or in birth centers��, an indication that LMs recognized problematic labors and appropriately transferred the mother.

|  |
| --- |
| �Birth outcomes for home deliveries were striking for their very low rates of poor outcomes.    For women who received prenatal care from licensed midwives, the majority (85% to 100%) of those would subsequently deliver infants with poor outcomes were transferred for hospital delivery at some point prior to birth.� **Baby Crowining** |

However it characterized one of the �most striking findings� of its research to be �the very high rates of in-hospital delivery for infants with poor outcomes� born to women who received some or all of their prenatal care from licensed midwives.

��the rates of neonatal and post-neonatal mortality among women who received some prenatal care from licensed midwives and gave birth in hospital are higher than the rates for Medicaid births in general.

�  the number of events is small (a total of 16 infants deaths among 1,020 liveborn infants born in 1989 thru 1992)

�.In reviewing the causes of death and underlying medical conditions, it was found that 12 of the16 infant deaths were attributed either to Sudden Infant Crib Death (n = 6) or to major congenital malformations (or chromosomal abnormalities) (n = 6). The rate of major malformations and chromosomal abnormalities found among the infants born with women with prenatal care from licensed midwives (6.9) per 1000) was significantly greater than the rate among all other Medicaid births (1.9 per 1000, p = 0.004).

|  |  |
| --- | --- |
| �Some received little prenatal care from licensed midwife (i.e., only a pregnancy test or Initial Assessment) and the transfer rate from this broad group is predictably higher��  �...we found that 43% of women with some prenatal care from licensed midwives delivered in hospital.�   |   |

The small increase in neonatal mortality rates was identified as reflecting a difference in the choices made by childbearing women (such as whether to use genetic testing prenatally) and not relevant to the quality of care received. However, even this increased rate was deemed to be �not statistically significant�, due to the small numbers involved and the rarity of these events�. An example of the statistical nature of these �rare� events are two cases of conjoined twins out of a small cohort of only 1,020 live births in the planned home birth group � a ratio of one out of 500 -- while there were only two conjoined twins in the general Medicaid groups of 105,317 -- a whooping one out of 52,658 deliveries. This is a good example of the statistical problems created when trying to make general conclusions from a very small set of data � natural variations are unnaturally magnified, which can lead to very wrong conclusions.

**The Cawthon study goes on to conclude that:**

�The occurrence of these birth defects should not be attributed to the prenatal care provided by licensed midwives. All the evidence we have suggests the mothers of these infants were treated appropriately during pregnancy and the majority (14 of 16 or 81%) of the infants who died during the first year of life delivered in hospital. However, the occurrence of these birth defects suggests that women who sought prenatal care from licensed midwives may be in some way different from other Medicaid women.�

�Infants of women who seek homebirth in a natural setting, with minimal high-tech interventions, are by no means immune from birth defects and chromosomal abnormalities.

�. It is to be expected that women who are planning (or considering) home births and seek prenatal care from a licensed midwife may be reluctant to comply with the usual guidelines for procedures such as triple screening (maternal serum alpha-fetoprotein, estriol, and human chorionic gonadotropin) and/or amniocentesis��

�The finding of higher rates of certain birth defects among women who planned home birth and received prenatal care from licensed midwives is intriguing and could be a random event. The occurrence of these birth defects should not be attributed to the place of birth or the prenatal care provided� In view of these considerations,  **the results of this study are**  **consistent with a large body of literature which has documented the safety of planned home birth for low risk women when attended by a trained provider**.�

�In addition to definitional issues and inconsistent selection of study subjects, most problematic in the analysis of infant mortality in published reports was the tendency to exclude lethal malformations from further analysis of infant deaths and reported mortality rates.�

This last observation from the original Washington State study seems to have provided  **a virtual blueprint for the authors of Washington State Study II**  who appear to have quite purposefully included lethal malformation in their analysis of neonatal mortality rates. This muddies the water as it introduces a data set focused on the personal choices made by the pregnant women � whether to do have genetic testing performed (amniocentesis, AFP and ultrasound) or if testing is done, this cohort of women more frequently chooses not to abort their pregnancies when potential genetic problems are revealed. This has nothing to do with planned home birth or the quality of care provided by licensed midwives. Lethal malformations should never have been included in the data sets used in the Pang-Benedetti study.

Major Studies on Home-based Birth Care Confirms Equal Outcomes

But finds Higher Complication Rate in planned hospital deliveries

The great majority of studies of healthy women who choose home-based birth services under the care of an experienced birth attendant had outcomes that were of equal or greater safety for their unborn and newborn babies (cite Schlenzka). The majority of these studies identify a perinatal mortality rate in all birth settings (home, hospital and independent birth centers) of approximately 2 per 1000 live births (excluding prematurity and congenital anomalies). As for the safest type of care for healthy mothers, community-based midwifery care (home or independent birth centers) reduces the number and magnitude of maternal complications and subsequent medical and surgical interventions by 2 to 10 times. (12 of the best home birth citations go here).

The Reuters newspaper accounts of the Washington study made no mention of the dramatically higher Cesarean rate for women planning hospital-based obstetrical care, which is 3 to 6 times greater than planned home birth with no reduction *at all* in the rate of cerebral palsy (cite ObGynNews article). Nor was there any accounting for the �excess� surgical mortality and morbidity (morbidity refers to post-op complication s such as bleeding or infection) that occurs as a result of cesarean surgeries and other hospital interventions. The complications of post-cesarean pregnancies -- placenta previa, placenta percreta, emergency hysterectomy and neonatal death or neurological damage subsequent to uterine rupture � are all life-threatening. These catastrophic complications of cesarean surgery frequently move the issue of maternal and infant risk to a different place on the spectrum, but they do not reduce or eliminate it. This substantial increase in both maternal and neonatal mortality in subsequent pregnancies was not factored into the study�s premise nor acknowledged in the newspaper story.

Reuters news service, the NY Times and other media do not have to be restricted to these one-sided opinions. Other reputable research, including other obstetricians, have noticed and commented on the gapping holes in these spurious arguments promoted by representatives of organized medicine. Access to this data is only a mouse-click away. For instance,  Dr. Elaine Waetjen, discussed and documented the lack of scientific evidence that elective Cesarean are preventative of pelvic floor dysfunction and that its use increases the danger to women at the time of surgery and "down stream" in subsequent pregnancies. A �Guest Editorial�, entitled �Elective C-section Revisited�, was published in Ob.Gyn.News, 4/1/01, Vo l 36, No. 15 and is available on line at [www.eObGynNews.com](http://www.eobgynnews.com/). It provided the following information:

**�Cesarean surgery causes more maternal morbidity and mortality than vaginal birth.**  In the short term, C-Section doubles or triples the risk of maternal death, triples the risk for infection, hemorrhage and hysterectomy, increase the risk of serious blood clots 2 to 5 times and causes surgical injury in about 1% of operations.

In the long term,  **cesarean section increases the mother�s risk**  of a placenta previa, accreta or percreta, uterine rupture, surgical injury, spontaneous abortions and ectopic pregnancies while decreasing fecundity.

Babies delivered by cesarean have a  **higher risk of lung disorders and operative lacerations.**� Cesarean babies also suffer triple the rate of asthma as adults**.** (\*Cesarean Birth Associated with Adult Asthma -- ObGynNews, 6/15/01, Vol  36, N0. 12)

In another edition of *Ob.Gyn.News* an obstetrician-researcher reported on a study to determine the �excess� perinatal deaths subsequent to Cesarean surgeries. He questioned whether the routine use of Cesareans for non-reassuring fetal heart tones in an attempt to prevent cerebral palsy actually improved outcomes. This is the category of increased interventions (C/S for fetal distress) that is directly associated with the routine use of continuous electronic monitoring in low risk pregnancies. Dr Hankins used a concept in medical research known as �numbers need to treat� (NNT) -- that is, the number of patients that a preventative treatment must be performed on in order to prevent one �bad outcome�. For example, it is widely accepted wisdom that doctors would have to perform a 1,000 Cesareans for �big babies� in order to prevent one case of Erb�s palsy � a complication caused by difficulty with the baby�s shoulders during a vaginal delivery. Dr Elaine Waetjen (quoted above) identifed the NNT relative to pelvic floor dysfunction as 23 cesareans to prevent one case. Using commonly accepted figures for complications in post-cesarean pregnancies, Dr. Hankins concluded that for each baby theoretically �saved� from cerebral palsy by a �timely� Cesarean,  **another baby would be lost in a future pregnancy.**

However this seeming equality does not take into account what he termed the �substantial morbidity� for the mother related to her surgery. This includes a 5 to 10-fold increase in the relative risk of infection, a 5-fold increase in thromboembolic events (blood clots), as well as a 10 to 20-fold increase in future risk of placenta previa and accreta. His conclusion was that:

�Performing cesarean section for abnormal fetal heart rate patterns in an effort to prevent cerebral palsy is likely to cause as least as many bad outcomes as it prevents� (OBGNews, 4/15/02, Vol 37, No. 8, Dr Gary Hankins)  emphasis added

While considerable resources of organized medicine are devoted to maintaining the fiction that normal birth is pathological and that care providers who offer physiological management (i.e. midwives) are unspeakably dangerous, some obstetricians privately acknowledge that this is simply not true. For example,

|  |  |
| --- | --- |
| "As an Obstetrician, I have learned that when things are left to themselves things usually turn out ok. In essence, we represent expensive "insurance policies" to those giving birth in a hospital under our care. ... how could we ever get enough numbers to compare outcomes with ... midwives, given the infrequent ... complication rate of childbirth, especially seemingly low risk ... ones". ~ ob-gyn-l@obgyn.net 1/17/97. |   |

In response to critical comments about non-nurse midwives by other OBs, obstetrician Beverly Miller said:

|  |  |  |
| --- | --- | --- |
|   | **"all major studies EVER done (see the literature) support the fact that trained ... midwives (i.e., pass a licensure exam ... etc) have as good or better stats in out of hospital settings than OBs do in hospital. The morbidity/mortality rates are lower in comparable pregnancies, the midwives frequently do a better job of risk reduction management, score higher in perceived quality of care (time element and rapport development count a lot here).****I've heard physicians say that if one of the midwives they backed up lost a baby, they were convinced that they, too would have lost it. There are rotten apples in every barrel, my friend. Pluck them out and go on  Don't sacrifice the benefits of utilizing the rest for the well-being of community maternal-child health. Find a good midwife in your area and give her some support". ob-gyn-l@obgyn.net 1/31/97 [?? 9 & 10]** |  |

Misleading newspaper accounts of a fundamentally flawed study provide an opportunity to see our culturally complex assumptions about childbirth as they are interwoven with popular prejudices and ignorance of what is normal. It important not be seduced into thinking the issue is home-based midwifery because really not. In addition to the bias and factual flaws, the Pang-Benedetti study is to be criticized for diverting the public�s attention from the substantial problems of contemporary obstetrical care such as failing to teach, learn or utilize physiological management of labor and birth (giving rise to a sky-rocketing Cesarean section rate and plummeting number of spontaneous vaginal births).  The steady stream of inaccurate, misleading and sensationalized portrayals of community-based midwifery also derails the public from questioning the wisdom and cost-effectiveness of utilizing surgical specialists to provide care to healthy women or rationally examining the newest wrinkle � the �silent epidemic� of normal vaginal births and the obstetrically favored �maternal choice� cesarean. The silver lining in this otherwise dark picture is another chance to review the fundamental criteria of �good� (PhD-level) scientific research.

A Critique of Methods Used and Accuracy of Data

One would assume from the authoritative tone of the authors that the Washington State study II fulfilled the basis scientific criteria of contrasting �like with like� so that the data produced could be fairly compared and thus provide a meaningful conclusion. The newspaper account�s lack of reference to the large number of similar studies would lead one to believe that this research was either the first of its kind or had some other special attribute, such as being a bigger, better or a more well-designed study, which would permit it to state as a �once and for all� definitive Truth that for healthy women having a normal childbirth, �hospital equal safe�, �home equals. Unfortunately, this was not the case in any of those venues � it is not the first, the biggest or the best designed.

But that is not the biggest problem with the study, which I would define as a kind of �bait and switch�. The �limited� goal it identifies is applied as a �global� or universal measure on the whole field of community-based midwifery (only 7.6 of the birth certificates identified MDs as the professional attendant while 92.4% listed a midwife). There is nothing intrinsically bad or unscientific about having a less-than-global goal as long as you stick to �the facts� and only the facts. The Washington State study II does not do that.

The study�s �objective� is stated an intention to determine �certain� adverse neonatal outcomes and lists only 3 -- death, low Apgar scores and need for ventilator support greater than 30 minutes -- as an object for study. The study has limited itself  to outcomes that occur immediately in the hospital and does not address any of the up-stream medical or surgical interventions that preceded the birth/delivery or any of the down-stream reverberations. For specific maternal outcomes it lists only two -- prolonged labor and postpartum bleeding. In general these maternal �complications� are both imprecisely defined. In this study they were measured by medical and *not* midwifery criteria. The 5 criteria identified by the study are all very important measure of quality of care but they are far from giving one the �whole picture� on the topic of informed choice for healthy childbearing women. Four out of the five criteria are admitted by the authors to be �soft� data at high risk for error or misclassification. I quote:

�**Several of the outcomes in this study may have been misclassified**, namely \*respiratory distress, requiring assisted ventilation for more than 30 minutes, prolonged labor and postpartum hemorrhage.�  (page 8, \*emphasis added)

This is a particular problem for the category of �prolonged labor� as most women, particularly first-time mothers, have a 4 to 48 hours �warm-up� phase while the Pang-Bennedetti study used 20 hours as the definition of �prolonged� labor. In obstetrician-attended, medically managed labors, a large percentage of these mothers are admitted to the hospital as soon as they have had mild contractions for a few hours. Their labors are then medically diagnosed as non-progressive and augmented with the artificial hormone Pitocin. As a result statistical averages for length of labor in hospitals are significantly shorter that it is for home-based midwifery care.

**Inability to Track for �Planned� place of birth:** **Birth Certificate Data in**

**Washington State Does Not Record "Intended Place of Birth"**

Why would one use birth registry data from a state that does not collect information on �intended� place of birth as the foundation for a study on birth outcomes relative to intended place of birth? Does an "educated guess" replace accurate data?

�Because Washington State birth certificates do not identify which home births are planned, we defined planned home birth as those singleton newborns of at least 34 weeks gestation who were delivered at home and who had a midwife, nurse or physician listed as either attendant or certifier on the birth certificate.�  p.2  emphasis added

The authors note that the very nature of this study has potential problems with accuracy in several critical factors. This is not trivial as the study identifies the inability of prior studies to determine whether or not a home birth was �planned� at the onset of labor as a �fatal flaw� for former research. The authors promote their study as unique for its supposed ability to accurately deduce from secondary characteristics the �intention� to have a home birth. While the birth registry data in Washington State does an excellent job of tracking all medical and surgical interventions (even though it was not accounted for in the study) this data does not distinguish between �planned� and unplanned home births (upon which all these negative conclusions depended). For purposes of the study, this was �inferred� by circumstantial evidence with *absolutely no way to ascertain whether or not it is accurate*. The total number of births in the study (17,086) is quite large but the number of �adverse� neonatal events is tiny � a grand total of only 38 neonatal deaths. Of those, 19 were the result of fatal congenital malformations, leaving only 19 theoretically �preventable� deaths (rate of 1.1 per 1000). That means that the accidental inclusion or mistaken assignment in even a few cases would negate or even reverse the stats to the favor the other group.

The basic foundation of the study � accuracy in the face of a tiny data set -- cannot and did not give us anything in which to have confidence. To be blunt, they made a number of educated guesses and then used statistical conclusions they created to build a case for increased hospital �safety� based on these "by gosh and by golly" numbers. With only 12 mortalities (subtracting the 8 cases of birth defects from the total of 20) as the basis of all conclusions on 'quality of care' issues and whether or not these deaths were indeed �preventable� based on the intended place of birth, that it would be crucial to actually interview the professional care providers and if possible the parents and review the charts. This was not done. And even if it had been, the numbers are too small to draw the major conclusions that the authors, newspapers and most recently ACOG have ascribed to this study  - home birth bad, hospital birth *good*!.

The authors of this anti-homebirth study�s did acknowledge that the statistical difference in neonatal mortality between the two groups -- 3.3 vs 1.7 per 1000-- was actually very small but then goes on to say that �women should know there is an added risk with home births�. Only on this last point can we agree -- women should be apprized of any �added� risk, whether receiving care at home or in hospital, whether provided by doctors or midwives. That care, as much as is humanly possible, should be safe, scientifically-based and satisfactorily meet the practical needs (physical, psychological and social) of both mother and baby and do so in a cost-effective manner. This perspective acknowledges the personal and social expense of inadequate or ineffective care and the detriment of over treatment that wastes money and sometimes causes serious or fatal iatragenic complications. Medical �routines� that **over treat** a large percentage of the childbearing population misdirect precious medical resources, at times denying care to the truly ill, while causing unnecessary suffering to mothers and their babies without improving their circumstances.

There are many jurisdictions that include a question on the birth registration form for �Intended place of Birth� that also have state-regulated professional midwifery (California for example). The only way to have accurate information on �intended place of birth� is for the professional who attended the birth to directly provide that data. Only the midwife or physician knows whether or not the baby made an unscheduled appearance before the �intention� to hospitalize could be carried out. And when the mother is hospitalized at the onset of labor (or the decision to hospitalize is made immediately upon arrival of the caregiver at the family�s home), then this birth is an �intended hospital birth�.

Without this quality of specificity and reliability, what we actually have is data on a cohort of childbearing women who choose to receive prenatal care from a midwife and experienced some change of health status that make hospitalization the preferred location. This raises different questions -- for example, whether these women are less likely to utilize genetic testing to determine if congenital malformations are present, or if such screening is done, are they less likely to abort such pregnancies? Or do they frequently choose to deliver at home in the face of untreatable lethal malformations? This would be a better focus for research based on data that does not define �intended place of birth�.

Here are other quotes on the limitations and problems of accuracy by the Pang-Benedetti Washington State study authors:

�The study has several limitations that are related to the reliance on birth certificate data. These include misclassifying various outcomes and co-variates. In addition, data were missing for some potential co-founders and effect modifiers.� (page 8)

�In addition, singleton newborns of at least 34 weeks who were born after transfer from home to a medical facility were considered to be planned home births if there birth certificates indicated that delivery was initially attempted at home\* by a health care professional.� (p.3)

The phrase �delivery was initially attempted at home� brings pictures to mind of the mother pushing for hours while the midwife unsuccessfully attempted to pull the baby out. Only after an exhaustive failed effort would the midwife transfer the mother to the hospital. That�s a *completely wrong picture* of home-based midwifery care and a misunderstanding of the majority of complications that result in hospital transfer. The most frequent problems are labor related � such as failure to progress -- and not the birth itself.  The problem is a vocabulary related to �delivery� when what we are actually describing is labor, not the birth of the baby. I guess doctors don�t relate to the many hours of labor, since they personally don�t attend labors and think instead in terms of �the delivery�. In their world, they would not be present at a �delivery� unless they were trying to do something to make the baby come. For midwives, it is the mother, through her spontaneous labor, who is the active agent or �doer�.  The efforts of the laboring mother to bring about the birth of her baby goes on whether or not the midwife is even present or if she is there in person, whether she is �doing� anything.

If a midwife arrives at a client�s home who is in premature labor or has some other evident problem, such as meconium in the amniotic fluid or fetal distress (abnormal fetal heart tones on arrival) and the mother delivers precipitously before she can be transferred (not uncommon for multiparous women), the baby would indeed be �born at home� and the birth certificate signed by a professional midwife but it would NOT be a �planned� home birth. If that baby must be hospitalized due to prematurity or meconium aspiration syndrome, etc, it will be incorrectly coded as a complication or perinatal death in a �planned� home birth. In fact, the encoding system give a false picture on both sides of the issue � babies categorized as �planned home births� were actually delivered in the hospital and babies that were planned to be born in the hospital are also mistakenly categorized as �planned home births. �

Midwives never think in terms of "home birth" as a "plan" to have the baby at home, no matter what. The intention or 'plan' is to begin labor at home *if the pregnancy is normal* and to remain at home as long (and only as long) as *the labor remains normal*. The correct term to describe that is "community midwifery" and "**home-based** birth care". The midwife is a community-based provider of normal maternity care, utilizing the full range of community resources and making "right use" of technology. That includes encouraging or arranging for the mother to receive diagnostic services from various types of medical clinics and laboratories, to consult with obstetricians and perinatalogists and, when necessary, to arrange for hospitalization due to a situation of concern or a complication. To borrow a term from mountaineering, home-based care acknowledges the family's home to be the "base camp" in relation to "other" services and other locations, to be used if or when appropriate.  However this subtle distinction of **home-based** care is a blind spot and prejudice of the medical model, accustomed as they are to "one-stop shopping" of the hospital. They don't acknowledge these critical differences and fail to take them into consideration when designing research. This blind spot is smack daub in the middle of the Pang-Benedetti study which apparently did not even know enough about community-based midwifery to take this vital distinction into account when building their statistical model for this study.

To minimize misclassification*\** of intended and unintended homebirth the main analysis was confined to births in which there were no recorded pregnancy-related complications*�\* emphasis added*

Again this begs the question. If a midwifery client in early labor at home reports to me by phone or is found by me in a house call to have abnormal bleeding, ruptured membranes with heavy meconium or a fever, I would transfer her care to a medical facility. However this would be classified by the authors of the Washington State study II as a planned home birth, when it is definitively not.

� misclassification might be greater in a home setting than in a hospital  � the magnitude and direction of any such bias cannot be predicted and so caution should be used when interpreting the results for these outcomes. P.9

**Missing Data**: The lead author of the study, Jenny Pang, acknowledged potential problems that were the result of missing or unreliable data. Examples of missing data that I found substantial were stats for postpartum hemorrhage (page 6) and assisted ventilation. The planned home birth cohort (approx. 6,000) only had 164 missing data sets, while the approx hospital 10,000 deliveries had 732 charts with missing data on PPH � a factor almost 3 times as high. The missing data for assisted ventilation was even greater � 1170 for the hospital (out of 9423) or about a 12% of the total while there were only 160 missing sets in the planned home birth cohort of 5983.  How can one say with absolute confidence that the home-birth cohort had �increased� or �excess� PPH and assisted ventilation rates when so much data is absent from the hospital set that we actually don�t know if or what the difference is.

**473 premies**: It is curious that the actual raw number differences between babies born at 34 to 37 weeks of pregnancy as contrasted with babies 37 or more were never given. The authors just assured us that the numbers were �comparable�. In the final frame, they based all computations on the whole set that included 473 premature babies. The conventional wisdom has always been that premature babies have significantly more respiratory distress than term babies. If that is true (by even a few instances) that would change the statistical conclusions remarkably. And if there really was NO difference at all, then perhaps we should be asking why � have the perinatalogist been wrong all these many years, is it �OK� for women to have more mature premies (34+) at home since there is no difference in the outcomes between home and hospital delivery. This seems to defy common sense but anything to shed light on the subject would be appreciated.

**30-minute resuscitation rule:** Another unanswered question is the criteria 30-minute rule for neonatal resuscitation that the study used as a measure of quality of care. Since depressed babies born at home would have their respiratory efforts assisted for several minutes (3 to 20) before the arrival of the paramedics and the EMTs would continue to ventilate during the trip to the hospital (5 to 30 minutes), until the baby was admitted under the care of the perinatologist, it would be expected that any baby with serious respiratory distress born out of hospital would have assisted respirations for at least 30 minutes, based not on how critical the baby was but rather on the unique circumstances of transport. One questions the relevancy of using this particular data set as a crucial watershed measure while completely skipping all the other aspects of medical and surgical intervention such as operative delivery rate and NIC admission.

Another equally interesting but unanswered question is how many of the hospital cohort had to be resuscitated for 29 minutes or less. Is it possible that more hospital born babies, especially whose mothers were given narcotics or who were those delivered by forceps, VE or Cesarean, required neonatal resuscitation?

**Mystery of**  **Zero Respiratory Distress Mortality for Hospitals Cohort:** Then there is the very curious rate of zero respiratory distress deaths for hospital deliveries. According to this data, there was not a single respiratory-related fatality out of 10,593 hospital deliveries  - a truly remarkable record that, if true, should itself be a focus for study. If this occurred because the 10K hospital cohort were all spontaneous birth, this remarkable number can be assumed to demonstrate the greater safety to babies of normal spontaneous birth as compared to operative deliveries. Or it may have something to do with the process of assigning medical diagnosis, as there is quite a lot of latitude in defining the medical explanation for why a baby does not make it.  For example, if the cause of the respiratory distress is a congenital malformation or infection, a hospitalized baby will fair better initially � that is not die of respiratory distress. When the baby dies later of its problems they will be counted in a different category  -- that of infection or congenital anomaly but not respiratory distress. There were a total of 11 mortalities in the hospital cohort that diagnosed as dying of congenital anomalies.

**Unanswered**  **Questions for further study**: What percent of the planned hospital cohort were midwife deliveries? How many of the hospital delivery mothers actually didn�t labor in the hospital �that is, delivered within an hour of arrival, before any of the routine medical interventions could be used? Was there a prejudice against home birth transfer patients that prevented a timely response to their problems? Did parents substantially delay hospital transfer based on religious or other objections to allopathic medical care or a distrust of medical care providers? Was there a difference between home and hospital practitioners in the assigning of Apgars? Were home birth babies **over or under treated** in the NIC? What were the reasons for the increased fetal distress or neonatal respiratory at home?  Could improved equipment available today (miniature EFM and pulse oximetry) close this gap?

**�Gee Toto, we�re not in Kansas any more� ~** **the Fatal Flaw**

From this small and shaky platform of a study plagued by multiple problems with its design and its data, these authors arrived at a �conclusion� that states as an immutable fact that planned home births had �greater infant and maternal risks than did hospitals births�. This reminds me of the �creative� accounting by corporations such as Enron and World .Com, where company executives only counted what was to their advantage and swept all the rest under the rug. This study as reported in the popular press is another example of the failure to the obstetrical profession to live up to its obligation to develop, design and disseminate scientifically-sound, unbiased research worthy of a PhD-level researcher.

The basis for this fatal problem � the shadow side of the equation -- is the topic about which the study itself is totally silent and that is rates and ratios for spontaneous vaginal births and operative delivery and other serious medical/surgical interventions. This is not a trivial topic to healthy women attempting to make and �informed choice� as we already have a 25% Cesarean rate in the US for planned hospital birth. An already astronomical C/S rate is predicted to double in the next generation, as the �maternal-choice� Cesarean and elective repeat Cesarean are ever more heavily promoted by the obstetrical profession.

|  |  |
| --- | --- |
|   | Operative delivery rates for the two groups and the routine interventions, such as continuous electronic monitoring, Pitocin use and epidural anesthesia that predictably lead to surgery, are *central* to the determination of safety and necessary to any informed consent process. The authors provided great detail on less crucial topics such as listing all 18 specific complications of pregnancy excluded from the study but unfortunately absolutely no mention is made of ratio of spontaneous vaginal delivery rate versus cesarean and other operative deliveries (episiotomy, forceps and Vacuum extraction) or subsequent admission of the baby to the NIC or the number of babies subjected to post epidural septic workups.     |

**Textbook photos of Cesarean Incision, dissection and forceps extraction of a breech baby**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  | **Breech Baby extracted** |
| **Body pulled out to shoulders** | **Forceps to pull out after-coming head** | **Forceps released** |

In examining the statistical data that is provided on the hospital side of the equation, one notes a total lack of complications relative to operative delivery or post-cesarean status. In addition there is low rate of postpartum hemorrhage, which is ordinarily increased in Cesarean deliveries. The likely explanation is that entire cohort of 10,593 hospital deliveries were all spontaneous vaginal births in �low-risk� mothers (i.e. vertex baby, intact uteri, no operative interventions, etc). This is the same low-risk category of women that are normally candidates for home-based midwifery care. In that regard, it is a sensible choice for study. But for the conclusion the study professes to document and the purposes which it has been assigned by the newspapers and ACOG � answering the question of relative safety of the two setting in the �big� picture, there are two associated problems.

First, as already mentioned, the study does not actually address the sequela of the high operative rate for planned hospital births, including post-cesarean complications in future pregnancies. Secondly, if the hospital cohort used by the study consists of only spontaneous vaginal birth, then it skimmed off the biggest source of complications associated with planned hospital birth **before** figuring the �complication� rate. In other words, it takes its data down stream � a �creative� accounting method so familiar in the corporate world but not expected to be used by PhD scientists.

To put this idea into more easily understandable terms consider an example from the world of television commercials. A particular airline, commonly known to be in hot competition with another airline, airs a commercial on TV claiming the superiority of its services based on an assertion that more of its passengers landed safely than its competitor. The maligned airline would no doubt do a bit of investigation about this bold claim. It would become obvious that the only way the competing airline could arrive at this conclusion was by only counting the planes that landed safely in the data set while failing to count the 30% of the flights that never got off the ground  - a rate five times that of its competitor. By skimming problematic outcomes off the top, it leaves the illusion of superior function when if fact, 25% fewer passengers got off the ground safely. The FTC would consider this type of misleading conclusion to be false advertising.

The third problem is in applying the study�s �conclusions�. Healthy childbearing women trying to make an informed choice between the two forms of care are not actually being �informed� by down-stream data as general interventionist hospital care is being misrepresented by extraordinarily non-interventionist outcomes. Equally important, the chances of each childbearing woman finding herself in that uncounted 1/3 operative delivery group, remains very high.  In hospitals with a 50 to 90% epidural rate, one can anticipate 29% to 60% surgically-assisted births (in addition to a 25% Cesarean rate), so her likelihood is higher than a 1/3 that her birth care will include forceps/VE or about 50-50 for operative delviery. This is compared to about 5% for community-based midwifery care in independent birth centers and clients homes. Nor is this �conclusion� helpful to the general public, government agencies or legislative bodies who set national maternity care policies.

If the Washington State research paper arrives at its supposedly superior numbers by skimming off the approximately 30% of surgical deliveries (episiotomy, forceps, vacuum extraction, CS) and all the complications that represent or give rise to, then it is not a valid study. In order to be a valid measure of relative safety, the complication rate of the two locations must be taken into account. For this it is necessary to first subtract the 5% operative delivery rate associated with community-based midwifery care from the 30% rate for hospital-based care and then to include the complications occurring in 25% of the hospital cohort in the final statistics and in ones conclusions and recommendations.

But lets consider the possibility that that the data for the hospital cohort were actually randomly selected and it was just a fluke of some sort that no operative complications for neonates showed up in this particular set of 10K deliveries (i.e., no subgaleal hematomas subsequent to vacuum extraction, no anoxia subsequent to uterine rupture, etc). In that case we can expect that of the 10,593 women, there was an induction rate of 20% (at least 2,000 women), epidural rate of 40% to 60% (4,000 to 6,000 mothers), a rate of 20% cesareans or at least 2100 major operations (a figured that is on the low side), in addition to at least 10 % forceps/VE (1,000 patients) and some percentage (5%) of VBAC labors with a uterine rupture rate of one in 200.

That means that less than 70% of these �low� risk mothers actually had a low-risk uncomplicated delivery. The 3,050 new mothers that had operative deliveries had to face the potential complications of surgical birth (such as pulmonary blood clots) and/or the long term complications such as breast-feeding failures and increased rates of postpartum depression. There is the possibility of increased rates of autism and adolescent drug addiction subsequent to narcotic and Pitocin use although the evidence for that is not conclusive. Those who were subjected to forceps and VE must live with an increased incidence of pelvic organ prolapse and incontinence, especially as they age. If these mothers choose to become pregnant again, they will have to deal with the complications of post-cesarean status, including infertility, abnormal placentation, uterine rupture, emergency hysterectomy, blood transfusions, neonatal death or disability for the post-cesarean baby.

**Data**  **Missing on Operative Rates:**  Assuming there was �random� selection of the hospital cohort (which would have included medical interventions and operative deliveries), the Washington State researchers did not account for the respective intervention rates between the two groups � use of Pitocin, epidurals, episiotomies, forceps and vacuum extraction deliveries, Cesarean sections, emergency hysterectomies and NIC admissions for post-epidural fever septic workups.

With the exception of maternal complications such PPH and emergency hysterectomy, each of these medical or surgical interventions is coded. That means that each intervention has a unique number used by all 50 states and traced by the National Center for Nativity Statistics (check this title). A list of these numerically coded interventions is used by birth professionals when filling out the birth registration form. The record of these interventions and complications is on the same birth certificates used by the authors of the Washington State study to collect the other information, such as Apgar score or respiratory distress. Nor was there any accounting by the study design for complications for mothers and babies in post-cesarean pregnancies such as increased rates of placenta previa, accreta and percreta, blood transfusions, emergency hysterectomies, neonatal death of disabilities as a result of VBAC uterine ruptures. It seems appropriate that if one intends to speak definitively of the �increased� maternal risk, that indeed, we count all the relative risks.

The Safety of Childbirth Alternative

1999 Stanford University Ph.D thesis by Dr. Peter Schlenzka

47 Time Bigger and Better Designed

Next let�s examine the diminutive size and minority status of the Washington state study. Dozens of large, well-designed studies refute the conclusion drawn by these authors. However, the best example, by virtue of being both recent and statistically �powerful�, (an extremely large, well-designed database) is a 1999 study by a Stanford PhD, Dr Peter Schlenzka (pronounced �Sha lens �Ka�). Dr. Schlenzka conducted a thorough review of scientific literature with a bibliography of 189 references and over 50 pages of literature review on such topics of the medicalization of childbirth, the shift from home-birth to hospital birth, the safety of obstetric and natural approaches, and the re-emergence of midwifery.

*The Safety of Childbirth Alternatives* is research that Dr. Bennedetti himself is familiar with as Dr. Bennedetti lectured at Stanford University Hospital �Grand Rounds� on the management of shoulder dystocia during the time Peter Schlenzka was doing this research. At that time Dr Hal Holbrook was the Chief of Neonatology in the obstetrical department of Stanford University Hospital and directly assisted Dr Schlenzka in setting up a complex mainframe data based used to analyze the information from 3 separate sources on birth outcomes. In many ways, the Washington study seems to be designed specifically to refute the conclusions arrived at by Dr. Schlenzka�s work, one of which is that use of perinatal mortality (which is so statistically rare) is an extremely poor characteristic to use as the measure of quality of care in the two setting. Of course, the Washington State study #II ignored this recommendations of Dr. Schlenzka. The authors of the Washington study also did not conduct a thorough review of scientific literature on the medicalization of childbirth or the safety of obstetrical management for healthy women.

|  |  |
| --- | --- |
|  | Outlining his reason for undertaking this study, Dr. Schlenzka states that research has suggested that the "*medicalization of childbirth and the move of childbirth from home to the hospital might not have improved the outcomes for these low risk pregnancies*" which constitute 60-80% of all pregnancies (p. 1).  In his own research, he studied perinatal mortality of pregnant women with equal risk levels to determine whether or not *"the non-interventionist natural approach to childbirth, as administered by midwives and some physicians in free-standing birth centers or at home, is as safe as the interventionist obstetric approach in hospitals.*"  Dr. Schlenzka examined evidence of the "overall social and economic cost to society" of these two approaches to maternal care (p. 3). |

"The woman's choice itself may influence her level of anxiety and apprehension, and in obstetrics levels of anxiety have been shown to predict obstetric complications" (p.3--from Wiegers et al 1996).

Dr. Schlenzka�s research examined information from live birth and perinatal death records and hospital discharge data for both the mother and the baby reporting medical risk factors. This included a million birth certificates in his original data set -- every single birth that occurred in California in the 1989 and 1990 birth cohort. He controlled for early and adequate prenatal care, excluding women who did not have both. He eliminated women with any significant medical or obstetrical complications or who delivered prior to 37 weeks. In his definition of �birth setting safety�, he also took into account all babies that required care in the NICU for 5 or more days.  The data produced by Dr Schlenzka�s mammoth study are in sharp contrast to those in the Washington study and in fact, **arrive at an exactly opposite conclusion**.

After careful matching of all appropriate data, Schlenzka examines perinatal outcomes of nearly 816,000 births, comparing low risk births inside and outside the hospital and high-risk births in and out of the hospital.  His findings clearly show that what he calls �the natural approach� (i.e., physiological management) and obstetric approach (i.e., medicalized management) both produce the **same perinatal mortality outcomes for low-risk and high-risk births both setting � home and hospital**. Dr. Schlenzka�s work was able to show a slightly (though not statistically significantly) better outcome in terms of lower perinatal mortality for low-risk women who opt for out-of hospital settings. After analyzing all of his data on perinatal outcomes, ("Safety of Alternative Approaches to Childbirth," p. 153) Schlenzka concludes:

|  |  |
| --- | --- |
| �**Under no circumstances do the California data for 1989 and 1990 allow the obstetric profession to uphold the claim that for the large majority of low-risk women hospital birth is "safer" with respect to perinatal mortality**.�  |  |

Statistical studies are measured by their �power�, a characteristic figured by the number of data sets and the reliability of the information. By that measure, Dr Peter Schlenzka study was 47 times more powerful and included a triple source of information providing a cross-check to establish that the data was reliable. According to this recent study perinatal mortality rate for all three birth settings (home, hospital and independent birth centers) that hovered, within a few tenths of a percentage point, at 2 per 1000 live births. While the rate of perinatal mortality and morbidity is approximately equal in all three locations, the rate of maternal interventions and complications for healthy women is two to ten times more when mothers are hospitalized.

Were tiny increments of statistical �safety � to determine our national maternity care policies, independent birth centers would win out -- they consistently have the best statistics for spontaneous vaginal birth and lowest cesarean rate, with excellent neonatal outcomes and the smallest number of medical and surgical interventions, fewest number of maternal complication and achieve this exemplary care with superior cost effectiveness.

|  |  |
| --- | --- |
|  |  |
|   |   |
|  |  |

In his abstract, Schlenzka concludes (intro pages iv-v): �Given no differences in perinatal mortality, it must be noted that the natural approach shows significant advantages with respect to lower maternity care cost as well as reduced mortality and morbidity from unnecessary cesareans and other obstetric interventions, and significant benefits from avoiding negative long-term consequences from unnecessary obstetric interventions and procedures\*. These advantages of the natural approach are of such a large order of magnitude as to raise serious doubts concerning the appropriateness of conventional "obstetric" treatment for low-risk childbirth. \*emphasis added

Finally, he reviews research that suggests that a wide variety of social ills that have been linked to birth trauma, such as lack of bonding between the mother and infant, involve a great economic and social cost to society-and that a less interventive birth model would reduce these ills. From this analysis, Schlenzka concludes that the **"apparent disadvantages of the obstetric approach have such large order of magnitude, that in any clinical trial it would be considered unethical to continue with the obstetric 'treatment' "** (p. 175).

A Plain English Example

In concluding this critique, let�s set aside all controversy for a moment about the accuracy of the numbers used, and any question as to whether its useful to include neonatal deaths from congenital heart malformations in the outcome stats. We�ll just take the perinatal mortality rate as reported in the Washington State study was 1.7 per 1000 for hospital and 3.3 per 1000 for planned home birth as gospel fact.  That is a difference of 1.6 per 1000 if heart malformations are included and 0**.**8 per 1000 if not. One way or another the difference between the two is just over or just under 1 per 1000.

Now lets examine the costs of a system such as we currently have  � the personal, economic and social cost � of maintaining and promoting the �superior� hospital care predicated on the current routine medicalization of healthy women. There is an increased economic cost of 50% to 300% greater (due in part to the increased ratio of Cesarean surgery and NICU admission of the baby for a septic work subsequent to intrapartum epidural fever), 6 Xs increased operative deliveries (from 5% for community midwifery to 30-40% for hospital care), epidural rate of 50% to 95% (including the cost of post-epidural NIC admission and trauma to the baby being treated with IV antibiotics), personal suffering and grief for mothers as a result of all this medically unnecessary interventions, the excess (preventable) maternal complications subsequent to these interventions and disruptions of bonding for the baby. Then there are all the other down-stream complications including increased rates of postpartum depression, autism, drugs addiction in adolescents triggered by maternal narcotics, etc.

What is astounding about this last scenario is all the obstetrical services the planned hospital delivery cohort consumed in professional education, care provider time, drug and anesthesia use, surgical skills and neonatal intensive care nursing plus the financial cost of medicalized care and its subsequent complications. All of this time and money and the suffering of the women -- only to achieve a theoretical improvement (compared to planned home birth) of a 1.3 per 1000 mortality rate. Even that small number is based on �soft� data from less than dependable sources does not factor in mortality and morbidity in post-cesarean pregnancies, which more than cancels out this perceived advantage.  But no matter which way the coin lands on this one � all spontaneous vaginal births *or* proportionally operative deliveries in the 10K hospital cohort -- it leaves a massive hole right in the center of the thesis of the study. This research purports to lead us in the direction of good science and then it tricks us and takes us instead to �Never-Never� land.

Now we should ask � is this the best the obstetrical profession can do with all that high powered education, highly technical skills and the high tech capacity of an entire hospital and its staff, compared to a midwife providing non-medical care in the family�s home with the assistance of the simplest of equipment -- is drop this one category (healthy mothers who delivered without any interventions or complications) by 1 +/- per 1000? Even more onerous is that all this high powered interventionist care is actually causing unnatural and unnecessary complications, especially in post-cesarean pregnancies.

Conclusions (unfinished)

I genuinely don�t understand the ethical premise behind the wider politics of the medical control of childbirth by the obstetrical profession and its strong push to further medicalized normal birth. This represents a large, well financed, highly organized effort that includes an important segment of partisan politics that represents the interests of big business with an orientation toward a policy of �father/government knows best�. Both obstetricians and politicians embrace two contradictory aspects of this debate that I find internally inconsistent and at odds with itself.

Culturally speaking, we unabashedly promote the safety and well being of the unborn or newborn baby over the welfare of the mother � that is, we seriously promote treatment strategies that (at least in theory) shave a few points of the perinatal mortality rate even though these protocols and procedures increase the maternal morbidity and mortality rate. Examples of this are the extremely liberal labor induction policies (routine induction at term or for a �big� baby, elective repeat CS and �maternal choice� cesareans, etc). This exposes the mother to the immediate suffering of surgery and on-going complications like postpartum depression or future infertility.

At the very same time that we elevate the �well-born� baby to a position of virtual worship, other spokespersons for the obstetrical profession, perhaps who are concerned with different part of the elephant, push for greater use of perinatal genetic testing as an important method of lowering perinatal mortality by aborting fetuses suspected of being congenitally �defective�. One of the most popular of these test � amniocentesis � triggers miscarriage in about 1% of pregnancies (10 per 1000). In terminating pregnancies that apparently have a seriously deformed fetus, the pathology report of a small number of these aborted fetuses reveal that it was a mistake � the fetus was perfectly healthy and normal.  The same energetic enthusiasm by doctors and public policy makers promotes a strange form of medicalized violence against both mothers and babies  -- high elective abortion rate and high Cesarean rate � both promoted as a miracle of modern medicine, used to improve our perinatal mortality rate.

At the same time there is a low priority on any outcomes that are not statistically a part of the immediate hospital experience. This includes problems such as breastfeeding failures, postpartum depression and complication in post-cesarean fertility or reproduction. If the obstetrical or perinatalogy profession doesn�t have to take any heat for a �less than perfect� baby � whatever the cost -- they are perfectly delighted and happy to leave the rest of us to deal with �down-stream� complications.



**The Bottom Line**  -- a 90/10 system in which the physiological management of labor and birth is the norm

The value of critiquing this study and the misleading newspaper reporting it generated is certainly not to promote the idea of community midwifery and home-based birth care as some kind of idealized solution to the problems we identified. Were the tables reversed and midwives to find themselves attempting to serve to 99% of the childbearing women in non-medical circumstances, we would immediately have to engage obstetricians to take over the care of the majority of them as most women want hospital care and they expect to receive drugs and anesthesia. Women have that right to make that choice, assuming they are accurately and fully informed of the known risks.

|  |  |  |
| --- | --- | --- |
|  | The real issue, stated in some form in each and every chapter preceding this one, (and those to follow) is that childbearing women should not be forced to choose between a 70/30 system (obstetrical medicalization) and a 95/5 system (domiciliary midwifery). Each set of numbers has its own difficulty associated with it. Instead, what  **healthy childbearing women need is a 90/10 system in which the physiological management of labor and birth is the norm,**  irrespective of the professional category of the caregiver � perinatalogist, obstetrician, family practice doctor, or profession midwife, either hospital-based nurse midwife or community passed licensed midwife.   |  |

**Abstract from the �other� Washington State study on Planned Home Birth**

**Planned Home Births  -- Outcomes Among Medicaid Women in Washing State**, Laurie Cawthon, MD, MPH July 1996; Washington State Department of Social and Health Services, Budget Division Office of Research & Data Analysis, First Steps Database; Olympia, Washington,  98504-5204 [When ordering, please refer to **Report 7.9**]

**Budget Division** Wolfgang Optiz, Ph.D, Director, Timothy R. Brown, Ph.D, Chief, Office of Research and Data Analysis,

**Planned Home Birth and Medicaid Reimbursement Task Force:**  Eric Houghtin, MD, Sarsh Hungton, LM, Kendra Johnson, Mary Looder, Annetter Manant, BSN, ARNP, CNM, Polly Taylor, CNM, MPH, ARNP, Marijke van Roojen, LM,Margaret Wilson, MN, ARN

**First Steps Work Group** � Ros Aarthum, Laura-Mae Baldwin, Linda Barret, Tom Bell, Amandalea Bennett, Andrew Brunskill, Sherilynn Casey, Laurie Cawthon, Dan Conion, Maura Craig, Susan Fleskes, Jim Gaudino, Toni Krusski, Diana Larsen-Mills, Lenore Lawrence, Dinah Martin, Sharon McAllister, Jan Rabkin, Florence Reeves, Nancy Reid , Laura Schrager, Stacey Schubert, Ginny Spenkle, Dian Tiffany, Joan Treacy, Peter Vennewitz, Jeff Willis, Suzanne Windels, Steve Wish

**Statistical Methods** : SAS was used for all data analysis and for t-tests. EPI-INFO was used for other statistical tests and for the computation of confidence intervals. Differences were considered significant then the p-value was at or greater than 0.05.

**Executive Summary** -- Planned Home Births: Outcomes Among Medicaid Women in Washington State

�This study describes birth outcomes, maternal characteristics and prenatal care for women with planned home births who gave birth between 1989 and 1994. Women with home births are compared to other women who received prenatal care from licensed midwives and gave birth in birthing centers or in hospitals.  These groups are compared to the general Medicaid population of women who gave birth. �. Women who received prenatal care from licensed midwives were assumed to be planning (or at least considering) home birth.

**�The results of this study are consistent with a large body of literature which has documented the safety of planned home birth for low risk women when attended by a trained provider.�**