

## IN THE LITERATURE

### COMMENTARY ON:

Wax JR, Lucas FL, Lamont M, Pinette MG, Cartin A, Blackstone J. Maternal and newborn outcomes in planned home birth vs planned hospital births: A meta-analysis. *Am J Obstet Gynecol* 2010;203:243.e1–243.e8.

de Jonge A, van der Goes BY, Ravelli ACJ, Amelink-Verburg MP, Mol BW, Nijhuis JG, Bennebroek Gravenhorst J, Buitendijk SE. Perinatal mortality and morbidity in a nationwide cohort of 529,688 low-risk planned home and hospital births. *BJOG* 2009;116:1177–1184.

## Home Birth: Gone Away, Gone Astray, and Here To Stay

Marc J.N.C. Keirse, MD, DPhil, DPH, FRCOG, FRANZCOG

**ABSTRACT:** *Home birth has attracted a great deal of attention of late, culminating in a meta-analysis to assess its risks for mother and baby. Mothers were estimated to be 2.6 times more likely to die and babies 3 times more likely to die from a planned home birth than from a planned hospital birth. The actual data on which these estimates were based demonstrate that meta-analysis can be developed into an art that suits whatever purpose its authors hope to achieve. Combining studies of home versus hospital, without differentiating what is inside them, where they are, and what is around them, is akin to producing a fruit salad with potatoes, pineapples, and celery. (BIRTH 37:4 December 2010)*

**Key words:** *home childbirth, hospital, fetal death, infant mortality, maternal mortality, meta-analysis, neonatal mortality, perinatal mortality, pregnancy outcome, review*

*Home delivery is maternal trauma ...  
home birth is child abuse.*

Warren H. Pearse, 1977

*Homebirth is the gold standard, God's standard,  
the highest standard of Birth possible.*

Jan Tritten, 2010

As the above quotations (1,2) illustrate, few subjects can evoke as much insane opinion and inane acrimony as

home birth. For a large part of the world, the issue is entirely irrelevant, as there is no home, let alone a hospital close by. For the rest of the world, bricks and buildings often seem to command more attention than what is inside them. Any new home birth study, whether it exposes the hazards or the merits of home birth, is guaranteed to fuel the fires of controversy, keeping both opponents and proponents nicely warm while shedding more heat than light on the subject. The last few years have seen renewed interest in starting the home birth fires, kindled by articles (3–14), commentaries (15–21), and editorials (22–26) in several journals, and fanned by media (27) and a public that, ever since Roman times, can be relied on to value bread and circuses more than common sense.

What better to do than to produce a meta-analysis on the subject (28), especially if it appears to consolidate the conclusions of two other articles from the same authors on the same subject in the same year (11,12)?

---

Marc Keirse is Professor of Obstetrics and Gynaecology at Flinders University, Adelaide, South Australia, Australia.

Address correspondence to Marc J.N.C. Keirse, MD, DPhil, DPH, FRCOG, FRANZCOG, Department of Obstetrics, Gynaecology and Reproductive Medicine, Flinders University, Flinders Medical Centre, Bedford Park, SA 5042, Australia.

© 2010, Copyright the Author  
Journal compilation © 2010, Wiley Periodicals, Inc.

### **Evidence, Non-evidence, Systematic Evidence, and Meta-analysis**

Let's consider what has brought meta-analyses and systematic reviews to the pinnacle of what is perceived as the best evidence possible. Rightly or wrongly, it is not a systematic review of everything published on a subject or a careful selection of it, but a systematic review of what is perceived to be the next best evidence: randomized controlled trials. Obviously, home birth has seen its share of advocates for a randomized controlled trial to establish whether or not it is safe.

Even if such a trial were to succeed, there are still two issues. First, how likely is it that its results would be applicable to anyone other than the people in the trial? Pregnant women who are happy to leave the choice of where to give birth to the toss of a coin are about as abundant as white elephants. Even when practitioners have sufficient equipoise, pregnant women do not. Two attempts at mounting such a trial, one in England 15 years ago (29), and another, more recently, in the Netherlands (30), testify to that. It may not be a credit to evidence-based medicine that such trials did not succeed, but it is a credit to common sense that both collapsed nearly as soon as they had started. Second, randomized controlled trials are notoriously inept at addressing rare outcomes, such as perinatal deaths, let alone potentially avoidable deaths, which seem to be everyone's main concern.

So, there is merit in systematically reviewing the available evidence, even when far from perfect, to assess what the real differences between home and hospital might be. Clearly, the difference is not in the bricks and buildings. Homes, such as Buckingham Palace and the White House, are not particularly representative of most homes. Neither are those who live in them representative of most pregnant women. A tertiary care hospital in Sydney is not the same as the small hospitals dotted around the country. The people in them are also not the same. It is not only fallacious to compare home and hospital without considering what is available within them, it is equally fallacious to compare them without considering what is around them. Planning to give birth at a home that is 5 minutes away from a major hospital is not the same as doing so when it may take hours to get to a hospital, when the need arises.

Yet numerous people seem to ignore such essential differences when comparing the smattering of home births in countries such as Australia (14,31), Canada (5,7), and the United States (32), or even the United Kingdom (33), with those in the Netherlands (6), where home birth is not an exotic rarity, but a traditional part of its culture and its geography. This is not to say that Dutch women are essentially different from women else-

where, but home birth practice in the Netherlands is fundamentally different from home birth practice in most other countries. Lumping home birth studies from countries that vary widely in culture, geography, and health care systems together in a meta-analysis (28) is akin to producing a fruit salad, not with apples and oranges, but with potatoes, pineapples, and celery.

### **Drawing Double Dutch Conclusions from Single Dutch Data**

The overwhelming majority of births (93.9%) in the paper of Wax et al (28) come from a nationwide study in the Netherlands, covering the years 2000 to 2006 (6). It confirmed several earlier, smaller observational studies that had testified to the relative safety of planned home birth, as practiced in the Netherlands, one of which (34) was included in the meta-analysis (28).

Yet, although both studies (6,34) found no difference in mortality, this is not what Wax et al (28) concluded from their meta-analysis. When negative outcomes are rare enough, even 94 percent of data with no difference in outcome are easily overshadowed by poor outcomes in the remaining 6 percent of the data. These poor outcomes need not be very frequent either to show what most people will know without ever having conducted a meta-analysis. Numerators and denominators are not independent from each other. When making a fruit salad of different studies, as meta-analyses basically attempt to do, one needs only one or two rotten fruits to spoil the lot. Moreover, when selectively excluding studies with relevant data from one outcome assessment, but not from another, as Wax et al (28) undeniably did, it is easy to substantiate any a priori belief.

Wax et al (28) state that outcome data were extracted by two physicians with differences resolved by consensus. They do not mention what that consensus involved, but it apparently did not involve a mathematician. Indeed, Table 3 in their report lists 23 normally formed neonatal deaths among 15,633 home births in 6 studies. Page 243.e3 in their report lists the references to these 6 studies and Table 1 the number of births in each of them. These add up to a total of not 15,633, but 9,811 planned home births. The 6 references also exclude a randomized controlled trial with 0 deaths among 5 home births (29). So, the problem may not just be how to add up numbers, but also how to analyze data.

There is further evidence to that effect. In addition to a denominator of 15,633 home births for normally formed neonatal deaths in 6 studies, Table 3 also shows a denominator of 330,324 home births for normally formed perinatal deaths in 4 studies. The difference in numbers can only be explained by adding data from the large Dutch study (6) to the perinatal, but not the

neonatal mortality, because it is the only study with more than 10,000 home births. Yet, that study clearly reported the number of deaths both before and after birth to let anyone make the distinction between perinatal and neonatal (6). Admittedly, it did not report neonatal deaths (i.e., within 28 days), which are still poorly ascertained in the Dutch registration system (35,36). It reported early neonatal deaths (i.e., within 7 days). But then, its perinatal deaths also included only those occurring during labor and in the first week, whereas Wax et al defined perinatal death as stillbirths plus deaths within the first 28 days of life (28). Thus, if the 7 days cutoff point was the reason to exclude the Dutch data from the neonatal mortality, they ought to have been excluded from the perinatal mortality too.

It is not clear either why the same study (6) was excluded from the compilation of data on preterm and postterm pregnancies, other than that Wax et al (28) still seem to struggle with outdated definitions. Thus, gestations below 37 weeks are referred to as “prematurity,” despite a more than 30-year-old international consensus that prematurity and preterm are not the same (37,38). Adding the Dutch data would, of course, have drastically changed the meta-analysis, as both preterm and postterm births are outside the realm, not only of home birth but also of primary midwifery care in the Netherlands (6,39).

My assumption is that the study (6) was included in the perinatal mortality rate, because otherwise the systematic nature of the meta-analysis would be questioned, and that it was excluded from the neonatal mortality, because adding another 163 nonanomalous deaths (6) to the current 37 (28) would have invalidated the authors’ conclusion that “planned home birth is associated with a tripling of the neonatal mortality rate” (28). Whether this is a fair assessment of the authors’ motivation (28) is not for me but for others to decide. However, there is supportive evidence for that contention.

Indeed, Wax et al (28) start their results section, stating that they calculated the upper 95 percent limits for the risk of maternal death as 27.3 per 100,000 planned home births compared with only 10.5 per 100,000 planned hospital births. Dramatic as this 2.6-fold difference in mortality is, it is based on two simple facts. First, not a single maternal death occurred in any of the 4 studies that contributed to that calculation. Second, the number of planned hospital births in these 4 studies was exactly 2.6 times the number of planned home births. If the number of planned home births in these studies had been 5,000 instead of 10,977, Wax et al (28) could have set the upper 95 percent limit for maternal death as high as 59.9 per 100,000 planned home births to compete with the poorest developing nations. It would still mean, though, that not one mother died.

### Differentiating Single Dutch from Double Dutch

It would be wrong to assume that home birth is not an issue in the Netherlands. A good 30 years ago home birth fires raged there as much as they still do elsewhere. In the late 1970s and 1980s, Hoogendoorn (40,41) and others attributed the Netherlands’ worsening position in the European perinatal mortality league to its reluctance to move birth from home to hospital. The issue was debated vigorously in the medical literature and the media for years (42). The study by de Jonge et al (6) firmly put this dogma to rest, although the dog, having lost its teeth, was already asleep (34,42).

Nevertheless, the Netherlands, once at the top of the European perinatal mortality league, has fallen well behind almost all European member states in terms of perinatal mortality (36). Its record on maternal mortality is not to be envied either (36,43). Yet, the consensus is that its poor standing in the European perinatal mortality league has little to do with the amount of bricks and mortar that differentiate homes from hospitals. Overly relying on Mother Nature and the merits of physiology (the common Dutch term for what Mother Nature has to offer) can be as hazardous as adhering to the concept that “no childbirth is normal except in retrospect.” Whereas the latter induces unwarranted intervention, the former induces unwarranted expectancy (36,44).

It is misleading to compare birth options, such as home or hospital, without a genuine understanding of the systems of maternity care in which they operate. It would seem that for many, including Wax et al (28), home birth is Home Birth; just as single Dutch is the same as double Dutch.

For decades successive Dutch governments have put maternity care on the slow burner. Midwives needed to attend an excessive number of births to earn a decent living, and they were severely penalized financially for referring women before instead of after the onset of labor, when problems arose during pregnancy (45). Things have changed considerably of late (44). Perhaps not enough, as yet (36,44), but home birth survived. Probably, because of strict criteria and adherence to what is and is not acceptable (6,39), home birth managed to stay in the Netherlands without going astray, as it did elsewhere.

### Both Away and Astray Are Still Here Today

In the middle of the previous century, home birth went away as hospitals became able to offer more than the mere heroics they could offer previously and do so more safely. Whether this move was wise or not may never be determined, but it led Archie Cochrane to award the

specialty of obstetrics the wooden spoon for introducing such a major change without proper evaluation (46). Anyway, home birth went away as snow under the sun, leaving slurry and rocks underneath. In most Western countries, it went astray too. It moved into the realm of a few radicals, who believed that slurry and rocks are not the kind of things you lose your footing on, but a source of undiscovered treasure.

Unfortunately, away and astray are still here today. In South Australia, with only 0.4 percent planned home births, 8.8 percent of these women had a previous cesarean section (14). Canada, with less than 2 percent home births, accepts home birth for women with one previous cesarean section (5,7). In the Netherlands, with a home birth rate of more than 25 percent, any previous cesarean section is an absolute contraindication, not only for home birth, but also for the absence of obstetric care during labor and birth (6,39). Of course, the risk of serious events during labor after a previous cesarean section is only about 1 in 200 (47). Yet, when they do occur, the lives of both mother and baby are in the balance and nothing can be done about the problem at home. The Dutch know it, but many elsewhere apparently still have to learn this lesson.

Any woman who surfs the Internet is likely to find splendid stories on what a marvelous experience it is to give birth at home, to give birth with dolphins, or to give birth in the Baltic Sea. Celebrities, who are sometimes more celebrated than cerebrated, can be relied on to contribute to the marvel of such stories. So, client demand is what is alleged to drive home birth for high-risk births, including twins, breech, postterm, and so forth, all of which are well outside the Dutch home birth criteria (6,39). It is similar to the argument that client demand is what drives cesarean section rates (48). How much truth is in these arguments, though?

There will always be people who wish to jump off a cliff. However, those who assist or push them are likely to end up in jail. The argument that those wishing to jump might otherwise hurt themselves before they reach the bottom of the cliff is not likely to be a valid excuse. Yet, some leaders of the midwifery profession still argue that assisting home birth, in circumstances that are clearly detrimental to a woman's well-being and that of her baby, is a legitimate course of action. They argue that offering such assistance is substantially better than so-named "free birthing," instead of acknowledging that taking a bigger bite than one can swallow is not helpful to anyone: mother, baby, or midwife.

If all goes well at a high-risk home birth, as it often does, there is not much need for a professional of any kind. When it does not, there is little that such professionals can offer without recourse to the infrastructure that is needed for effective action.

## Planning and Unplanning the Planned

What is meant by a planned home birth needs to be considered too. The Wax et al meta-analysis refers to planned home births (28), but most of the births contributing to the alleged threefold higher risk of neonatal death are derived from a study based on U.S. birth certificates without information on whether home birth was planned or not (49). The inclusion of that study in the meta-analysis emphasizes a general lack of consistency in what is or is not a planned home birth. Everyone agrees that a woman who gives birth at home accidentally or unintentionally should not be considered as a planned home birth. However, that is where the consensus ends. For some, planned means what was planned early in pregnancy (14), for others it is what was intended at the onset of labor (6). Although both views have something to commend them, they are another illustration of the fallacy of concentrating on bricks and buildings instead of what is inside them.

It is perfectly legitimate to exclude women who initially planned to give birth at home because an ultrasound detected a twin pregnancy or a placenta previa. One can also argue that any change of plan and timely referral that occurs before the onset of labor is a legitimate exclusion. It is another issue, though, when a woman is referred to hospital with severe preeclampsia, just before the onset of labor, because no one bothered to take her blood pressure previously.

Birth is such a cataclysmic event that too many people still believe that it is the most important factor of life or death in the entire pregnancy. Even Wax et al seem to believe this, stating (28, p 243.e3) that: "In developed nations, following congenital anomalies, most perinatal deaths are related to intrapartum anoxia." This may have been so in the past, but not any more. Wax et al (28) support their contention by the same type of reading that characterizes their meta-analysis, referring to a paper that excluded all deaths, except those related to the so-named "delivery" of term infants (50). In the 1958 British Perinatal Mortality Survey, about half of all stillbirths were intrapartum deaths (51). Nowadays, such deaths are rare. So, when comparing home and hospital births, it is not sufficient to concentrate on labor and birth without considering what went on before that time.

It is utopian to assume that lack of proper risk assessment before labor will be compensated for by adequate assessment during labor (14,52). The difference between the results of planned and unplanned home births is partially an issue of self-selection (30,32). It is also an issue of a properly functioning backup system for home births. Such systems will contribute very little to the safety of home birth, though, if they are not used

in a timely and responsible manner from both ends: home and hospital. Differences in how such backup is organized and used are clearly large in different countries, making a mockery of across countries' meta-analyses (28).

### Home Birth Is Here to Stay, Whatever Anyone May Say

When homes disappear, home birth may do so too. Before that time, it will not. It is a woman's fundamental human right to choose her reproductive behavior, which includes how and where to give birth. Pregnant women and their practitioners will always have different priorities too. However, most, if not all of them, aim for a healthy child, a healthy mother, and a satisfying birth. The way they approach these goals may differ, but the fundamentals are the same. So, why not concentrate on what can make mother and baby both be safe and feel safe, instead of arguing the merits of bricks and buildings without considering the mortar that holds them together, where they are, and what is on offer inside? The secret to progress is debating the essentials, not a war over their outer casings.

If those who are vigorously opposed to home birth were equally vigorous to promote what is basically a natural phenomenon, instead of concentrating on the correction of nonexistent pathology, hospitals would be less daunting than they are perceived to be. Also, if those who are vociferous enough to defend or promote home birth were equally vociferous in insisting on, complying with, and teaching adequate safety standards, there would be very little to keep the home birth fires ablaze. Most importantly, mothers and babies would be the ultimate winners instead of the unfortunate losers, which, far too often, they still are today—away and astray at both ends of the fray.

### References

1. Pearse WH. The home birth crisis. *Bull ACOG*, 1977; July.
2. Tritten J. The miracle of homebirth. *Midwifery Today Int Midwife* 2010;Spring;(93):5.
3. Mori R, Dougherty M, Whittle M. An estimation of intrapartum-related perinatal mortality rates for booked home births in England and Wales between 1994 and 2003. *BJOG* 2008;115:554–559.
4. Lindgren HE, Rådestad IJ, Christensson K, Hildingsson IM. Outcome of planned home births compared to hospital births in Sweden between 1992 and 2004. A population-based register study. *Acta Obstet Gynecol Scand* 2008;87:751–759.
5. Janssen PA, Saxell L, Page LA, Klein MC, et al. Outcomes of planned home birth with registered midwife versus planned hospital birth with midwife or physician. *Can Med Assoc J* 2009;181:377–383.
6. de Jonge A, van der Goes BY, Ravelli AC, et al. Perinatal mortality and morbidity in a nationwide cohort of 529,688 low-risk planned home and hospital births. *BJOG* 2009;116:1177–1184.
7. Hutton EK, Reitsma AH, Kaufman K. Outcomes associated with planned home and planned hospital births in low-risk women attended by midwives in Ontario, Canada, 2003–2006: A retrospective cohort study. *Birth* 2009;36:180–189.
8. Boucher D, Bennett C, McFarlin B, Freeze R. Staying home to give birth: Why women in the United States choose home birth. *J Midwifery Womens Health* 2009;54:119–126.
9. Newman L, Hood J. Consumer involvement in the South Australian state policy for planned home birth. *Birth* 2009;36:78–82.
10. Vedam S, Stoll K, White S, Aaker J, Schummers L. Nurse-midwives' experiences with planned home birth: Impact on attitudes and practice. *Birth* 2009;36:274–282.
11. Wax JR, Pinette MG, Cartin A, Blackstone J. Maternal and newborn morbidity by birth facility among selected United States 2006 low-risk births. *Am J Obstet Gynecol* 2010;202:152.e1–e5.
12. Wax JR, Pinette MG, Cartin A. Home versus hospital birth—process and outcome. *Obstet Gynecol Surv* 2010;65:132–140.
13. Lindgren HE, Rådestad IJ, Christensson K, et al. Perceptions of risk and risk management among 735 women who opted for a home birth. *Midwifery* 2010;26:163–172.
14. Kennare RM, Keirse MJNC, Tucker GR, Chan AC. Planned home births in South Australia, 1991–2006: Differences in outcomes. *Med J Aust* 2010;192:76–80.
15. Gyte G, Dodwell M, Newburn M, et al. An estimation of intrapartum-related perinatal mortality rates for booked home births in England and Wales between 1994 and 2003. *BJOG* 2008;115:1321–1322.
16. Högborg U. Homebirths in a modern setting – a cautionary tale. *Acta Obstet Gynecol Scand* 2008;87:797–799.
17. Kitzinger S. Letter from Europe: Home birth reborn. *Birth* 2008;35:77–78.
18. Kitzinger S. Letter from Europe: Home birth, midwives, and doulas. *Birth* 2008;35:250–252.
19. Newman LA. Why planned attended homebirth should be more widely supported in Australia. *Aust NZ J Obstet Gynaecol* 2008;48:450–453.
20. McLachlan H, Forster D. The safety of home birth: Is the evidence good enough? *Can Med Assoc J* 2009;181:359–360.
21. van Weel C, van der Velden K, Lagro-Janssen T. Home births revisited: The continuing search for better evidence. *BJOG* 2009;116:1149–1150.
22. Ellwood D. The debate about place of birth. *Aust NZ J Obstet Gynaecol* 2008;48:449.
23. Steer P. An estimation of intrapartum-related perinatal mortality rates for booked home births in England and Wales between 1994 and 2003. Editor-in-Chief's reply. *BJOG* 2008;115:1185.
24. Young D. Home birth in the United States: Action and reaction. *Birth* 2008;35:263–265.
25. Pesce A. Planned home birth in Australia: Politics or science? *Med J Aust* 2010;192:76.
26. Editorial. Home birth—proceed with caution. *Lancet* 2010;376:303.
27. Sweet M. Science, politics, and headlines in the home birth war. *BMJ* 2010;340:c826.
28. Wax JR, Lucas FL, Lamont M, et al. Maternal and newborn outcomes in planned home birth vs planned hospital births: A meta-analysis. *Am J Obstet Gynecol* 2010;203:243.e1–243.e8.
29. Dowsell T, Thornton JG, Hewison J, et al. Should there be a trial of home versus hospital delivery in the United Kingdom? *BMJ* 1996;312:753–757.
30. Hendrix M, Van Horck M, Moreta D, et al. Why women do not accept randomisation for place of birth: Feasibility of a RCT in The Netherlands. *BJOG* 2009;116:537–542.

31. Laws P, Sullivan EA. *Australia's Mothers and Babies 2007*. Perinatal Statistics Series No. 23. Sydney: AIHW National Perinatal Statistics Unit, 2009.
32. Declercq E, MacDorman MF, Menacker F, Stotland N. Characteristics of planned and unplanned home births in 19 States. *Obstet Gynecol* 2010;116:93–99.
33. Nove A, Berrington A, Matthews Z. Home births in the UK, 1955 to 2006. *Popul Trends* 2008;133:20–27.
34. Wieggers TA, Keirse MJNC, van der Zee J, Berghs GAH. Outcome of planned home and planned hospital births in low risk pregnancies: Prospective study in midwifery practices in the Netherlands. *Br Med J* 1996;313:1309–1313.
35. Anthony S, van der Pal-de Bruin KM, Graafmans WC, et al. The reliability of perinatal and neonatal mortality rates: Differential under-reporting in linked professional registers vs. Dutch civil registers. *Paediatr Perinat Epidemiol* 2001;15:306–314.
36. Keirse MJNC. Perinatal mortality in the Netherlands. *BMJ* 2009;338:1156–1157.
37. International Federation of Gynecology and Obstetrics. FIGO News: Lists of gynaecologic and obstetrical terms and definitions. *Int J Gynaecol Obstet* 1976;14:570–576.
38. World Health Organization. Recommended definitions, terminology and format for statistical tables related to the perinatal period and use of a new certificate for cause of perinatal deaths. *Acta Obstet Gynecol Scand* 1977;56:247–253.
39. Verloskundig vademecum 2003 – Eindrapport van de Commissie Verloskunde van het College voor zorgverzekeringen. [Obstetric vademecum 2003 – Final report of the Committee Obstetrics of the College of health insurances] De verloskundige-indicatielijst 2003. [List of obstetric indications 2003] Accessed September 10, 2010. Available at: <http://www.knov.nl/voor-verloskundigen/richtlijnen-gedragcodes-en-werkafspraken/verloskundige-indicatielijst/>.
40. Hoogendoorn D. De relatie tussen de hoogte van de perinatale sterfte en de plaats van bevalling: thuis, dan wel in het ziekenhuis. [Relation between level of perinatal mortality and place of birth: Home or hospital]. *Ned Tijdschr Geneesk* 1978;122:1171–1178.
41. Hoogendoorn D. Indrukwekkende en tegelijk teleurstellende daling van de perinatale sterfte in Nederland. [Impressive and concurrently disappointing decline in perinatal mortality in the Netherlands]. *Ned Tijdschr Geneesk* 1986;130:1436–1443.
42. Treffers PE. Veertig jaar discussie over perinatale sterfte in Nederland. [Forty years discussion about perinatal mortality in the Netherlands]. *Ned Tijdschr Geneesk* 2004;148:1853–1855.
43. Schutte JM, Steegers EAP, Schuitemaker NWE, et al. Rise in maternal mortality in the Netherlands. *BJOG* 2010;117:399–406.
44. Merkus JMWM. De verloskundige zorg in Nederland opnieuw de maat genomen. [Obstetric care in the Netherlands measured again]. *Ned Tijdschr Geneesk* 2008;152:2707–2708.
45. Keirse MJNC. Interaction between primary and secondary antenatal care, with particular reference to the Netherlands. In: Enkin M, Chalmers I, eds. *Effectiveness and Satisfaction in Antenatal Care*. London: William Heineman, 1982:222–233.
46. Cochrane AL. 1931-1971: A critical review with particular reference to the medical profession. In: Teeling-Smith G, ed. *Medicines for the Year 2000*. London: Office of Health Economics, 1979:1–11.
47. Guise JM, Denman MA, Emeis C, et al. Vaginal birth after cesarean: New insights on maternal and neonatal outcomes. *Obstet Gynecol* 2010;115:1267–1278.
48. Gamble J, Creedy DK, McCourt C, et al. A critique of the literature on women's request for cesarean section. *Birth* 2007;34:331–340.
49. Pang JWY, Heffelfinger JD, Hunag GJ, et al. Outcomes of planned home births in Washington State: 1989-1996. *Obstet Gynecol* 2002;100:253–259.
50. Pasupathy D, Wood AM, Pell JP, et al. Rates of and factors associated with delivery-related perinatal death among term infants in Scotland. *JAMA* 2009;302:660–668.
51. Butler NR, Alberman ED. *Perinatal Problems*. Edinburgh: Churchill Livingstone, 1969.
52. Bastian H, Keirse MJNC, Lancaster PAL. Perinatal death associated with planned home birth in Australia: Population based study. *BMJ* 1998;317:384–388.