The role of primary care midwives in the Netherlands. Evaluation of midwifery care in the Dutch maternity care system: a descriptive study

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CHAPTER 9

General discussion
The Dutch health care legislation has made systematic evaluation of the quality of care a prerequisite for the delivery of medical care and for the performance of both the individual midwife and the midwifery practice (Chapter 1). According to the Quality Assurance at Medical Facilities Act (Kwaliteitswet Zorginstellingen), evaluation comprises:

1. the systematic collation and registration of data relating to the quality of the care delivered (Art. 4:2a)
2. systematic assessment of the quality of the care delivered on the basis of the aforementioned data (Art. 4:2b)
3. where necessary, a reorganisation of the facility’s care system, depending on the results of the aforementioned assessment (Art. 4:2c).

Within the framework of this definition we studied the role of the midwife in the Dutch maternity care system.

The midwife’s work has changed considerably over the last few decades. On the one hand, her tasks and competences have become more extensive, especially in matters of antepartum care (Chapter 1 and Table A in Appendix 1). Furthermore, the number of diagnostic and screenings methods has increased, even in primary-care midwifery. Midwifery training has changed significantly, a national quality management policy has been established and practice management is becoming increasingly professional (Chapter 2). In addition, general practitioners’ involvement in childbirths has declined drastically (Chapter 3) and 84% of pregnant women in the Netherlands now receive their first maternity care from a primary-care midwife (Netherlands Perinatal Registry, 2008 data).

On the other hand, the number of patients referred to secondary care by their primary-care midwives has risen dramatically, to 50.1% in 2004, from 36.4% in 1988 (Chapter 4). Since 2004, this number has risen even further to 61.1%, according to the latest Netherlands Perinatal Registry yearbook* (2008). This does not necessarily mean that primary-care-midwife-supervised deliveries have been marginalised. In 2008 nearly 58,000 Dutch women gave birth under the supervision of a primary-care midwife, with 37.078 doing so at home. This figure represents nearly one-third of all childbirths reported in the Netherlands in that year.

* Assuming that the PRN’s method of data analysis did not change since 2004, the only year overlapping our analysis. The percentages of antepartum and intrapartum referrals in the PRN-data differed from our analysis (probably by different choices in the assignment of indications to pregnancy or labour), but they ended up with a comparable percentage of ‘births completed under the supervision of the primary-care midwife’ (49.1% in our analysis and 49.4% in the PRN-analysis).
Kloosterman reported that even in 1978, one-third of all childbirths were completed under the responsibility of a midwife.\textsuperscript{4} Figures issued by Statistics Netherlands and the Netherlands Perinatal Registry show that the increase in the number of women referred to secondary care is roughly equal to the decrease in the number of women whose childbirths used to be supervised by GPs (\textit{Chapter 3}). Therefore, midwives’ net involvement in childbirths has not actually decreased that much; it still accounts for approximately one-third of all childbirths in the Netherlands (Figure 9.1).

\textbf{Figure 9.1} - The percentage of deliveries in the Netherlands, completed under the supervision of the primary care midwife, 1964 – 2008

Statistics from 1964 to 1993 are based on data presented by Statistics Netherlands.\textsuperscript{5} Statistics from 1995 to 2008 are based on data from the Netherlands Perinatal Registry.\textsuperscript{6,7}

\textbf{Research question no. 1: What is ‘normal’?}

Amidst all these changes, the core of the midwife’s duties has not changed all that much. She is still charged with the supervision of normal pregnancies, deliveries and post partum period. The general philosophy of the Dutch maternity-care system continues to be that ‘pregnancy and childbirth generally are physiological processes’, and that ‘medicalisation of obstetric care should be avoided, i.e. actively opposed’\textsuperscript{8} - from the point of view that care must be provided ‘in primary care setting as long as it suffices and in secondary care if necessary’.\textsuperscript{9}
The current discrepancy between the general philosophy and the increasing number of pregnant women being referred to specialist care is due to the fact that our understanding of normality has changed significantly, due to new diagnostic methods and technological advances, new epidemiologic insights and changes in society (Chapter 3). The basic tenet of the Dutch maternity-care system, i.e. ‘to give birth at home under the supervision of a midwife and a GP in the event of a normal pregnancy; to give birth in hospital in the event of a pathological pregnancy’, was held before the first lists of indications for referral to specialist care were introduced.\textsuperscript{10,11} Kloosterman highlighted this dichotomy as long ago as 1966 when he said that ‘every deviation from a perfect physiological course of events justifies a hospital birth.’\textsuperscript{11} This has been the basic tenet of the Dutch maternity-care system ever since.

In reality, the distinction between ‘normal pregnancy’ and ‘pathology’ is not a dichotomy, but rather a sliding scale. The narrowing scope of conditions accepted as ‘normal’ has made the conditions which are still considered normal more homogeneous, while making the increased scope of ‘pathological pregnancy’ increasingly heterogeneous. ‘Pathological pregnancy’ now ranges from a situation with need for resources in an otherwise normal delivery (e.g. anaesthesia) to pregnancy with mildly deviant symptoms (e.g. prelabour rupture of membranes) to one with severe pathology (e.g. HELLP syndrome). However, when a pregnant woman is referred to a specialist to prevent the onset of pathology (requiring resources which are not available to primary-care midwives, such as analgesics or antibiotic infusions), she will receive the same ‘high risk’-label as a woman with previously diagnosed or suspected complications.

Back in 1966, the ‘high-risk’-versus-‘low-risk’ dichotomy made sense. Breech births and multiple births were supervised in primary care. In the event of a failure to progress first stage of labour, the midwife or GP would administer intramuscular oxytocin, and in the event of a failure to progress second stage an obstetrician would come to perform a forceps delivery at home. These conditions were considered to belong to the ‘normal area’ at the time. The few conditions which were actually considered complications were indeed severely pathological. Nearly half a century onwards, the above-mentioned treatments are not administered in the primary-care setting any more, and rightly so. Therefore, a two-level classification ‘high risk’ versus ‘low risk’ seems obsolete now. A classification in more categories (e.g. ‘low risk’, ‘additional diagnostics required’, ‘additional resources required’, ‘threatening or occurring pathology’) seems to better fit the present day reality.

Differentiating between the various types of indications for referral is useful in evaluating, understanding and describing the maternity-care system’s performance.
For instance, data analysts who continue to interpret comparisons of primary-care and secondary-care outcomes as comparisons of low-risk populations versus high-risk populations are losing sight of the fact that the population of women referred to specialist care is startlingly heterogeneous. Depending on what point a study is trying to prove, either primary-care or secondary-care results will be interpreted as being more favourable than they really are.

**Research question no. 2: Evaluation of risk-screening methods and referral to specialist care at the national level**

Differentiating between the various types of referral can also help a pregnant woman make a decision on where she would like to give birth and can help the care provider in his counselling. *Chapter 5* shows that almost the half of all first-time mothers who started labour under the supervision of a primary-care midwife ends up being referred to a specialist intrapartum. The recent Netherlands Perinatal Registry yearbooks confirm this development, which is often referred to in the current debate on the Dutch maternity-care system. ‘Referral to specialist care’ is thus often interpreted to indicate ‘complications’, ‘primary care’ is interpreted to indicate ‘home birth’ and no distinction is made between first-time mothers and women who have given birth before. This, in turn, results in one-liners such as ‘Half the women who choose to give birth at home end up having to go to the hospital due to complications’, accompanied by an image of an ambulance. Our analyses show this picture to be erroneous. Judging from our figures, only 3.4 per cent of all home births involved emergency referrals (Chapter 5, Table 3). A recent NIVEL study on ambulance transports confirm this figure. Next, pregnant women should know that three-quarters of all intrapartum referrals are being made during the first stage of labour, when being transported to a hospital on medical grounds is no greater burden than being transported to a hospital for a planned hospital delivery.

A more detailed classification of the indications for referral may also enable a new model of care with continued supervision by a primary-care midwife in the event of a referral. In the current system, primary-care midwives generally stop looking after their patients the moment said patients are handed over to secondary care, even if they are in labour. This may seem logical from the dichotomy high-risk-versus-low-risk and the current ‘demarcation-of-responsibilities’ perspective, but as far as the woman herself is concerned, discontinuing care at such a crucial moment may well be very undesirable. Rijnders et al. have shown that women who were referred to a specialist intrapartum were much less happy with their birth experiences than women who completed a home birth or planned to give birth in hospital from the start. This was largely due to the lack of continuity in the care they received. One could argue that it
might be better to make the transition from one medical practitioner to the next more smooth by allowing the ‘own’ trusted primary-care midwife to continue to play a role in the proceedings even after the referral. The midwife then could, for instance, continue her ‘relational care’ \(^{18}\), and – depending on the nature of the complication – also (a part of) the medical care, thus ensuring continuity of care in a ‘case manager’-like capacity.

Last but not least, a smoother transition from primary care to secondary care as described above could create room for care organised in accordance with the standards proposed by the *Stuurgroep Zwangerschap en Geboorte* (*A Good Start*, published in January 2010).\(^9\) This report, written by the professional groups involved, proposes a patient-to-Ob-Gyn-nurse-or-maternity-assistant ratio of 1:1, plus a patient-to-obstetric-professional (obstetrician, midwife or resident) ratio of 1:2. This standard will be hard to attain with obstetric professionals and Ob-Gyn nurses continuing to be in short supply, unless hospitals tap into new forms of collaboration, for instance by making good use of the expertise and capacities of primary-care midwives.

 Needless to say, such a vast overhaul of the maternity-care system would have to meet certain preconditions. Harmonious co-operation between all medical professionals involved would be a prerequisite, as would shared files, registration and continuous evaluation. Serious incidents reported to the Dutch Health Care Inspectorate have taught us that a lack of clarity as to the division of responsibilities, authorisation and direction puts both mother and child at risk (*Chapter 8*). Therefore, a reshuffle of responsibilities is only safe and justified if very strict protocols and agreements on the nature of the collaborative effort and the division of responsibilities are in place, and if each care provider does only what he or she is sufficiently competent and legally qualified to.\(^{19,20}\)

All this requires a thorough re-evaluation of the way in which maternity care is currently organised. The specific expertise and capacities of primary- and secondary-care providers should not be equalised, but rather made much more explicit, so that the two groups of medical practitioners complement each other rather than become rivals. Midwives are no ‘HBO-obstetricians’\(^{21}\), nor should they aspire to be, not even if midwifery courses were to become an academic course.\(^{22,23}\) This being the case, redefining the scope of the primary-care midwife’s duties would not constitute an extension of that scope, but rather a re-evaluation of her current duties, which would benefit the pregnant women, who, being be at the centre of care\(^{24}\), would receive the made-to-measure care they require. Such an individual approach to the delivery of care would be in keeping with ‘proper care’ as defined in the Quality
Assurance at Medical Facilities Act (Kwaliteitswet Zorginstellingen): high-quality care which is provided to the patient in an effective, efficient and patient-friendly way and meets the patient’s individual needs.¹

Research question no. 3: Evaluation of individual care
Have care and perinatal and maternal outcomes improved since the big shifts described above took place and the scope of ‘normality’ was narrowed? This is the key question, which, if answered affirmatively, would justify all the changes within the role division in the Dutch obstetric system over the years.

It is impossible to answer this question with the data currently available, since no causal relations can be inferred from the perinatal databases. Many parties, however, appear to believe this is possible. The media have played an important role in drawing far reaching conclusions from these flawed inferences.¹²,²⁵⁻³¹ GP/epidemiologist Hoogendoorn provoked a lively debate when he first suggested there is a correlation between perinatal mortality and home birth in 1986.³² It is worth mentioning in this regard that recent publications have shown that the highest perinatal mortality rates are found in areas with a low incidence of home births.³³⁻³⁵ However, it would be equally unjust to attribute the Netherlands’ failure to reduce its perinatal mortality rates to the level of other European countries to the increased involvement of secondary-care providers.

Once it becomes available, the Dutch Perinatal Registry’s improved data set will provide researchers with a greater insight into the relationship between care delivery and outcome in primary, secondary and tertiary care, respectively.³⁶⁻³⁸ However, even this relatively sophisticated registry will not generate more than hypotheses and trends which will have to be tested in more thorough studies.³⁹ Moreover, the secondary-care data generated by the Registry will in all likelihood prove difficult to interpret since the indications for referral are so heterogeneous (as stated above) and because a substantial percentage of women in secondary care are in fact low-risk women.⁴⁰⁻⁴²

Perinatal audit is an important analytical instrument which can be used to identify both substandard factors and best practices, and may detect both undertreatment and overtreatment. The results of the first nation-wide audit are expected to be released at the end of 2011.⁴³,⁴⁴ However, perinatal audit is especially useful at the local level, since a multi-disciplinary discussion of cases with adverse outcomes inevitably results in greater openness and actions geared towards improvement. The multidisciplinary approach and the collaboration during the audit meetings improves the co-operation between perinatal care providers in the patients’ care as well, not the least because by
knowing each other better than before. At the moment the instrument is mainly used for assessment of perinatal mortality, but it has also proven useful in assessing other outcomes, such as postpartum haemorrhage, and interventions such as Caesarean section and episiotomy.

As we showed in Chapter 7, care providers generally accept feedback given by external parties in the perinatal audit procedure. Among the more unexpected findings of our study was the fact that the care providers involved generally judged themselves more harshly than the audit panel did. This being the case, we suspect that audit meetings could help medical professionals to deal with their grief over their personally professional failure as well.

Perinatal mortality audit involves a selection of certain cases. Therefore, the results of an audit may not be translated in interventions or new policies conducted in the population at large, without considering the full impact on the population. As a consequence, the instrument of audit should always be combined with other quantitative and qualitative quality assessment activities, such as intervention studies. The same is true for the results of the Inspectorate’s own study investigating critical incidents. Those, too, reflect a select number of cases rather than the population at large.

Nevertheless, certain structural aspects can be inferred from the analysis described in Chapter 8. It appears that significant improvements could be made by improving basic preconditions for proper care, such as good communication, explicit patient handovers, unceasing alertness and a clear demarcation of duties and responsibilities. This goes for all echelons and all disciplines. This is an important finding which may help us reorganise the Dutch maternity-care system. Good care is not delivered by ‘bricks and buildings’, but rather by the care providers working inside those buildings, irrespective of whether these buildings are hospitals or people’s homes. The effectiveness of care largely depends on how well such medical professionals – primary-, secondary- and tertiary-care providers alike – co-operate. Several of the indicators described in Chapter 6 correspond to these preconditions for proper care, which goes to show that quality, or a lack thereof, does not have to be defined in terms of adverse outcomes only. A well chosen indicator is on the one hand an alarm, if minimum standards are not met or if the rating is deviating from average practice strongly, but on the other hand a sign of quality in case of good performance. By using the indicators for reflection and benchmarking, these may act as a stimulus to improve care on the individual, regional and national level.
Evaluations of Dutch midwifery care in the (inter)national literature

In Chapter 1 we presented an overview of scientific, peer-reviewed literature assessing the work of the primary care midwife within the Dutch maternity-care system in the 1956-2005 period. One of the conclusions we drew was that in the study period Dutch midwives’ performance was assessed primarily by people who were not midwives themselves, most notably by obstetricians. Another conclusion we drew was that the quality of Dutch maternity care was defined largely in terms of mortality or morbidity, focusing on the condition of the neonate rather than the mother. An early stage development of an evidence base for the content of the midwife’s work was recognised from 1996 onwards.

We performed another literature search for the 2006-2011 period (cut-off date: June 1st 2011), using the same key words and selection criteria as before (see page 13). The international search resulted in 259 additional hits, while the Dutch search resulted in 53 hits. Again, we divided the studies into two subcategories: ‘Assessment of the quality of Dutch midwifery care’ and ‘The scope of Dutch primary-care midwives’ duties’.

Studies assessing the quality of Dutch midwifery care

The key data and conclusions of the studies thus selected are presented in the second part of Table B in Appendix 2. Once again, we analysed the composition of each research team, coming up with two figures: the MR-factor (the extent to which midwives were represented in each research team) and the OR factor (the extent to which obstetricians were represented in each team).

Table 9.1 (page 174) presents a summary of all the findings of Table B. The bolded data in the end column cover a five-year period, whereas the columns to the left each cover a ten-year period.

* We assumed that the first-listed author for each study was the principal researcher. He/she was awarded 4 author points. The second- and the last-listed author each received 2 points, while all other authors listed were each awarded 1 author point. The midwives’ involvement in the research team, the MR-factor (denoting the extent to which midwives were represented in the research team) was calculated as the quotient of the number of author points for midwives, in relation to the available number of author points * 100. In the same way the obstetricians’ involvement in the research team (the OR-factor) was calculated (denoting the extent to which obstetricians were represented in the research team).

As an example: The paper ‘Perinatal mortality and morbidity in a nationwide cohort of 529,688 low-risk planned home and hospital births’(2009) had 8 authors. The first, second and fourth author were midwives (4+2+1=7 author points for midwives); the fifth, sixth and seventh author were obstetricians (3 * 1 =3 author points) and the third and last author were neither midwife nor obstetrician(1+2 author points). Thus, the total number of authorpoints available was 13. The MR-factor resulted in 7 : 13 * 100 = 54; the OR-factor resulted in 3 : 13 * 100 = 23.
The most striking thing about the 2006-2011 period is the large increase in the number of midwifery-related studies: 25 studies met the criteria for inclusion. Thus, the number of studies published in the 2006-2011 period is twice that of the preceding ten years and makes up two-thirds of the total number of studies devoted to Dutch midwifery care of the preceding fifty years combined. Furthermore, more diverse outcome measures were used in the 2006-2011 period, and more studies were devoted to maternal outcomes. Twenty-five% of the 2006-2011 studies used the maternal experience as either the primary or a secondary outcome measure, with another 12.5% focusing on maternal mortality or morbidity (Figure 9.2). In addition, since the mid-1990s, a significant number of studies discussed the maternity-care system as a whole, rather than just the place of delivery, which is no more than a consequence of the system (Figure 9.3).

The mean Midwives’ Research factor (MR-factor) increased significantly in the 2006-2011 period, achieving the same level as the mean Obstetricians’ Research Factor (OR-factor). The decrease in the OR-factor may also be due to the increasing number of epidemiologists and other non-obstetric researchers studying the field. No fewer than 83% of the papers published in this period were published in foreign journals, which reflects international interest in the Dutch maternity-care system.

Studies concerning the scope of primary-care midwives’ duties
A total of 36 papers published in the 2006-2011 period met the criteria for inclusion in the second subcategory (i.e. the scope of primary-care midwives’ duties), which almost equals the number of papers published in the preceding fifty years. Table 9.2, which summarised the subjects of the studies, shows that pregnancy and mothers’ expectations were popular subjects in this period (page 176).

The mean MR-factor in this subcategory was 19, showing the participation of midwives since the nineties. Many more papers are expected to be published over the next few years, since quite a number of studies investigating primary-care midwifery in the Netherlands are currently being conducted, e.g. the Deliver Study (conducted by the Amsterdam/Groningen Midwifery Academy)\textsuperscript{174} and VECAS (a study conducted by the Maastricht Midwifery Academy).\textsuperscript{175} Furthermore, the Primary-Care Midwifery Consortium, which is currently being established, will likely produce studies and research papers.

Conclusions from the literature
The obvious conclusion to be drawn from the recent literature produced on the subject is that our understanding of the Dutch obstetric system, and the role played therein by midwives, has improved considerably over the last five years. It is also
Table 9.1 - Studies investigating the quality of midwifery care, published in peer-reviewed journals in the 1956-2011 period. (Refer to Table B in Appendix 2 for a descriptive summary of the selected studies.)

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<td>12</td>
<td>12</td>
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<tr>
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<td>Number of papers published in Dutch</td>
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<td>MR-factor (Midwives’ involvement in the research team) †</td>
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<td>Mean = 0</td>
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<td>Mean = 25</td>
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<td>OR-factor (Obstetricians’ involvement in the research team) †</td>
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<td>Mean = 33</td>
<td>Mean = 70</td>
<td>Mean = 62</td>
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<td>Mean = 25</td>
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**Subject of the study**

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<td>place of delivery</td>
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<td>maternity care system</td>
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**Outcome measures * **

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<th>1 53</th>
<th>8 32;40:54-59</th>
<th>7 39;60-65</th>
<th>6 66-71</th>
<th>10 33;35;52;72-78</th>
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<td>perinatal mortality</td>
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<td>39;60-65</td>
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<td>neonatal morbidity</td>
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<td>–</td>
<td>5 40;59;79-81</td>
<td>4 62;82-84</td>
<td>3 66;71:85</td>
<td>5 52;72;75;77;986</td>
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<td>maternal mortality</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1 87</td>
<td>1 88</td>
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<tr>
<td>maternal morbidity</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1 66</td>
<td>2 46;99</td>
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<td>referral</td>
<td>–</td>
<td>–</td>
<td>3 40:58-59</td>
<td>1 90</td>
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<td>5 72;91-94</td>
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<td>interventions</td>
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<td>–</td>
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<td>2 62:84</td>
<td>2 95:96</td>
<td>3 42;94;97</td>
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<td>women’s experiences</td>
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<td>–</td>
<td>–</td>
<td>1 98</td>
<td>2 96:99</td>
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<td>substandard care factors</td>
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<td>1 64</td>
<td>5 67-70:105</td>
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† See page 172 for explanation of MR-factor and OR-factor

* the sum of numbers exceeds the number of papers since more than one outcome measure could be used
Figure 9.2 - Outcome measures in studies assessing the quality of Dutch midwifery care 1956-2011, as a percentage of the number of studies published per decade.

Figure 9.3 - Subject of the studies assessing the quality of Dutch midwifery care 1956-2011, as a % of the number of studies published per decade.
### Table 9.2 - Studies Investigating the Scope of Primary-Care Midwives’ Duties

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<td>3 Range 0 - 22</td>
<td>18 Range 0 - 100</td>
<td>19 Range 0 - 70</td>
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<td><strong>Pregnancy</strong></td>
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<td>counselling and advice (pre-conception, nutrition, smoking cessation, prenatal screening, breastfeeding)</td>
<td></td>
<td>1 106</td>
<td>3 107-109</td>
<td>8 110-117</td>
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<td>use of medication</td>
<td></td>
<td>1 118</td>
<td>1 119</td>
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<td>diagnostics, tests and interventions</td>
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<td>2 120;121</td>
<td>3 122-124</td>
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<td>social make-up of clientele (socioeconomic status, elderly women, women with a history of sexual abuse, immigrants)</td>
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<td>1 126</td>
<td>1 127</td>
<td>2 128;129</td>
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<tr>
<td><strong>Delivery</strong></td>
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<td>management of labour and interventions</td>
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<td>2 130;131</td>
<td>3 78;132;133</td>
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<td>neonatal condition after home birth</td>
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<td><strong>Women’s attitudes and expectations</strong></td>
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<td>decision-making process in making choices</td>
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<td>2 138;139</td>
<td>5 140-144</td>
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<td>expectations and preferences for certain types of care</td>
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<td>2 145;146</td>
<td>3 147-149</td>
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<tr>
<td><strong>Preferences and attitudes of midwives</strong></td>
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<tr>
<td>midwifery-related factors influencing expectant mothers’ choices</td>
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<td>3 150-152</td>
<td>2 153;154</td>
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<tr>
<td>influence of birth location on midwife’s performance</td>
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<td>1 18</td>
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<tr>
<td>adherence to guidelines (miscarriage, anaemia, vitamin K policy, smoking cessation procedure)</td>
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<td>3 155-157</td>
<td>1 158</td>
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<tr>
<td><strong>Care management</strong></td>
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<tr>
<td>primary-care midwives’ workload</td>
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<td>1 160</td>
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<tr>
<td>costs of birth</td>
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<tr>
<td>co-operation between primary- and secondary-care professionals</td>
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<td>1 162</td>
<td>1 163</td>
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<td>transport of obstetric patients</td>
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<td><strong>Evaluation</strong></td>
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<td>small peer-group evaluation</td>
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<td>1 165</td>
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<tr>
<td>feasibility and effects of (perinatal) audit</td>
<td></td>
<td></td>
<td>1 166</td>
<td>2 167;168</td>
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<tr>
<td>Education and knowledge (genetics, medication, Hb-pathy)</td>
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<td>5 169-173</td>
</tr>
</tbody>
</table>
obvious that midwives are increasingly taking responsibility for the evaluation of their own performance and are publishing their evaluations. This finding is an indication of the midwives’ developing professional attitude towards their work (Chapter 2).

Perinatal mortality continues to be the most commonly used outcome measure in studies investigating the assessment of the Dutch obstetric system and the role of the midwife therein (42 per cent of all studies published between 2006 and 2011, down from 57 per cent in the preceding fifty years). In addition, a large number of papers on the subject of perinatal mortality in the Netherlands were published in the 2006-2011 period which were not included in this study because they paid scant attention to the role played in the proceedings by midwives.34;35;45;73;74;176-180

So far, this large body of evidence has not resulted in a generally accepted conclusion on the most effective way to run the Dutch maternity-care system. On the contrary, in Keirse’s words, ‘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.’51

Causal relation?
One of the reasons why the discussion cannot seem to be satisfactorily concluded is because we do not have enough information to assume that there is a causal relation between the care provided and the outcome. When we juxtapose these two elements in a 2x2 table, it may seem at first glance that the assessments in the situations represented by Sections A, C and D are correct (Figure 9.4a): a healthy child was born in primary care (Section A), or the pathology was remedied successfully, resulting in a healthy mother and child (Section C), or complications arose despite the secondary care givers employed all technical possibilities (Section D). Section B shows mortality or morbidity in a primary-care setting, so, the patient was not referred to specialist care despite suffering complications, which seems to lead to the inevitable conclusion that the risk selection failed.
This way of thinking generally results in conclusions like the one Lievaart drew in a 1982 study investigating neonatal morbidity: ‘In pregnancies and deliveries considered normal by midwives, only neonates with a condition that is virtually optimal should be born.’80 Reijnders concluded in 1987 from a data analysis of intra-uterine death in Dutch hospitals, 40% of which had been referred to the obstetrician by primary-care midwives: ‘The avoidability of the cases of intra-uterine death in primary care has to be analysed.’60

In reality, only Section A is truely useful for evaluative purposes, its outcome being a healthy mother and a healthy baby in primary care (Figure 9.4b). Section B raises the question of whether the pathology could have been detected and treated if the woman had been under secondary supervision, and if so, whether the outcome would

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**Figure 9.4a** - Evaluation of relationship between care and outcome, at first appearance

<table>
<thead>
<tr>
<th>Good outcome child/mother</th>
<th>Adverse outcome child/mother</th>
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</thead>
<tbody>
<tr>
<td><strong>Delivery in primary care</strong></td>
<td></td>
</tr>
<tr>
<td>‘Rightly’ in primary care</td>
<td>A</td>
</tr>
<tr>
<td><strong>Delivery in secondary care</strong></td>
<td></td>
</tr>
<tr>
<td>‘Rightly’ in secondary care</td>
<td>C</td>
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</tbody>
</table>

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**Figure 9.4b** - Evaluation of relationship between care and outcome, in reality

<table>
<thead>
<tr>
<th>Good outcome child/mother</th>
<th>Adverse outcome child/mother</th>
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</thead>
<tbody>
<tr>
<td><strong>Delivery in primary care</strong></td>
<td></td>
</tr>
<tr>
<td>‘Rightly’ in primary care</td>
<td>A</td>
</tr>
<tr>
<td>→ <em>Unless the outcome was unavoidable and would have been the same in secondary care</em></td>
<td></td>
</tr>
<tr>
<td><strong>Delivery in secondary care</strong></td>
<td></td>
</tr>
<tr>
<td>‘Rightly’ in secondary care</td>
<td>C</td>
</tr>
<tr>
<td>→ <em>Post or propter?</em></td>
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</table>
have been different. As an example: an acute abruption of the placenta, a preterm delivery at home or on the way to the hospital, or a foetus with a non-identifiable congenital disorder or an undetermined cause of death. Section C raises questions as to whether, given the division of responsibilities between the various levels of care, this patient was rightly referred to secondary care, or whether this was really a low-risk pregnancy which should have been entered in section A. In the case of Section D, it is unclear whether the adverse outcome occurred despite proper care or whether it was due to substandard care delivered in secondary care, and/or in primary care in case of a referral. As far as Section D is concerned, the critical incidents described in Chapter 8 demonstrate a large room for improvements in just basic aspects of care, e.g. adequate communication and co-operation, clear assignment of responsibilities and attentiveness in maternal and fetal surveillance.

The understanding of this common way of thinking may be used to gain insight into the historical debates and to be able to ask the right research questions for the future. The Sections B and D contain the spearheads of further evaluative research concerning adverse outcomes. However, the Sections A and C will be of the utmost importance to gain insight into the still unrevealed physiological processes of pregnancy and labour and into possibilities to prevent adverse outcomes. The obvious conclusion to be drawn from Figure 9.4b is that all four sections need attention, and that all four sections concern both primary and secondary care.

Perinatal audit or observational studies can play an important part in helping us complete the above 2x2 table. Bais’ study investigating the detection of intrauterine growth restriction (IUGR) is a good example. Bais found the diagnostic performance of abdominal palpation as a screening test for IUGR performed by midwives disappointing, but also found that various stratagems, such as routine ultrasound, did not improve detection rate, nor perinatal morbidity and mortality. In addition, this example demonstrates the complexity of the problems in health care in general and in maternity care specifically. The result of the sole research question on the diagnostic performance of abdominal palpation in detecting IUGR detection will in itself not be sufficient to improve care. It has to be followed by questions concerning the efficiency and efficacy of alternative screening methods: would these methods improve the detection rate, and if so, are efficient treatments available, and if so, will these treatments result in the desired outcome? This way of thinking is crucial in preventing ineffective interventions with ‘more harm than good’ and will help us learn which field specifically requires innovative research aimed at eradicating the current problems.
Research Agenda

It is high time that all obstetric professionals, regardless of their positions, look at all the material gathered so far with scientific detachment and an open mind, and determine what all this may mean in practice.

At first, we owe it to the pregnant women and the society to show that Dutch care providers are working together to ensure the best results. The reputation of the Dutch maternity-care system has been badly affected by the continued focus on the Netherlands’ high PERISTAT ranking and the heated, frequently public, debates on this subject conducted over the last few years by the professionals groups involved. Headlines such as, ‘In hospitals the number of babies dying at night is a quarter more than at daytime’ or ‘Primary-care deliveries are 2.5 times more likely to result in death than secondary-care deliveries’, without any mention of the a priori hazard (6 in 10,000) cause a great deal of uncertainty in pregnant women who seem to have to make a choice between two dangerous options and so compromise patient safety indirectly. Which is not to say that studies which publish such results do not warrant a thorough in-depth analysis by all obstetric professionals involved.

Convincing pregnant women that their faith in the Dutch maternity-care system is justified will require continuous assessment of obstetric professionals’ performance and its outcomes, as well as openness about these things, at three levels: the multi-disciplinary level, the level of each specific obstetric profession and the individual care provider’s level. This will allow both internal and external evaluation and accountability.

Secondly, now that we have obtained knowledge about the prevalence of perinatal mortality, it is important to broaden the focus. The last years’ studies and public debates have been focussing mainly at the intrapartum mortality of children at term (both in primary and secondary care). According to the Netherlands Perinatal Registry, in 2008 91.5% of all pregnant women delivered in the term period (≥ 37 weeks GA). Of all perinatal mortality, 27.4% took place in this group at term. This implies that 72.6% of all perinatal mortality occurred in the 8.5% of the pregnancies not at term. Besides, within the perinatal mortality in pregnancies at term, 60% occurred in the antepartum period (see Figure 9.5).

These figures suggest that the ongoing debate on the place of delivery shifts the focus away from questions that urgently need to be addressed. The largest gains may be achieved in prevention of antepartum mortality, especially in the preterm period. This is all the more a matter of importance since preterm birth, intrauter-
ine growth retardation and congenital malformations constitute the most significant causes of perinatal mortality. Together, these so-called BIG-3 causes are responsible for 82% of all perinatal mortalities. The prevention of these conditions request an approach both on a Public Health level and on an individual level.

We need more insight into the determinants of these pathological conditions and we should focus on the improvements which can be made concerning primary prevention, early risk-detection and prediction models, to be used in all levels of care. Next, much more emphasis should be put on implementing evidence based preventive measures, such as supporting women in smoking cessation and in the use of folic acid. Given her easy accessibility, the primary-care midwife may play an important role in these health promotional activities.

Thirdly, the attention to the remaining 99.1% of pregnancies in which no perinatal mortality occurred, has diminished as a result of the emphasis on mortality. What is

Figure 9.5 - Perinatal deaths in absolute numbers per gestational age (GA) and per period (ante-partum, intrapartum, postpartum) according to the Netherlands Perinatal Registry 2008.

* GA: gestational age. PMR: Perinatal Mortality Rate / 1000 born children
the best care for these babies and their mothers, and how can it be improved in order to prevent morbidity and to increase maternal / parental satisfaction? How can we stimulate a normal progress of pregnancy and childbirth? What do expectant mothers themselves think important, and how can we stimulate them to help themselves have a healthy baby? All these issues must be examined together, using the specific expertise of obstetric professionals in primary, secondary and tertiary care alike. The current (2011-2015) ZonMw Zwangerschap en Geboorte Programme requires that study proposals only be authorised if the studies in question are conducted by a Consortium consisting of zero-, primary-, secondary- and tertiary-care providers. This attempt at stimulating the various obstetric professionals to work together certainly is a step in the right direction.

Midwives can make an essential contribution to such multidisciplinary projects, having gained expertise and knowledge of their field of work. By contributing to such projects, they would satisfy their legal requirement, which is to stimulate and monitor the natural progress of pregnancy, delivery and post partum period, all with the goal of reaching the best possible outcomes.
Conclusions and recommendations

• Normal is not what it used to be. The proportion of conditions in maternity care considered normal (‘low-risk’) is shrinking and the proportion of conditions considered not normal (‘high-risk’) is increasing, and so do the number of referrals from primary- to secondary care.

• The low-risk-versus-high-risk dichotomy has become obsolete. The heterogeneity of the ‘high-risk’-group of women hampers the assessment of the effectiveness of the Dutch maternity care system, is inefficient and results in discontinuity of care.
  - The dichotomy low-risk-versus-high-risk should be substituted by a classification in accordance to real practice, e.g. prevention of pathology / additional diagnostics required / additional resources required / threatening pathology / occurring pathology.
  - Multidisciplinary research is urgently needed to better determine the risk status and the optimal type of care and care provider for each individual woman in her specific situation.
  - Given the evidence-based advantages of continuity of care, the transition from primary- to secondary care should be made smoother by allowing the own, trusted primary-care midwife to continue her relational care, and – depending on the nature of the complication – also (a part of) the medical care in a case manager-like capacity even after the referral.
  - A review of the way the Dutch maternity-care system is organised is required. The specific expertise and capacities of primary- and secondary-care providers should made much more explicit, in order not to compete but to complement each other.

• Two-thirds of the women starting labour in primary care completed childbirth under the exclusive supervision of the primary-care midwife (83% of the parous women and 51% of the nulliparous women).

• Three-quarters of all intrapartum referrals from primary to secondary care are being made during the first stage of labour; the commonest indications being failure to progress first stage and need for pain relief.

• 3.6% of the women who were classified as low-risk when their deliveries began were referred on an urgency basis. The neonatal outcome was worst in the group of emergency referrals and the best in the non-referred group.
  - It has to be explored whether the antenatal criteria for the assessment ‘low risk at start labour’ can be improved.
  - The classification presented in chapter 5 provides a framework for the further evaluation of intrapartum referrals.
  - Safely keeping women in primary care could be considered one of a midwife’s
interventions, just as a referral to secondary care may be. The art of midwifery is to balance both interventions, in order to achieve the optimal result for mother and child.

− Given the evidence-based advantages of primary care for low-risk women, it is a challenge for midwives, obstetricians and policymakers to maintain this opportunity with preventive measures at a public health level (e.g. preconception counselling and education), at the pregnant women’s level (e.g. improve utilisation of the advantages of continuous support during labour) and at the caregiver’s level (e.g. awareness and multidisciplinary co-operation).

• In 2008 91.5% of all pregnant women delivered in the term period (≥ 37 weeks GA). 72.6% of all perinatal mortality occurred in the 8.5% of the pregnancies not at term.

• Perinatal audit is a powerful tool for analysing the relationship between care and outcomes and to improve co-operation between perinatal care providers, not the least because by getting to know each other better than before.

• Perinatal audit meetings, if defined and performed carefully, are not perceived by care providers as a threat. The meetings could help medical professionals to deal with their grief over their personally professional failure.

• It turns out to be possible to specify a set of midwifery indicators, in spite of the difficulty to define valid outcome indicators for care in a low-risk population, given the low incidence of both interventions and adverse outcomes.

• Significant improvements could be made by improving preconditions for proper care, e.g. proper communication, explicit handovers, continuous evaluation and a clear division of responsibilities in both the primary- and secondary-care settings.

• Midwives are increasingly describing and assessing their own field of study.

− Considerations to improve the perinatal mortality rate, by means of changing policies or interventions or maternity care system, should always take into account the consequences for the total number of pregnant women and their children.

− In view of the BIG-3 causes of perinatal mortality (preterm birth, intrauterine growth retardation and congenital malformations) much more emphasis should be placed on evidence based preventive and health promoting activities, both on a Public Health level and on a individual level (such as supporting women in smoking cessation and in the use of folic acid). Given her easy accessibility, the primary-care midwife may play an important role in these health promotional activities.

− The system of audit should be used also for assessment of care without adverse outcome, in order to optimise outcomes.

− An understanding of the natural progress of pregnancy and childbirth is essential for the prevention of complications and should therefore be put high on the research agenda.
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