

Improving Quality and Safety in Maternity Care: The Contribution of Midwife-Led Care

Declan Devane

The Journal of ...

Need to cite this paper?

[Get the citation in MLA, APA, or Chicago styles](#)

Want more papers like this?

[Download a PDF Pack of related papers](#)

[Search Academia's catalog of 22 million free papers](#)

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/43533120>

Improving Quality and Safety in Maternity Care: The Contribution of Midwife-Led Care

Article in *Journal of midwifery & women's health* · May 2010

DOI: 10.1016/j.jmwh.2010.02.002 · Source: PubMed

CITATIONS

43

READS

938

5 authors, including:



[Jane Sandall](#)

King's College London

274 PUBLICATIONS 2,598 CITATIONS

[SEE PROFILE](#)



[Declan Devane](#)

National University of Ireland, Galway

113 PUBLICATIONS 2,901 CITATIONS

[SEE PROFILE](#)



[Hora Soltani](#)

Sheffield Hallam University

88 PUBLICATIONS 1,184 CITATIONS

[SEE PROFILE](#)



[Marie Hatem](#)

Université de Montréal

47 PUBLICATIONS 741 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Project Re-Assure: Emboldening women to share their safety concerns [View project](#)



Exploring the contributing factors to high maternal mortality in adolescents in Eastern Freetown: a qualitative study. [View project](#)

All content following this page was uploaded by [Jane Sandall](#) on 07 January 2017.

The user has requested enhancement of the downloaded file.

Improving Quality and Safety in Maternity Care: The Contribution of Midwife-Led Care

Jane Sandall, RM, RN, MSc, PhD, Declan Devane, RM, Hora Soltani, RM, MMedSci, PhD, Marie Hatem, RM, PhD, and Simon Gates, PhD

This article draws on findings from a recent Cochrane systematic review of midwife-led care and discusses its contribution to the safety and quality of women's care in the domains of safety, effectiveness, woman-centeredness, and efficiency. According to the Cochrane review, women who received models of midwife-led care were nearly eight times more likely to be attended at birth by a known midwife, were 21% less likely to experience fetal loss before 24 weeks' gestation, 19% less likely to have regional analgesia, 14% less likely to have instrumental birth, 18% less likely to have an episiotomy, and significantly more likely to have a spontaneous vaginal birth, initiate breastfeeding, and feel in control. In addition to normalizing and humanizing birth, the contribution of midwife-led care to the quality and safety of health care is substantial. The implications are that policymakers who wish to improve the quality and safety of maternal and infant care, particularly around normalizing and humanizing birth, should consider midwife-led models of care and how financing of midwife-led services can support this. Suggestions for future research include exploring why fetal loss is reduced under 24 weeks' gestation in midwife-led models of care, and ensuring that the effectiveness of midwife-led models of care on mothers' and infants' health and well-being are assessed in the longer postpartum period. *J Midwifery Womens Health* 2010;55:255–261 © 2010 by the American College of Nurse-Midwives.

keywords: humanized care, midwife-led care, physiologic birth, quality, safety

INTRODUCTION

Maternal and perinatal morbidity and mortality together represent one of the biggest challenges to public health, particularly in low-income countries.¹ However, the evidence base on safety, its root causes and contributing factors, and the most cost-effective solutions to common problems is very limited. As a result, research on maternal and neonatal care has been identified by the World Health Organization (WHO) Patient Safety Programme as one of the top 20 global research priorities in low-income countries or countries with economies that are in transition. However, the actual quality of care for healthy women, which constitute the majority of women worldwide, has received relatively less research attention.² This article discusses some of the findings of a recent Cochrane review on midwife-led models of care in relation to dimensions of quality and safety in maternity care.

IMPROVING QUALITY AND SAFETY IN MATERNITY CARE

The concepts of childbirth safety and normalizing and humanizing childbirth are often presented in oppositional terms as though to achieve a safe birth requires that a woman may have to compromise on the experience of a physiologic birth.³ Safety is often presented as an absence of harm rather than a positive aspect of the birth experience. For example, in 2002, WHO Member States agreed on a World Health Assembly resolution on patient safety, defined as “the reduction of risk of unnecessary

harm associated with healthcare to an acceptable minimum.”⁴ When safety is conceptualized in terms of risk management activities, midwives and birthing women can experience surveillance and medical dominance.⁵ This dichotomizing of the issues leads to a narrow approach to exploring the experiences of all childbearing women, including those who are healthy, and a lack of understanding around when and where women feel safe in giving birth. In relation to maternity care, it would seem more fruitful to conceptualize the concepts of safety and quality in a holistic way drawing upon ideas of social and cultural safety.⁶

Quality of health care has been conceptualized in a more holistic multidimensional way. For example, the Institute of Medicine (IOM), the health arm of the US National Academy of Sciences, defines quality of health care as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”⁷ In its report “Crossing the quality chasm,” the IOM called for large-scale changes to the US health care system and laid out six national aims for improvement: safety, effectiveness, patient-centeredness (referred to as woman-centeredness in this article), timeliness, efficiency, and equity. Within maternity care, the UK maternity policy “Maternity matters” focuses on improving quality and safety of care.⁸ In the United States, the landmark report “Evidence-based maternity care: What it is and what it can achieve” highlights that nearly all women who give birth in US hospitals experience high rates of interventions, with risks of adverse effects. Procedures appropriate for a relatively small number of mothers, such as episiotomy and continuous electronic fetal monitoring, are common. This report notes that optimal maternity care should

Address correspondence to Jane Sandall, RM, RN, MSc, PhD, Department of Primary Care and Public Health Sciences, King's College London, 42 Weston St., London SE1 3QD. E-mail: jane.sandall@kcl.ac.uk

follow the principle of “effective care with least harm” and that “numerous beneficial practices that support women’s own innate capacities or the physiologic process of childbirth,” such as labor support, are underused.⁹

In many parts of the world, emphasis has been placed on the difficulties with ensuring a trained and knowledgeable workforce.¹⁰ Improving the availability of skilled midwifery care has been identified by WHO and a range of other agencies as an important priority. However, there is less understanding of how such care should be organized, and how midwifery care can contribute to improvements in safety and quality. In addition, the concept of quality has broad implications for women’s choices, because emerging evidence indicates alarming rates of increasing caesarean sections, especially in places where medical models are dominant.¹¹

THE COCHRANE REVIEW ON MIDWIFE-LED CARE COCHRANE VERSUS OTHER MODELS OF CARE FOR CHILDBEARING WOMEN AND THEIR INFANTS

This article draws upon findings from a recent Cochrane review of midwife-led models of care that synthesized information on differences in maternal and perinatal morbidity and mortality, effectiveness, and psychosocial outcomes.¹² The review compared midwife-led models of care with other models of care for childbearing women and their infants, and investigated whether effects of midwife-led care were influenced by: 1) differing levels of continuity, 2) varying levels of obstetric risk, and 3) practice setting (community- or hospital-based). The review also included a narrative evaluation of cost implications.

In the review, models of care were classified as “midwife-led” or “other” based on the lead professional providing care in both the antepartum and intrapartum periods. The rationale for this classification is that decisions and actions taken in pregnancy affect intrapartum events. Models of care were defined in the following ways:

- a) Midwife-led care, where the midwife is the woman’s lead professional, but one or more consultations with medical staff are often included as part of routine practice;

- b) Obstetrician-led care, which is common in North America, wherein obstetricians are the primary providers of antenatal care for most childbearing women. An obstetrician (not necessarily the one who provides antenatal care) is present for the birth, and nurses provide intrapartum and postnatal care;
- c) Family doctor–led care, with referral to specialist obstetric care as needed. Obstetric nurses or midwives provide intrapartum and immediate postnatal care but not at a decision-making level, and a medical doctor is present for the birth; and
- d) Shared models of care, where responsibility for the organization and delivery of care, throughout initial booking to the postnatal period, is shared between different health professionals.

The review summarized 11 trials involving 12,276 women that took place in public health systems in four countries (the United Kingdom, Canada, New Zealand, and Australia). The review included trials with women classified as being at “low” and “mixed” risk of complications. “Other” models of care included shared and medical-led care. Midwife-led models of care included team and caseload midwifery. In team midwifery, a woman receives her care from a number of midwives in the team, the size of which can vary. In caseload midwifery, a woman receives her antenatal, intrapartum, and postnatal care from one midwife and back-up practice partner(s).

None of the trials included models of care that offered home birth, although some offered intrapartum care in a midwife-led birth center in a hospital. In addition, the place of antenatal and postnatal care varied (Table 1).

Details of the design and methodology can be found in the full review.¹² The review included published and unpublished studies, and Cochrane quality criteria were used to assess trials for inclusion in the review.

WHAT DOES MIDWIFE-LED CARE CONTRIBUTE TO QUALITY AND SAFETY IN MATERNITY CARE?

Drawing on a previously published discussion,¹³ this section examines findings of the Cochrane review specifically in relation to four of the IOM-defined dimensions of quality: safety, effectiveness, woman-centeredness, and efficiency. Table 2 classifies findings from the Cochrane review according to these dimensions.⁷

Safety

Safety is defined as “avoiding injuries to patients from the care that is intended to help them.”¹⁴ Women randomized to midwife-led models of care were less likely to experience fetal loss or neonatal death at less than 24 weeks’ gestation (eight trials; N = 9890; risk ratio [RR] = 0.79; 95% confidence interval [CI], 0.65–0.97; fixed effects analysis; Figure 1).

Jane Sandall, RM, RN, MSc, PhD, is a professor of Social Science and Women’s Health and Innovations Programme Director, King’s Patient Safety and Service Quality Research Centre, King’s College London, London, UK.

Declan Devane, RM, is a senior lecturer in the School of Nursing and Midwifery, Áras Moyola, National University of Ireland, Galway, Galway, Ireland.

Hora Soltani, RM, MMedSci, PhD, PG Dip (Health Care Education), is a reader in the Centre for Health and Social Care Research at the Faculty of Health and Wellbeing, Sheffield Hallam University, Sheffield, UK.

Marie Hatem, RM, PhD, is a professor in the Department of Social and Preventive Medicine, University of Montreal, Montreal, Quebec, Canada.

Simon Gates, PhD, is a Principal Research Fellow at the Health Sciences Research Institute, Warwick Medical School Clinical Trials Unit, Warwick University, Warwick, UK.

Table 1. Details of 11 Trials in Cochrane Review of Midwife-Led Care Versus Other Models of Care for Childbearing Women and Their Infants

Countries, n	
Australia	4
Canada	1
New Zealand	1
United Kingdom	5
Risk status, n	
Low	6
Mixed	5
Women attended by a known carer, %	
Midwife-led	63–98
Other models	0.3–21
Types of midwife-led models of care, n	
Team	9
Caseload	2
Types of other models of care, n	
Shared care	7
Medical-led	3
Medical-led and shared care	1
Midwife-led models of care, setting for intrapartum care, n	
Hospital homelike unit	3
Hospital labour ward	8
Midwife-led models of care, setting for antenatal and postnatal care, n	
All hospital based	4
Antenatal care in community and no community postnatal care	1
Antenatal and postnatal care in community	3
Antenatal care in hospital and postnatal care in community	3

Source: Hatem et al.¹²

There were no statistically significant differences between groups for overall fetal loss or neonatal death equal to or greater than 24 weeks' gestation. There was no increased likelihood for any adverse outcome for women or their infants associated with having been randomized to a midwife-led model of care. These results were moderate in magnitude and generally consistent across all the trials.

Effectiveness

Effectiveness is defined as “providing services based on sound scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and overuse, respectively).”⁷

Women randomized to midwife-led models of care were less likely to experience: regional analgesia/anesthesia (11 trials; N = 11,892; RR = 0.81; 95% CI, 0.73–0.91; random effects analysis), an instrumental (forceps or vacuum) birth (10 trials; N = 11,724; RR = 0.86; 95% CI, 0.78–0.96; fixed effects analysis; [Figure 2](#)), and an episiotomy (11 trials; N = 11,872; RR = 0.82; 95% CI, 0.77–0.88; fixed effects analysis). However, there were no significant differences in the caesarean section rate (11 trials; N = 11,897; RR = 0.96; 95% CI, 0.87–1.06; fixed effects analysis).

In addition, women randomized to midwife-led models of care were more likely to experience no intrapartum regional analgesia/anesthesia (five trials; N = 7039; RR = 1.16; 95% CI, 1.05–1.29; fixed effect analysis; [Figure 3](#)), a spontaneous vaginal birth (nine trials; N = 10,926; RR = 1.04; 95% CI, 1.02–1.06; fixed-effect analysis), and breastfeeding initiation (one trial; N = 405; RR = 1.35; 95% CI, 1.03–1.76; random-effects analysis).

Woman-Centeredness

Woman-centeredness is defined as “providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.”⁷ Women randomized to midwife-led models of care were more likely to experience high perceptions of control during labor (one trial; n = 471; RR = 1.74; 95% CI, 1.32–2.30; fixed effects analysis) and attendance at birth by a known midwife (six trials; n = 5525; RR = 7.84; 95% CI, 4.15–14.81; random-effects analysis; [Figure 4](#)). Levels of continuity, as measured by the percentage of women who were attended during birth by a known carer, varied from 63% to 98% for midwife-led models of care and from 0.3% to 21% in other models of care.

Women's reported experiences of care included maternal satisfaction with information, advice, explanation, venue of delivery, and preparation for labor and birth, as well as perceptions of choice for pain relief and evaluations of carer's behavior. In the majority of the included studies, satisfaction in various aspects of care appeared to be higher in the midwife-led models compared to the other models of care.

Efficiency

Efficiency is defined as avoiding waste, including waste of equipment, supplies, ideas and energy.⁷ Five trials presented cost data using different economic evaluation methods. All of the five trials that assessed costs suggest a cost-saving effect in intrapartum care for midwife-led models of care compared to other models of care. One trial suggested a higher cost and one trial no differences in cost of postnatal care when midwife-led care was compared with medical-led maternity care. There was a lack of consistency in estimating maternity care cost among the

Table 2. Findings of the Cochrane Review on Midwife-Led Care Classified by Four Dimensions of Quality of Care

Safe	Effective	Woman-Centred	Efficient
Fetal loss	Evidence-based care	Experience and satisfaction	Staff resource use
Perinatal mortality	Physiologic birth	Sense of control	Length of stay
Perinatal morbidity	Breastfeeding	Continuity of care by a known midwife	Readmission
Maternal morbidity	—	—	Antenatal hospitalization

Sources: Institute of Medicine⁷ and Hatem et al.¹²

available studies; however, there seemed to be a trend towards the cost-saving effect of midwife-led care in comparison with medical-led care.

Women randomized to midwife-led models of care were less likely to experience antenatal hospitalization (five trials; $N = 4337$; $RR = 0.90$; 95% CI, 0.81–0.99; fixed effects analysis; Figure 5). In addition, infants of women randomized to midwife-led models of care had a shorter mean length of stay in hospital (two trials; $N = 259$; weighted mean difference [WMD] -2.00 days; 95% CI, -2.15 to -1.85 ; random effects analysis) than infants of women randomized to other models of care.

THE EFFECT OF BACKGROUND RISK, CONTINUITY, AND CARE PROVISION IN COMMUNITY SETTINGS

It was hypothesised that differential effects and outcomes could be related to three factors. First, the levels of continuity with care provider (caseload models of care offer higher levels of relationship continuity); second, whether women are low- or mixed-risk; and third, whether any care is provided in a community-based practice setting.

When the sub-group analyses were conducted, the risk ratio for fetal loss or neonatal death at greater than or equal to 24 weeks' gestation was 0.48 (95% CI, 0.23–1.03) in the caseload trials, and 1.44 (95% CI, 0.86–2.42) in the team trials. In the analysis of the proportion of neonates with 5-minute Apgar score <7 , the RR was 0.62 (95% CI, 0.38–1.02) in one caseload trial and 1.40 (95% CI, 0.97–2.01) in the team trials.

However, the significance of the analyses of individual sub-groups is not a reliable guide to whether the treatment effects differ between sub-groups, because nonsignificance may be caused by a small sample size (and therefore wide CIs). Interaction tests provide a more appropriate test of differences between the sub-groups, but need to be interpreted with caution because the number of outcome events influence interaction tests, and in these analyses was low. Subgroup analyses are by their nature observational (not randomized), and the increase in the number of analyses performed caused by sub-group analyses can lead to some statistically significant results arising by chance. When these were conducted, there was a statistically significant difference in the treatment effects between team and caseload models of midwife-led care for 5-minute Apgar scores <7 (interaction chi-square = 5.62; $P = .02$), and fetal loss and neonatal death at greater than or equal to 24 weeks' gestation (interaction chi-square = 5.25; $P = .02$) as shown in Figure 6.

There was no evidence of any difference in treatment effects between the sub-groups for any other outcome, and other effects were consistent by level of risk, practice setting, and organization of care, suggesting that the effectiveness of midwife-led models of care is maintained for women classified both as low- and mixed-risk, and in both community- and hospital-based settings.

DISCUSSION

Policy makers and health care providers want to improve the quality of maternity care; however, there has been a range of definitions of quality. Drawing on the six

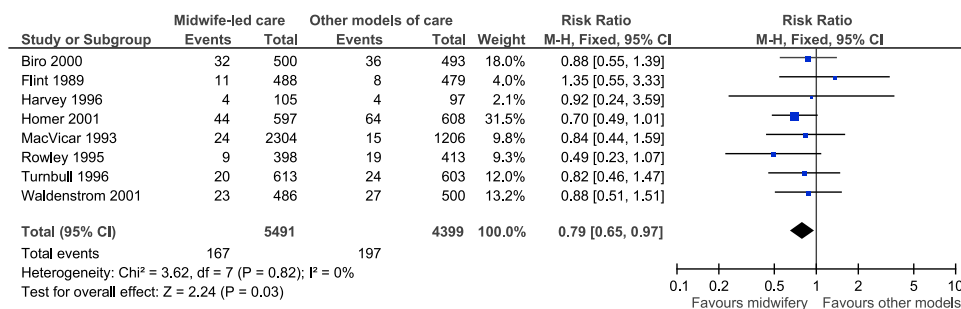


Figure 1. Midwife-led versus other models of care for childbearing women and their infants - fetal loss or neonatal death less than 24 weeks. Source: Hatem M, Sandall, J. (Joint First Author and Contact Author) Devane D, Soltani H, Gates, S. (2008) Midwife-led versus other models of care for childbearing women, Cochrane Database of Systematic Reviews 2008, Issue 4, Page 40.

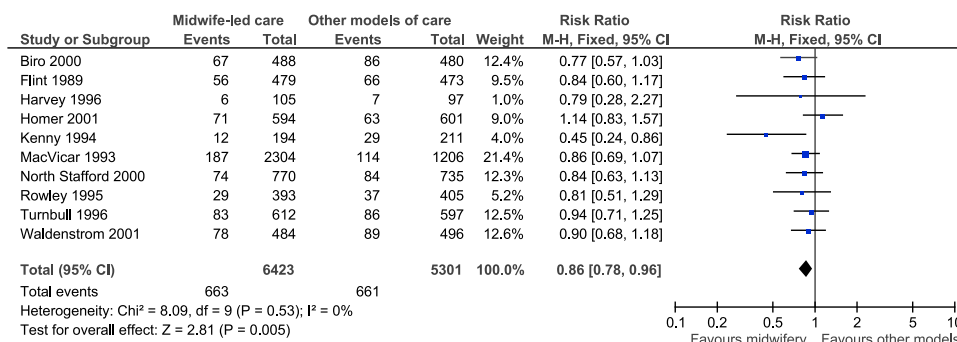


Figure 2. Midwife-led versus other models of care for childbearing women and their infants - Instrumental birth. Source: Hatem M, Sandall, J. (Joint First Author and Contact Author) Devane D, Soltani H. Gates, S. (2008) Midwife-led versus other models of care for childbearing women, Cochrane Database of Systematic Reviews 2008, Issue 4, Page 50.

dimensions of quality as defined by the IOM allows for some comparisons with similar work in mainstream health care to be made.

In summary women who received models of midwife-led care were nearly eight times more likely to be attended at birth by a known midwife, 21% less likely to have a fetal loss before 24 weeks' gestation, 19% less likely to have regional analgesia, 14% less likely to have instrumental birth, 18% less likely to have an episiotomy, and significantly more likely to have a spontaneous vaginal birth, initiate breastfeeding, and feel in control. Midwife-led models were generally cheaper, and women and infants spent significantly less time in hospital. Overall, there was no increased likelihood for any adverse outcome for women or their infants associated with having been randomized to a midwife-led model of care. These results were moderate in magnitude and generally consistent across all the trials.

When outcomes for women who received team midwifery were compared with women who received caseload midwifery, women who received team midwifery were significantly more likely to have a fetal loss after 24 weeks' gestation and for their infants to have significantly lower Apgar scores.

The review concluded that most women should be offered midwife-led models of care, and that women should be encouraged to ask for this option, although caution should be exercised in applying this advice to women

with substantial medical or obstetric complications. It is important to note that the findings of the review cannot be generalized to models of midwife-led care that include homebirth.

Policy makers and health care providers should be aware that such benefits are conferred whether midwives provide antenatal care in hospital or community settings. Not all areas of the world have health systems where midwives are able to provide midwife-led models of care, and health system financing is a potential barrier to implementation. Policy makers who wish to improve the quality and safety of maternal and infant care, particularly around normalizing and humanizing birth, should consider midwife-led models of care and how financing of midwife-led services can support this.

The implications are that increasing the number of women who have access to midwife-led care will improve the quality of care they receive. This would increase the number of women who have a physiologic birth and report a good birth experience. The challenge is that in the majority of countries in the world, service reconfiguration will be required to deliver models of care that offer continuity of care by midwives.

IMPLICATIONS FOR RESEARCH

In terms of safety, an intriguing question remains about why fetal loss is reduced under 24 weeks' gestation in

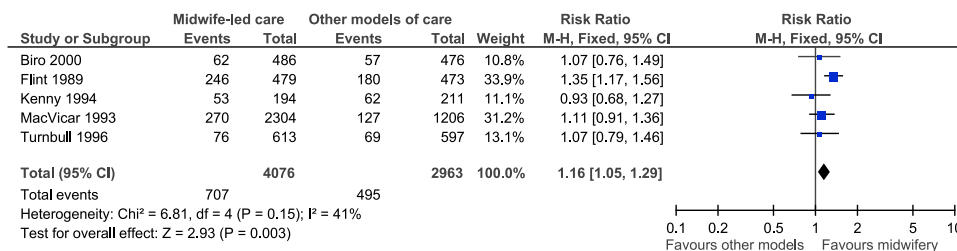


Figure 3. Midwife-led versus other models of care for childbearing women and their infants – no regional analgesia/anesthesia. Source: Hatem M, Sandall, J. (Joint First Author and Contact Author) Devane D, Soltani H. Gates, S. (2008) Midwife-led versus other models of care for childbearing women, Cochrane Database of Systematic Reviews 2008, Issue 4, Page 44.

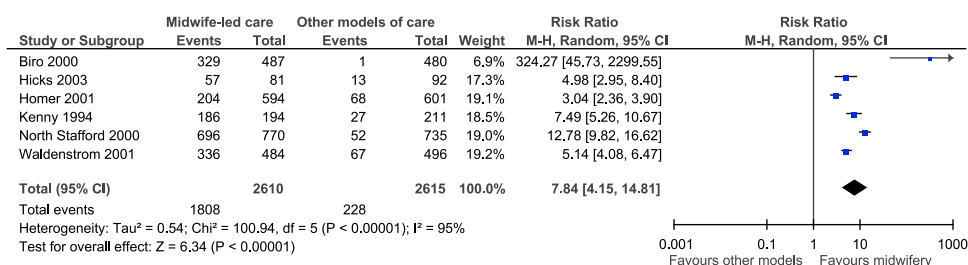


Figure 4. Midwife-led versus other models of care for childbearing women and their infants – Attendance at birth by a known midwife. Source: Hatem M, Sandall, J. (Joint First Author and Contact Author) Devane D, Soltani H. Gates, S. (2008) Midwife-led versus other models of care for childbearing women, Cochrane Database of Systematic Reviews 2008, Issue 4, Page 49.

midwife-led models of care. Future research in this area would benefit from drawing on a framework for trials of complex interventions, which explicitly requires theoretic modeling between processes and outcomes in the pretrial stage in terms of what the hypothesized mechanisms might possibly be.

There remains relatively little information about the effectiveness of midwife-led models of care on mothers' and infants' health and well-being in the longer postpartum period. Future research should pay particular attention to outcomes that have been underresearched but are causes of significant morbidity, including urinary and fecal incontinence, duration of caesarean incision pain, pain during intercourse, prolonged perineal pain, and birth injury (to the infant).

In terms of women-centeredness and humanized care, little is known about maternal self-confidence, post-traumatic stress disorder, and coping after the birth, or whether women feel they are part of the decision-making process. There is wide variation in the instruments used to measure women's views and experiences of care. There is a need for future trials to use meaningful, robust, valid, and reliable methods to assess psychosocial outcomes and well-being in pregnant and childbearing women.

Given the heterogeneity in the choice of outcome measures routinely collected and reported in randomized evaluations of models of maternity care, a core (minimum) dataset would be useful not only within multicenter trials and for comparisons between trials, but might also be a sig-

nificant step in facilitating useful meta-analyses of similar studies.¹⁵ In addition, future trials should include measures of optimal outcomes for mothers and infants in addition to measures of morbidity.

In assessing efficiency, there is a lack of consistency in estimating maternity care cost, and further research using standard approaches of cost estimation is required, which also includes cost to women and families. All trials should include economic analyses of the relative costs and benefits. There were no trials in resource-constrained countries, and additional trials may be required in such settings.

There is no evidence in the Cochrane review regarding impact on timeliness and equity; however, midwife-led services have the potential to reduce disparities and improve timeliness in relation to early antenatal care and maternal and fetal well-being and parenting. Future trials should assess the effect of models of care equity and timeliness.

Although continuity of care has been identified as a core component of midwife-led care, there is wide variation in the definition and measurement of continuity of care, which will require greater sophistication in future studies. All future trials should provide greater description of the models of care being assessed and how they are being delivered. Future research should also assess acceptability to midwives of different models of midwife-led care that offer relational continuity.

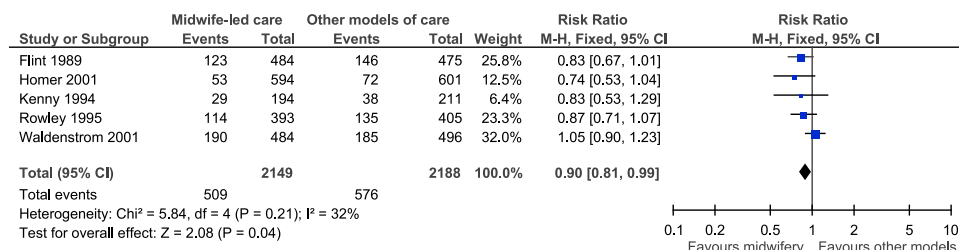


Figure 5. Midwife-led versus other models of care for childbearing women and their infants -Antenatal hospitalisation. Source: Hatem M, Sandall, J. (Joint First Author and Contact Author) Devane D, Soltani H. Gates, S. (2008) Midwife-led versus other models of care for childbearing women, Cochrane Database of Systematic Reviews 2008, Issue 4, Page 39.

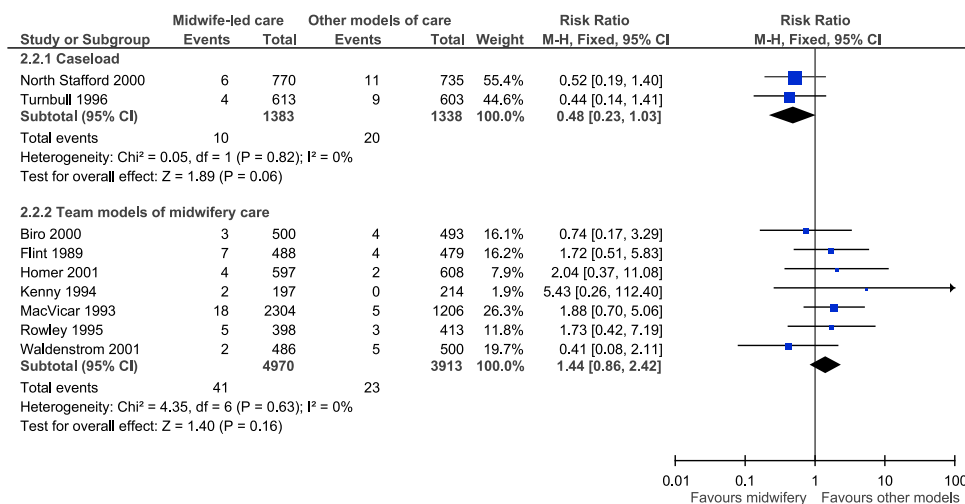


Figure 6. Midwife-led versus other models of care: variation in midwifery models of care (caseload/one-to-one or team) fetal loss/neonatal death equal to/after 24 weeks. Source: Hatem M, Sandall, J. (Joint First Author and Contact Author) Devane D, Soltani H. Gates, S. (2008) Midwife-led versus other models of care for childbearing women, Cochrane Database of Systematic Reviews 2008, Issue 4, Page 65.

REFERENCES

1. Lawn JE, Cousens S, Zupan J, Lancet Neonatal Survival Steering Team. 4 million neonatal deaths: When? Where? Why? *Lancet* 2005;365:891–900.
2. Althabe F, Bergel E, Cafferata ML, Gibbons L, Ciapponi A, Alemán A, et al. Strategies for improving the quality of health care in maternal and child health in low- and middle-income countries: An overview of systematic reviews. *Paediatr Perinat Epidemiol* 2008;22(Suppl 1):42–60.
3. Waldenström U. Modern maternity care: Does safety have to take the meaning out of birth? *Midwifery* 1996;12:165–73.
4. World Health Organization Web site. Quality of care: Patient safety. Report by the Secretariat. Fifty-fifth World Health Assembly, provisional agenda item 13.9. Available from: http://apps.who.int/gb/archive/pdf_files/WHA55/ea5513.pdf [Accessed February 15, 2010].
5. Annandale E. How midwives accomplish natural birth: Managing risk and balancing expectations. *Social Problems* 1988; 35:95–110.
6. De Vries RA. *pleasing birth: Midwives and maternity care in the Netherlands*. Philadelphia: Temple University Press, 2005.
7. Institute of Medicine. *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: National Academies Press, 2001.
8. Department of Health /Partnerships for Children, Families and Maternity Web site. *Maternity matters: Choice, access and continuity of care in a safe service*. Available from: www.dh.gov.uk/dr_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_074199.pdf [Accessed February 15, 2010].
9. Sakala C, Corry MP. *Evidence-based maternity care: What it is and what it can achieve*. Childbirth Connection, New York, Milbank Memorial Fund. Available from: www.childbirthconnection.org/pdfs/evidence-based-maternity-care.pdf [Accessed February 15, 2010].
10. World Health Organization Web site. *Global priorities for research in patient safety research (first edition)*. The Research Priority Setting Working Group, December 2008. Available from: www.who.int/patientsafety/research/priorities/global_priorities_patient_safety_research.pdf [Accessed September 23, 2009].
11. Ribeiro VS, Figueiredo FP, Silva AA, Bettiol H, Batista RF, Coimbra LC, et al. Why are the rates of cesarean section in Brazil higher in more developed cities than in less developed ones? *Braz J Med Biol Res* 2007;40:1211–20.
12. Hatem M, Sandall J, Devane D, Soltani H, Gates S. Midwife-led versus other models of care for childbearing women. *Cochrane Database Syst Rev* 2008;4:CD004667.
13. Sandall J, Hatem M, Devane D, Soltani H, Gates S. Discussions of findings from a Cochrane review of midwife-led versus other models of care for childbearing women: Continuity, normality and safety. *Midwifery* 2009;25:8–13.
14. Vincent C. *Patient safety*. London: Churchill Livingstone, 2006.
15. Devane D, Begley CM, Clarke M, Horey D, OBoyle C. Evaluating maternity care: A core set of outcome measures. *Birth* 2007; 34:164–72.