



December 2010 – SUPPORT Summary of a systematic review

Does midwife-led care improve the delivery of care to women during and after pregnancy?

Midwives are the primary providers of care for childbearing women around the world. In midwife-led care, midwives are the lead professionals in the planning, organisation and delivery of care given to women from the initial booking to the post-natal period. Non-midwife models of care include obstetrician-provided care; family physician-provided care; and shared models of care, in which responsibility for the organisation and delivery of care is shared between different health professionals.

Key messages

→ Compared to other models of care, midwife-led care:

- Leads to fewer antenatal hospitalisations and instrumental vaginal deliveries
- Decreases the use of pain killers during labour
- Leads to more spontaneous vaginal births, and
- Probably has little or no effect on numbers of foetal and neonatal deaths, augmentation or induction of labour, caesarean sections, and postpartum haemorrhage

→ The studies included in the review were conducted in high-income countries. Factors that need to be considered when assessing the transferability of the findings to a particular LMIC setting include the availability and training of midwives, as well as women's access to other models of healthcare for pregnant mothers



Who is this summary for?

People making decisions concerning the use of midwife-led care models in the care of childbearing women.

! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low- and middle-income countries

X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:

Hatem M, Sandall J, Devane D, Soltani H, Gates S. Midwife-led versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews* 2008, Issue 4. Art. No.: CD004667. DOI:10.1002/14651858.CD004667.pub2.

What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies.

SUPPORT – an international collaboration funded by the EU 6th Framework Programme to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries. www.support-collaboration.org

Glossary of terms used in this report: www.support-collaboration.org/summaries/explanations.htm

Background references on this topic: See back page.

Background

In most low- and middle-income countries, midwives are the primary providers of care for childbearing women. In midwife-led care, midwives are the lead professionals in the planning, organisation, and delivery of care given to women from initial antenatal bookings through to the postnatal period. Referrals to specialist obstetric care are provided as needed. The midwife-led model of care is woman-centred and based on the premise that pregnancy and birth are normal life events. Other models of care include obstetrician-provided care; family physician-provided care, including referral to specialist obstetric care as needed; and shared models of care, where responsibility for the organisation and delivery of care, from initial bookings through to the postnatal period, is shared between different health professionals.

This summary is based on a Cochrane review published in 2008 by Hatem and colleagues which aimed to synthesise available information on the effects of midwife-led care.

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low- and middle-income countries. The methods used to assess the quality of the review and to make judgements about its relevance are described here:

www.support-collaboration.org/summaries/methods.htm

Knowing what's not known is important

A good quality review might not find any studies from low- and middle-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

About the systematic review underlying this summary

Review objective: To compare midwife-led care with other models of care for childbearing women and their infants.

	What the review authors searched for	What the review authors found
Interventions	Randomised controlled trials comparing midwife-led care to other models of care	11 randomised controlled trials
Participants	Pregnant women, classified as being at low or mixed risk of complications	12,276 pregnant women recruited from both community and hospital settings
Settings	Not pre-specified	Australia (5 studies), Canada (1 study), United Kingdom (UK) (5 studies)
Outcomes	Antenatal, labour, delivery and immediate postpartum, neonatal, and maternal postpartum outcomes	Antenatal, labour, delivery and immediate postpartum, neonatal, and maternal postpartum outcomes

Date of most recent search: January 2008

Limitations: A good quality systematic review with only minor limitations

Hatem M, Sandall J, Devane D, Soltani H, Gates S. Midwife-led versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews* 2008, Issue 4. Art. No.: CD004667. DOI:10.1002/14651858.CD004667.pub2.

Summary of findings

The review summarised 11 randomised controlled trials (RCTs) involving 12,276 women, conducted in high-income countries.

1) Antenatal outcomes

Five randomised trials reported data on antenatal hospitalisation, nine reported on foetal loss before 24 weeks, and 10 on overall foetal loss and neonatal death. A synthesis of these trials shows that:

- **Midwife-led care leads to fewer foetal deaths before 24 weeks of gestation and fewer antenatal hospitalisations than other models of care**
- **There is little or no difference in overall foetal and neonatal deaths between midwife-led care and other models of care**

About the quality of evidence (GRADE)

⊕⊕⊕⊕

High: Further research is very unlikely to change our confidence in the estimate of effect.

⊕⊕⊕○

Moderate: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

⊕⊕○○

Low: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

⊕○○○

Very low: We are very uncertain about the estimate.

For more information, see last page

Antenatal outcomes					
Patients or population: Pregnant women at risks of complications which range from low to high Settings: Tertiary and community hospitals in Australia, Canada, and UK Intervention: Midwife-led care Comparison: Other models of care					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Other models of care	Midwife-led care			
Antenatal hospitalisation	263 per 1,000	237 per 1,000 (213 to 260)	RR 0.90 (0.81,0.99)	4,337 (5)	⊕⊕⊕⊕ High
Foetal loss before 24 weeks	45 per 1,000	36 per 1,000 (29 to 44)	RR 0.79 (0.65,0.97)	9,890 (8)	⊕⊕⊕⊕ High
Overall foetal loss and neonatal death	45 per 1,000	37 per 1,000 (31 to 45)	RR 0.83 (0.70,1.00)	11,806 (10)	⊕⊕⊕⊕ High

CI: Confidence interval RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)
 *Illustrative comparative risks. The assumed risk WITHOUT the intervention is based on the control group risk in the review. The corresponding risk WITH the intervention (and its 95% confidence interval) are based on the overall relative effect (and its 95% confidence interval).

2) Labour outcomes

Ten randomised controlled trials reported data on augmentation or induction of labour, five reported on use of intra-partum analgesia or anaesthesia, and 10 on induction of labour. These results, pooled together, show that:

- **Midwife-led care decreases the use of analgesia or anaesthesia during labour**
- **Midwife-led care probably leads to little or no difference in the augmentation or induction of labour, compared to other models of care**

Labour outcomes					
Patients or population: Pregnant women at risks of complications which range from low to high Settings: Tertiary and community hospitals in Australia, Canada, and UK Intervention: Midwife-led care Comparison: Other models of care					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Other models of care	Midwife-led care			
Augmentation of labour	292 per 1,000	269 per 1,000 (237 to 307)	RR 0.92 (0.81,1.05)	11,709 (10)	⊕⊕⊕○ Moderate
No intrapartum analgesia	167 per 1,000	194 per 1,000 (175 to 215)	RR 1.16 (1.05,1.29)	7,039 (5)	⊕⊕⊕⊕ High
Induction of labour	194 per 1,000	182 per 1,000 (161 to 206)	RR 0.94 (0.83,1.06)	11,711 (10)	⊕⊕⊕○ Moderate

CI: Confidence interval RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)
 *Illustrative comparative risks. The assumed risk WITHOUT the intervention is based on the control group risk in the review. The corresponding risk WITH the intervention (and its 95% confidence interval) are based on the overall relative effect (and its 95% confidence interval).

3) Delivery and immediate postpartum outcomes

Twelve RCTs reported data on caesarean sections, nine on spontaneous vaginal delivery, and seven on postpartum haemorrhage. Combining these results shows that compared to other models of care:

- A midwife-led model of care leads to little or no difference in the incidence of caesarean sections or postpartum haemorrhage
- Midwife-led care leads to more spontaneous vaginal births and less instrumental vaginal delivery than other models of care

Delivery and immediate postpartum outcomes					
Patients or population: Pregnant women at risks of complications which range from low to high Settings: Tertiary and community hospitals in Australia, Canada, and UK Intervention: Midwife-led care Comparison: Other models of care					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Other models of care	Midwife-led care			
Caesarean birth	124 per 1,000	119 per 1,000 (108 to 131)	RR 0.96 (0.87, 1.06)	11,897 (11)	⊕⊕⊕⊕ High
Spontaneous vaginal birth	710 per 1,000	738 per 1,000 (724 to 753)	RR 1.04 (1.02, 1.06)	10,926 (9)	⊕⊕⊕⊕ High
Postpartum haemorrhage	50 per 1,000	51 per 1,000 (42 to 62)	RR 1.02 (0.84, 1.23)	8,454 (7)	⊕⊕⊕⊕ High
Instrumental delivery	125 per 1,000	108 per 1,000 (97 to 120)	RR 0.86 (0.78, 0.96)	11,724 (10)	⊕⊕⊕⊕ High

CI: Confidence interval RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)
 *Illustrative comparative risks. The assumed risk WITHOUT the intervention is based on the control group risk in the review. The corresponding risk WITH the intervention (and it's 95% confidence interval) are based on the overall relative effect (and its 95% confidence interval).

4) Neonatal and postpartum outcomes

RCTs that reported neonatal and maternal postpartum outcomes show that:

→ **Midwife-led care leads to little or no difference in the incidence of low birthweight and preterm birth, compared to other models of care**

Neonatal and maternal postpartum outcomes					
Patients or population: Pregnant women at risks of complications which range from low to high Settings: UK, Australia Intervention: Midwife-led care Comparison: Other models of care					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Other models of care	Midwife-led care			
Low birthweight	63 per 1,000	62 per 1,000 (52 to 74)	RR 0.99 (0.83,1.17)	8,009 (5)	⊕⊕⊕⊕ High
Preterm birth	68 per 1,000	59 per 1,000 (50 to 71)	RR 0.87 (0.73,1.04)	7,516 (5)	⊕⊕⊕⊕ High

CI: Confidence interval RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)
 *Illustrative comparative risks. The assumed risk WITHOUT the intervention is based on the control group risk in the review. The corresponding risk WITH the intervention (and its 95% confidence interval) are based on the overall relative effect (and its 95% confidence interval).

Relevance of the review for low- and middle-income countries

→ Findings

▷ Interpretation*

APPLICABILITY

→ The trials included in the review were conducted in high-income countries. However, midwives are the primary providers of antenatal and postpartum care in most low- and middle-income countries (LMICs). The measured effects may be transferable to LMIC settings.

▷ When assessing the transferability of these findings to LMIC settings, the following factors should be considered:

- The availability and training of midwives
- Accessibility to other models of healthcare for childbearing women
- Cost implications of other models of care compared to midwife-led care
- Local epidemiology of maternal and perinatal mortality

EQUITY

→ There was no information in the included studies regarding the differential effects of the interventions on resource-disadvantaged populations.

▷ Given the scarcity of obstetricians and family physicians serving disadvantaged populations in LMICs, the use of midwife-led care has the potential to reduce inequalities in access to antenatal and postpartum care, provided the midwives are recruited, trained, supported and retained in under-served communities. Consideration should be given to incentives and regulations encouraging this.

ECONOMIC CONSIDERATIONS

→ Five studies presented cost data using different economic evaluation methods. Evidence from these studies suggests that the use of midwife-led care may reduce costs when compared to medical-led care.

▷ Midwife-led care is cost effective and produces comparable outcomes. If there are limited resources, midwives provide an affordable alternative to medical care with equivalent outcomes.

MONITORING & EVALUATION

→ No evidence from low- and middle-income countries was identified in this review.

▷ In light of the paucity of data on the applicability and efficiency of using midwives to substitute for medical doctors in LMICs, their use should be pilot tested and their impacts and costs rigorously monitored and evaluated.

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low- and middle-income countries. For additional details about how these judgements were made see:

<http://www.support-collaboration.org/summaries/methods.htm>

Additional information

Related literature

Muthu V, Fischbacher C. Free-standing midwife-led maternity units: a safe and effective alternative to hospital delivery for low-risk women?. *Evidence-Based Healthcare and Public Health*. 2004;8:325-331.

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This summary was prepared by

Charles Shey Wiysonge, School of Child and Adolescent Health, University of Cape Town, South Africa; Charles Okwundu, South African Cochrane Centre; Cape Town, South Africa

Conflict of interest

None. For details, see: www.support-collaboration.org/summaries/coi.htm

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Keywords

All Summaries: evidence-informed health policy, evidence-based, systematic review, health systems research, health care, low- and middle-income countries, developing countries, primary health care, Midwives, birth centre, task shifting, antenatal care, postpartum care, maternity.

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About quality of evidence (GRADE)

The quality of the evidence is a judgement about the extent to which we can be confident that the estimates of effect are correct. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the type of study design (randomised trials versus observational studies), the risk of bias, the consistency of the results across studies, and the precision of the overall estimate across studies. For each outcome, the quality of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE:

www.support-collaboration.org/summaries/grade.htm

SUPPORT collaborators:

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration aiming to promote the generation and use of health policy and systems research as a means to improve the health systems of developing countries. www.who.int/alliance-hpsr

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is a Collaborative Review Group of the Cochrane Collaboration: an international organisation that aims to help people make well informed decisions about health care by preparing, maintaining and ensuring the accessibility of systematic reviews of the effects of health care interventions. www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPNet) is an initiative to promote the use of health research in policymaking. Focusing on low- and middle-income countries, EVIP-Net promotes partnerships at the country level between policy-makers, researchers and civil society in order to facilitate both policy development and policy implementation through the use of the best scientific evidence available. www.evipnet.org

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