



October 2016 – SUPPORT Summary of a systematic review

## Should non-physician clinicians versus doctors be used for caesarean section?

Many low-income countries face a shortage of trained medical doctors, especially in rural areas. This situation has detrimental effects on healthcare outcomes for the population. Non-physician clinicians are trained to perform some tasks usually carried out by doctors, including obstetric care. In some countries, non-physician clinicians are authorized to carry out caesarean sections. As their training and salary are lower and their retention is better, these clinicians could offer an alternative to doctors for caesarean section in low-income countries.

### Key messages

- It is uncertain whether there are any differences in maternal or perinatal mortality between caesarean sections performed by non-physician clinicians and by doctors.
- Non-physician clinicians performing caesarean sections may lead to slightly more wound infections and occurrences of wound dehiscence than doctors.
- All six studies included in this systematic review were from low-income countries.



### Who is this summary for?

People making decisions regarding who can perform caesarean sections

#### ! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low-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:

Wilson A, Lissauer D, Thangaratnam S, et al. A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world: meta-analysis of controlled studies. *BMJ* 2011; 342:d2600.

### 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** was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

**Glossary of terms used in this report:**  
[www.supportsummaries.org/glossary-of-terms](http://www.supportsummaries.org/glossary-of-terms)

**Background references on this topic:**  
See back page

# Background

Given the substantial shortage of trained medical doctors in low-income countries, especially in rural areas, non-physician clinicians are often posted to alleviate the shortage in these settings. Non-physician clinicians have a separate training programme to medical doctors, but they are authorized to perform many medical and surgical tasks usually carried out by doctors. Depending on the country, their scope of practice includes diagnosis and treatment of medical conditions, anaesthesia, and prescribing. In some countries, non-physician clinicians are authorized to perform caesarean section. Given that caesarean section is a major surgical procedure and must be delivered in a timely fashion, non-physician clinicians could potentially play an important part in increasing accessibility and availability of emergency obstetric care, particularly caesarean section.

As their training and salary costs are reduced, and they show better retention, these clinicians could provide a viable solution for improving access to obstetric care in resource-limited settings.

## 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-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here: [www.supportsummaries.org/how-support-summaries-are-prepared/](http://www.supportsummaries.org/how-support-summaries-are-prepared/)

## Knowing what's not known is important

A reliable review might not find any studies from low-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.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

## About the systematic review underlying this summary

**Review objective:** To determine whether key outcomes of caesarean section differ between non-physician clinicians and medical doctors

Types of	What the review authors searched for	What the review authors found
<b>Study designs &amp; Interventions</b>	Controlled studies that compared non-physician clinicians and medically trained doctors for caesarean section	Six non-randomised studies comparing the outcomes of caesarean section performed by non-physicians versus caesarean section performed by physicians
<b>Participants</b>	Women having a caesarean section	The six studies included adults only
<b>Settings</b>	Low-income countries	The studies were conducted in five African countries: Burkina Faso, Malawi (2 studies), Mozambique, Tanzania, and Zaire
<b>Outcomes</b>	Any clinically relevant maternal or perinatal outcomes	All six studies reported maternal mortality. Other reported outcomes included perinatal mortality (5 studies), wound dehiscence (3 studies), and wound infection (2 studies).
<b>Date of most recent search:</b> 2010 (month not specified)		
<b>Limitations:</b> This is a well-conducted systematic review with only minor limitations.		

Wilson A, Lissauer D, Thangaratinam S, et al. A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world: meta-analysis of controlled studies. *BMJ* 2011; 342:d2600.

# Summary of findings

Six studies conducted in low-income countries, including 16 018 participants overall, evaluated caesarean section carried out by non-physician clinicians compared to caesarean section carried out by doctors.

## 1) Caesarean section carried out by non-physician clinicians versus doctors

- It is uncertain whether there are any differences in maternal or perinatal mortality between caesarean sections performed by non-physician clinicians and by doctors. The certainty of this evidence is very low.
- Non-physician clinicians performing caesarean sections may lead to slightly more wound infections and occurrences of wound dehiscence than doctors. The certainty of this evidence is low.

### About the certainty of the evidence (GRADE) \*

⊕⊕⊕⊕

**High:** This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

**Moderate:** This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕○○

**Low:** This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

**Very low:** This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

\* This is sometimes referred to as 'quality of evidence' or 'confidence in the estimate'.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

Caesarean section by non-physician clinicians compared to caesaeran section by doctors					
People	Women having a caesarean section				
Settings	Low-income countries (Burkina Faso, Malawi, Mozambique, Tanzania, Zaire)				
Intervention	Caesarean section by non-physicians				
Comparison	Caesarean section by physicians				
Outcomes	Number of participants (Studies)	Absolute effect*		Relative effect (95% CI)	Certainty of the evidence (GRADE)
		Doctor	Non-physician		
Maternal mortality	16 018 (6)	9 per 1000	13 per 1000	OR 1.46 (0.78 to 2.75)	⊕○○○ Very low
		Difference: 4 more per 1000 (Margin of error: from 2 less to 15 more)			
Perinatal mortality	15 665 (5)	90 per 1000	115 per 1000	OR 1.31 (0.87 to 1.95)	⊕○○○ Very low
		Difference: 25 more per 1000 (Margin of error: from 11 less to 72 more)			
Wound infection	4436 (2)	16 per 1000	25 per 1000	OR 1.58 (1.01 to 2.47)	⊕○○○ Low
		Difference: 9 more per 1000 (Margin of error: from 0 more to 22 more)			
Wound dehiscence	6507 (3)	11 per 1000	20 per 1000	OR 1.89 (1.21 to 2.95)	⊕○○○ Low
		Difference: 9 more per 1000 (Margin of error: from 2 more to 21 more)			
Margin of error = Confidence interval (95% CI)   OR: Odds ratio   GRADE: GRADE Working Group grades of evidence (see above and last page)					
* The risk WITHOUT the intervention is based on the baseline risk in the studies included in the review. The corresponding risk WITH the intervention (and the 95% confidence interval for the difference) is based on the overall relative effect (and its 95% confidence interval).					

# Relevance of the review for low-income countries

→ Findings	▷ Interpretation*
APPLICABILITY	
→ The six studies were conducted in low-income countries in Africa.	▷ This intervention is likely applicable to other low-income countries.
EQUITY	
→ Included studies did not directly address impacts on equity.	▷ Caesarean sections performed by non-physician clinicians could reduce inequities for women living in remote areas who do not have access to a physician for caesarean section.
ECONOMIC CONSIDERATIONS	
→ Included studies did not provide information regarding economic considerations.	▷ The initial training and salary costs for non-physician clinicians is likely to be lower than for medical doctors. ▷ Training costs, human resource costs, and the costs of other necessary resources must be costed locally.
MONITORING & EVALUATION	
→ The certainty of the evidence is low or very low.	▷ Careful monitoring of outcomes, including maternal and perinatal mortality, infections, and dehiscence should be monitored and evaluated carefully, if non-physician clinicians are authorised to perform caesarean sections. ▷ Consideration should be given to training and monitoring the surgical technique used by non-physician clinicians to reduce the risk of infections and dehiscence.

\*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-income countries. For additional details about how these judgements were made see: [www.supportsummaries.org/methods](http://www.supportsummaries.org/methods)

# Additional information

## Related literature

Kruk ME, Pereira C, Vaz F, et al. Economic evaluation of trained assistant medical officers in performing major obstetric surgery in Mozambique. *BJOG* 2007; 114:1253–60.

Lassi ZS, Haider BA, Bhutta ZA. Community-based intervention packages for reducing maternal and neonatal morbidity and mortality and improving neonatal outcomes. *Cochrane Database of Systematic Reviews* 2010, Issue 11. Art. No.: CD007754.

Sandall J, Soltani H, Gates S, et al. Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews* 2013, Issue 8. Art. No.: CD004667.

Lassi ZS, Bhutta ZA. Mid-level health workers for improving the delivery of health services (Protocol). *Cochrane Database of Systematic Reviews* 2012, Issue 2. Art. No.: CD009649.

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## Conflict of interest

None declared. For details, see: [www.supportsummaries.org/coi](http://www.supportsummaries.org/coi)

## Acknowledgements

This summary has been peer reviewed by: Amie Wilson and Staffan Bergstrom.

## This review should be cited as

Wilson A, Lissauer D, Thangaratinam S, et al. A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world: meta-analysis of controlled studies. *BMJ* 2011; 342:d2600.

## The summary should be cited as

Gagnon MP. Should non-physician clinicians versus doctors be used for caesarean section? A SUPPORT Summary of a systematic review. October 2016. [www.supportsummaries.org](http://www.supportsummaries.org)

## About certainty of the evidence (GRADE)

The “certainty of the evidence” is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By “substantially different” we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE: [www.supportsummaries.org/grade](http://www.supportsummaries.org/grade)

## SUPPORT collaborators:

**The Cochrane Effective Practice and Organisation of Care Group (EPOC)** is part of the [Cochrane Collaboration](http://www.cochrane.org). The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. [www.epocoslo.cochrane.org](http://www.epocoslo.cochrane.org)

**The Evidence-Informed Policy Network (EViPNet)** is an initiative to promote the use of health research in policymaking in low- and middle-income countries. [www.evipnet.org](http://www.evipnet.org)

**The Alliance for Health Policy and Systems Research (HPSR)** is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. [www.who.int/alliance-hpsr](http://www.who.int/alliance-hpsr)

**Norad**, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. [www.norad.no](http://www.norad.no)

**The Effective Health Care Research Consortium** is an international partnership that prepares Cochrane reviews relevant to low-income countries. [www.evidence4health.org](http://www.evidence4health.org)

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