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.
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.

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

<table>
<thead>
<tr>
<th>Types of</th>
<th>What the review authors searched for</th>
<th>What the review authors found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study designs &amp; Interventions</td>
<td>Controlled studies that compared non-physician clinicians and medically trained doctors for caesarean section</td>
<td>Six non-randomised studies comparing the outcomes of caesarean section performed by non-physicians versus caesarean section performed by physicians</td>
</tr>
<tr>
<td>Participants</td>
<td>Women having a caesarean section</td>
<td>The six studies included adults only</td>
</tr>
<tr>
<td>Settings</td>
<td>Low-income countries</td>
<td>The studies were conducted in five African countries: Burkina Faso, Malawi (2 studies), Mozambique, Tanzania, and Zaire</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Any clinically relevant maternal or perinatal outcomes</td>
<td>All six studies reported maternal mortality. Other reported outcomes included perinatal mortality (5 studies), wound dehiscence (3 studies), and wound infection (2 studies).</td>
</tr>
</tbody>
</table>

Date of most recent search: 2010 (month not specified)

Limitations: This is a well-conducted systematic review with only minor limitations.

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.
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Number of participants (Studies)</th>
<th>Absolute effect*</th>
<th>Relative effect (95% CI)</th>
<th>Certainty of the evidence (GRADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Doctor</td>
<td>Non-physician</td>
<td></td>
</tr>
<tr>
<td>Maternal mortality</td>
<td>16 018 (6)</td>
<td>9 per 1000</td>
<td>13 per 1000</td>
<td>OR 1.46 (0.78 to 2.75)</td>
</tr>
<tr>
<td>Perinatal mortality</td>
<td>15 665 (5)</td>
<td>90 per 1000</td>
<td>115 per 1000</td>
<td>OR 1.31 (0.87 to 1.95)</td>
</tr>
<tr>
<td>Wound infection</td>
<td>4436 (2)</td>
<td>16 per 1000</td>
<td>25 per 1000</td>
<td>OR 1.58 (1.01 to 2.47)</td>
</tr>
<tr>
<td>Wound dehiscence</td>
<td>6507 (3)</td>
<td>11 per 1000</td>
<td>20 per 1000</td>
<td>OR 1.89 (1.21 to 2.95)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>➤ Findings</th>
<th>➤ Interpretation*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPLICABILITY</strong></td>
<td></td>
</tr>
<tr>
<td>➤ The six studies were conducted in low-income countries in Africa.</td>
<td>➤ This intervention is likely applicable to other low-income countries.</td>
</tr>
<tr>
<td><strong>EQUITY</strong></td>
<td></td>
</tr>
<tr>
<td>➤ Included studies did not directly address impacts on equity.</td>
<td>➤ 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.</td>
</tr>
<tr>
<td><strong>ECONOMIC CONSIDERATIONS</strong></td>
<td></td>
</tr>
<tr>
<td>➤ Included studies did not provide information regarding economic considerations.</td>
<td>➤ 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.</td>
</tr>
<tr>
<td><strong>MONITORING &amp; EVALUATION</strong></td>
<td></td>
</tr>
<tr>
<td>➤ The certainty of the evidence is low or very low.</td>
<td>➤ 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.</td>
</tr>
</tbody>
</table>

*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


This summary was prepared by
Marie-Pierre Gagnon, Université Laval, Canada.

Conflict of interest
None declared. For details, see: www.supportsummaries.org/coi

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

This review should be cited as

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

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

SUPPORT collaborators:
The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the Cochrane Collaboration. The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. 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

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

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. 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

To receive e-mail notices of new SUPPORT summaries or provide feedback on this summary, go to: www.supportsummaries.org/contact

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

SUPPORT collaborators:
The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the Cochrane Collaboration. The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. 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

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

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. 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

To receive e-mail notices of new SUPPORT summaries or provide feedback on this summary, go to: www.supportsummaries.org/contact