Do lay or community health workers in primary health care improve maternal, child health and tuberculosis outcomes?

Lay health workers have no formal professional education, but are usually given job-related training, and can be involved in either paid or voluntary care. They perform diverse functions related to health care delivery and have a range of titles, including village health workers, community volunteers and peer counsellors.

Key messages

- **The use of lay health workers in maternal and child health programmes:**
  - Probably leads to an increase in the number of women who breastfeed
  - Probably leads to an increase in the number of children with up-to-date immunisation schedules
  - May lead to fewer deaths among children under five years
  - May lead to fewer children who suffer from fever, diarrhoea and pneumonia
  - May increase the number of parents who seek help for their sick child

  No studies looked at the impact of lay health workers on maternal mortality.

- **The use of lay health workers in tuberculosis programmes:**
  - Probably leads to an increase in the number of people with tuberculosis who are cured
  - Probably makes little or no difference to the number of people who complete preventive treatment for tuberculosis

- **Little evidence is available regarding the effectiveness of substituting lay health workers for health professionals or the effectiveness of alternative strategies for training, supporting and sustaining lay health workers**

- **Factors that need to be considered when assessing whether intervention effects are likely to be transferable to other settings include:**
  - The availability of routine data on who might benefit from the intervention
  - The availability of resources for the lay health worker programme, for clinical and managerial support, and for supplies
Background

Growing concern regarding the human resource crisis in health care has renewed interest in the role of lay health workers in primary and community care delivery. This summary is based on an update of a Cochrane systematic review published in 2010 by Lewin et al. The summary focuses on the effects of lay health worker interventions in improving maternal, child health and tuberculosis outcomes.

About the systematic review underlying this summary

Review objective: To assess the effects of lay health worker interventions in improving maternal and child health and tuberculosis outcomes.

<table>
<thead>
<tr>
<th>What the review authors searched for</th>
<th>What the review authors found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventions</td>
<td>Randomised controlled trials of lay health worker (paid or voluntary) interventions in maternal and child health and infectious diseases</td>
</tr>
<tr>
<td></td>
<td>82 trials</td>
</tr>
<tr>
<td>Participants</td>
<td>Lay health workers: any health worker without formal professional certification who was trained in some way in the context of the intervention. No restriction on types of patients</td>
</tr>
<tr>
<td></td>
<td>Considerable differences in numbers, recruitment methods and training of lay health workers. Different recipients were targeted</td>
</tr>
<tr>
<td>Settings</td>
<td>All primary care and community health settings globally</td>
</tr>
<tr>
<td></td>
<td>54 studies were conducted in 6 high income countries: Australia (1), Canada (3), Ireland (1), New Zealand (1), UK (8), and USA (40). 12 studies were conducted in 8 middle income countries: Brazil (2), China (1), India (2), Mexico (1), Philippines (1), Thailand (1), Turkey (1), South Africa (3). 16 trials were from 10 low income countries: Bangladesh (4), Burkina Faso (1), Ecuador (1), Ethiopia (1), Ghana (1), Iraq (1), Jamaica (1), Nepal (1), Pakistan (2), Tanzania (2), Vietnam (1)</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Primary outcomes: health behaviours and health care outcomes, including harms</td>
</tr>
<tr>
<td></td>
<td>Secondary outcomes: utilisation of lay health worker services, consultation processes, satisfaction with care, costs, social development measures</td>
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<tr>
<td></td>
<td>Most studies reported multiple effect measures and many did not specify a primary outcome</td>
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</tbody>
</table>

Date of most recent search: February 2009

Limitations: This is a good quality systematic review with only minor limitations.

Summary of findings

The review included 82 studies relevant to maternal and child health care and tuberculosis outcomes. A substantial proportion of the included studies (33%) were conducted in low- and middle-income countries or were directed at low-income groups in high-income countries.

1) Immunisation uptake in children under two years

The review summarised four studies that took place in urban settings in the United States of America (USA) and Ireland, in populations that were described as economically disadvantaged. Lay health workers made home visits to parents, gave them information about the importance of routine childhood immunisations, and encouraged them to visit clinics for child immunisation. The studies showed the following:

» Lay health worker-based promotion strategies probably increase immunisation uptake in children, compared to usual health care services

### Immunisation uptake in children under two years

**Patients or population:** Children less than two years

**Settings:** Formal or informal low-income communities in the USA (3 studies) and Ireland (1 study)

**Intervention:** Lay health worker interventions to promote immunisation uptake

**Comparison:** Usual health care services

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Comparative risks*</th>
<th>Relative effect (95% CI)</th>
<th>Number of participants (studies)</th>
<th>Quality of the evidence (GRADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccination complete according to schedule</td>
<td>Without lay health workers</td>
<td>With lay health workers</td>
<td>RR 1.22 (1.1 to 1.37)</td>
<td>3,568 (4 studies)</td>
</tr>
<tr>
<td>495 per 1,000</td>
<td>604 per 1,000 (544 to 678 per 1,000)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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 risk in the control group in the systematic 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) Breastfeeding
The review summarised 18 studies, ten from high-income countries and eight from low-or middle-income countries. The lay health workers carried out a number of activities, including postnatal counselling to promote exclusive breastfeeding and to address barriers to breastfeeding, observation of mother-child interaction, and health education. These studies showed the following:

Lay health worker interventions, compared to usual health care services:

- Probably increase the number of mothers who initiate breastfeeding
- Probably increase the number of mothers who breastfeed their child at all, and
- Probably increase the number of mothers who breastfeed exclusively for up to six months

### Breastfeeding

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Comparative risks*</th>
<th>Relative effect (95% CI)</th>
<th>Number of participants (studies)</th>
<th>Quality of the evidence (GRADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of breastfeeding</td>
<td>540 per 1,000 (616 to 839 per 1,000)</td>
<td>RR 1.36 (1.14 to 1.61)</td>
<td>17,159 (12 studies)</td>
<td>⭐⭐⭐⭐ Moderate</td>
</tr>
<tr>
<td>Any breastfeeding, 3 weeks to 12 months</td>
<td>320 per 1,000 (352 to 445 per 1,000)</td>
<td>RR 1.24 (1.1 to 1.39)</td>
<td>8,104 (12 studies)</td>
<td>⭐⭐⭐⭐ Moderate</td>
</tr>
<tr>
<td>Exclusive breastfeeding, 3 to 6 months</td>
<td>70 per 1,000 (122 to 311 per 1,000)</td>
<td>RR 2.78 (1.74 to 4.44)</td>
<td>4,334 (10 studies)</td>
<td>⭐⭐⭐⭐ Moderate</td>
</tr>
</tbody>
</table>

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### 3) Mortality and morbidity in children under five years

The review summarised 11 studies from nine low- or middle-income countries. Lay health workers promoted health, and in some cases managed or treated common childhood illness, including acute respiratory infections, malaria, diarrhoea and malnutrition. In five studies, lay health worker tasks included visiting homes to educate mothers about specific health issues and referrals to health facilities. In six studies, lay health workers promoted birth preparedness and essential newborn care. These 11 studies showed the following:

**Lay health worker interventions, compared to usual health care services:**

- May reduce neonatal mortality and mortality in children under five years
- May reduce morbidity from common illnesses in children under five years
- May increase the number of parents seeking help for their sick child

<table>
<thead>
<tr>
<th>Mortality and morbidity in children under five years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients or population:</strong> Children under five years</td>
</tr>
<tr>
<td><strong>Settings:</strong> Bangladesh (3 studies), Burkina Faso, Ethiopia, Ghana, India, Nepal, Tanzania, Thailand, Vietnam</td>
</tr>
<tr>
<td><strong>Intervention:</strong> Lay health worker interventions to reduce mortality and morbidity in children</td>
</tr>
<tr>
<td><strong>Comparison:</strong> Usual health care services</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Outcomes</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Without lay health workers</td>
<td>With lay health workers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mortality among children less than 5 years</strong></td>
<td>50 per 1,000</td>
<td>38 per 1,000 (28 to 51 per 1,000)</td>
<td>RR 0.75 (0.55 to 1.03)</td>
<td>56,378 (3 studies)</td>
</tr>
<tr>
<td><strong>Neonatal mortality</strong></td>
<td>45 per 1,000</td>
<td>34 per 1,000 (26 to 46 per 1,000)</td>
<td>RR 0.76 (0.57 to 1.02)</td>
<td>29,217 (4 studies)</td>
</tr>
<tr>
<td><strong>Morbidity (from fever, acute respiratory infection or diarrhoea)</strong></td>
<td>398 per 1,000</td>
<td>342 per 1,000 (298 to 394 per 1,000)</td>
<td>RR 0.86 (0.75 to 0.99)</td>
<td>17,408 (7 studies)</td>
</tr>
<tr>
<td><strong>Care seeing practice for sick children</strong></td>
<td>131 per 1,000</td>
<td>174 per 1,000 (113 to 269 per 1,000)</td>
<td>1.33 (0.86 – 2.05)</td>
<td>11,195 (3 studies)</td>
</tr>
</tbody>
</table>

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 risk in the control group in the systematic review. The corresponding risk WITH the intervention (and its 95% confidence interval) are based on the overall relative effect (and its 95% confidence interval).
4) Maternal mortality

The review did not identify any eligible studies that looked at the impact of lay health worker programmes on maternal mortality.

5) Tuberculosis outcomes

The review summarised six studies from both high-, middle- and low-income countries. In these studies, lay health workers gave some form of adherence support to people with tuberculosis. These studies showed the following:

Lay health worker interventions, compared to self-supervision or clinic-based supervision:

- Probably increase the number of smear positive TB patients who are cured
- Probably make little or no difference to the number of people who complete preventive TB treatment

### Tuberculosis outcomes

<table>
<thead>
<tr>
<th>Patients or population:</th>
<th>People with tuberculosis (TB) or requiring preventive TB treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settings:</td>
<td>USA (2 studies); South Africa (2 studies); Tanzania; Iraq</td>
</tr>
<tr>
<td>Intervention:</td>
<td>Lay health worker support for adherence to TB treatment</td>
</tr>
<tr>
<td>Comparison:</td>
<td>Self-supervision or clinic-based supervision</td>
</tr>
</tbody>
</table>

#### Outcomes

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Comparative risks*</th>
<th>Relative effect (95% CI)</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Cure for smear positive TB patients</strong></td>
<td>526 per 1,000</td>
<td>642 per 1,000 (594 to 689 per 1,000)</td>
<td>RR 1.22 (1.13 to 1.31)</td>
<td>1,203 (4 studies)</td>
</tr>
<tr>
<td><strong>Completed preventive TB therapy</strong></td>
<td>766 per 1,000</td>
<td>766 per 1,000 (705 to 835 per 1,000)</td>
<td>RR 1.0 (0.92 to 1.09)</td>
<td>595 (2 studies)</td>
</tr>
</tbody>
</table>

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*Illustrative comparative risks. The assumed risk WITHOUT the intervention is based on the risk in the control group in the systematic 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

**APPLICABILITY**

- The studies reviewed covered an extensive range of settings, including several different low- and middle-income countries as well as low-income groups in high-income countries.

- The findings summarised here are based on studies in which the levels of organisation and support were potentially higher than those available outside of research settings.

- Few of the studies described how lay health worker provided services were linked to other health system components.

- Community participation in lay health worker programmes was generally poorly described.

**EQUITY**

- Overall, the included studies provided little data regarding differential effects of the interventions for disadvantaged populations.

**ECONOMIC CONSIDERATIONS**

- There is little information regarding the cost-effectiveness of lay health worker interventions.

**MONITORING & EVALUATION**

- Lay health workers in this review generally focused on specific health issues. The review found little evidence regarding lay health workers who delivered a range of health care interventions.

### Interpretation*

- In general, if the health outcomes in your local context are worse than the median reported in these studies, the absolute effects (i.e. the numbers benefiting) of introducing lay health worker programmes are likely to be greater. Similarly, if health outcomes in your local context are better, the absolute effects of introducing lay health workers are likely to be less.

- Factors that should be considered when assessing whether the intervention effects are likely to be transferable to your local context include:
  - The availability of routine data on who might benefit from the intervention (e.g. population immunisation status records)
  - The financial and organisational resources to provide clinical and managerial support for lay health workers, and the capacity of other health professionals to collaborate with lay health workers
  - The supplies necessary for lay health workers to deliver services. Widespread programme implementation may increase demand for services such as immunisations. If these services are not available, lay health worker activities may be undermined
  - Consider how lay health workers can be integrated into the primary health care team
  - If such participation is seen as important to programme success, considerable effort may need to be invested in this process

- Many lay health worker programmes aim to address inequity by extending services to underserved communities. Community involvement in programme decisions, such as lay health worker selection, may aid this.

- Some interventions used systems (e.g. vaccination registers, mobile phones) that might exclude the most disadvantaged, thereby worsening inequities.

- The cost of lay health worker programmes is likely to be highly variable and must be estimated based on specific local conditions outside research settings.

- Lay health workers are most likely to be useful when they have a (cost-)effective intervention to deliver. Before these programmes are scaled up, robust evidence is needed regarding the (cost-)effectiveness of the intervention to be delivered and the use of lay health workers as a delivery mechanism.

- If decision makers choose to implement lay health worker programmes in areas where good evidence of effectiveness is still unavailable, they should ensure that these programmes include robust evaluation. The effect of lay health workers on child morbidity and mortality is an example of one such area.

- The acceptability of lay health worker programmes to service users and to health professionals may need to be evaluated before such programmes are taken to scale.

*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


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Conflict of interest
Claire Glenton and Simon Lewin are authors of the Cochrane review on which this summary is based. For details, see: www.support-collaboration.org/summaries/coi.htm

Acknowledgements
This summary has been peer reviewed by: Harriet Nabudere, Uganda and George W. Pariyo, Switzerland. An earlier version of the summary was peer reviewed by Xavier Bosch, Spain; Luis Gabriel Cuervo, USA; Tara Bickis, Bolivia; Tracey Perez Koehlmoos, Rukshana Gazi and Shaed Hossain, Bangladesh.

This summary should be cited as

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

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, EVIPNet 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

For more information:
www.support-collaboration.org

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