



January 2011 – SUPPORT Summary of a systematic review

Do lay or community health workers in primary health care improve maternal and 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 who have their immunization schedule up to date
- may lead to fewer deaths among children under five
- 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 in 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 to assess whether the 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



Who is this summary for?

People making decisions about the use of lay health workers in primary and community health care.

This summary is based on the following systematic review:

Lewin S, Munabi-Babigumira S, Glenton C, Daniels K, Bosch-Capblanch X, van Wyk BE, Odgaard-Jensen J, Johansen M, Aja GN, Zwarenstein M, Scheel IB. Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases. *Cochrane Database of Systematic Reviews* 2010, Issue 3. Art. No.: CD004015. DOI: 10.1002/14651858.CD004015.pub3.

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.

! 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

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

Growing concern regarding the human resource crisis in health care has renewed interest in the roles that lay health workers may play 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 and child health and tuberculosis outcomes.

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/methods

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

	What the review authors searched for	What the review authors found
Interventions	Randomised controlled trials of lay health worker (paid or voluntary) interventions in maternal and child health and infectious diseases	82 trials
Participants	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	Considerable differences in numbers, recruitment methods and training of lay health workers. Different recipients were targeted
Settings	All primary care and community health settings globally	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)
Outcomes	Primary outcomes: health behaviours and health care outcomes, including harms Secondary outcomes: utilization of lay health worker services, consultation processes, satisfaction with care, costs, social development measures	Most studies reported multiple effect measures and many did not specify a primary outcome

Date of most recent search: February 2009

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

Lewin S, Munabi-Babigumira S, Glenton C, Daniels K, Bosch-Capblanch X, van Wyk BE, Odgaard-Jensen J, Johansen M, Aja GN, Zwarenstein M, Scheel IB. Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases. *Cochrane Database of Systematic Reviews* 2010, Issue 3. Art. No.: CD004015. DOI: 10.1002/14651858.CD004015.pub3

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 USA and Ireland, among populations that were described as economically disadvantaged. Here, 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. These studies showed the following:

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

About 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.

Immunization uptake in children under two					
Patients or population: Children less than two years Settings: Formal or informal low income communities in USA (3 studies) and Ireland (1 study). Intervention: Lay health worker interventions to promote immunization uptake Comparison: Usual health care services					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Without lay health workers	With lay health workers			
Vaccination complete according to schedule	495 per 1000	604 per 1000 (544 to 678 per 1000)	RR 1.22 (1.1 to 1.37)	3 568 (4 studies)	⊕⊕⊕○ 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 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 of which were from high income countries and eight from low or middle income countries. Here, 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					
Patients or population: Breastfeeding mothers Settings: UK (5 studies); USA (4 studies); Canada; (Bangladesh (3 studies); Brazil (2 studies); India; Mexico; Phillipines. Intervention: Lay health worker support for breastfeeding Comparison: Usual health care services					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Without lay health workers	With lay health workers			
Initiation of breastfeeding	540 per 1000	734 per 1000 (616 to 839 per 1000)	RR 1.36 (1.14 to 1.61)	17 159 (12 studies)	⊕⊕⊕○ Moderate
Any breastfeeding, 3 weeks to 12 months	320 per 1000	397 per 1000 (352 to 445 per 1000)	RR 1.24 (1.1 to 1.39)	8104 (12 studies)	⊕⊕⊕○ Moderate
Exclusive breastfeeding, 3 to 6 months	70 per 1000	195 per 1000 (122 to 311 per 1000)	RR 2.78 (1.74 to 4.44)	4334 (10 studies)	⊕⊕⊕○ 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 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).					

3) Mortality and morbidity in children under five years

The review summarised eleven studies from nine low or middle income countries. Here, the 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 referral to health facilities. In six studies, lay health workers promoted birth preparedness and essential newborn care. These eleven 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 who seek help for their sick child

Mortality and morbidity in children under five years					
Patients or population: Children under five years Settings: Bangladesh (3 studies), Burkina Faso, Ethiopia, Ghana, India, Nepal, Tanzania, Thailand, Vietnam Intervention: Lay health worker interventions to reduce mortality and morbidity in children Comparison: Usual health care services					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Without lay health workers	With lay health workers			
Mortality among children less than 5 years	50 per 1000	38 per 1000 (28 to 51 per 1000)	RR 0.75 (0.55 to 1.03)	56 378 (3 studies)	⊕⊕○○ Low
Neonatal mortality	45 per 1000	34 per 1000 (26 to 46 per 1000)	RR 0.76 (0.57 to 1.02)	29 217 (4 studies)	⊕⊕○○ Low
Morbidity (from fever, acute respiratory infection or diarrhoea)	398 per 1000	342 per 1000 (298 to 394 per 1000)	RR 0.86 (0.75 to 0.99)	17 408 (7 studies)	⊕⊕○○ Low
Care seeing practice for sick children	131 per 1000	174 per 1000 (113 to 269 per 1000)	1.33 (0.86 – 2.05)	11 195 (3 studies)	⊕⊕○○ Low

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. Here, the 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					
Patients or population: People with tuberculosis (TB) or requiring preventive TB treatment Settings: USA (2 studies); South Africa (2 studies); Tanzania; Iraq. Intervention: Lay health worker support for adherence to TB treatment Comparison: Self-supervision or clinic-based supervision					
Outcomes	Comparative risks*		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)
	Without lay health workers	With lay health workers			
Cure for smear positive TB patients	526 per 1000	642 per 1000 (594 to 689 per 1000)	RR 1.22 (1.13 to 1.31)	1203 (4 studies)	⊕⊕⊕○ Moderate
Completed preventive TB therapy	766 per 1000	766 per 1000 (705 to 835 per 1000)	RR 1.0 (0.92 to 1.09)	595 (2 studies)	⊕⊕⊕○ 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 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 lower and middle income countries

→ Findings	▷ Interpretation*
Applicability	
→ The studies that were 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.	▷ In general, if the health outcomes in your setting are worse than the median reported in these studies, the absolute effects of introducing lay health worker programmes are likely to be more. Similarly, if health outcomes in your setting are better, the absolute effects are likely to be less
→ The findings summarised here are based on studies in which the levels of organization and support were potentially higher than those available outside of research settings.	▷ Factors that you should consider when assessing whether the intervention effects are likely to be transferable to your settings include: <ul style="list-style-type: none"> – the availability of routine data on who might benefit from the intervention (e.g. do you have records of your populations' immunisation status?) – 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 immunizations. If these services are not available, lay health worker activities may be undermined
→ Few of the studies described how lay health worker provided services were linked to other health system components.	▷ Consider how lay health workers can be integrated into the primary health care team
→ Community participation in lay health worker programmes was generally poorly described.	▷ If such participation is seen as important to programme success, considerable effort may need to be invested in this process
Equity	
→ Overall, the included studies provided little data regarding differential effects of the interventions for disadvantaged populations.	▷ 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, worsening inequities
Cost-effectiveness	
→ There is little information regarding the cost-effectiveness of lay health worker interventions.	▷ 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 as well as lay health workers as a delivery mechanism
Monitoring & evaluation	
→ Lay health workers in this review generally focused on specific health issues. The review found little evidence about lay health workers that deliver a range of health care interventions.	▷ Decision makers choosing to implement lay health worker programmes in areas where good evidence of effectiveness is still unavailable, e.g. the effect of lay health workers on child morbidity and mortality, should ensure that these programmes include robust evaluation ▷ 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 lower 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

This report reviews evidence on the feasibility and effectiveness of community health worker (CHW) programmes in providing basic health services and addressing the shortage of health workers in low-income countries: Lehmann U, Sanders D. Community health workers: what do we know about them? The state of the evidence on programmes, activities, costs and impact of health outcomes of using community health workers. World Health Organization, 2007.

This book summarises the findings of evaluations of large scale community health worker programmes in the 1980s, drawing out the implications for policy and practice: Walt G. Community health workers in national programmes: just another pair of hands? Milton Keynes: Open University Press, 1990.

A systematic review of the effects of lay health worker programmes in the USA: Swider S, M. Outcome effectiveness of community health workers: an integrative literature review. Public Health Nurs. 2002; 19(1):11–20.

This review summarises the evidence regarding the effectiveness of traditional birth attendants – a form of lay health workers: Sibley LM, Sipe TA, Brown CM, Diallo MM, McNatt K, Habarta N. Traditional birth attendant training for improving health behaviours and pregnancy outcomes. Cochrane Database Syst Rev. 2007;(3):CD005460.

This review examines the experiences with using various incentives to motivate and retain community health workers: Bhattacharyya K, Winch P, LeBan K, Thien M. Community health worker incentives and disincentives: How they affect motivation, retention and sustainability. 2001. Published by BASICS II for the United States Agency for International Development. Arlington, Virginia, October 2001.

This review summarises the evidence regarding the cost-effectiveness of lay health workers in immunisation programmes: Corluka A, Walker DG, Lewin S, Glenton C, Scheel IB. Are vaccination programmes delivered by lay health workers cost-effective? A systematic review. Hum Resour Health, 2009; Nov 3;7:81.

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Conflict of interest

Claire Glenton and Simon Lewin are authors of the Cochrane review on which this summary is based.

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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.epoc.cochrane.org

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