March 2017 – SUPPORT Summary of a systematic review

Do home- or community-based programmes for treating malaria improve health outcomes?

Prompt access to diagnosis and treatment with effective antimalarial drugs is a central component of malaria control. Home- or community-based programmes for managing malaria are one strategy that has been proposed to overcome the geographical barrier to malaria treatment. In these programmes people living in rural settings, such as mothers, volunteers, or community health workers, are trained to recognise fever and provide antimalarial medicines at a low cost or for free.

Key messages

➔ **Home- or community-based programmes for treating malaria**
- probably increase the number of children who are treated promptly with an effective antimalaria medicine
- probably reduce all-cause mortality
- may have little or no effect on the prevalence of anaemia

➔ **The effects of home- or community-based programmes for treating malaria on hospitalisations, severe malaria, the prevalence of parasitaemia, and adverse effects are uncertain.**

➔ **The use of rapid diagnostic tests in home- or community-based programmes for treating malaria, compared to clinical diagnosis**
- probably reduces the number of children treated with antimalarials
- may have little or no effect on all-cause mortality and hospitalisations

➔ **The effects of using rapid diagnostic tests in home- or community-based programmes for treating malaria on treatment failures, severe malaria, the prevalence of parasitaemia, anaemia, and adverse effects are uncertain.**

Who is this summary for?

People making decisions about management strategies for treating malaria

! 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:

Okwundu CI, Nagpal S, Musekiwa A, Sinclair D. Home- or community-based programmes for treating malaria. Cochrane Database Syst Rev 2013; (5): CD009527.

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

Background references on this topic: See back page

Background

Malaria is a major public health problem, especially in Africa where an estimated 400 to 900 million episodes of fever occur each year. Prompt treatment using effective antimalarial therapy is essential to reduce malaria morbidity and mortality. However, the effectiveness of malaria treatment is limited by the lack of adequate healthcare infrastructure in parts of Africa. For this reason, home- or community-based management of malaria has been promoted as a key strategy for delivering more timely – and therefore more effective – malaria treatment. The strategy has been adopted by the World Health Organization as a cornerstone of its efforts to control malaria in African countries.

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/

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 evaluate home- and community-based management strategies for treating malaria

Types of	What the review authors searched for	What the review authors found
Study designs & Interventions	Randomised trials, non-randomised trials, controlled before-after studies, and interrupted time series studies that evaluated the effects of a home- or community-based programme for treating malaria	7 randomised trials and 3 controlled before-after studies. In all 10 studies, the intervention involved training low-level health workers or mothers to give antimalarials provided free or at a highly-subsidised cost. 8 studies compared presumptive treatment of all episodes of fever to standard (facility-based) care. 2 studies compared home- or community-based programmes using rapid diagnostic tests to confirm malaria with programmes using presumptive treatment.
Participants	People living in a malaria endemic setting	7 studies targeted children aged less than six years, and 3 studies treated all age groups.
Settings	Malaria endemic settings	Kenya (2 studies), Tanzania (2), Uganda (2); Burkina Faso, DR Congo, Ethiopia, Zambia (1 study in each country)
Outcomes	Primary: all-cause mortality Secondary: malaria-specific mortality, hospitalisations, severe malaria, recommended treatment within 24 hours, any antimalarial treatment, parasitaemia, anaemia, adverse events	For home- or community-based programmes versus facility-based care: all-cause mortality (1 study), hospitalisations (1), prompt treatment (2), parasitaemia (2), anaemia (3) For using rapid diagnostic tests versus clinical diagnosis: all-cause mortality (2), hospitalisations (1), treatment with an antimalarial (2), treatment failure at day 7 (2)
Date of most recent search: September 2012		
Limitations: This was a well-conducted systematic review with only minor limitations.		

Okwundu CI, Nagpal S, Musekiwa A, Sinclair D. Home- or community-based programmes for treating malaria. Cochrane Database Syst Rev 2013; (5): CD009527.

Summary of findings

1) Home- or community-based programmes for treating malaria compared to facility-based care

Eight studies compared home- or community-based management of malaria to standard (facility-based) care. The intervention in all eight studies included training low-level health workers or mothers to give antimalarials, providing antimalarials free or at a highly-subsidised cost, and presumptive treatment of all episodes of fever.

➔ **Home- or community-based programmes for treating malaria probably increase the number of children who are treated promptly with an effective antimalaria and probably reduce the number of children who die. The certainty of this evidence is moderate.**

➔ **Home- or community-based programmes for treating malaria may have little or no effect on the prevalence of anaemia among children treated for malaria. The certainty of this evidence is low.**

➔ **The effects of home- or community-based programmes for treating malaria on hospitalisations and the prevalence of parasitaemia are uncertain. The certainty of this evidence is very low.**

➔ **No studies were found that reported on severe malaria or adverse effects.**

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.

Home- or community-based programmes for treating malaria versus facility-based care

People Children with fever or malaria symptoms
Settings Malaria endemic areas
Intervention Home- or community-based programmes
Comparison Standard care

Outcomes	Absolute effect*		Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Without Home- or community-based programmes	**With Home- or community-based programmes**		
All-cause mortality	50 per 1000	29 per 1000	RR 0.58 (0.44 to 0.77)	⊕⊕⊕◯ Moderate
	Difference: 21 fewer deaths per 1000 children (Margin of error: 11 to 28 fewer)			
Hospitalisations	230 per 1000	145 per 1000	RR 0.63 (0.35 to 1.17)	⊕◯◯◯ Very low
	Difference: 85 fewer hospitalizations per 1000 children (Margin of error: 149 fewer to 39 more)			
Prompt treatment with an effective antimalarial	100 per 1000	469 per 1000	RR 4.69 (1.00 to 22.07)	⊕⊕⊕◯ Moderate
	Difference: 369 more treated promptly per 1000 children (Margin of error: 0 to 900 more)			
Prevalence of parasitaemia	Mixed results		Mixed results	⊕◯◯◯ Very low
Prevalence of anaemia	44 per 1000	59 per 1000	RR 1.33 (0.70 to 2.51)	⊕⊕◯◯ Low
	Difference: 15 more children with anaemia per 1000 (Margin of error: 13 fewer to 66 more)			

Margin of error = Confidence interval (95% CI) RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)

* The risk WITHOUT the intervention is based on the median or mean control group risk across studies. 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).

2) Home- or community-based programmes using rapid diagnostic tests versus clinical diagnosis

Home- or community-based programmes for treating malaria that use rapid diagnostic tests compared to ones that do not:

- ➔ **Probably reduce the number of children treated with antimalarial. The certainty of this evidence is moderate.**
- ➔ **May have little or no effect on all-cause mortality and hospitalisations. The certainty of this evidence is low.**
- ➔ **Have uncertain effects on treatment failures. The certainty of this evidence is very low.**
- ➔ **Have uncertain effects on severe malaria, the prevalence of parasitaemia, anaemia, and adverse effects. No studies reported these outcomes.**

Home- or community-based programmes using rapid diagnostic tests versus clinical diagnosis

People Children with fever or malaria symptoms
Settings Malaria endemic areas
Intervention Home- or community-based programmes using rapid diagnostic tests
Comparison Home- or community-based programmes using clinical diagnosis

Outcomes	Absolute effect*		Relative effect (95% CI)	Certainty of the evidence (GRADE)
	Without rapid diagnostic tests	**With rapid diagnostic tests**		
All-cause mortality	1 per 1000	2 per 1000	RR 3.51 (0.68 to 18.22)	⨁⨁◯◯ Low
	Difference: 1 more death per 1000 children (Margin of error: 1 less to 10 more)			
Hospitalisations	7 per 1000	2 per 1000	RR 0.25 (0.04 to 1.50)	⨁⨁◯◯ Low
	Difference: 5 fewer hospitalizations per 1000 children (Margin of error: 7 fewer to 4 more)			
Treatment with an antimalarial	980 per 1000	382 per 1000	RR 0.39 (0.18to 0.84)	⨁⨁⨁◯ Moderate
	Difference: 598 fewer treated per 1000 children (Margin of error: 804 fewer to 157 fewer)			
Treatment failure at day 7	Mixed results		Mixed results	⨁◯◯◯ Very low

Margin of error = Confidence interval (95% CI) RR: Risk ratio GRADE: GRADE Working Group grades of evidence (see above and last page)

* The risk WITHOUT the intervention is based on the median control group risk across studies. 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	
➔ **All of the studies were conducted in malaria-endemic African countries.**	▷ *The findings of the review are applicable to low-income countries.*
EQUITY	
➔ **No data regarding the differential effect of the intervention for disadvantaged populations was provided.**	▷ *Home- and community-based programmes for treating malaria probably reduce inequities when implemented in underserved rural areas.*
ECONOMIC CONSIDERATIONS	
➔ **The included studies did not provide any data on the costs of home- and community-based programmes for treating malaria.**	▷ *Local costing studies should be considered prior to implementing home- and community-based programmes for treating malaria.* ▷ *Costs include training costs, antimalarial costs, the cost of rapid diagnostic tests if used, and lay health worker time.*
MONITORING & EVALUATION	
➔ **The certainty of the evidence varies from very low to moderate.**	▷ *Consideration should be given to evaluating the effects of planned home- and community-based programmes for treating malaria before scaling them up.* ▷ *Adverse events, severe malaria, malaria-specific mortality, and costs should be monitored and evaluated, in addition to all-cause mortality and prompt access to antimalarials.*

*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

Additional information

Related literature

World Health Organization. Global Fund – funding proposal development – WHO policy brief 2016. Geneva: World Health Organization, 2016. http://www.who.int/malaria/publications/atoz/who-policy-brief-2016/en/

World Health Organization. Guidelines for the treatment of malaria. Third edition. Geneva: World Health Organization, 2015. http://www.who.int/malaria/publications/atoz/9789241549127/en/

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Conflict of interest

None known. For details, see: www.supportsummaries.org/coi

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This review should be cited as

Okwundu CI, Nagpal S, Musekiwa A, Sinclair D. Home- or community-based programmes for treating malaria. Cochrane Database Syst Rev 2013; (5): CD009527.

The summary should be cited as

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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

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