Evidence Update

Summary of a Cochrane Review

Malaria Series

Are artemisinin-based combination therapies (ACTs) as effective as chloroquine for treating *P. vivax* malaria?

Yes. ACTs are as good as chloroquine for treating *P. vivax* malaria

Researchers in The Cochrane Collaboration conducted a review of the effects of ACTs for treating malaria due to the Plasmodium vivax (P. vivax) parasite. After searching, they identified 12 relevant articles. This Evidence Update summarizes the findings.

What is *P. vivax* malaria and how do ACTs work?

P. vivax is one of five species of the malaria parasite which causes illness in humans. It is a common cause of malaria in Asia, South America and Oceania. The typical symptoms of fever is due to infection of the persons blood with the parasite. Unlike *P. falciparum* (the commonest cause of malaria in Africa), *P. vivax* has a liver stage which is not treated by most common antimalarial drugs. This liver stage can become active and cause a relapse of symptoms weeks or even years after the initial illness.

The standard treatment for *P. vivax* malaria in common use is chloroquine to treat the initial illness, and a 14 day course of primaquine to clear the liver stage. However, in some areas, particularly Oceania, the *P. vivax* parasite is becoming resistant to chloroquine.

The World Health Organization recommends ACTs for treating *P. falciparum* malaria worldwide. People are often diagnosed as having both *P. falciparum* and *P. vivax* at the same time and doctors may be unsure whether to treat with both an ACT and chloroquine. If ACTs were shown to be effective against *P. vivax* they could become the standard treatment for all forms of malaria.

Current ACT combinations are not effective against the liver stage of *P. vivax* and so a 14 day course of primaquine would still be necessary to achieve a complete cure.

What does the research say?

The effects of ACTs for treating *P. vivax* malaria:

In areas where chloroquine is still effective

- Treatment with an ACT probably reduces the number of people who still have fever after 24 hours of treatment
- Treatment with an ACT clears the malaria parasite from the blood quicker than chloroquine
- ACTs and chloroquine are similarly effective at treating the blood stage of *P. vivax* malaria

Is the research reliable?

Yes. The trials were generally well conducted with a low risk of bias.

Can the results of the research be applied to my setting?

The trials were conducted mainly in adults in Afghanistan, Thailand, Cambodia, India and Indonesia.

The ACTs tested were artemether-lumefantrine, artesunate plus sulfadoxine-pyrimethamine, dihydroartemisinin-piperaquine and artesunate plus pyronaridine.

It is likely that these results can be applied to other settings where chloroquine remains effective.

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The effects of ACTs for treating *P. vivax* malaria

This table provides more detail about what happens to people who take ACTs to treat *P. vivax* malaria. These numbers are based on the results of the research, when available. The quality of evidence is either ranked as high, moderate, low or very low. The higher the quality, the more certain we are about what will happen.

Outcome	Chloroquine	ACT	What happens	Quality of evidence
How many people still have fever after 24 hours of treatment?	29 per 100	16 per 100	Treatment with an ACT resolves the malaria symptoms quicker than chloroquine	Moderate
How many people still have the malaria parasite in their blood after 24 hours of treatment?	41 per 100	16 per 100	Fewer people treated with an ACT still have the malaria parasite in their blood after 1 day of treatment	High
How many people suffer a recurrence of malaria within one month?	1 per 100	1 per 100	ACTs and chloroquine are similarly effective at treating the blood stage of *P. vivax* malaria	High

More information

This summary is based on the following systematic review:
Sinclair D, Gogtay N, Brand F, Olliaro P. Artemisinin-based combination therapy for treating uncomplicated *Plasmodium vivax* malaria. *Cochrane Database of Systematic Reviews* 2011, Issue 7. Art.No.:CD008492. DOI: 10.1002/14651858.CD008492.pub2.

What is a systematic review?
A systematic review seeks to answer a well formulated and specific question by identifying, critically appraising, and summarising the results of all relevant trials, published and unpublished, according to pre-stated and transparent methods.

What is The Cochrane Collaboration?
The Cochrane Collaboration is an international network of more than 28,000 people from over 100 countries. The collaboration is one of the biggest producers of systematic reviews on the effects of healthcare interventions, and Cochrane Systematic Reviews are recognized internationally as the benchmark for high quality information. The *Cochrane Database of Systematic Reviews* is available from www.thecochranelibrary.com and free for eligible countries.

How has the quality of evidence been assessed?
The quality of evidence has been assessed using methods developed by the GRADE working group (www.gradeworkinggroup.org). The GRADE system considers 'quality' to be a judgment of the extent to which we can be confident that the estimates of effect are correct. The level of 'quality' is judged on a 4-point scale. Evidence from randomized controlled studies is initially graded as HIGH and downgraded by one, two or three levels after full consideration of: the risk of bias of the studies, the directness (or applicability) of the evidence, and the consistency and precision of the results.

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 may change the estimate.

Very low: We are very uncertain about the estimate

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