

# Evidence Update

*Malaria Series*

Is artesunate better than quinine for treating severe malaria?

For adults with severe malaria, intravenous artesunate results in fewer deaths and fewer cases of hypoglycaemia than quinine. There is insufficient evidence to make firm conclusions about the treatment of children or the effectiveness of intramuscular artesunate.

## Inclusion criteria

### Studies:

Randomized controlled trials.

### Participants:

Adults and children with severe malaria who are unable to take medication by mouth.

### Intervention:

Intervention: intravenous, intramuscular, or rectal artesunate.

Control: intravenous or intramuscular quinine.

### Outcomes:

Primary: death.

Secondary: neurological sequelae, coma recovery time, time to hospital discharge, fever clearance time, parasite clearance time.

Adverse effects: serious adverse effects requiring discontinuation of treatment, hypoglycaemia, other adverse events.

## Results

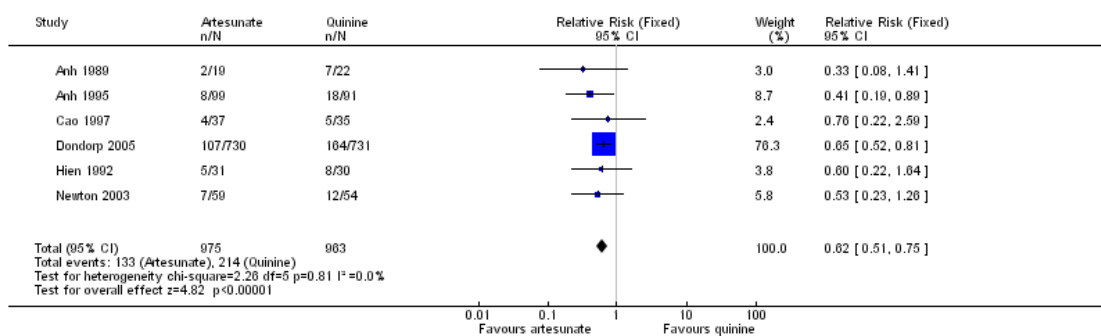
- Six trials were included, involving 1664 adults and 274 children; all trials were carried out in Asia. Artesunate was given intravenously in five trials and intramuscularly in one; quinine was given intravenously in all six. Allocation concealment was adequate in four trials.
- There were significantly fewer deaths in participants treated with artesunate (relative risk 0.62, 95% confidence interval 0.51 to 0.75; 1938 participants, 6 trials), and parasite clearance time was significantly shorter (weighted mean difference 8.14 hours, 95% CI 11.55 to 4.73; 292 participants, 3 trials).
- There was no evidence of a difference between groups in neurological sequelae, coma recovery time, time to hospital discharge, or fever clearance time.
- Treatment with artesunate resulted in fewer cases of hypoglycaemia after admission, when blood sugar was monitored (RR 0.46, 95% CI 0.25 to 0.87; 185 participants, 2 trials) or only in participants with clinical signs of hypoglycaemia (RR 0.32, 95% CI 0.13 to 0.79; 1461 participants, 1 trial). No trials reported discontinuation of treatment, and all other reported adverse events could be attributed to malaria.



Adapted from Jones KL, Donegan S, Lalloo DG. Artesunate versus quinine for treating severe malaria. *Cochrane Database of Systematic Reviews* 2007, Issue 4. Art. No.: CD005967. DOI: 10.1002/14651858.CD005967.pub2. *Evidence Update* published in August 2008.

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## Artesunate vs quinine: death



## Authors' conclusions

### Implications for practice:

Intravenous artesunate is the drug of choice for adults with severe malaria, particularly if acquired in Asia. There is insufficient evidence to make firm conclusions about the treatment of children or the effectiveness of intramuscular artesunate.

### Implications for research:

Further trials are urgently needed to compare the effects of artesunate and quinine in children with severe malaria in Africa; an ongoing multi-centre trial is addressing this question. Future trials should include routine monitoring of blood glucose for all participants.