

# Availability of anti-malarial treatment in Critical Care Units in the UK

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## Background:

*P. falciparum* malaria has a high morbidity and mortality. Although it is not endemic in the United Kingdom approximately 1500 cases of malaria a year are imported from abroad, the vast majority of which are due to *P. falciparum*<sup>1</sup>.

Artesunate has widely replaced quinine as first line medication of choice in severe cases and British Infection Association (BIA) guidelines recently suggested it be used as the first line treatment for all patients with severe malaria and all those with a parasite count >2%<sup>2</sup>.

At the Hospital for Tropical Diseases we receive phone calls for advice on the treatment of malaria from around the UK. We noticed that in some telephone calls there was reported difficulty accessing artesunate and sometimes quinine for use in emergencies. In the UK the median diagnosis-to-treatment time for artesunate has been shown to be 1 hour (range 0.5-5 hours) in a specialist centre but 7.5 hours (range 4-26 hours) for those receiving it in a referring hospital via a hub-and-spoke system<sup>3</sup>.

## Methods:

A web-based survey was designed in order to ascertain the availability of a range of anti-malarial medication including quinine and artesunate. This survey was sent to Critical Care Unit (CCU) pharmacists at 202 hospitals in the UK via the UK Clinical Pharmacists Association Critical Care Group.

### Do you consult any malaria guidelines / protocols (please tick all that apply)

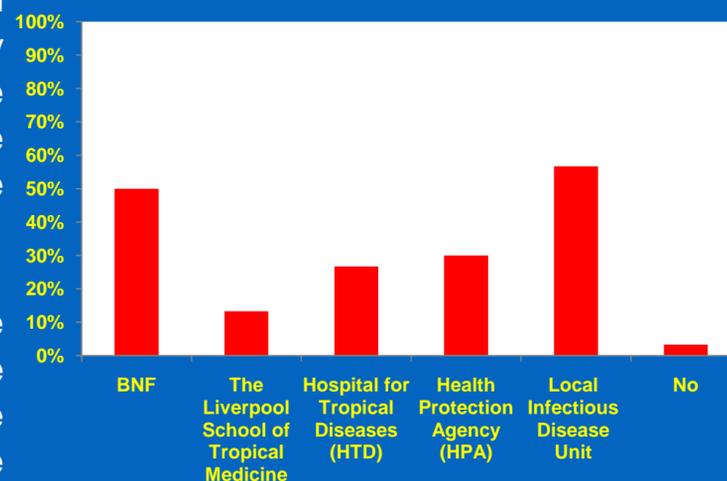


Figure 1: Use of guidelines

## Results:

From 202 hospitals sent the survey, 33 CCU pharmacists responded to our survey. Using national data as to the geographical location of malaria cases<sup>1</sup> we were able to demonstrate a clear correlation between number of malaria cases reported locally and the number of pharmacists responding to our questionnaire ( $R^2=0.74$ ,  $P=0.01$ ).

Of the hospitals in which pharmacists responded, 94% described that their hospital had an on-site emergency department. 91% of hospitals which responded had admitted 5 or less cases of malaria to their CCU in the previous 12 months.

97% of respondents reported using local or national guidelines in order to determine the appropriate treatment of cases of malaria in their CCU (Figure 2).

For uncomplicated *P. falciparum* malaria on the CCU the majority of respondents reported that they used quinine as a first line treatment. For severe malaria on the CCU 78% of respondents reported that they would use artesunate or quinine, with the remaining responses being that they would consult local or national guidelines.

### What would your first-line treatment be for severe *P. falciparum* malaria on the CCU?

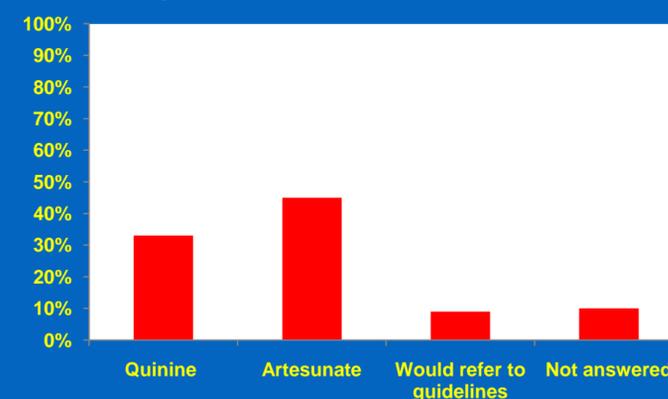


Figure 2: First-line treatment of *P. falciparum* malaria in CCU

On the CCU, 56% of pharmacists responding to the questionnaire with a suggested treatment reported that they would use artesunate as first line for severe malaria in the CCU. The rest reported that they would use quinine in this situation. However, only 57% of the hospitals held artesunate on-site and 20% of hospitals reported that their supply of artesunate was stored over 1 hour away.

### How quickly can you obtain artesunate?

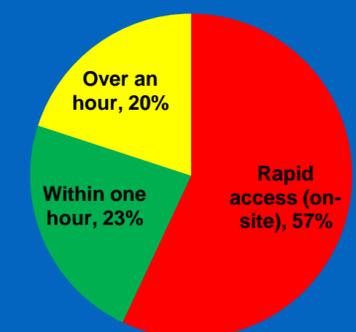


Figure 3: Accessibility of artesunate

**Conclusions:** CCU facilities in areas in which malaria is seldom seen use quinine rather than artesunate first-line. This may be in part due to a lack of availability of the medication in such areas but it is possible it is also related to a lack of clinical exposure to the condition. In addition artesunate is currently unlicensed in the UK. Further work is needed to ensure rapid access to first line treatments for malaria across the UK.



1. Imported malaria cases by species and region of travel, United Kingdom: 2014 PHE 2014
2. UK Malaria Treatment Guidelines 2016 Lalloo D; Shingadia D; Bell DJ; Beeching NJ; Whitty CJM; Chiodini PL; PHE Advisory Committee on Malaria Prevention in UK Travellers *Journal of Infection* (accessed Jan 2016)
3. Broderick, C; Friend, P; Smith, V; Blaze, M; Gothard, P; Chiodini, PL; Whitty, CJM (2012) Geographical concentration of falciparum malaria treated in the UK and delay to treatment with artesunate in severe cases: An observational study. *BMJ Open*, 2 (6). ISSN 2044-6055.