Severe *Plasmodium falciparum* malaria in refugee children despite reported predeparture antimalarial treatment

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To the Editor: Predeparture screening and treatment for *Plasmodium falciparum* malaria is increasingly administered to humanitarian refugees from malaria-endemic areas immediately before resettlement in Australia. It is undertaken by the International Organization for Migration (IOM), under contract from the Department of Immigration and Multicultural Affairs (DIMA).[1] Combination therapy (usually an artemisinin derivative in combination with another drug, or chloroquine) is used for both adults and children. The first dose (of what is usually a 3–5-dose treatment course) is supervised, and written documentation of the treatment should accompany the refugee to Australia.[1] Giving predeparture antimalarial treatment has the potential benefit of reducing the incidence of malaria after arrival, as well as reducing the risk of local transmission in malaria-receptive areas of Australia.

Onshore health assessments are performed in about 80% of humanitarian refugees resettled in Western Australia (A Thambiran, Medical Director, Migrant Health Unit, Perth, WA, personal communication). Between August 2005 and March 2006 — a period of increased offshore predeparture management of malaria (in line with DIMA/IOM policy in response, presumably, to the increasing burden of imported malaria in refugees coming to Australia) — 336 African refugee children were screened on arrival in WA. Thirty-two children (9.5%) with *P. falciparum* malaria were identified, of whom 20 (10 Burundian, eight Congolese and two Sudanese) had received predeparture antimalarial medications. Eleven children who presented in a 3-week period had all been treated at a single centre in Kenya with pyrimethamine–sulphadoxine and artesunate, according to sighted IOM documentation. Of the remaining nine children, some had transited through countries other than Kenya, but not all had complete documentation. Three children presented with malaria parasite loads ranging from 6% to 14% within 7–10 days of arrival in WA. One child had severe malaria (14% parasite load), was obtunded at presentation and required intravenous quinine therapy and resuscitation. Overall, 15 of the 20 children treated before departure required hospital admission, despite our selective non-admission policy for uncomplicated *P. falciparum* malaria. No child had long-term sequelae and all had parasitological cure at Day-28 follow-up.

Possible explanations for these apparent failures of predeparture treatment include: (i) incorrect documentation of treatment; (ii) poor compliance; (iii) lack of supervision; and (iv) inactive or expired medication. Delays in departure must also be considered at assessment, as these allow potential re-infection — in this cohort, the time between treatment and migration was poorly documented. Subsequent clinical presentation in WA ranged from 24 to 31 days after treatment in Africa (in cases where documentation was available). As all children were not treated at a single centre offshore, these cases are likely to reflect more widespread and multifactorial issues about the effectiveness of predeparture antimalarial management.

Another concern is the rise of multidrug-resistant strains of *P. falciparum*, particularly throughout sub-Saharan Africa and South-East Asia. Combination therapy with artemisinin derivatives is now recommended by the World Health Organization as first-line treatment.[2] However, many of the patients in this cohort received treatment with pyrimethamine–sulphadoxine and artesunate, despite reported high levels of parasite resistance.[3] IOM protocols are evolving in an attempt to reflect the rapidly changing multidrug-resistance patterns in these malaria-endemic regions.[1] A recent Ugandan study reported high Day-28 cure rates with artemether–lumefantrine (despite a relatively complex dosing schedule) because of lower drug resistance.[4]

These cases highlight the continuing need for comprehensive and timely onshore assessment (including malaria screening), irrespective of predeparture treatment.

P. falciparum malaria remains a major global cause of morbidity and mortality — there were an estimated 515 million clinical infections in 2002, with 70% occurring in Africa.[5] *P. falciparum* has a significant case-fatality rate (up to 20% in cerebral malaria[6]), even when managed appropriately. It results in 1–2 million deaths each year,[3] mainly of children, and about 18% of all child deaths in sub-Saharan Africa are directly attributable to malaria.[7] Australia resettles more humanitarian refugees per capita than any other nation[8] and many are from malaria-endemic regions. Predeparture antimalarial treatment should reduce the number of clinical episodes of malaria presenting within Australia, but the efficacy of this unproven intervention warrants prospective study. Importantly, documented predeparture antimalarial treatment should not distract health care providers from considering this potentially life-threatening infection in a febrile child recently migrated from a malaria-endemic area.

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