Standby Emergency Treatment of malaria for travellers to low transmission destinations. Does it make sense or save lives?

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The recommendation for carriage Standby Emergency Treatment for malaria (SBET) is now becoming more widespread across Europe. This follows as a replacement to the withdrawal of recommendations for use of malaria chemoprophylaxis, predominantly therefore to falling transmission of Plasmodium falciparum malaria on the successful malaria control programmes across S. E. Asia and S America. [1] Travellers are prescribed SBET antimalarial medication to carry during their journey. The policy is aimed at travel to areas of low falciparum malaria transmission in the above continents, not at travellers to Sub Saharan Africa. They are advised to use the medication when malaria is suspected and prompt medical attention is unavailable, but ideally, to attend a medical centre within 24 h of onset of symptoms for a diagnosis, and if malaria is confirmed, use the medication secure in the knowledge that it is not counterfeit.
The role of SBET has been examines by a number of experts and policy groups and is now being selected as first line malaria prevention strategy by a number of European countries and Japan.

SBET was first recommended in 1988 to Swiss travellers[2] visiting Thailand and data from a small cohort of 1187 travellers in 1989, revealed 10% of the cohort developed a febrile illness of whom 1 was confirmed to have malaria. A later German study in 1995 followed 2867 travellers of whom 127 (4.4%) had a febrile illness and 4 had positive malaria antibodies (0.1% of the cohort)[3]. The most recent analysis of German travellers carrying SBET found 84% did not follow the recommend response to a fever and seek medical advice.[4] In their cohort, the proportion of febrile travellers who , received appropriate malaria treatment was similar in those prescribed and carrying SBET to those who had not been carrying SBET, so in this study, the benefit of having SBET prescribed was of no clear advantage.
In 2002 a sponsored meeting, discussed the role of SBET and included discussions of the role in low risk countries. For this particular indication, no consensus was achieved amongst the small group for its value and role in low transmission environment, in part for the lack of evidence.[5]
Subsequently the use of SBET expanded to be used through much of S. America and S. E. Asia by the Swiss, Germans and Austrians[6] with other EU countries including Italy and the Netherlands (L Visser personal communication) beginning to transition their recommendations from chemoprophylaxis to SBET in low transmission/ P vivax In S.E Asia and S America.
The prescribing and carriage of SBET has been rationalised with a number of explanations.[5]

- Areas have inadequate medical services, and good quality medication may not be obtainable
- Remote areas out of reach of medical attention within 24 h

- Tolerability of chemoprophylaxis.
- Reminder to travellers they are at risk of malaria and to seek medical advice if febrile
- Prevent progression of/to life-threatening illness.

The successful control of and significant reduction in both transmission and more importantly widespread treatment of malaria in these regions calls into to question the concerns of diagnosis and the availability of good quality drugs[1]. Although counterfeit drugs have been shown to present in the marketplace of these countries, these appear to have not impacted on malaria control and elimination.

The cost benefit and effectiveness of this strategy must be called into question.
If we look at effectiveness first, the very limited data suggest falciparum malaria occurs in<10% of febrile patients in this settings and therefore presumptive or even by local diagnosis has a probability of being P falciparum malaria in <90% of febrile symptoms. The implications of a fulminant sepsis or other severe infections including bacterial (rickettsia, salmonella) and viral fevers being delayed or mistreated as malaria, needs to be considered. Shanks has similarly argued why SBET does not resolve the main causes of fever in travellers or deal completely with the commonest Plasmodia, P. vivax and argues that preventative health advice should focus on trauma service rather than malaria treatment [7]
The epidemiology of imported malaria from these regions [8] has shown that the risk of malaria in most regions is now well below 1 case of P falciparum cases per 100,000 visits from western travellers and in many destinations such as Vietnam and Thailand significantly lower. Visits to single urban or resort destinations (e.g. Phuket, Chang Mai, Koh Samui and similar) with no risk of malaria, are not affected by the policy to receive SBET. However a significant majority of travellers, particularly in S E Asia travel regionally, across multiple countries[9], and pass though varied risk regions, making SBET recommendations relevant to a large proportion of visitors to both S. E. Asia and S. America.. Data from UK travellers to S.E Asia in 2014 shows and incidence of all malaria to be around 0.1 case per 100,000 visits and only 1 case of P falciparum in 3.5 million visitors to 11 countries.(unpublished data). The denominator will include visits to cities and resort destination with no risk of malaria, so overestimate incidence.
As for cost, benefit of SBET in low transmission settings. If we use a model based on the decade old average incidence of acquiring P falciparum across SE Asia of 0.4 cases per 100,000 visits,[8] the number of treatments required to be carried to treat 1 true falciparum case would be approximately 200,000 doses. The number of treatments to be carried to prevent 1 death (1% Case Fatality Rate) would be of the order of 20 million doses. Multiplying this by the cost of each treatment (~€40), the cost of 1 avoided death is extraordinary (20m x €40) . Using the 2014 incidence of P falciparum, the cost would be 17 times higher than even this large number.
The study by Vinnemeier et al. calculated that €71.4 million was spent by German tourist (~1.77 million) on SBET in 2015, in which 4 cases of P. falciparum were reported from the region, and a 5 year total of 13 P falciparum imported into Germany from the major tourist destinations in S E Asia[4].

Haditsch [10] assessment on the need SBET in low transmission countries is in part contingent on rapid access (24hrs) to adequate diagnosis and treatment. However if the incident P falciparum rate is 1 in 3.5 million, this argument is somewhat irrelevant.

The main (and possibly only) beneficiary of the SBET policy is the pharmaceutical industry who benefit from the sale of millions of doses of treatments annually, most of which will be discarded. The drugs recommended include artemether/ lumefantrine, dihydorartemesinin/piperaquine and atovaquone/proguanil. The choice of atovaquone/proguanil is somewhat surprising given its slow parasite clearance rate and that is not included as a treatment for falciparum malaria in endemic regions by WHO malaria treatment guidelines. Its inclusion may be related to its utility as a chemoprophylaxis, making unused tablets available for use as a chemoprophylaxis in future travel.

Recommending SBET to travellers with negligible malaria risk but facing many other more frequent and life threatening health concerns, is a major disservice and makes little sense in current S. E. Asia and S. American low falciparum transmission destinations.

Conflict of interest. None declared. The views are that of the authors alone and do not reflect the views of the Advisory Committee of Malaria Prevention UK of which the authors is a member.

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