SCIENTIFIC LETTER

WHY MALARIA CONTROL IS FAILING IN AFRICA AND THE SUGGESTED WAY FORWARD

Dear Sir,

WHO launched Roll Back Malaria (RBM) during 1998 with the stated goal of halving malaria deaths worldwide by the year 2010(1). This was endorsed by the African heads of state on 25th April 2000, in the Abuja declaration, promising effective management, control and surveillance. This should be considered an excellent chance for malaria control and African countries should take advantage of it. However, with nearly half the time to the deadline now past, Attaran e*t al.* observed(2), that progress on effective treatment is so inadequate that RBM is failing to meet its targets. They suggested artemisimin class combination therapy (ACT) as the best treatment option for replacing chloroquine (CQ), and sulfadoxine- pyrimethamine (SP) (2). This raises the question whether the replacement of CQ and SP by ACT will automatically be followed by effective malaria control since CQ was undoubtedly an effective anti- malarial drug for decades but failed to reduce the malaria burden. Since ACT could also fail as CQ has, there is need to identify the reasons why CQ has failed.

Chroloquine failure cannot be dissociated from its extensive use for prophylaxis, its under-dosage during clinical practice, its use in treatment of other diseases such as rheumatoid arthritis, disseminated lupus erythematosus and amoebiasis as well as its addition to community salt for purposes of prophylaxis. Furthermore, treatment with CQ was for cases presenting with symptomatic malaria, which same cases are presumably being targeted for ACT by Attaran *et al*(2). Treatment of only symptomatic cases cannot be considered a preventive measure since the untreated asymptomatic cases will continue to act as sources of infection, thereby promoting the spread of the disease. To avoid this mistake, asymptomatic cases should also be treated since they form even bigger sources of infection as highlighted by the findings in the studies below.

During 1988 while studying the response of *P. falciparum* to CQ, SP and amodiaquine in Uganda, 780(20%) of 3999 primary school children had parasites(3). In another study in 1996, out of 539 people screened at Buwenge in South eastern Uganda for malaria parasites, 135 were below 10 years of age, of these, 63.7% had parasites. The remaining older age groups also had parasites but in smaller numbers, confirming that there is hardly an age group without parasites (Table 1) (Sezi C.L. Unpublished data).

Table 1

Distribution of malaria parasites in 539 cases at Buwenge

Age (years)	No. in Cohort	No. with malaria (%)
0-10	212	135(63.7)
11-20	127	40 (31.5)
21-30	86	13(15.1)
31-40	43	6(14)
41-50	30	4(13.3%)
51-60	27	3(11.1%)
61-70	14	3(21.4%)

Kilian A.H.D. compiled the results of a study, sponsored by the German Government on the control of malaria in Kabarole and Bundibugyo districts, in Uganda in 1995(4) (Table 2).

Table 2

Parasite and spleen rates in healthy children aged 29 years (Average overall surveys) at the four sites

Site	Altitude in meters	No.	Parasite rate in (%)	Spleen rate (%)	Endemicity level
Bundibugyo	700-910	1453	89.0	72.1	Holo
Kamwenge	1210- 1290	1501	84.6	86.4	Holo
Ruteete	1430- 1550	1201	27.8	19.5	Meso
Kicwamba	1580- 1680	1490	6.7	5.3	Hypo

These findings show variable incidences of parasites in children ranging from 89% at low altitude to 6.7% in highlands. Therefore in order to control malaria using only cure, since this is the only available control method, the other two control methods of quarantine and vaccination being inapplicable, cure should be availed to both the symptomatic and the asymptomatic so that the latter ceases to be a source of infection for the mosquito and man. Since RBM, at its inception, did not address this vital source of infection, its impending failure as highlighted by Attaran *et al.* is therefore an expected finding(2).

Furthermore, RBM includes in its plan of action, the use of preventive measures such as house screening and the use of insecticide treated nets. The relevance of these measures is not only questionable but also ridiculous when the people being placed in such houses or bed nets for protection against malaria are already having malaria parasites in their blood. For this reason, such methods of control are irrelevant and predict the inevitable failure of RBM. Malaria control activities have hitherto been based on the discoveries of the malaria parasite by Laveran in 1880 and its transmission by the mosquito by Ross in 1898. Applying common sense rather than scientific hypotheses dictates that interception of the contact between the mosquito and man would terminate the transmission of malaria.

It is for this reason that man has persecuted the mosquito in order to control malaria. However, despite this persecution, it is paradoxical that malaria is still on increase(5). For this reason, the man's obsession for destroying mosquitoes should be questioned and other strategies for control explored.

However it is not too late to rectify this problem and there is no need to refer the matter to the African heads of state since their blessings are already with us. The matter is now left for WHO experts to reconsider and rectify.

We need to note that the elements of RBM are many and difficult to carry out. Even if these were faithfully performed, and fulfilled there is no assurance that malaria control shall be achieved since there is no specified activities for quantified results. It is not questionable that parasite removal from the population would terminate malaria transmission, since there are no animals, which transmit human malaria. However the major question here is how this can be carried out effectively. By using ACT for every body, one will not only address the trophozoites but also gametocytes. Therefore, ACT is the ideal substance to use for cleansing the population of their depots of malaria parasites. The exercise should be simple and systematic. It should be preceded by training for administration of drugs to all age groups. There is need to combine ACT with SP since SP has the best compliance, being a single dose drug, it is also cheap and is still effective. The exercise should be done simultaneously throughout the country or region and should be repeated monthly for four to six times to make sure that the cleansing of the population is thorough. The mosquito populations are best left alone since they will have no parasite to transmit and attempts at their destruction is likely to be as it has been, mission impossible, which if attempted will waste resources and lead to despair. We need to perform activities, which yield positive results. However, mosquitoes may be fought for being a nuisance. All resources should be put together for this activity. When effective removal of parasites has been achieved, surveillance should be undertaken and should be thorough.

Resources from the Global Fund should be utilised in addition to other sources. If the average cost per dose per person is estimated to be about US$ 1.5-2, a population of about 20 million people would require, for a single treatment course, about US $30-40 million excluding logistics for distribution and administration. Even in war zones, the Red Cross could arrange for such drugs to be administered.

Since opposition is expected from some sector of the population, there is need for putting laws in place before such exercises are carried out. These should require people to be free from parasites after a certain period or get inconvenienced at their expense when discovered with parasites after the deadline. Since campaigns for other diseases have succeeded, there is no reason why malaria campaigns should fail.

Yours sincerely,

C. L. Sezi, FRCP(Edin.), Department of Medicine, Makerere University, P.O Box 7051, Kampala, Uganda

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