

Antimalarial measures — type, sources of advice and compliance among tourists to Natal/KwaZulu

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Typical advice on antimalarial measures provided by pharmacies as well as actual behaviour in this regard and sources of advice accessed by tourists to northern Natal/KwaZulu were canvassed by telephonic interviews with 70 pharmacies and 53 'care providers' (members of travel parties). Doctors (26%) and pharmacists (40%) were the most commonly approached sources of antimalarial advice. Professional recommendations frequently involved chloroquine-based drugs (80% of recommended drugs), despite the chloroquine-resistant status of the study area. Drug choice reflected the limited availability of new alternatives to chloroquine at the time the study was conducted, as well as ignorance of drug resistance in the area. Possible reasons for the inappropriate nature of many of the reported recommendations, as well as an approach to the dissemination of future prophylactic policy documents, are discussed.

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Increased travel to areas where malaria is endemic, drug resistance and, until recently, the unavailability of certain drugs in South Africa have hampered the provision of sound, uncomplicated and unconflicting advice on prophylaxis, despite the adequacy of current prophylaxis policy.¹ This study describes typical advice on antimalarial measures provided to the public, and the prophylaxis used by tourists to northern Natal/KwaZulu, an area of known chloroquine resistance.²⁻⁵ Since data collection preceded the release of proguanil and mefloquine, the results do not accurately reflect current antimalarial behaviour, but they do provide a basis from which to document further changes in prophylactic advice and usage. The results are being used in the design of a surveillance system investigating use of antimalarial prophylaxis and the activities of tourists who contract malaria, aimed at providing continually updated data useful for policy formulation and the targeting of education.

Methodology

Information was acquired in two ways. Pharmaceutical advice was canvassed by telephoning 39 Durban and 31 Johannesburg pharmacies. Respondents were randomly selected (every 20th listing) from the South African Pharmacy Council's *Registry of Pharmacies for the Republic of South Africa* (1992). The interviewer asked to speak to someone concerning malaria prevention. Posing as a person making enquiries on behalf of a group, including a pregnant woman and a 2-year-old child, visiting Ndumo Game Reserve, typical advice for these categories was obtained. Actual behaviour of tourists with regard to antimalarial measures was assessed with the co-operation of the KwaZulu Bureau of Natural Resources (KBNR), which made its booking register available. Thirty telephonic interviews with travel party members who considered themselves the group's 'care providers' from Natal and 23 from the Transvaal were conducted. Respondents in this category had visited northern Natal/KwaZulu during summer and were randomly selected for interview. Only visitors to Kosi Bay, Ndumo Game Reserve and Tembe Elephant Reserve were interviewed, since these more northern reserves are most likely to be perceived by both tourists and pharmacists as posing a higher risk from malaria than the KBNR's more southerly regions. The diversity of accommodation and activities available in these reserves provide a sample reasonably representative of tourists to this region. Compliance, drug type and sources of advice were documented. Use of personal barrier protection was also recorded.

Results and discussion

Pharmaceutical advice was canvassed because of the high number of tourists who reported having used pharmacies as a source of advice, as well as for reasons of convenient access. While much of the reported advice is dubious and ignored the resistant status of the area, we stress that any criticism is equally applicable to advice stemming from medical sources, as evinced by reported behaviour based on a doctor's advice (see Table II).

Table I lists the prophylactic regimens suggested by 70 pharmacies and indicates heavy reliance on chloroquine-based drugs for a chloroquine-resistant area (currently requiring mefloquine or proguanil + chloroquine or doxycycline). Although at the time of going to press mefloquine and proguanil had only recently been sanctioned for release (or re-release in the case of proguanil) by the Medicines Control Council and were still difficult to obtain, the low number of recommendations to use Maloprim, or combinations of chloroquine-based drugs and Maloprim, suggests that availability has less influence on advice offered than perceived risk or ignorance of chloroquine resistance in the area. Maloprim, alone or in combination with chloroquine, was at that stage the only readily available alternative to chloroquine. Children in particular were offered chloroquine (94%), mostly as Daraclor (pyrimethamine + chloroquine) tablets or syrup (80%). Suggested drugs for use in pregnancy included Maloprim/Maloprim + folic acid (51% of drugs recommended), although the same agencies recommended chloroquine-based drugs for adults and children. Given the usefulness of chloroquine in pregnancy this begs explanation, especially since the high number of referrals and suggestions that pregnant women do not enter malarious areas suggest comprehension of the risks malaria poses to the fetus. There seems to be some confusion about the need for folic acid supplementation with various prophylactic regimens — it is in fact only required when drugs which interfere with the metabolism of folic acid are used during pregnancy. Pyrimethamine and proguanil are folic acid antagonists which may affect its metabolism, and since folic acid requirements increase during pregnancy, supplementation with either folic or folinic acid is necessary. The use of chloroquine in isolation does not necessitate folic acid supplementation.

Two of the pharmacies whose suggestions include Maloprim (pyrimethamine + dapson) made enquiries about sulphone sensitivity. Regimens were adjusted for size/weight

Table I. Prophylactic advice provided by 70 pharmacies

Advice	Adults	Pregnant women	Children
Daraclor	39 (9)	4	56
+ folate		3	
Nivoquine	9 (1)	3	7
+ folate		2	
Nivoquine + Maloprim	9 (1)		1
+ folate		1	
Maloprim	4 (1)	4	2
+ folate		11	
Plasmoquine	2		2
Daraclor/Maloprim	2		
Daraclor/mefloquine	1		
Daraprim	1	1	
Refer	2	19	2
Homeopathy		1	
Nothing	1	3	
Don't go		11	
Don't go/Daraclor		1	
Repellent only		5	
Unsure		1	

() = No. of cases where suggested regimen deviated from the manufacturers'.

in only 2 instances. Only 3 pharmacies suggested further consultation with sources of advice other than medical practitioners and gynaecologists.

Barrier protection methods were recommended as follows: none (45), bed nets (3), repellent coils or pads (6), repellent creams and sprays (22), protective clothing (3). The advice was solicited by asking, 'Is there anything else you can tell me?' at the conclusion of each interview. The regional variation in emphasis on barrier protection (77% of the Transvaal group did not recommend these precautions, as opposed to only 54% in the Natal group) remains unexplained.

Tourists' drug choice, compliance, source of advice and adverse reactions are listed in Table II. Chloroquine-based drugs were used in isolation or combined with pyrimethamine by 71% of respondents. Maloprim and proguanil, in isolation or with chloroquine, were used by only 29% of respondents who took some sort of prophylaxis. Twenty-six per cent of reported prophylactic practice was based on a doctor's advice and 40% on advice from a pharmacist.

The use of personal barrier protection and the reasons for use/non-use are set out in Table III. Twenty-three of the 54 respondents did not use personal barrier protection. Of the 31 who did use some form of protection, 42% did so solely with malaria in mind; 29% employed barrier methods simply to avoid being bitten, and 29% with a view to malaria prevention as well as insect avoidance. All respondents who did not resort to personal barrier protection reported that they did not use it because they were not bothered by insects. It seems that the presence of 'nuisance' mosquitoes or other insects promotes the use of barrier methods.

Increased travel to malarious areas of differing resistance status, seasonality and prevalence of *Plasmodium* species make the provision of advice on prophylaxis difficult. Within our borders the situation is confounded by the spread of chloroquine-resistant *P. falciparum*, as well as the occurrence of *P. ovale*.⁶ These factors necessitate recourse to more toxic or less well-known drugs, and provision of increasingly individual and specific advice to travellers. Ideally, any antimalarial strategy should be simple, so that advice can be given confidently by non-specialists and adopted easily by travellers.⁷ Complicated regimens result in poor compliance, as does conflicting or confusing advice.⁸

The formulation of good prophylactic regimens in South Africa has been impeded by poor drug availability, resulting in lack of familiarity with newly available drugs and combinations of these and more familiar compounds. A sensible approach⁷ is to classify advice requirements into 'specialist' and 'routine'. This would allow specific targeting of medical education and information, so that practitioners and pharmacists can confidently handle routine enquiries and refer requests for specialist advice to appropriate centres of expertise. The latter group would be charged with advising travellers to areas of high drug resistance, those at special exposure risk or at high risk from malaria, those for whom routine measures are contraindicated, and long-stay residents.

Underlying reasons for the inappropriate advice reported include a history of limited drug availability, political restrictions on travel destinations, low perceived risk, lack of clarity and contradictory accounts of the extent of chloroquine resistance within South African malarious areas.

Table II. Tourist drug choice, adverse reactions and sources of advice

	Total	Incomplete compliance	Source of advice/reason for taking or not taking prophylactic					Adverse reactions
			Doctor	Pharmacy	Habit	Hearsay	Other	
Daraclor	25	8	4	10	8	1	2	N (2), H (2)
Daraclor syrup	1		1					
Maloprim	8	2	1	5	1	1		N (1)
Maloprim + Nivaquine	4	1	1	3				H (1), H+N (1)
Nivaquine	6	3	3	2	1			
Nivaquine + Paludrine	2		1	1				
Plasmaquine	1			1				
Nothing	8		3				5	
Total	55	14	14	22	10	2	7	

H = headache; N = nausea.

Table III. Barrier protection and reasons for use and non-use

Barrier protection	Total	Reasons for using/not using barrier protection			
		Not pestered by insects	To avoid being bitten	Used with malaria prevention in mind	To avoid malaria and being bitten
None	23	23			
Bed nets	1		1		
Coils/pads	6		1	2	3
Creams/sprays	24		7	11	6

For example, reports of chloroquine-resistance from the Transvaal,^{5,9-11} the chloroquine-resistant status of all malarious areas adjacent to the Transvaal, and the high number of imported cases reported from within this region are to some extent at odds with the current consensus document,¹ which recommends chloroquine alone for this region. Adding further confusion to the resistance scenario, northern Natal/KwaZulu is described as an area of low-level chloroquine resistance,¹² despite studies documenting a high prevalence of strongly resistant malaria.^{3,4}

It is likely that the high incidence of malaria reported for the 1992/93 season,^{2,10} together with extensive coverage in both the medical and the popular press, will have increased awareness of newly available and necessary drugs on the part of both travellers and medical advisors. Since all the recommended drugs in the otherwise sound and widely distributed TPS Drug Information Centre/National Health malaria prophylaxis document¹ are now available, we look forward to documenting reliance on more appropriate drugs or drug combinations. Ongoing medical education for doctors and pharmacists is vital for sound provision of advice in a changeable setting, especially given recently gazetted changes to the Pharmacy Act (*Government Gazette* 25 June 1993) which will increase opportunities for the involvement of pharmacists in primary health care and health education. The sizeable role the travel industry plays in providing information on prophylaxis has been documented⁸ and travel agents must be kept aware of current policy, not only through opportunistic use of travel conferences but also through formal channels. Future antimalaria documentation intended for providers of advice on prophylaxis should list, and encourage consultation with, existing centres of expertise.

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