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Malaria prevention in travellers

Case Scenario. Joanne comes to you before her 'round the world' trip for a year. Her plans include the Mayan ruins in Guatemala, the Brazilian Amazon for a one-week ecotour, Nairobi to Cape Town by truck, the palaces and forts of north India, Egypt and Jordan, and the backpacker trail in Southeast Asia. She's had all of her shots but would like your advice regarding malaria prevention. Where do you start?

Gaining more history

Having a systematic approach is helpful, rather than just focussing on tablets. A number of things will shape your advice, so gathering more information is a good start.

Is she on the oral contraceptive pill (antibiotic interaction)? Is she prone to thrush on antibiotics (antibiotic side effect)? Does she have a personal or family history of mental illness (mefloquine is contraindicated)? Does she plan to scuba dive/surf/lie around on beaches (photosensitivity with doxycycline, and mefloquine contraindicated with Scuba)? What time of year will she be in each of the places (risk increases in wet season)? How tight is her budget (some medications more expensive)? Does she have any prior experience with malaria tablets (better the devil you know!)?

Giving advice

The next step is to explain that the aim is to minimise (not eliminate) the risk of serious illness from falciparum malaria. Prevention is always the first step and by avoiding bites, exposure to other mosquito borne illnesses will be reduced (Dengue fever, Yellow fever, Japanese Encephalitis), along with other disease vectors such as ticks.

DEET based repellents are best – tropical strength Rid and Aerogard are about 20%, repellents with 30-40% offer protection of longer duration. Clothing, sleeping sheets and mosquito nets can be treated with a residual insecticide such as permethrin (Coopex). Mosquito coils are worthwhile if sleeping in non airconditioned accommodation. Avoiding



strong personal scents is a good idea but colour of clothing probably makes little difference. Anopheles, the malaria mosquito is active at dawn and dusk, but Aedes (the Dengue vector) is active all day and night, therefore avoidance measures are best adopted at all times.

Prophylactic medication

Choice of medication prophylaxis is tailored to the individual. For low risk areas (the Middle East and Central America in Joanne's case), chloroquine (or nothing) is the way to go.

For high risk areas (her African leg), the choices are doxycycline, mefloquine, and atovaquone/proguanil. These have differing regimes, side effects and costs, but similar efficacy – 90% (not 100%, which is worth emphasising).

The intermediate risk areas (the Amazon basin, the Subcontinent and South East Asia) are more difficult and require discussion and informed choice. As a rule of thumb, the longer the trip, and the more off-the-beaten-track, the higher the risk. Options are as for high risk areas.

Key practise points:

- ◆ Find out as much as possible about the trip.
- ◆ Emphasise avoidance and treatment as well as prophylaxis.
- ◆ Chloroquine (or nothing) for low risk areas.
- ◆ Mefloquine, doxycycline or atovaquone/proguanil for high risk areas.
- ◆ Negotiate/make choices for intermediate risk areas.
- ◆ Fever = malaria until proven otherwise

Treatment

Beyond avoidance and prophylactic medication, which never completely eliminates risk, treatment needs to be discussed. For all travellers to malaria endemic areas, any fever is malaria unless proven otherwise. Medical help must be sought as soon as possible, ideally within 24-48 hours.

Some special groups of travellers may take emergency self-treatment with them:

- ◆ Travel to remote destinations with poor medical facilities in high risk areas
- ◆ Contraindications/side effects with prophylactic agents
- ◆ Expatriates or long term travellers where cost and duration of prophylaxis is prohibitive

Rapid self-test kits for falciparum and vivax antigen exist, but are rarely recommended due to incorrect use and false negatives, which can contribute to delayed treatment. Exceptions might be use by experienced health care workers. In such cases, atovaquone/proguanil is probably the best emergency treatment. If already on this medication, quinine, doxycycline or lumefantrine/artemether are alternatives.

References

- 1: *Manual of Travel Medicine 2nd edition 2004 Ruff, Yung, Torresi, Leder, O'Brien*
- 2: *World Health Organization 2005 International Health and Travel*

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	Doxycycline	Mefloquine	Atavaquone/proguanil
Dose	100mg daily.	250mg weekly.	One tablet.
	2 days before.	3-4 weeks before.	One day before.
	2-4 weeks after.	4 weeks after.	One week after.
Advantages	Widely used and generally well tolerated.	Weekly dosage aids compliance.	Shortest course.
		Best researched re. long term safety.	Very well tolerated.
Disadvantages	Side effects including GI upset, photosensitivity (5%), thrush and interactions with OCP.	Neuropsychiatric side effect profile. Avoid in arrhythmias, epilepsy, scuba divers, airline pilots.	Cost – more expensive than alternatives. Abdominal pain, headache (uncommon).
Best suited for	Short and medium length travel.	Long term travellers, expats and children.	Short trips, business travel, and children.