Malaria in the ADF, July – December 2001

IN THE PERIOD July to December 2001, the ADF deployed personnel to malarious areas including Bougainville and East Timor, in addition to those posted and exercising in Papua New Guinea and Malaysia. Specific features of the malaria cases notified to the Central Malaria Register (CMR) at the Australian Army Malaria Institute (AMI) were the diversity of malaria exposure that ADF personnel received and the complexity of determining the original source of clinical infections with malaria parasites.

During the reporting period, 21 notifications of malaria cases were received at AMI, most concerning soldiers who had served recently in East Timor (Table). It would be simple to classify all such cases as arising from exposures in East Timor, but six of these personnel had also visited other malarious countries including Papua New Guinea, Malaysia, China and Vietnam.

Two personnel developed malaria associated with Malaysian exposure. One developed vivax malaria during military exercises in that country. Although the soldier was taking doxycycline for prophylaxis, his compliance with the medication and the bioavailability of the drug are unknown. He had returned from East Timor 14 months earlier and, although the longest recorded delay to date for first-onset clinical malaria following East Timor service is 505 days, it is more likely this parasite was contracted in Malaysia. Similarly, the second malaria case was in a soldier with exposures in both East Timor (departed InterFET in February 2000) and Malaysia. This soldier served in Malaysia only weeks and developed vivax malaria about 18 months later. This infection is considered more likely to have been contracted in Malaysia.

Eighteen cases of vivax malaria arose from exposure in East Timor: 17 that presented in Australia and one in a soldier diagnosed in East Timor. That soldier had treated himself twice with doxycycline and had one, or possibly two, episodes of clinical malaria. He was eventually treated with chloroquine and 6 mg/kg of primaquine to prevent further episodes of vivax malaria.

Vivax malaria and relapses of this infection are the greatest problems in management of malaria facing the ADF. Primaquine "tolerant" vivax malaria is present in East Timor and justifies the increase in primaquine dose for eradication and treatment to 30 mg daily for 14 days. It also raises the prospect of using 6 mg/kg for management of difficult vivax cases.

Relapsing vivax malaria may actually be a recrudescent infection (appearance of parasites within the period of chemosuppression normally expected to be therapeutically effective), implying acute care resistance. For chloroquine, the presence of parasites within 28 days of the standard treatment regimen of 1500 mg over three days is suggestive of drug resistance.

The geographic source of possible resistant parasites is of great interest for health staff treating vivax malaria. One soldier presented with vivax malaria in July 2001, three weeks after treatment with chloroquine for an early episode of vivax malaria. It was difficult to determine where the soldier was infected, as he had served in East Timor between two deployments to Bougainville. Evidence that he was infected in Bougainville came when Balmoral Naval Hospital received and managed another case of chloroquine-resistant vivax malaria. This soldier presented within two weeks of standard treatment with chloroquine. In collaboration with AMI, the diagnosis was confirmed and he was treated successfully with Malarone (atovaquone–proguanil) and primaquine. His only exposure to malaria had been while serving in Bougainville, following which he had received a lower dose of primaquine for vivax eradication (22.5 mg × 14 days). These findings suggest that chloroquine-resistant vivax malaria is present in Bougainville.

Malaria infection in ADF personnel reported from July to December 2001, categorised by probable source of infection

	P. falciparum	*P. vivax*	*P. malariae*
East Timor	0	1 in AO 17 on RTA	0
PNG	1	0	1
PNG (Bougainville)	0	5	0
Malaysia	0	1 in AO 1 on RTA	0
Totals	1	25	1

AO: area of operation; RTA: return to Australia.

An even more unusual and troubling case came from 3RAAFHOSP. Clinicians forwarded blood from an airman who suffered recurrent febrile illnesses for about two years. DNA analysis at AMI showed that he had *Plasmodium malariae*. The only exposure to malarious areas was during a short deployment to Jackson's airport in Port Moresby. *P. malariae* is thought to have a long-term tissue stage, in erythrocytes, which may cause episodes of infection many months after the initial infection. Fortunately, this parasite is uncommon in the Australasian region. The patient was treated successfully with chloroquine.

The AMI recently collaborated with 4RAR Battalion Group to complete a tolerability study of mefloquine under operational circumstances. The preliminary findings are that mefloquine is well accepted. As with doxycycline, individuals who are intolerant of the chemoprophylaxis typically will demonstrate this early in the course. The study is being continued by 2RAR Battalion Group to confirm and expand findings.

LCDR Sonya Bennett at AMI is exploring short-term primaquine prophylaxis for those visiting malarious areas for weeks rather than months. Half the volunteers will receive doxycycline with primaquine eradication and the others only primaquine from the day before deployment exposure to three days after returning to Australia. The study aims to determine whether primaquine alone is as effective and tolerable as the cumbersome doxycycline and primaquine regimen in preventing malaria infections.

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