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Table 9. Malaria notifications, Australia, 1992 and 1993, by occupation.

Occupation	1992		1993	
	Number of cases	Percent	Number of cases	Percent
Clerk	3	0.4	9	1.3
Labourer and related worker	29	3.8	20	2.8
Machine operator, driver	15	2.0	7	1.0
Manager, administrative	15	2.0	18	2.5
Minor (years old)	53	7.0	49	6.9
Para-professional	23	3.0	22	3.1
Professional	72	9.5	36	5.0
Salesperson, personal service worker	20	2.6	17	2.4
Student	160	21.1	149	20.8
Tradesperson	30	4.0	31	4.3
Unknown	348	45.9	357	49.9
Total	758	100	715	100.0

Table 10. Malaria notifications, Australia, 1992 and 1993, by reason for presence in country in which malaria exposure occurred.

Reason	1992		1993	
	Number of cases	Percent	Number of cases	Percent
Business	57	8.3	56	10.0
Business companion	2	0.3	2	0.4
Education	7	1.0	3	0.5
Employment	90	13.1	104	18.5
Holiday	237	34.4	190	33.9
Other	51	7.4	27	4.8
Birth country	203	29.5	123	21.9
Student vacation	5	0.7	9	1.6
Visiting relatives	36	5.2	47	8.4
Total ¹	688	100.0	561	100.0

1. Excludes 70 cases in 1992 and 154 cases in 1993 for whom no data were recorded.

Editorial Comment

Bronwen Harvey

Apart from historical interest, what can a report on the malaria situation in Australia five years ago tell us? Firstly, the report highlights the potentially disastrous consequences of delays in diagnosis of malaria and misdiagnosis of malaria species, issues which are as important now as in 1993.

Secondly, the report serves as a reminder to clinicians, travellers and travel agents that travel to malarious countries carries with it the risk of exposure to infection with malaria. Clinicians need to be able to provide accurate and up to date travel health advice to intending travellers, or to refer them to someone who can (see Box). Travellers may not be aware of the need to seek such advice and travel agents can play an important role in educating travellers and ensuring that they seek advice several weeks before the date of travel. A travel history should become a routine part of clinical practice and anyone who has recently returned from a malarious country and presents with symptoms suggestive of malaria should be immediately tested for the infection, preferably through a pathology service which has experience in malaria diagnosis.

Thirdly, the report provides an opportunity to remind clinicians and laboratories of the importance of ensuring

that all cases are notified to the relevant State or Territory health authority. Prompt notification enables public health authorities to establish the origin of each patient's infection and ensure the early identification of any cases acquired in Australia. In the malaria receptive area of Australia, prompt investigation of cases enables public health action to prevent local transmission of the disease.

Finally, the report provides an opportunity to consider the current status of national malaria surveillance in Australia and to look at possible future directions.

Malaria is one of the communicable diseases for which data are collected by State and Territory health authorities under their public health legislations. Notification data for a number of communicable diseases, including malaria, have been nationally collated since 1917.¹ Since 1991, the National Notifiable Diseases Surveillance System (NNDSS) has provided the framework for the continuation of this national collation. Malaria data are published regularly in the surveillance section of *CDI* and included in the annual reports of the NNDSS.

Data on only a small number of variables are collected within the NNDSS: age, sex, state and postcode of residence, aboriginality and onset and report dates. Since 1995, data on the *Plasmodium* species have also been

collected. Although there is a level of under-reporting of malaria to the NNDSS,³ the data allow general trends in the incidence of malaria to be monitored (see report below). However, the absence of data on the origin of infection limits its usefulness for documenting Australia's continuing freedom from endemic disease.

To collate more extensive information than available through routine notifiable disease surveillance, a Central Register of Malaria Cases was established as a Commonwealth Department of Health function at the School of Public Health and Tropical Medicine, Sydney, in 1969.² Responsibility for the Australian Malaria Register (AMR) was transferred to the Tropical Health Program at the University of Queensland in 1990. AMR reports for 1990 and 1991 have been previously published in CDI.^{3,4}

The data available through the AMR are both more complete and more extensive. The better case ascertainment through the AMR is illustrated by comparing the numbers of cases reported by the AMR and the NNDSS for the two years 1992 (AMR 758 cases, NNDSS 741 cases) and 1993 (AMR 712 cases, NNDSS 669 cases). The more extensive dataset enables reporting of place of acquisition and has the capacity to identify cases which have occurred due to local transmission. Data on reason for travel and occupation are useful adjuncts to the data on place of acquisition. The Register also provides important information on diagnostic delay and misdiagnosis and incorporates data on malaria deaths.

Although the AMR has the capacity to be a more useful dataset than the NNDSS, the timeliness of data analysis and reporting has been a problem which has limited the value of the data collection for those involved in providing travel advice and clinical services to patients with malaria. A meeting between the AMR and Commonwealth, State and Territory health authorities in October 1995, made a number of recommendations for improving malaria surveillance⁶ but these have not been implemented. One State health authority has formally advised the Commonwealth that, while continuing to investigate each case for possible local transmission and collate data relevant for that purpose, the State is no longer collecting the extended data needed for reporting to the AMR.

What should be the role of national malaria surveillance? Should it be limited to ensuring and documenting Australia's malaria free status or should surveillance

attempt to answer broader questions about why travellers continue to contract this disease? Some of the questions which could be addressed include: Is malaria in Australia the result of inadequate travel advice from clinicians, or travellers not seeking travel advice in the first place? Are travellers failing to comply with treatment regimens and/or engaging in activities which increase their risk? Are the currently prescribed regimens effective?

While the risk that malaria will be reintroduced to Australia is low,⁷ the primary focus of malaria surveillance must continue to be the identification of and rapid public health response to introduced cases. At the national level, this could be achieved through the NNDSS with the addition of a field for classifying cases. Whether this approach would constitute a sufficient level of malaria surveillance for Australia could be debated.

The current AMR is an "outsourced" surveillance program that fits well within the model for national communicable disease surveillance developed in the National Communicable Diseases Surveillance Strategy.⁸ However, it is time to reconsider the purpose of malaria surveillance and determine the best approach to this complex issue. The review of the list of nationally notified disease and case definitions currently being undertaken through the Communicable Diseases Network Australia New Zealand could provide a suitable forum for reconsidering these issues.

References

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4. Forsyth S, Loeskow K, Pearce M, Riley I, Sleigh A and Srinivasa M. Report of the Australian Malaria Register for 1990. *Commun Dis Intell* 1991;15:400-408.
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8. National Communicable Disease Surveillance Strategy.

List of travel health advisory services

Travellers Medical and Vaccination Centre (TMVC). (Available in each capital city and some regional centres)
Health Services Australia (HSA). (Available in each capital city)
Medical Advisory Services to Travellers Abroad (MASTA). (Sydney)