Local Transmission of Malaria in Singapore: An Important Public Health Message

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With all the hype about SARS, it is important to recognise that there is another infectious disease which kills more than 2,500 people worldwide every *day*. It is not a new disease that may have emerged from some exotic animal market, it is a disease that once used to plague Singapore. Thanks to a combination of geography, entomology and government efforts beginning with the Straits Settlements Anti-Malaria Committee led by Dr Middleton, the Municipal Health Officer in 1911⁽¹⁾, local transmission of malaria was largely eliminated from Singapore by the 1970s⁽²⁾.

Yet, in a way that should alert us to the concerns of that other more publicised infectious disease, malaria has a habit of popping up once again in the least expected places in Singapore⁽³⁾. It is important to recognise that only one disease has ever been successfully eradicated from the face of the earth the exclusively human viral disease smallpox. And even that eradication is now suspect. From January to March 2003, seven US civilians sustained cardiac adverse events (with two deaths) from vaccination for a disease which was thought to have been removed from the face of the earth⁽⁴⁾. This August, we will be celebrating 25 years since the world's last smallpox case in Birmingham, UK. For all other infectious diseases that once plagued Singapore, as long as there is an animal reservoir or as long as the disease is not eradicated from the poorest, most radical or most remote part of the world, there is always the risk of reintroduction to Singapore.

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Correspondence to: A/Prof Paul Ananth Tambyah Tel: (65) 6779 5555 Fax: (65) 6779 4112 Email: mdcpat@ nus.edu.sg In fact, as we have learned painfully from our experience with dengue, there is a paradox that results from the successful control (but not global eradication) of an infectious disease. In Southeast Asia, apart from the seasonal deaths from dengue haemorrhagic fever, most dengue infectious occur asymptomatically in children playing in the padi fields of the region. Adults are generally immune to all the circulating serotypes and the disease has minimal economic impact. In Singapore, thanks to a successful public health campaign by the Ministry of the Environment, children who spend their days memorising assessment books are unlikely to be infected. A large pool of susceptible adults can become quite ill from dengue haemorrhagic fever transmitted by small numbers of the highly adaptable Aedes aegypti as we have seen in the current outbreak⁽⁵⁾. This is a strong argument for enlightened self interest motivating efforts to promote public health not just in Singapore but in the poorer member states of ASEAN for example. Dengue is not the only "tropical" disease which has re-emerged in globalised Singapore of late. The same has been seen with murine or endemic typhus⁽⁶⁾.

In this issue of the journal, Chiam et al⁽⁷⁾ report local transmission of malaria in Singapore. It serves as a reminder that malaria is an important diagnosis not to miss - the index case in this outbreak died from what the authors describe as "incidentally discovered" malaria in Singapore. She was a bedridden elderly woman who had not travelled outside Singapore and it is to the credit of the haematologist who reviewed the film that the diagnosis was made in someone without a travel or "contact" history. The secondary cases associated with this outbreak lived in the same condominium and had travelled to Malaysia. It is again to the credit of the epidemiologists involved that science prevailed and a local transmission was recognised and appropriate public health measures were instituted. The prompt initiation of screening and vector control surely prevented a larger outbreak. This report highlights the importance of prompt notification and mobilisation of Singapore's public health forces which were prepared to swing into action promptly to control a potentially dangerous problem.

Malaria remains an important public health problem worldwide. The death of this older woman is a reminder of the toll malaria exacts in vulnerable populations in many parts of the world. There has been a resurgence of interest in the control of malaria after the let down of the 1980s when the initial hopes of the global malaria eradication programme faded. The World Health Organisation now plans more conservatively to "Roll Back Malaria" rather than eliminate it. Using a combination of hope for resources from wealthy countries and promotion of local public health efforts in parts of the world worst hit by the illness, the WHO is to be hailed for trying again to control malaria worldwide.

Newer agents are being licensed in many countries such as atovaquone in combination with proguanil and the various artemether derivatives. Innovative research is being conducted on preventive measures both vaccines and public health practices such as insecticide impregnated bed-nets which have been successfully used in China and Africa. New diagnostic tests using antigens or molecular methods which can be used in the field without a microscope have become available. At the same time, drug resistance is a huge problem and the diversity of the parasite has to date precluded a successfully vaccine⁽⁸⁾. There are clearly tremendous research challenges ahead in the field of malariology⁽⁹⁾.

Here in Singapore, while malaria is still mainly a diagnosis of travellers⁽²⁾, all clinicians need to have a high index of suspicion in individuals with high fever without a clearly defined source or with anaemia or jaundice as with the patient reported in this issue of the SMJ. While pockets of anophelines remain in

Singapore and the population remains susceptible, we need to be vigilant to prevent the reintroduction of the parasite and the considerable morbidity and mortality associated with this – one of mankind's oldest foes.

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