

The public health response to a *Plasmodium malariae* outbreak in Penampang district, Sabah during a COVID-19 movement control order

ABSTRACT

Background Since 2018, no indigenous human malaria cases has been reported in Malaysia. However, during the recent COVID-19 pandemic the World Health Organization is concerned that the pandemic might erode the success of malaria control as there are reports of increase malaria cases in resource limited countries. Little is known how the COVID-19 pandemic has impacted malaria in middle-income countries like Malaysia. Here the public health response to a *Plasmodium malariae* outbreak occurred in a village in Sabah state, Malaysia, during a COVID19 movement control order is reported. Methods An outbreak was declared following the detection of *P. malariae* in July 2020 and active case detection for malaria was performed by collecting blood samples from residents residing within 2 km radius of Moyog village. Vector prevalence and the efficacy of residual insecticides were determined. Health awareness programmes were implemented to prevent future outbreaks. A survey was conducted among villagers to understand risk behaviour and beliefs concerning malaria. Results A total of 5254 blood samples collected from 19 villages. Among them, 19 *P. malariae* cases were identified, including the index case, which originated from a man who returned from Indonesia. His return from Indonesia and healthcare facilities visit coincided with the movement control order during COVID-19 pandemic when the healthcare facilities stretched its capacity and only serious cases were given priority. Despite the index case being a returnee from a malaria endemic area presenting with mild fever, no malaria test was performed at local healthcare facilities. All cases were symptomatic and uncomplicated except for a pregnant woman with severe malaria. There were no deaths; all patients recovered following treatment with artemether-lumefantrine combination therapy. *Anopheles balabacensis* and *Anopheles barbirostris* were detected in ponds, puddles and riverbeds. The survey revealed that fishing and hunting during night, and self-treatment for mild symptoms contributed to the outbreak. Despite the index case being a returnee from a malaria-endemic area presenting with mild fever, no malaria test was performed at local healthcare facilities. Conclusion The outbreak occurred during a COVID-19 movement control order, which strained healthcare facilities, prioritizing only serious cases. Healthcare workers need to be more aware of the risk of malaria from individuals who return from malaria endemic areas. To achieve malaria elimination and prevention of disease reintroduction, new strategies that include multisectoral agencies and active community participation are essential for a more sustainable malaria control programme.