

## **Increased detection of Plasmodium knowlesi in Sandakan division, Sabah as revealed by PlasmoNex™**

### **Abstract**

#### **Background**

*Plasmodium knowlesi* is a simian malaria parasite that is widespread in humans in Malaysian Borneo. However, little is known about the incidence and distribution of this parasite in the Sandakan division, Malaysian Borneo. Therefore, the aim of the present epidemiological study was to investigate the incidence and distribution of *P. knowlesi* as well as other *Plasmodium* species in this division based on a most recent developed hexaplex PCR system (PlasmoNex™).

#### **Methods**

A total of 189 whole blood samples were collected from Telupid Health Clinic, Sabah, Malaysia, from 2008 to 2011. All patients who participated in the study were microscopically malaria positive before recruitment. Complete demographic details and haematological profiles were obtained from 85 patients (13 females and 72 males). Identification of *Plasmodium* species was conducted using PlasmoNex™ targeting the 18S ssu rRNA gene.

#### **Results**

A total of 178 samples were positive for *Plasmodium* species by using PlasmoNex™. *Plasmodium falciparum* was identified in 68 samples (38.2%) followed by 64 cases (36.0%) of *Plasmodium vivax*, 42 (23.6%) cases of *P. knowlesi*, two (1.1%) cases of *Plasmodium malariae* and two (1.1%) mixed-species infections (i.e., *P. vivax/P. falciparum*). Thirty-five PlasmoNex™ positive *P. knowlesi* samples were misdiagnosed as *P. malariae* by microscopy. *Plasmodium knowlesi* was detected in all four districts of Sandakan division with the highest incidence in the Kinabatangan district. Thrombocytopenia and anaemia showed to be the most frequent malaria-associated haematological complications in this study.