

# Malaria vaccines: a new weapon?

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## ABSTRACT

**Introduction:** In Malaysia, a total of 2,302 malaria cases were reported in 2016. Plasmodium knowlesi malaria consisted of 69.5% of cases while 10.5% of cases were Plasmodium falciparum malaria. Malaria vaccine has been seen as one of the potential strategy in combating malaria endemic. However, RTS,S/AS01 is the only vaccine candidate reached phase 3 trial. The objective of this horizon scanning assessment is to evaluate the efficacy, safety and potential impacts of malaria vaccines. **Methods:** Malaria vaccines were identified proactively through horizon scanning activity; namely identification, filtration, prioritisation and assessment. Web pages (BBC News and Medtech Insight) and databases (Ovid MEDLINE, EMBASE, PubMed and Google Scholar) were searched. Any relevant studies published in English until 14 March 2017 were reviewed. A literature review was conducted according to horizon scanning method. **Results:** A phase 3 of RTS,S/AS01 and a phase 1 field study of PfSPZ were reviewed. The RTS,S/AS01 study showed that vaccine efficacy (VE) against clinical malaria for Plasmodium falciparum were 36.35% (95% confidence interval [CI]: 31.8,40.5) in children and 25.9% (95%CI: 19.9,31.5) in infants who received primary and booster doses. The VE without booster dose was much lower in children (28.3% [95%CI: 23.3,32.9]) and infants (18.3% [95%CI: 11.7,24.4]). As for safety, meningitis cases were reported to be higher in vaccinated children than in control group (21 cases versus one case). In the field trial, PfSPZ gave 48.3% (95%CI: 14.5,68.7) protection by time to first Plasmodium falciparum infection. Only minimal local and systemic adverse events were reported. **Discussion:** Both vaccines showed promising results. However, RTS,S/AS01 has issues of low vaccine protection and serious adverse events that warrant further investigation. Both vaccines only protect against Plasmodium falciparum infection, but Plasmodium knowlesi malaria is of high importance in Malaysia.

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# Mapping distribution of general practitioners for public clinic in Sarawak, Malaysia

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## ABSTRACT

**Introduction:** General practitioner (GP) is a medical doctor who treats acute and chronic illnesses and provides preventive care and health education to patients. The mal-distribution of GP is a challenge in a Malaysia, especially in Sarawak with remote and sparsely populated areas, with long travelling times to the nearest urban region. The major objective of this paper is to examine the spatial distribution of general practitioners utilisation in Sarawak with a view to ascertaining whether there is any inequalities that can increase to travel times or waiting times for patients. **Methodology:** The analysis showed the efficacy of GIS in determining accessibility of healthcare facilities using Geographic Information System (GIS) and spatial analysis. Data related to posts was gathered from the Family Health Development Division, Ministry of Health Malaysia meanwhile public clinic location was gathered from Health Informatics Centre. **Results:** A total of 202 general practitioners in year of 2016 accommodating the medical needs of Sarawak population. A map displaying the current distribution of these doctors and the location of their medical centres were obtained by establishing their positions on a base map of Sarawak. Upon inspection of the map, the distribution indicates that the majority of the doctors appear to be located close to the centre of the city, with the remainder scattered unevenly about rural districts of Sarawak. Several factors have influenced the general practitioners' choice of location of their practices, just as there are many factors behind the patient's selection of doctor. **Conclusion:** This study uses GIS techniques to visualise the distribution of general practitioners and medical centres throughout Sarawak. The distribution examined compared the concentrations of doctors and population of Sarawak and found evidence of the inadequate distribution of general practitioners. The contributing factors in the analysis included traffic patterns, proximity to commercial centres, charging patterns and population density.