Chapter 1
Southeast Asia: Hotspot for Parasitic Infections

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1.1 Brief Overview

Southeast Asia (SEA) is a vibrant subregion of Asia located between the two mega Asian powers, India and China. This region is blessed with high diversity of flora and fauna, covering an area of approximately 4 million km², and is inhabited by an estimated 600 million people [1]. For the purposes of this book, we adopt the definition of SEA as the 11 member countries of the Association of Southeast Asian Nations (ASEAN) which was established in 1967 by founding member countries, namely Indonesia, Malaysia, Philippines, Singapore and Thailand. Besides these founding members, the current ASEAN countries also consist of neighbouring countries such as Brunei Darussalam, Cambodia, Timor-Leste (observer), Lao PDR, Myanmar and Vietnam. The pivotal aims of ASEAN are to promote regional economic growth, political stability, social progress and cultural developments (http://www.asean.org/asean/about-asean/overview).

Historically, this region was once plagued with political conflicts, uncertain economies and ethnic and social inequities. However, in recent times, this diverse cultural region is experiencing thriving economic, environmental and sociodemographic transformations. As a region with increasing geopolitical influence in view of Asia’s global economic ascendance, it is not surprising that the global focus is now on SEA as an emerging economic market.

The dynamic processes of rapid urbanisation, exponential population growth and mobility which SEA is undergoing have also led to the intensification of food production, agriculture, livestock and land use resulting in deforestation and inevitably climatic change. As the ecological balance is disturbed, new niches emerge encouraging infectious agents (e.g. parasites) to adapt and change. Evidences of these sometimes subtle adjustments between parasites and their ecologies are
Chapter 2

Plasmodium knowlesi: Emergent Human Malaria in Southeast Asia

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Abstract Plasmodium knowlesi is an emerging malaria parasite in humans and is unique to Southeast Asia. Since most countries in Southeast Asia are working towards elimination of malaria, it is important to have knowledge on this emerging simian malaria parasite affecting humans. The first case of simian malaria was reported in Malaysia in 1965. At that time extensive work conducted did not reveal other simian malaria cases in humans. However, in 2004, a large focus of P. knowlesi was reported from Sarawak, Malaysian Borneo and that led to many studies and cases being reported from most countries in Southeast Asia. In this chapter, the history, epidemiology, diagnosis, vectors and role of simian host are discussed. Malaria is now a zoonosis and the challenges facing the countries of Southeast in tackling the knowlesi malaria situation and the way forward have been documented.

2.1 Introduction

Malaria is a mosquito-borne disease caused by the protozoan parasite of the genus Plasmodium. To date, there are nearly 200 species of Plasmodium known to infect a wide range of hosts [1]. These include malaria parasite species that infect mammals, rodents, birds and reptiles. There are five species of Plasmodium known to infect and cause malaria in humans, namely Plasmodium falciparum, P. vivax, P. malariae, P. ovale and P. knowlesi [2, 3]. Of these, P. falciparum is well known to be the deadliest form of human malaria, whereas P. vivax is the most prevalent.