

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 ascendancy, 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

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unfolding in SEA as reports on the emergence of zoonotic parasitic infections are appearing to be more common [2]. The problem of controlling parasitic infections is further augmented as drug resistance develops due to indiscriminate usage of antiparasitic agents enabling the parasites to thrive, thus compromising on the progress of malaria control programmes [3].

These interconnected driving forces have vital impact on human health and recent articles in *Lancet* (2011) alerted the global community of the significance of SEA region as an emerging hotspot for global health [4, 5]. Granted its rich biodiversity, SEA is at the focus of attention with regard to parasitic infections, in particular, zoonotic and vector-borne diseases (i.e. *Plasmodium knowlesi* infection) where the burden of these diseases can be substantial. Although many countries in this region are experiencing economic development, pockets of impoverished populations still exist, and these populations play significant roles in the propagation and transmission of neglected tropical diseases (e.g. soil-transmitted helminthiasis) [6].

Limited available financial resources and rapid urbanisation often results in insufficient clean water supply or proper waste disposal. These factors, coupled with the HIV/AIDS pandemic the region is facing and the conducive tropical or subtropical climate, facilitate the transmission of waterborne/foodborne and opportunistic parasites [7]. With advancing modes of transportation, increasing transboundary migrations and a burgeoning tourism trade, the potential for the spread of these infectious diseases will be borderless and immeasurable.

In 2015, the ASEAN Economic Community (AEC) with a goal of regional economic integration will be established. The AEC aspires to transform ASEAN into a region with borderless trade. There will be free movement of goods, services, investment, skilled labour and freer flow of capital (<http://www.asean.org/communities/asean-economic-community>). When this materialises, there will be greater transboundary movement amongst these neighbouring countries. Hence, it is crucial to assess and have an enhanced understanding of the current status of the epidemiology and clinical impact of parasitic infections in these 11 SEA countries.

Thus far, there has been no collective systematic appraisal of parasitic infections and their vectors in SEA. For these reasons, this book attempts to present a comprehensive review of all the accessible information/data and publications for individual SEA countries. Coverage of parasites in this book includes *Plasmodium*, *Entamoeba*, *Giardia*, *Cryptosporidium*, *Toxoplasma*, *Blastocystis*, free-living amoeba, filarial worm, soil-transmitted helminths, cestodes, trematodes, *Sarcocystis*, pentastomes and vectors for malaria and filariasis. For those who have always been intrigued by the diversity of the SEA communities, may this book inject some interest into the health aspects, in particular, the epidemiology of parasitic infections in this region. On a more serious note, it is hoped that the collation of these data will provide an extensive baseline information with crucial highlights on the significant gaps of knowledge. It is hoped that this understanding could then assist in formulating a solid scientific framework/platform for future integrated research in the field of infectious diseases, in particular, parasitic

infections amongst member countries. In short, may it spearhead a consolidated regional effort in public health and prepare the region as it launches into a borderless trade.

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