

REVIEW

STATUS OF MALARIA IN THAILAND

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Abstract. Despite decades of control success and a competent network of country-wide health infrastructure, malaria remains an important health threat in rural Thailand. All 4 known human malaria parasites have been reported present, with *Plasmodium falciparum* and *Plasmodium vivax* predominant. The expansion and intensity of multi-drug resistant *Plasmodium falciparum* is the most serious development to occur the last several decades. Members of 3 anopheline species complexes, *Anopheles dirus*, *Anopheles minimus*, and *Anopheles maculatus*, are considered to be primary malaria vectors in the country. Representatives within all 3 taxa are difficult or impossible to separate morphologically from one another, and insufficient information exists about population genetics between sibling species and vector status. Vector control in Thailand has been the primary means of malaria control, mainly by the use of routine residual insecticide spray inside houses. The use of DDT in vector control has resulted in measurable successes to interrupt malaria transmission in many parts of the country. Since 1949, DDT has been the predominant compound used; however, its public health use has continued to decline as a result of perceived operational difficulties, political issues and environmental concerns. The increased use of pyrethroids to impregnate bednets and for intradomiciliary spraying are generally more accepted by rural populations and are rapidly replacing the use of DDT. Organized malaria control activities have reduced malaria morbidity from 286/1,000 population in 1947 to 1.5/1,000 population by 1996. Despite encouraging trends in dramatically reducing malaria, the rates of disease may be re-emerging in the country as evidence from an increased annual parasite index from 1.78/1,000 in 1997 to 2.21 in 1998. The possible reasons for the apparent increase in incidence are discussed in terms of the technical, operational and social obstacles in malaria control in Thailand.

INTRODUCTION

Malaria is still one of the important infectious diseases in Thailand, despite decades of successful control programs and dramatic reductions in morbidity and mortality. While deforestation has pushed malaria out of many regions in Thailand, malaria remains most prevalent along the undeveloped borders of eastern Myanmar, western Cambodia and northern Malaysia. The current distribution of malaria in Thailand is given in Fig 1. Based on the malaria surveillance activities in Thailand from 1985 to 1998 (Table 1), recorded malaria cases in Thailand totaled 275,443 in 1985, peaking to 349,291 cases in 1988, and declining thereafter to 85,625 cases in 1995. In general, from 1988 to 1996, detected malaria infections have dramatically

declined. This continued improvement in reduced malaria has been, to a certain extent, the result of effective, well organized mosquito control program, concentrating activities on indoor residual insecticide spray and, more recently, distribution of pyrethroid-impregnated bed nets.

Recent surveillance data indicate malaria may be re-emerging in Thailand, as similarly witnessed in many other malaria endemic countries worldwide (Campbell, 1997; Roberts *et al*, 1997a). In spite of continued vigilance in control, malaria cases have shown a recent increase based on reports compiled in 1997 and 1998 (Fig 1). The explanation for the increase is unclear, but it would appear to be a combination and consequence of the increased human and economic activities along forested, mountainous frontier international boundaries, and a recent reduction in vector control coverage, due to the Asean financial crisis 1997-1999. These areas are frequently associated with tribal populations that are highly migratory because of transient employment opportunities (logging, mining, road construction), hunting, gem mining

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