CHAPTER 1

INTRODUCTION

1.1 Context And Justification

Malaria is a communicable disease which is said to infect 270 million people worldwide (TDR, 1990) and claims 2.5 million lives annually (Warrel, 1991). In areas of endemic malaria, this disease causes high mortality of infants and children and is an adverse factor for the social and economic advancement of the Third World (Bruce-Chwatt, 1985).

There are no simple solutions to the world's malaria problem and no single strategy for control will be applicable to all countries and all epidemiological situations. Experience has shown that in most parts of the world, malaria is a disease which can be neither eradicated nor controlled by the "campaign" approach in which a single package of interventions is implemented intensively for a limited period of time. Among others, one of the strategic principles which are globally valid and fundamental to the operation of all institutionalized control programmes is that timely and adequate diagnosis and treatment are made accessible to all populations at risk of malaria. This, it is believed, if correctly applied from the periphery to hospital level of the health services and targeted to populations at greatest risk of severe illness and death will prevent most mortality (Henderson, 1991).

Consequently, most developing countries have adopted this strategy of malaria control by providing peripheral to hospital level of malaria services targeted to populations of greatest risk of severe illness and death. In most case this is operated side by side with selective or comprehensive vector control actives.

Thailand, one of the tropical developing countries has succeeded through a national malaria control programme in progressively reducing the morbidity and mortality due to malaria. In 1947, the morbidity was approximately 286 per 1,000 population, and mortality was about 100 per 100,000 population. But by 1992 morbidity has been reduced to a low level of 3.74 per 1,000 population and the mortality to 2.1 per 100,000 population (Malaria Division country report on Malaria Control, 1993). However, it seems likely that malaria will continue to be a major public health problem in the border forest areas where access to services is least developed and the population are exposed to infection.

The dynamics of incidence and factors influencing the disease requires careful review at the national, regional and clinic levels of how best to allocate resources in order to achieve the desired goals. The government of Thailand has long recognized malaria as a priority

communicable disease of public health importance. As part of the country's health system, the Malaria Division has set as its main goals to reduce morbidity and mortality due to malaria to the minimal public health importance and to prevent the re-establishment of malaria to the minimal public health importance and to prevent the re-establishment of malaria into the integrated areas (Malaria Division country report on Malaria Control, 1993).

To be able to achieve these laudable goals through the judicious allocation and utilization of scarce resources pertinent in all developing countries, one requires a clear understanding of the relationship between demand for the serivces the Division provides at all levels and the factors influencing it in the system. Unfortunately, little empirical work has been done on this subject (Mills, 1991).

Medical care is one of the various functions for which there is a need to search for better use of scarce resources. Malaria clinic service is an expensive way of providing medical care where the government spends millions of baht to provide services free of charge to the population.

Consequently, this research is aimed at examining the demand for malaria services at the sector offices in Thailand (by conducting a time series study of a cross section of malaria clinics in Zone 1 of Malaria Region 1 in Tak Province) and identifying the factors influencing it. Such a process, if carried out correctly will make it possible to quantify the type and extent of the relationship between the response variable - the demand for the services and the corresponding explanatory variables - the factors influencing it. The relationship thus derived can then be used to predict the future states of the malaria clinics output, provided the factor inputs for those future states are known.

The forecasting method chosen for this research is a multiple regression, an explanatory model, which facilitates a better understanding of the output and allows experimentation with different combinations of the factor inputs in order to study their effects on the forecast. In this way, the explanatory model can, by its basic formulation, be geared toward intervention, influencing the future through decisions made today and enabling an informed estimates of resources allocation to be made by managers.

Malaria services at the sector clinics involve preparation and microscopic examination of blood slides for malaria parasites and then treatment of positive cases. A patient who visits the clinic but diagnosed negative for malaria parasites, therefore do not receive full services as he is not given any treatment for his disease which is not diagnosed positive for malaria parasite. He has to seek another services elsewhere. On the other hand, a patient diagnosed positive and then goes on to receive treatment enjoys full services at the malaria clinics.

Since these two categories of patients either partially or fully consume services and yet they all demand for the services a model will be formulated for demand for treatment of positive cases and then extrapolated through a forecasting model in order to predict demand for the services (Positive and negative cases measured by the total blood slides examined).

1.2 Objectives

1.2.1 General Objective

The board aims of the study are therefore to:

1. Identify possible factors which may affect the demand for malaria diagnosis and treatment at malaria clinics and
2. formulate and estimate a demand function for malaria clinics.

1.2.2 Specific Objectives:

To construct an explanatory model which can be used to forecast demand for malaria clinic services by achieving the following five specific objectives:

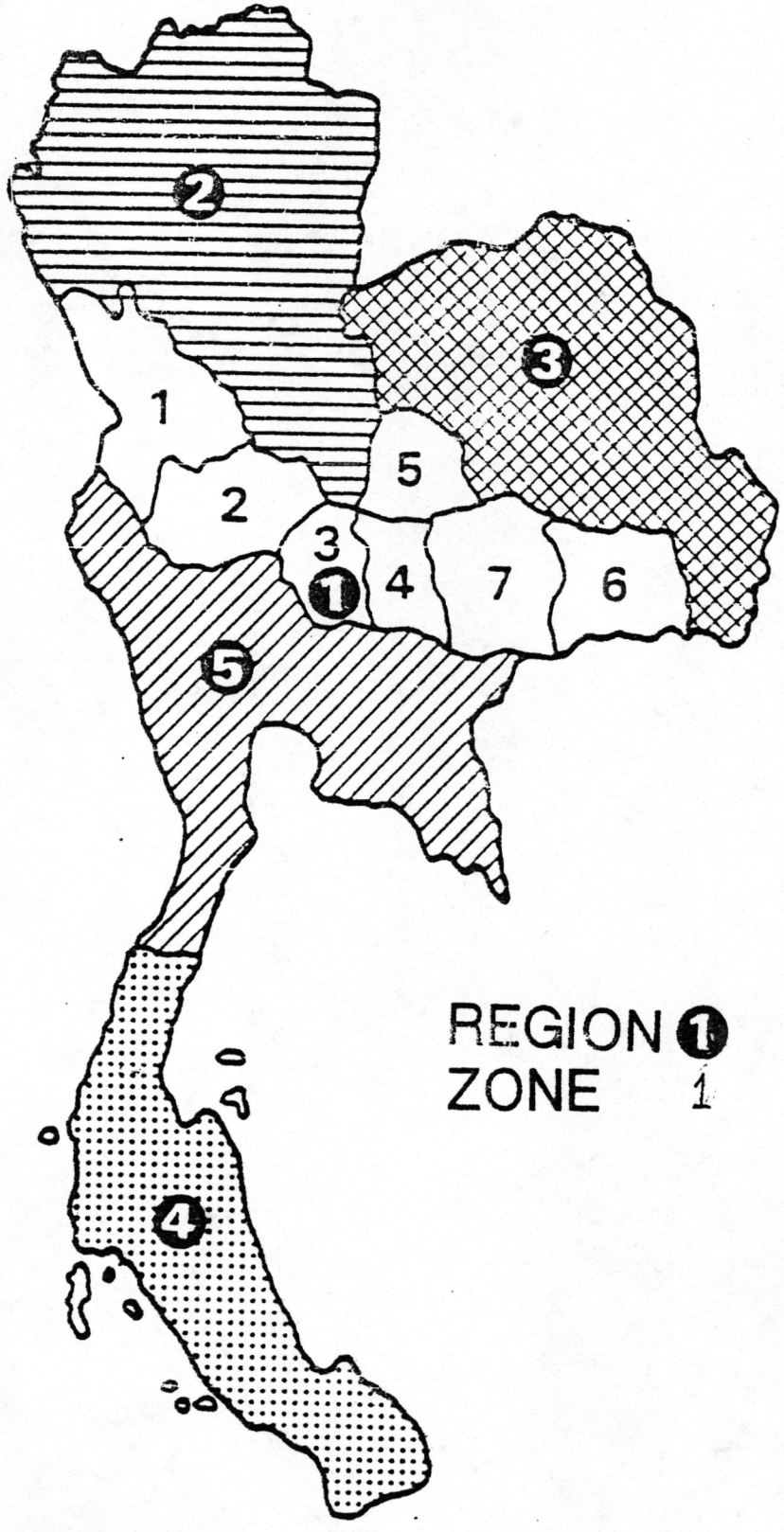
1. Identify factors influencing demand for malaria services at malaria clinics in Thailand,
2. Construct a demand function for malaria clinics,
3. Determine and estimate the parameters of the demand function by using data from the malaria clinics and the study zone,
4. Test the reliability of the function in the field using data from some malaria clinics and adjust it for a possible better fit to the data and
5. Analyze the economic implications in relation to the demand function.

1.3 Scope Of Study

The Malaria Division of the Ministry of Public Health decentralizes its operations into five regions. Each region provides services through a number of zones which are subdivided into sectors. Each sector office is attached to a malaria clinic which is supposed to serve outpatients from the surrounding villages and towns within its catchment area. Each district has 3 to 4 sector offices with each sector office attached to a malaria clinic. The present research study is conducted in zone 1, Tak Province in Region 1 (Figure 1.1)

Region 1 is responsible for operations in twelve provinces covering 113,646 square kilometers from Tak Province on the Myanmar border to Sri Saket province bordering Kampuchia. The population of 9 million people (1983) is distributed among the 12 provincial capitals, 129 district towns and 11,765 villages. Of the population 88% are in eradication areas and 12% in the largely mountainous and border areas under control.

FIG 1: MALARIA DIVISION, REGIONS AND ZONES



Zone 1, Tak Province is a control area under the responsibility of Malaria Unit number 11 (Tak). Geographically Tak province is mainly mountain and forest. it has a long border with Myanmar. Fighting inside Myanmar makes it very risky for control operations. High risk areas of the province are its five districts along the 355 km long border with Myanmar. Population in the control area constitutes 70% of its total population with 20% of the population being hill tribe people (7 tribes) living in the mountains.

Inhabitants of the area are both ethnic Karen from Myanmar near the border with Thailand and ethnic Thais engaged in rice farming and small-scale enterprises. There is a frequent border crossing into Myanmar because of family ties and the location of rice fields which are typically some distance from the village hamlets. The area reported an Annual Parasite incidence in 1985 of 194 per 1000 with 50% Plasmodium falciparum. Malaria operations in the area include twice-yearly house spraying in most villages, a network of village voluntary collaborators who make blood smears and dispense anti-malaria drugs, health education and malaria clinics - defensive involving sector Malaria clinics and offensive involving fixed schedule mobile clinics and special case defection (FSMC + SCD). The offensive approach (FSMC + SCD) serve the remote villages on a regular weekly schedule and they are usually set up in a temple buildings or other central locations in the villages. Villages are well aware of the day and site of clinic opening and the schedule is maintained without fail throughout the year.

There are also large government hospitals, health centers, health parts, private clinics, many pharmacies and a number of traditional healers and injectionists all of which offer treatment of one kind or another for malaria.

The research study was limited to a cross section of 3 out of the 8 districts in Tak Province all selected purposively. These districts are Dasongyang, Phop phra and Mae Ramard, and a total of 10 Malaria clinics were selected. All the clinics in these districts open five days a week during government working hours.

A casual discussion with some of the senior Malaria staff members in the Tak province showed a frequent change in policy from time to time to reflect the malaria situation in the zone at any particular time. Since a change in policy, among others, affects the pattern of the relationship of the factors in the system, the maximum years that were found to be stable and convenient for data collection were from 1990 to 1993. In few cases even these periods could not be obtained as those clinics involved had been newly established.