

CHAPTER 5

SUMMARY

This is a design research for developing simulation modelling to estimate costs and outcomes from introducing a rapid malaria diagnostic test.

The study was conducted in Thailand. It was done on analytic methods and tools of health economics research and health system research (cost/benefit analysis, forecasting, linear regression, record analysis and interview,...).

A simulation modelling was developed using a computer program based on foxpro software working on 1 database file and 1 program file, from 47 input data reflecting various activities related to malaria diagnosis and treatment with reference to advantages of a rapid test.

The program in running provides output data including:

- * Cost and its components
- * Benefit and its components
- * Benefit/cost ratio

within

- * Defined time frame
- * Defined interest rate
- * Defined population and population growth rate
- * Defined decrease rate of incidence

Evaluating the feasibility of the simulation modelling with records, information and assumptions from Thailand Malaria Control Program working on the ParaSight technique of testing, it was shown that the modelling computer program can be a tool for rapid appraisal.

Preliminary application of the ParaSight test have also been made as follows:

- * the major part of test cost is variable cost. Consequently, Benefit/Cost ratio in the short run is the same as in the long run.
- * The simulation model cannot take into account savings from prevented drug resistance. If it could, benefit in the long run should be of higher significance.
- * On "break event point" analysis based on the price of the current technique, the acceptable price of ParaSight test kit is 15 Baht per test without accounting for drug saving cost, and 35.5 Baht accounting drug saving cost. That means the cost of 25 baht a test is in between.
- * Improvement of test specificity contributes to the increase of Benefit/cost ratio by reducing cost of false positive cases.
- * Involvement of village malaria volunteers contributes also to the increase of benefit/cost ratio by reducing cost of labor.

Summary of output data of the program in running from 47 input data related to the ParaSight test as follows:

Present Value	Ten years	One year
Capital Cost	229,435	229,435
Fixed Cost	422,891,674	30,617,700
Variable Cost	1,912,745,705	138,484,340
Total Cost	2,335,866,814	169,331,475
Drug Cost Saving	1,324,076,748	95,864,230
External cost saving	17,173,185,703	1,243,547,737
Total benefit	18,497,262,451	1,339,411,967
B/C Ratio	7.92	7.91

Only limited testing of the model has been carried out so far, consistent with the objectives. In practice the values of variables will cover wide ranges, depending on the situation in a given country or region, and on the nature of each particular rapid test system. Special consideration would need to be given to the transition period during which a new test is introduced to a malaria control program, since existing and new test costs would be compounded until the existing methods were phased out. These and other limitations of the modelling thus require further study.