SIMULATION MODELLING OF COSTS AND OUTCOMES FOR A NEW RAPID MALARIA DIAGNOSTIC TEST

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This study is a design research study for developing simulation modelling to estimate costs and outcomes from introducing a rapid malaria diagnostic test. The study was based on Thai data but is intended to provide a general guide to similar analyses in any country. It was based on analytic methods and tools of health economics research, including cost/benefit analysis, forecasting, linear regression, record analysis, and interview.

Simulation modelling was developed using foxpro software, working on one database file and one program file, from 47 input data, reflecting various activities related to malaria diagnosis and treatment. The program provides output data including costs and their components, benefit and their components, benefit/cost ratio with a defined time frame, defined interest rate, defined population size and growth rate, and a projected rate of decreased malaria incidence.

The feasibility of the simulation modelling was tested using Thai Malaria Division data, with a new rapid malariadiagnostic assay (ParaSight) presently under development as a test system. It was demonstrated that the computer modlling program can be a suitable tool for rapid appraisal. In testing the modelling, particular interest focused on the benefit from potential reduction of drug wastage, which was determined to be a substantial contributor to current costs. It was found that a rapid on the spot diagnostic test could reduce markedly this drug wastage (an intermediate outcome). This could have consequent effects on drug usage policy and perhaps on malaria drug resistance patterns: these are final outcome beyond the present analysis.

While there are limitations to the simulation modelling as presently formulated, the study demonstrates the general usefulness of this approach in providing a more complete approach to benefit/cost analysis of malaria diagnostic tests.

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