APPENDIX

APPENDIX A

APPENDIX A

US panel's recommendations

1. The nature of CEA and of reference case should take:
   - Societal perspective
   - Premeasured value based on community survey, ethical issues.
2. Components belonging in the numerator and the denominator of a C/E ratio:
   - The denominator of a C/E ratio is reserved for the improvement in health associated with an intervention.
   - The numerator of a C/E ratio captures changes in resource use associated with intervention.
3. Measuring terms in the numerator of a C/E ratio should include all relevant costs:
   - Indirect costs
   - Direct costs should be included in a CEA
   - Non-direct medical costs
   - Numerator should be valued at its opportunity cost
   - Cost should be measured from a long-term perspective and must be discounted
4. Valuing the health consequences in the denominator of a C/E ratio
   - The health effectiveness should be measured in terms of QALY
   - QALY should be based on a health-state classification system , such as health utilities index, the Eurogol, the quality of well-being scale, and the years of health life measure
   - QALY should be based on the preferences for health states
   - Valuing health states should be interval scale such as standard gamble, time-trade-off technique, and visual analogue scale
5. Estimating effectiveness of interventions:
   - Because the quality of CEA depends crucially on the quality of the effectiveness data, data on effectiveness should be valid as much as possible. The reference case suggested:

- Data on effectiveness that may come from a variety of sources (randomized controlled trials, observational studies, and descriptive series.
- The analyst should select outcome probabilities from the best-designed (least-biased) sources involving the study question and population.

6. Time preference and discounting
   - Costs and outcomes occurring during different time period should be discounted to their present value in the same rate.
   - 3% discount rate should be used in reference case; however 5% of that rate can be used as well.
7. Handling uncertainty in CEA.
   - Univariate (1-way) sensitivity analysis should be used in all CEAs.
   - Multivariate sensitivity analyses should also be conducted.
   - The confidence interval for the C/E ratio should be estimated based either on statistical methods or on simulation, if possible.
8. Reporting guideline
   - Framework of the CEA
     - The motivation for the research, research objectives
     - An explicit statement of the analysis perspective
     - Outline of the study design and description of comparator programs
     - Program elements of intervention (Site, target population, and frequency of an intervention) should be outlined
     - Analysis boundaries should be described, explaining the extent to which relevant benefits and harms are included
     - The timeframe should be indicated and should be long enough to capture all significant benefits, harms, and costs
   - Data and methods section
     - Description of the event pathway(Model)
     - Identification of outcomes of interest in analysis (death, life, and cost)

- Description of model used, modeling assumptions, diagram of event pathway
- Software used
- Complete description of estimates of effectiveness, resource use, unit costs, health states and quality-of- life weights and their sources.
- Methods for obtaining estimates of effectiveness, costs, and preferences.
- Critique of data quality
- Statement of year of costs, Statement of type of currency
- Method used to adjust costs for inflation, Statement of discount rates

■ Results

- Results of model validation
- Study results (discounted at 3% and non-discounted): total costs and effectiveness, incremental costs-effectiveness ratios.
- Results of sensitivity analyses, other estimates of uncertainty, if available
- Graphical representation of cost-effectiveness results
- Aggregate cost and effectiveness information, disaggregated results
- Secondary analysis using 5% discount rate should be reported (if relevant)

■ Discussion

- Summary of reference case results
- Summary of sensitivity results to assumptions and uncertainty in the analysis
- Discussion of analysis assumptions having important ethical implications
- Limitation of the study
- Relevance of study results for specific policy question or decisions
- Distributive implication of an intervention.

APPENDIX B

APPENDIX B

BMJ 35-item checklists

Study design

1. Is the question clearly sated?
2. Is the importance of research question stated?
3. Is the perspective of an analysis clearly stated and justified?
4. Is a rationale of choosing the alternative intervention compared stated?
5. Are the alternatives being compared clearly described?
6. The form of economic evaluation used is stated?
7. Is choice of economic evaluation form justified in relation to the questions addressed?

Data collection

8. Are the sources of effectiveness estimates used stated?
9. Are details of the design and results of effectiveness study given?
10. Are details of the method of synthesis or meta-analysis of the estimates given?
11. Are the primary outcome measures for economic evaluation clearly stated?
12. Are methods to value health states and other benefits stated?
13. Are details of the subjects from whom evaluated were obtained given?
14. Are the productivity changes reported?
15. Is the relevant of productivity change discussed? (if included).
16. Are quantities of resource reported separately from their unit costs?
17. Are methods of estimation of quantities and unit costs described?
18. Are currency and price data recorded?
19. Are details of currency of price adjustments for inflation currency or conversion given?
20. Are details of any model used given?
21. Are the choices of model and the key parameter on which it is based justified?

Analysis and interpretation of results

22. Is time horizon of costs & benefits stated?
23. Is the discount rate stated?
24. Is the choice of rate justified?
25. Is explanation given if cost or benefits are not discounted?
26. Are details of statistic test & confidence intervals given for stochastic data?
27. Is the approach to sensitivity analysis given?
28. Is the choice of variables for sensitivity analysis justified?
29. Are the ranges over which the variables are varied stated?
30. Are relevant alternatives compared?
31. Is incremental analysis reported?
32. Are major outcome presented in disaggregated as well as aggregate form?
33. Is the answer to the study question give?
34. Did conclusion follow from data report?
35. Are conclusion accompanied by the proper caveats?

APPENDIX C

APPENDIX C

Scoring system: the first method

Criteria	*Scoring*		
	Yes (1)	Cannot tell (0.5)	No (0)
1. Was a well-defined question posed in answerable form?	( )	( )	( )
2. Was a comprehensive description of the competing alternatives given?	( )	( )	( )
3. Was the effectiveness of the programs established?	( )	( )	( )
4. Were all the relevant costs and consequences identified?	( )	( )	( )
5. Were the costs and consequences measured in appropriate physical units?	( )	( )	( )
6. Were the costs and consequences valued credibly?	( )	( )	( )
7. Were the costs and consequences adjusted for differential timing?	( )	( )	( )
8. Was an incremental analysis of the costs and consequences alternatives performed?	( )	( )	( )
9. Was an allowance made for uncertainty in the estimates of the cost and consequences?	( )	( )	( )
10. Did the presentation and discussion of the study results include all issues of concern to users?	( )	( )	( )

APPENDIX D

APPENDIX D

Criteria selected for grading system

No	Criteria	Point
1.	Was the study objective presented in a clear, specific, and measurable manner?	7
2.	Were the perspective of the analysis and reasons for its selection stated?	4
3.	Were variable estimates used in the analysis from the best available source	8
4.	If estimates came from a subgroup analysis, were the groups prespecified at the beginning of the study?	1
5.	Was uncertainty handled by (1) statistical analysis to address random events, (2) sensitivity analysis to over a range of assumptions?	9
6.	Was incremental analysis performed between alternatives for resources and costs?	6
7.	Was the methodology for data abstract (including the value of other benefits) stated?	5
8.	Did the analytic horizon allow time for all relevant and important outcomes? Were benefits and costs that went beyond 1 year discounted (3%-5%) and justification given for the discount rate?	7
9.	Was the measurement of costs appropriate and the methodology for the estimation of quantities and unit costs clearly described?	8
10.	Were the primary outcome measure for the economic evaluation clearly stated and were the major short-term, long-term and negative included?	6
11.	Were the health outcome measures/scales valid and reliable? If previously tested valid and reliable measures were not available, was justification given for the measures/scales used?	7
12.	Were the economic model, study methods and analysis, and the components of the numerator and denominator displayed in a clear, transparent manner?	8
13.	Were the choices of economic model, main assumption, and limitations of the study stated and justified?	7
14.	Did the authors explicitly discuss direction and magnitude of potential biases?	6
15.	Were the conclusion/recommendations of the study justified and based on the study results?	8
16.	Was there a statement disclosing the source of funding for the study?	3
	Total Points	**100**

APPENDIX E

APPENDIX E

Criteria developed by Higashi et al

Study design

1. Was a comparative analysis done?
2. Were both costs and outcomes considered?
3. Was an accepted study design employed?
4. Was the timeframe appropriate?
5. Was uncertainty evaluated?

Clinical data

6. Was treatment effect data derived from controlled clinical trial? If not Were patient populations similar?
7. Was recurrence accounted for?
8. Were adverse treatment effects included?

Economic data

9. Were the methods for deriving costs given?
10. What was the source for medical resource utilization estimates?
11. What was the source for cost estimates?

APPENDIX F

APPENDIX F

The description of each database

1. Thai Index Medicus

Thai Index Medicus is a collection of documents published in Thai medical journal from 1918 to current year. It is a bilingual (Thai / English) database and maintained by the Chulalongkorn Medical Library, Siriraj Medical Library, and KhonKaen Medical Library.

2. Thai Thesis Online

This databases is a collection of unpublished studies in Thailand, almost all of the studies were used to fulfill the requirement of master and doctoral degree. The database contains a total of 52,732 articles that conducted by various academic institutes in Thailand from 1972 through 2003.

3. Dissertation Abstract Online (DAO)

DAO includes doctoral dissertations in all subject areas completed at U.S. accredited institutions. Some masters theses and foreign language dissertations are also included. DAO have collected citations from 1980 to date.

4. Index Medicus Myanmar (IMM)

IMM is an annotated bibliographic database of articles from health science journals in Myanmar, it is updated by the Department of Medical Research, Myanmar.

5. SE Asia Index Medicus or Index Medicus for South East Asia Region (IMSEAR)

IMSEAR is a database of articles published in selected journals at WHO South East Asia Region. It is a collaborative effort of participating libraries in Health Literature, Library and Information Services network in the region.

6. Malaria Journal

Malaria Journal is the only journal that publishes exclusively papers on malaria. It aims to serve as a communication focus for malariologists and provides up-to-date web-links as well as information about meetings, initiatives and events.

7. Pubmed

Pubmed will provide access to information on biomedicine and healthcare and encompass those areas of the life sciences, behavioral sciences, chemical sciences, and bioengineering. Moreover, Pubmed can provide the journal citation happening before the date of a journal that was selected for Medline indexing and can provide some additional life science journals that submit full text to PubMed Central.

8. HealthSTAR (Health Services Technology, Administration, and Research)

HealthSTAR was an online bibliographic information service, which was database collecting health services research including clinical and non-clinical aspects of health care delivery.

9. EBM Reviews (Evidence-Base Medicine Reviews)

EBM Reviews is a collection of four evidence based medicine databases including American Collage of Physicians (ACP) Journal Club, Cochrane Database of Systematic Reviews, and Database of Abstract of Reviews of Effectiveness.

10. CINAHL (Cumulative Index to Nursing & Allied health Literature)

CINAHL is originally a print index for the literature of nursing and eventually allied health information. CINAHL database contains full-text materials including selected state nursing journals, standards of practice, practice acts, government publications, research instruments and patient education material.

11. EconLit (Economic Literature)

EconLit is the American Economic Association's electronic bibliography of economics literature throughout the world. EconLit contains abstracts, indexing, and links to full-text articles in economics journals.

12. HEED (Health Economic Evaluations Database)

HEED has been developed as a joint initiative between the Office of Health Economics (OHE) and the International Federation of Pharmaceutical Manufacturers' Associations (IFPMA). HEED contains information on studies of cost-effectiveness, other forms of economic evaluation of medicines, and other medical interventions.

13. IPA (International Pharmaceutical Abstracts)

IPA provides information on all phases of the development and use of drugs, and on professional pharmaceutical practice. The scope of the database ranges from the clinical, practical, and theoretical to the economic and scientific aspects of the literature.

14. Science Direct

ScienceDirect is the world's largest electronic collection of science. It provides technology full text, medicine full text, and bibliographic information

15. SIGLE (System for Information on Grey Literature in Europe)

SIGLE is a bibliographic database covering European non-conventional literature (Grey literature) in the fields of pure and applied science, technology, economics, social sciences, and humanities.

APPENDIX G

APPENDIX G

Contact information for experts in the field

Dear.....

My name is Phouvang Suyavong. I was a faculty member in Department of Pharmacy, Faculty of Medical Sciences, National University of Laos. I have been awarded a scholarship to pursue my master degree at Naresuan University, Thailand. Currently, I am conducting a systematic review of economic evaluations in malarial research in Greater Mekong Sub-region. I got your e-mail address from Mekong Malaria website or from one of your published studies in Southeast Asian Journal of Tropical Medicine & Public Health.

As you are one of the experts in this field, I wonder if you are aware of any other Greater Mekong Sub-region studies, other than those listed below. It would be great if you can recommend key persons to whom I should contact to get the Greater Mekong Sub-region-related studies

I appreciate your help and look forward to hearing from you.

Sincerely,

Phouvang Suyavong

List of all 23 studies

[1] Kaewsonthi, S. (1983). Cost-effectiveness of malaria surveillance and monitoring measures. Southeast Asian Journal of Tropical Medicine & Public Health, 14 (1), 74-77.

[2] Prasittisuk, C. & Ettling, M. (1986). Cost-effectiveness research in malaria control and the need for health behaviour and socio-economic research in malaria control in Thailand. Southeast Asian Journal of Tropical Medicine & Public Health, 17 (3), 393-395.

[3] Keawsonthi, S. & Harding, A. G. (1989). The economics of malaria control in Thailand. Parasitology Today, 5 (12), 392-396.

[4] Ettling, M. B. et al. (1991). Economic analysis of several types of malaria clinics. Bulletin of the World Health Organization, 69 (4), 467-476.

[5] Kittisuksuntorn, C. (1993). A comparison of cost-effectiveness for detecting *Plasmodium falciparum* malaria by thick blood film, Elisa and QBC. Master thesis, Chulalongkorn University, Bangkok.

[6] Tima, C. (1993). Cost-effectiveness of malaria diagnosis and treatment services at village health canters. Master thesis, Chulalongkorn University, Bangkok.

[7] KamolratanaKul, P. et al. (1993). Economic analysis of malaria control for migrant workers in Eastern Thailand. Southeast Asian Journal of Tropical Medicine & Public Health, 24 (2), 216-220.

[8] Nguyen, T. K. C. (1994). Simulation modeling of cost and outcomes for a new rapid malaria diagnostic test. Master thesis, Chulalongkorn University, Bangkok.

[9] Nguyen, M. H. (1995). Cost - effectiveness of artemisinin-doxycycline and quinine - doxycycline in hospital based *falciparum* malaria treatment in Vietnam. Master thesis, Chulalongkorn University, Bangkok.

[10] Cho, M. N. (1996). Economic analysis of diagnosis and treatment in the malaria control project, Myanmar: a methodological approach. Master thesis, Chulalongkorn University, Bangkok.

[11] Phone, M. (1997). Cost-benefit analysis of clinical diagnosis for malaria. Master thesis, Chulalongkorn University, Bangkok.

[12] Ha, V. T. (1997). Cost- effectiveness of antimalarial treatment of artemisinin plus doxycycline VS. quinine plus doxycycline in Phuoclong hospital in Vietnam. Master thesis, Mahidol University, Bangkok.

[13] La, H. Y. (1997). Cost-effectiveness and cost-benefit analyses of using permethrin impregnated bednets comparing with untreated bednets in preventing malaria in Longan and Songbe, Vietnam. Master thesis, Chulalongkorn University, Bangkok.

[14] Zhou, S. (1998). Economic analysis of malaria control in the border area of Yunnan, China. Master thesis, Chulalongkorn University, Bangkok.

[15] Sriachiranont, J. (1999). Cost and effectiveness of malaria diagnosis and treatment services at malaria clinic. Master thesis, Chiang Mai University, Chiang Mai.

[16] Honrado, E.R. et al. (1999). Cost-effectiveness analysis of artesunste and quinine plus tatracycline for the treatment of uncomplicated *falciparum* malaria in Chanthaburi, Thailand. Bulletin of the World Health Organization, 77 (3), 235-243.

[17] Butraporn, P. et al. (1999). Cost-effectiveness analysis of lambdacyholothrin treated nets for malaria control: the patients' perspective Southeast Asian Journal of Tropical Medicine & Public Health, 30 (3), 427-431.

[18] Cho, M. N. et al. (2000). Ex post and ex ante willingness to pay (WTP) for the ICT malaria Pf/Pv test kit in Myanmar. Southeast Asian Journal of Tropical Medicine & Public Health, 31 (1), 104-111.

[19] Cho, M. N. & Saul, A. (2000). Treatment of uncomplicated *Plasmodium falciparum* malaria in Myanmar: a clinical decision analysis Southeast Asian Journal of Tropical Medicine & Public Health, 31 (2), 238-245.

[20] Proux, S. et al. (2001). Short communication: Paracheck-Pf®: A new, inexpensive and reliable rapid test for *P. falciparum* malaria. Tropical Medicine and International Health, 6 (2), 99-101.

[21] KamolratanaKul, P. et al. (2001). Cost-effectiveness and sustainability of lambdacyholothrin treated mosquito nets in comparison to DDT spraying for malaria control in Western Thailand. American Society Journal of Tropical Medicine & Hygiene, 65 (4), 279-284.

[22] XU, J. W. et al. (2002). Cost-effectiveness analysis of the current measures for malaria prevention in Yuanjiang Valley, Yunnan Province. Chines Journal of Parasitology & Parasitic Disease, 20 (4), 238-241.

[23] Baulombai, P. et al. (2003). Determining cost-effectiveness and cost component of three malaria diagnostic models being used in remote non-microscope areas. Southeast Asian Journal of Tropical Medicine & Public Health, 34 (2), 322-333.

APPENDIX H

APPENDIX H

Abstraction form

Title of study:.....

- Background information

1. Source of article:.....

   1.1 Name of journal:.....

   1.2 Publication year:.....

   1.3 Authors:.....

2. Study setting:.....

3. Strategy of intervention:

   ( ) Strategy for prevention:.....

   ( ) Strategy for diagnosis:.....

   ( ) Strategy for treatment:.....

   ( ) Others (please specify):.....

4. Type of analysis:

   ( ) Cost-effectiveness analysis ( ) Cost-benefit analysis

   ( ) Cost-utility analysis ( ) Cost-minimization analysis

   ( ) Others:.....

5. Funding agency:.....

- **Technical features**

1. Aspects of cost

   1.1. Perspective of cost:

   ( ) Government ( ) Providers

   ( ) Patient ( ) Society ( ) Others:.....

   1.2. Type of cost measure

   ( ) Direct medical costs ( ) Direct non- medical costs

   ( ) Indirect costs ( ) Others:.....

   1.3. Clarity of cost measure

   - Were capital costs as well as operating costs included?

- Were methods of estimation of quantities and unit costs described?
- Were the quantities of resource reported separately in various physical units? (Itemized measure, composite measure, and mix both measures)

1.4. Source of cost data obtained:

( ) Randomized clinical trials (primary data)

( ) Actual expense data (secondary data)

( ) Published/unpublished cost data (secondary data)

( ) Not clear ( ) Others.....

1.5. Valuation of inputs

- Were details of currency of price adjustments for inflation given?
- What were currency and price data used? (local or foreign currency)?

2. Aspects of outcome

2.1. Choice of outcome

( ) Cases prevented ( ) Cases detected

( ) Cases cured ( ) Life year gained ( ) Others.....

2.2. Source of outcome data were used in the analysis derived from:

( ) Randomized control trial (primary data)

( ) Descriptive cross-sectional study (secondary data)

( ) Meta-analysis (secondary data)

( ) Published data from different setting (secondary data)

( ) Not clear ( ) Others.....

2.3. Valuation of outcome data

- Were method to value health state and other benefits stated?
- Were the primary outcome measures for economic evaluation clearly stated?

3. Aspects of an economic analysis

3.1. Question of the study

- Was the study question clearly stated?

- Did the study involve a comparison of two alternatives?

3.2. Issue of time

- Was the time frame stated? (period of which the interventions are applied)
- Was the analytic horizon of the interventions stated? (period over which costs and effects regarding an intervention are considered).
- Was the discount rate stated?
- Was the choice of rate justified?
- Was explanation given if cost or benefits are not discounted?

3.3. Choice of summary measure

- Was an average cost-effectiveness ratio used?
- Was an incremental analysis of the intervention reported?

3.4. Sensitivity analysis

Sensitivity analysis is the way to assess the robustness of results to change in assumptions and the values of input variables.

- Was the approach to sensitivity analysis given?
- What type of sensitivity analysis have they performed? (Univariate, multivariate sensitivity analysis or threshold analysis)
- Were the ranges of which the variables are varied stated?
- Was the choice of variables for sensitivity analysis justified?

3.5. Affordability/ sustainability of programs

A health program is affordable only if each of the parties that must contribute to financing its operation on the scale envisioned in its design is able and willing to do so.

- Were the issues of Affordability/ sustainability of interventions discussed?

3.6. Issue of the generalizability of the results to other settings

- Was the generalizability of their results to other settings discussed?
- Was the generalizability of their results to other settings justified?

APPENDIX I

APPENDIX I

Giving the quality score to the article

The article is scored based on reviewer's decision to give yes (1.0) or no (0.0) for specific question, but sometime it is clearly (0.5), I give it cannot tell (Table a).

Table a. Scoring the article

Item	Scoring criteria	Score
1	The study question involve a comparison of two alternative The perspective of the study was clearly stated	1
	One of 2 sub-items was missed	0.5
	Both the sub-items was missed	0
2	Authors provided the details of the alternative (who did what to whom, where, and how often)	1
	Authors provided the partial information of the alternative	0.5
	Authors did not provide the details of the alternative	0
3	Authors provided the details of effectiveness of the intervention - If the effectiveness was done through controlled clinical trial, the authors describe the trial protocol - If the effectiveness was done through conventional survey, the authors describe the data collection procedure - If the effectiveness obtained from published sources, the authors describe the details on method of measuring the data	1
	Authors provided the partial information of effectiveness of the intervention	0.5
	Authors did not provide the details of effectiveness of the intervention at all	0

Table a. Scoring the article (Cont.)

Item	Scoring criteria	Score
4	All relevant costs and consequences covered the study perspective	1
	If the costs or consequences did not cover the study perspective	0.5
	If both costs and consequences did not cover the study perspective	0
5	Quantities of resource were given as number, mean, or median Primary outcome measure was chosen appropriately	1
	One of 2 sub-items above was missed	0.5
	Both the sub-items above was missed	0
6	Methods of estimation of quantities and unit cost were described The quantities of resource were reported separately from unit cost The primary outcome measure was clearly stated	1
	One of 3 sub-items above was missed	0.5
	All the 3 sub-items above was missed	0
7	The costs and outcomes were adjusted for differential timing	1
	The costs and outcomes were not adjusted for differential timing	0
8	An incremental analysis was performed	1
	An incremental analysis was not performed	0
9	A sensitivity analysis was performed	1
	A sensitivity analysis was not performed	0
10	Conclusion follow from the data reported The results were compared with other results? The authors described difference in methodology The study discussed the generalizability of the results to other settings The study discussed the affordability/ sustainability of the program	1
	If two of 4 sub-items above missed	0.5
	More than two of 4 sub-items above missed	0

❖ Example of giving the quality score to article [5]

- Item 1 was given a quality score of 1.0 since the study question was clearly stated. The authors state that they conducted the costs analysis of three types of malaria clinics including central, peripheral, and periodic mobile malaria clinics (p.467). In addition, The authors stated that they performed the economic analysis of costs of those malaria clinics to the antimalarial programme (institution's perspective) and to the community of clinic attendees (patient's perspective).
- Item 2 was given the score of 1.0 because authors provided details of the type of malaria clinics, which were given the description of clinic's location and its ability of giving service. In addition, they described only the criteria of giving antimalarial drugs to patients and the malaria case management in clinic (p. 468).
- Item 3 was given the score of 0.0 as the authors did not provide the details of effectiveness (outcome) of program at all. They did not describe design of survey and data collection process, and they did not tell us where effectiveness data (case detected) was obtained from (Table 1, p. 471).
- Item 4 was given the score of 1.0 because the authors included direct medical and direct non-medical costs borne by institution and patient in the cost estimation (p. 469). Although the antimalarial drug costs were not estimated for the article, it would be unlikely to have a major impact on the result of the article because these costs were free for study period. Case positive (case detected) was used as primary outcome measure.
- Item 5 was given the score of 1.0 because the authors provide overall an accurate measurement of resource use as well as outcome of program. Resource use was estimated for each clinic, the authors showed the number of smears that were used by each clinic (Table 1, p. 471). Many of the data presented in Table 1 as a number, this is appropriate for testing statistics. The main outcome was estimated as a case detected, which is also appropriate for malaria diagnosis.

- Item 6 was given the score of 0.5. In this article, the estimation of the costs covered the study perspective (i.e. costs were valued credibly), but the outcome estimation were not valued credibly.
- Item 7 was not applicable for valuing costs and effects borne by malaria interventions because a time horizon of all the relevant costs and outcomes was less than one year time period. Therefore, this item is excluded for the appraisal.
- Item 8 was given the score of 1.0. The authors presented an incremental cost-effectiveness ration in the articles (p. 473), the incremental analysis provided an incremental institution cost per extra case of US$ 0.79 at the central clinic.
- Item 9 was given the score of 1.0. The authors used the worse and best case scenario approach for sensitivity analysis (p. 473), they assumed that 40% of periodic clinic patients would attend a central clinic and that 60% of periodic clinic patients would attend the peripheral clinic under combination of peripheral clinic & central clinic.
- Item 10 was given the score of 1.0. The authors included a discussion of the reasonable results. They presented that extension of malaria clinic services would result in higher institutional costs (US$ 0.4 per case tested), but the overall costs of malaria patients were reduced by as much as 34% (p. 474).

The authors also provided a comparison of their results and other ones, they revealed that their results appear reasonable if considering the low malaria incidence of Thailand. The authors also argued that their results were generalizable for areas of high transmission (p. 475).

In addition, the authors revealed the efficiency of the peripheral versus mobile clinic depends on other important factors such as the transport to remote rural villages and willingness of individuals to travel outside their village for treatment (p. 475).

APPENDIX J

APPENDIX J

Details of exchange rate

Costs that expressed in local currency were converted into US dollars using exchange rate of individual country. The US dollar-expressed costs was calculated by dividing local currency-expressed costs by exchange rate. The exchange rate used as shown in Table b.

Table b. Exchange rate used in each article

References	Exchange rate	Country	Year
Ettling et al. [5]	25.5 baht per 1US$	Thailand	1991
Kittisuksuntorn [6]	25.5 baht per 1US$	Thailand	1993
Tima [7]	25.5 baht per 1US$	Thailand	1993
Kamolratanakul et al. [8]	25.5 baht per 1US$	Thailand	1993
Nguyen [9]	25.5 baht per 1 US$	Thailand	1994
Nguyen [10]	10,500 VND per 1 US$	Vietnam	1995
Cho [11]	6 Kyat per 1US$	Myanmar	1996
Phone [12]	6 Kyat per 1 US$	Myanmar	1997
Ha [13]	11,500 VND per 1 US$	Vietnam	1997
La [14]	11,500 VND per 1US$	Vietnam	1997
Honrado et al. [15]	25 baht per 1 US$	Thailand	1999
Butraporn et al. [16]	35 baht per 1 US$	Thailand	1999
Cho & Saul [17]	9 Kyat per 1 US$	Myanmar	2000
Kamolratanakul et al. [18]	35 baht per 1 US$	Thailand	1999
Bualombai et al. [19]	43 baht per 1 US$	Thailand	2001

VND- Vietnam Dong

Appendix K

Appendix K

Details of differences in cost and outcome of the intervention

The difference in cost between the intervention and the alternative is calculated by subtracting the intervention cost and the alternative cost, and the difference in outcome between the intervention and the alternative does so. The details are given Table c.

Table c. Difference in cost and outcome between the intervention and the alternative

References	Intervention	Findings				Quadrant
		Cost	Difference in cost	Outcome	Difference in outcome	
Kittisuksuntorn [6]	Microscope	474.6 US$		93.37 CD		
	Quantitative Buffy Coat	1,889.8 US$	1415.2 US$	45.78 CD	- 47.59 CD	IV
	ELISA	2,266.8 US$	1792.2 US$	74.09 CD	-19.28 CD	IV
Kamolratanakul et al. [8]	Untreated nets vs Treated nets	2.78 US$*				II
Nguyen [9]	Microscope vs ParaSight test	0.31 US$*				II

CD- case detected; CC- Case cured

Table C. Difference in cost and outcome between the intervention and the alternative (Cont.)

References	Intervention	Findings				Quadrant
		Cost	Difference in cost	Outcome	Difference in outcome	
Nguyen [10]	Quinine+ doxycycline	2990 US$		54 CC		
	Artemisinin+doxycycline	30009 US$	19 US$	63 CC	9 CC	I
Cho [11]	Microscope	131,782 US$		13,500 CD		
	Dipstick test	166,692 US$	34,910 US$	20,250 CD	6,750 CD	I
Phone [12]	Fever alone vs Clinical criteria	1.10 US$*				II
Ha [13]	Quinine+ doxycycline	117.2 US$		0.82 CC		
	Artemisinin+doxycycline	107 US$	-10.2 US$	0.93 CC	0.11 CC	II
La [14]	Untreated nets	3,0008 US$		49 CA		
	Treated nets	1,648 US$	-1360 US$	285 CA	236 CA	II

CC- Case cured; CA- Case avoided; * Cost benefit ratio

Table C. Difference in cost and outcome between the intervention and the alternative (Cont.)

References	Intervention	Findings				Quadrant
		Cost	Difference in cost	Outcome	Difference in outcome	
Honrado et al. [15]	Quinine+tetracycline	884.5 US$		47 CC		
	Artesunate	1042.5 US$	158 US$	61 CC	14 CC	I
Butraporn et al. [16]	Residual spraying	997.5 US$		1,355 CA		
	Treated nets	785.2 US$	-212.3 US$	1,339 CA	-16 CA	III
Cho & Saul [17]	Chloroquine	75 US$		536 CC		
	Sulfadoxine/pyrimethamine	75 US$	0 US$	625 CC	89 CC	II
	Mefloquine	1,500 US$	1,425 US$	888 CC	352 CC	I
Kamolratanakul et al. [18]	Residual spraying	2,536.7 US$		1,355 CA		
	Treated nets	2,060.3 US$	-476.4 US$	1,339 CA	-16 CA	III
Bualombai et al. [19]	Microscope	791.6 US$		76 CD		
	On-site optimal	542.5 US$	-2491	83 CD	7 CD	II
	On-site ICT	589.9 US$	-201.7	74 CD	-2 CD	III

CA- Case avoided; CC- Case cured; CD- Case detected