

Research Proposal

**“Assessing a societal value for a ceiling threshold in Thailand and other
Asian countries”**

By

Health Intervention and Technology Assessment Program (HITAP)

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1. Background and rationale

In a resource constraint society, economic evaluation, particularly cost-utility analysis (CUA), is increasingly used as an important tool for efficient health care resource allocation. For CUA to become a practical tool for facilitating a systematic, consistent and transparent decision making process, there is a need for a so-called “ceiling threshold”. An arbitrary threshold of US\$50,000 per Quality-Adjusted Life Year [1] as well as the thresholds of 1-3 times of GDP per capita per Disability-Adjusted-Life Year (DALY) recommended by the Commission on Macroeconomics and Health [2] were frequently cited with several arguments [3-5]. In England, a National Institute for Health and Clinical Excellence (NICE) guide refer to an arbitrary threshold of £20,000 -30,000 per QALY. [6] Rather than an arbitrary ceiling threshold, a willingness-to-pay (WTP) per QALY (WTP/QALY) value, estimated by combining WTP and utility value measured simultaneously, should be adopted as a ceiling threshold.

Estimating the WTP/QALY value involves both theoretical and methodological challenges. Existing evidence has revealed that WTP/QALY is not a single value [3, 7-11]. It depends on several factors including context and type of health gain. A QALY gained by improving the quality of life is worth less than a QALY gained by saving life [3, 9, 11]. A QALY gained from treatment and prevention is theoretically different [12, 13]. In addition, a WTP/QALY value also varied widely on socioeconomic status [8], duration of health gained [9, 11, 14, 15], elicitation method used for estimating utility [12, 16-20] and WTP measure [11, 19], and calculation method [21].

Over the past few years, many attempts have been made to estimate the WTP/QALY value as a ceiling threshold. However it is worth noting that almost all of these studies were confined to industrialized nations [10, 12, 19, 22]. This is also included the recent study, European Value of a quality adjusted life year (EuroVaQ), which was conducted to determine the monetary value of a quality adjusted life year (QALY) across a number of European Member States including the Netherlands, UK, France, Spain, Sweden, Norway, Denmark, Poland, Palestine, and Hungary) [23]

Nowadays, more countries in Asia including Thailand have recently begun to adopt economic evaluation-based reimbursement policy [24]. Nevertheless, only a few studies examining WTP/QALY exists among these countries [25-27]. In addition, there has never been an international study examining the value of a QALY across countries in Asia before. By conducting international study, the variation and factors associated with the variation across countries can be further examined.

In Thailand, due to the demand of economic evidence to support health policy decision making, the first study examining the value of a QALY was conducted in 2008. [27] In that study,

1,191 respondents were interviewed face-to-face to elicit their health state preference in one of three pairs of health conditions: i) unilateral and bilateral blindness, ii) paraplegia and quadriplegia, and iii) mild and moderate allergy. A Visual Analogue Scale (VAS) and Time Trade Off (TTO) were used as the eliciting methods. Subsequently, the respondents were asked about their WTP for the treatment and prevention of the pairs of health conditions using a bidding game technique. According to the study, the WTP for a QALY ranged from 59,000 to 285,000 Baht (16.2 Baht = \$US PPP 1) or approximately 0.4 to 2 times of Thailand's GDP per capita in 2008. Although these figures were consistent with the past allocation decision made by National Essential List of Medicine (NELD) committee in Thailand as 1-3 times of GDP per capita [23] it should be noted that this study was suffered from the ceiling effect and the generalizability of the study findings is limited due to the sampling method. In addition, it did not address the issue of having more than a single ceiling threshold for all types of intervention including the threshold in case of life extension in terminal illness situation.

2. Objectives of this study

This study aims to examine a value of a QALY across countries in Asia (Thailand, South Korea, Malaysia, and Japan). Specific objectives are to;

- a. Examine a value of a QALY associated with treatment/ prevention that help improving quality of life among patient with mild, moderate, and severe conditions, and to
- b. Examine a value of a QALY associated with life extension among patient suffered with terminal illness.

The methodology employed in each country will be similar. However, the findings sources and budget may vary across countries.

3. Proposed methodology

3.1 Sample: National representative of Thailand. The Inclusion criteria include 1) aged between 18- 65 years, and 2) be able to read and write Thai. Exclusion criteria are as follows; 1) students who are unemployed 2) unable to answer a series of complex theoretical questions and 3) refuse to participate in the study.

3.2 Sampling methods and sample size calculation: The total sample size and sampling method will be carried out with assistance from National Statistical Office to ensure that the value of a QALY in each condition (improvement of quality of life among mild, moderate, severe, and life extension for terminal illness) are the actual values of Thai's population. According to the preliminary consultation, the sample size was proposed as 4,000 across 9 provinces.

3.4 Method: Summary of the proposed methodology is presented in figure 1. Firstly, the respondents would be asked to complete an utility assessment exercise in order that their utility value for a given health states (described using EQ-5D description; as shown in table 1) is ascertained. Then, they would be asked their willingness to pay to avoid a given duration of that health state. To avoid ceiling effect, such duration is set by a research team so that QALY gained is only 0.2 or 0.4 (as shown in table 1). Finally, the respondents 'answers to both components (i.e utility assessment and willingness to pay) can then be used to estimate the WTP for a QALY.

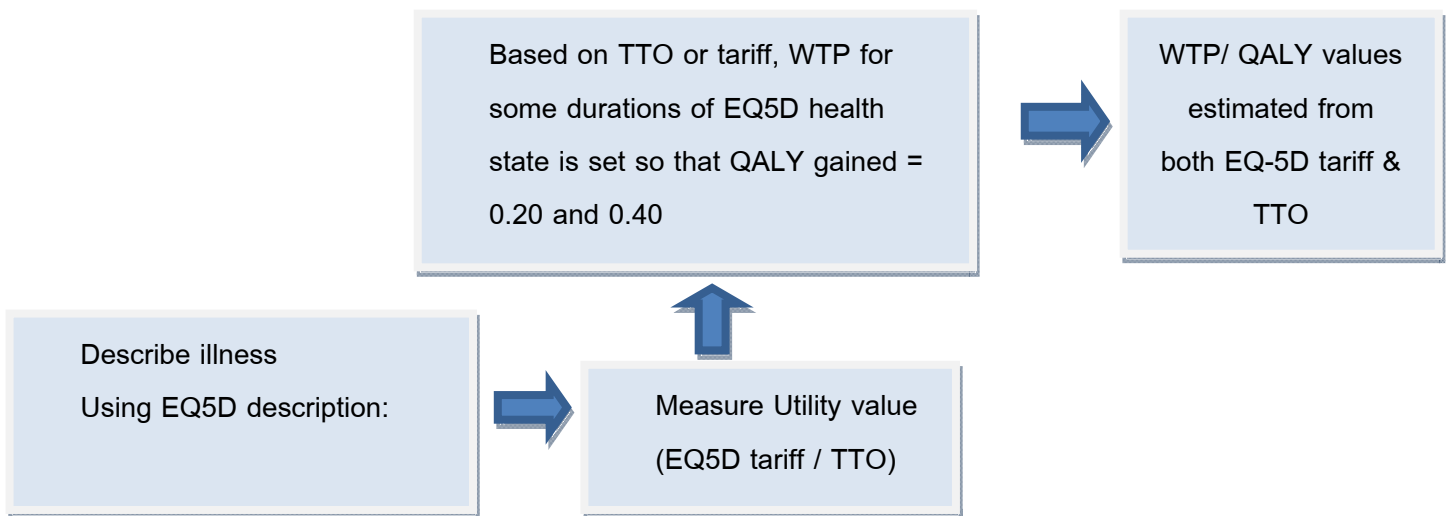


Figure 1: Summary of proposed methodology

3.4.1 Method for measuring utility: Time Trade Off (TTO) and EQ-5D will be used to measure utility among respondents.

3.4.2 Selection of EQ-5D Health States: EQ-5D Health states will be classified into 3 groups (mild moderate and severe). Health state worse than death will not be included. In order to have enough health states for modeling and for cross comparison, the selected 5 EQ-5D health states (i.e. 2 for mild, 2 for moderate, and 1 for severe) will be used across all 3 countries, as shown in table 1.

Table 1: EQ-5D health states as well as time spent in each health states to gain 0.2 and 0.4 QALY

Health states	Utility [27]	0.2 QALY*		0.4 QALY**	
		Treatment	Prevention	Treatment	Prevention
Mild (> 0.7)					
11121	0.726	9 months	9 months	18 months	18 months
11212	0.707	9 months	9 months	18 months	18 months
Moderate (0.35 - 0.7)					
22212	0.465	4 months	4 months	8 months	8 months
11323	0.357	4 months	4 months	8 months	8 months
Severe (< 0.35)					
21333	0.099	3 months	3 months	6 months	6 months
Terminal illness					
21333	0.099	2 years	2 years	4 years	4 years

*0.02 QALY gained for prevention, ** 0.04 QALY gained for prevention

3.4.3 WTP Method: Dichotomous bidding technique followed by open end question will be employed. The value and algorithm of WTP is presented in table 2.

Starting point	Time of GDP per capita	First bidding value	Answer	Second bidding value (Time of GDP per capita)
1	0.02	4,000 Baht	No	2,000 (0.0125)
			Yes	8,500 (0.05)
2	0.05	8,500 Baht	No	4,000 (0.025)
			Yes	17,000 (0.1)
3	0.1	17,000 Baht	No	8,500 (0.05)
			Yes	35,000 (0.2)
4	0.2	35,000 Baht	No	17,000 (0.1)
			Yes	70,000 (0.4)
5	0.4	70,000 Baht	No	35,000
			Yes	140,000
6	0.8	140,000 Baht	No	70,000
			Yes	170,000
7	1.0	170,000 Baht	No	140,000
			Yes	200,000

1	400	No	200
		Yes	850
2	850	No	400
		Yes	1,700
3	1,700	No	850
		Yes	3,500
4	3,500	No	1,700
		Yes	7,000
5	7,000	No	3,500
		Yes	14,000
6	14,000	No	7,000
		Yes	17,000
7	17,000	No	14,000
		Yes	20,000

- For quality of life improvement: Time variant WTP questions (0.2 / 0.4 QALY gained from mild, moderate, severe health state to perfect health) will be used. The rationale behind having both 0.2 and 0.4 QALY gained is to check the difference in WTP between small gain and large gain from each severity. The following is an example of a time variant question for 0.2 QALY gained.

You are in 11112 and have 2 choices

Choice I: Stay in 11121 for 9 months or

Choice II: Pay X Baht for treatment that give perfect health (11111), where X is randomly selected from

Example of time variant question for 0.4 QALY gained for Thai: You are in 11112 and have 2 choices

Choice I: Stay in 11112 for 20.51 months or

Choice II: Pay xx Baht for treatment that give perfect health (11111)

For terminal illness: 0.2 QALY gain from remaining in the severe health state for 1+x months rather than staying for 1 month and then immediately death were compared, as shown in table 3.

Example of time variant question for 0.2 QALY gained for Thai: You are in 31322 and have 2 choices

Choice 1: Not pay anything → stay in 31322 in 1 months then death

Choice 2: Pay XX baht for stay in 31322 for 1+2.41 months then death

4. Timeline

24 months. Tentative timeline of activities is described in Annex A.

5. Research Team

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6. Budget

3,018,500 Baht. The detail calculation of costs is presented in Annex B

Annexs

- A. Time Frame and Project Activities**
- B. Detailed Budget**
- C. Draft questionnaire**

A. Time Frame and Project Activities

Activities	2011												2012											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
1. Literature Review	√	√	√	√	√	√																		
2. Proposal Development							√	√	√	√	√	√												
3. Set up International collaboration					√	√	√	√																
4. Expert meeting										√					√								√	
5. Questionnaire and software development										√	√	√	√	√	√									
6. Pilot testing										√	√	√	√	√	√									
7. Discussion on questionnaire/ software amendment														√	√	√								
8. sample size calculation and sampling													√	√										
9. Logistic arrangement to field test														√	√	√								
10. Final questionnaire and software production															√									
11. Training of interviewers and supervisors																√								
12. Design of data entry program															√	√								
13. Supervision plan																√								
14. Field work																	√	√	√	√	√			
15. Questionnaire coding verification																		√	√	√	√			
16. Data entry																		√	√	√	√			
17. Data cleaning																		√	√	√	√			
18. Data analysis																				√	√	√		
19. First draft of preliminary report																					√	√	√	
20. Internal discussion on the prelim report																							√	
21. Final report writing																								√

B. Detailed Budget

1	Honorarium for foreign expert	3 persons * 5,000 Baht	15,000
2	Accommodation for foreign expert	3 persons *2000 Baht * 3 days	18,000
3	Travel cost for foreign expert	3 persons *20,000 Baht * 3 days	180,000
4	Expert meeting	30,000 Baht*3 times	90,000
5	Questionnaire printing	15 Baht * 4,000 questionnaire	60,000
6	Manual printing and instrument developing	200 Baht * 15 manual	3,000
7	Training interviewers	1 times * 15,000 Baht	15,000
8	Travel cost for field data collection	75 days * 4,000 Baht	300,000
9	Accommodation for data collection	75 days * 1,500 Baht * 7 rooms	787,500
10	Interviewer	10 persons *15,000 Baht *6 months	900,000
11	Site Staff	1,000 Baht * 10 persons	10,000
12	Interviewee	100 Baht * 4,000 questionnaire	400,000
13	Computer program development		50,000
14	Office supplies and facilities		10,000
15	Travel cost for field supervisions	2 persons* 4,000 Baht*5 times	40,000
16	Pilot testing		60,000
17	Accommodation for field supervisors	2 persons * 1,500 Baht* 10 days	30,000
18	Final report printing and manuscript submission		50,000
	Total Project costs		3,018,500

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