Special Article

Defining Types of Economic Evaluation

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Objective: *Recommend types of economic evaluation for Thai health technology assessment (HTA) guideline.*
Material and method: *Various types of economic evaluation, including their definitions and background theories from research documentations were explored. In addition, the international economic evaluation guidelines were reviewed. Finally, the recommendations for Thai HTA guideline were made.*
Result: *There are generally four types of economic evaluation: Cost-Benefit Analysis (CBA), Cost-Minimization Analysis (CMA), Cost-Effectiveness Analysis (CEA), and Cost-Utility Analysis (CUA). Theories of welfare and extra-welfare economics were used to explain each type of economic evaluation. From the international guidelines, each country's guideline has its own preferred types of economic evaluation. CEA and CUA were more likely to be recommended in those guidelines.*
Conclusion: *For Thai HTA guideline, CUA was recommended to be a method of choice. However, CEA could be used, especially when only intermediate outcomes of compared alternatives are available.*

Keywords: *Type, Economic evaluation, Method*

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Economic evaluation is defined as a comparative analysis of alternatives in terms of both their costs and outcomes. Drummond et al. divided the economic evaluation into six categories[1]. First, if only outcomes of the service or program are examined, the evaluation is called an "outcome description". Similarly, if only costs of the service or program are estimated, it is called a "cost description" In Thailand, the cost description method was the form of primary economic evaluation in the last decade because it is simple and believed to be a foundation for further economic analysis. Both costs and outcomes can also be described in a study and is called a "cost-outcome description". These categories of economic evaluation have no comparison of any alternative.

When two or more alternatives are compared, three categories of economic evaluation are identified. First, if only outcomes are examined and compared between alternatives, the evaluation is called either an "efficacy study" or an "effectiveness study". On the other hand, when costs are compared between alternatives, the evaluation is called a "cost analysis". The last category is called a "full economic evaluation" since it not only compares two or more alternatives, but also examines both costs and outcomes. Therefore, the full economic evaluation provides efficiency information and is appropriate for policy making. The objective of this review is to define the types of full economic evaluation. Their brief theoretical backgrounds are discussed. International economic evaluation guidelines are then reviewed. The adoption of types of economic evaluation is compared across the guidelines. Finally, the recommendations for Thai health technology assessment (HTA) guideline are made.

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Types of full economic evaluation and their definitions

The full economic evaluation has two major components-costs and outcomes of compared alternatives. The cost component is always measured in monetary unit, while the outcome component can be measured in various ways. Based on different outcome measurements, the full economic evaluation is divided into four types of analysis. They are Cost-Benefit Analysis (CBA), Cost-Minimization Analysis (CMA), Cost-Effectiveness Analysis (CEA), and Cost-Utility Analysis (CUA).

CBA measures both costs and outcomes of compared alternatives in monetary units. This means that no matter how outcomes are originally measured, they need to be converted to monetary units for comparison. Theoretically, CBA provides absolute benefit of alternatives. It estimates the value of output, compared to the value of the resource input. It, therefore, can be used in a comparative analysis of alternatives which have different objectives. For instance, CBA is applicable if one compares a new statin drug with a bird flu vaccine. However, very few cost-benefit studies are found in health care because it is counterintuitive to express health outcomes in monetary units.

When the common outcomes of compared alternatives are equivalent or assumed to be equivalent, CMA is the analysis of choice. It identifies the lowest cost alternative. For instance, suppose that a new proton-pump inhibitor is proved to be clinically equivalent to an existing proton-pump inhibitor. CMA determines which one has the cheapest costs. Recently, Drummond et al. did not view CMA as a form of full economic evaluation[1]. Since the estimations of costs and outcomes are uncertain, it is difficult to have equivalent outcomes unless the alternatives are almost identical. Briggs and O'Brien pronounced the death of CMA, since circumstances under which CMA is an appropriate economic method of analysis are rare. It is unlikely that a study is specifically designed to show the equivalence of treatments in terms of costs or effects. Therefore, CMA on the basis of an observed lack of significance in either the effect or cost differences between alternatives should not be used[2].

Generally, very few compared alternatives in health care are clinically equivalent, if they are, or it is difficult to prove. CEA allows the comparative analysis of alternatives with differential degree of success of common outcomes. For instance, two antihypertensive drugs are compared and they have differential degrees of decreasing blood pressure. Basically, CEA by definition requires a single, common natural outcome e.g. cure rate, mmHg, etc. However, it is possible to use CEA to compare any alternatives which do not have legitimate common natural outcomes but share some kinds of common effect e.g. life-years saved, case treated, etc.

Lastly, the outcomes can be measured in utility terms. This type of economic evaluation is CUA. The utility reflects one's preference of the outcomes. Quality of life is an example of adjustment used in CUA. Therefore, CUA provides more complete information because both the quantity and quality of the outcomes are accounted for. Basically, CUA can be viewed as the extended analysis of CEA after or while the outcomes in CEA are being quantified; these outcomes are then adjusted by quality for CUA. For instance, each life-year gained from using a cancer treatment is adjusted by the utility value of health states. Therefore, the outcome is reported as quality-adjusted life-years (QALYs), which is one of the generic outcome measures for CUA.

Each type of economic evaluation has its own characteristics, with different outcome measurements. These measurements have different theoretical supports, which are discussed in the next section. However, CMA is not included in the discussion because it is not considered as a full economic evaluation[1].

Economic evaluation in theory

The theory of economic evaluation has been debated[3]. Traditionally, economic evaluation is based on welfare economics. The welfarist approach focuses on how individuals value the outcomes because they are assumed to know most of their own welfare. While some economists prefer to be strict when dealing with traditional welfare economics, some adopt a more pragmatic decision maker's approach. The decision maker adherents view economic evaluation as maximizing health effects from a given budget. They believe that the health effect should be measured in natural units or health state preference scores. Sometimes their view of willingness-to-pay is biased, however.

Welfare economic approach

In welfare economics, which support the CBA concept, efficiency is referred to as *Pareto efficiency*. *Pareto efficiency* is defined as an allocation of resources, with no alternative allocation, that can make at least one person better off without making anyone else worse off. As long as another alternative allocation exists, and it makes at least one person better off without making anyone else worse off, the allocation is inefficient. A simple decision rule for CBA is that if an alternative has positive benefits, it is possible to make at least one person better off without making anyone else worse off. For instance, a new anticancer treatment is considered for use among three patients. They are asked about their willingness-to-pay (WTP) for the treatment. The first person is willing to pay A baht for the treatment while the second person would like to pay B baht. The third person has a different perspective on the treatment. He has negative willingness-to-pay for the same treatment in the amount of -C baht.

Assuming there is no opportunity cost for the treatment, the summation of the willing-ness-to-pay is calculated to reflect the net benefits. If the treatment is chosen without any other arrangements, the resource allocation to the treatment is not *Pareto efficient* because the third person is worse off from the allocation. However, if the amount of net benefit (A+B-C) is more than zero or positive, it can be adjusted to reach the *Pareto efficiency*. For instance, some benefits of the first and second persons can be transferred to the third person and the arrangement leaves no one worse off. To be more specific, CBA adopts a decision rule based on the Kaldor-Hicks criterion, which states that an alternative should be chosen if and only if those who will gain could fully compensate those who will lose and still be better off. This criterion supports the potential *Pareto efficiency* rule (net benefits criterion) suggesting that only alternatives that have positive net benefits should be adopted. Then, only when compensation occurs, the actual *Pareto efficiency* rule is warranted.

Similarly, the objective of CEA involves *Pareto efficiency*[4]. For instance, a given budget is used to improve either survival probabilities (SP) or mobility status (MS) for a group of individuals. Theoretically, CEA aims to ensure that the improvement of MS is maximized for a fixed improvement in SP. This means there is an attempt to allocate resources in a way that implies technical efficiency because an increase in total benefits from the same amount of resources is found. However, the application of CEA is usually used to make a comparison between an existing alternative and a new alternative which have neither costs nor outcomes constant. The evaluation then considers both incremental benefits and incremental costs. It is noteworthy that when a new alternative costs more than an existing alternative, the decision maker's rule of CEA assumes that the additional resources for the new alternative will be from other alternatives which have a rate of return to the resources at a margin lower than the existing alternative has. In other words, the existing alternative reflects an opportunity cost for the overall resource for the new alternative. Therefore, if the new alternative is evaluated, the benefits from the new alternative should be compared with the benefits from giving up the existing alternative and other alternatives. However, Birch and Gafni conclude that the current applications of CEA often do not comply with welfare economics theory and therefore are not useful for maximizing the total aggregate health benefits at a given budget[4]. If we consider an existing alternative and a new alternative, which have neither costs nor outcomes constant, trading the existing alternative for the new alternative does not obviously show an increase in technical efficiency. Only after value judgments of the benefits and loss are conducted, CEA can show whether the existing alternative or new alternative is preferable.

Garber and Phelps' paper is another recent work that embeds CEA in welfare economics[5]. One of their suggestions is that individual optimality exists when the wage rate is equal to the willingness to pay for an additional unit of time. Brouwer and Koopmanschap clarify this statement as a gap between real-life valuation of effects in society decision making and how the welfare economics has been suggested in CEA[2]. Since it ties productive possibilities with additional life-years, the WTP for persons who are less productive is low. If these persons are people who really need help, such as the handicapped, embedding CEA in welfare economics seems to be unethical from a societal perspective. In other words, societal utility is not explicit in this perspective. Therefore, the value judgment in CEA based on welfare economics becomes an equity concern for health care decision makers when allocating the resources. When the issue of equity plays a role in the decision model, various rules are violated, e.g. classical utilitarianism indicating social welfare equal to the sum of individual utilities, potential Pareto-criterion, etc.

Extra-welfare approach

CEA can identify only technical efficiency because it cannot compare the benefits across alternatives with different objectives. To identify allocative efficiency, utility-based measures of outcomes are required. CUA can offer both technical efficiency and allocative efficiency because it has utility-based measures of outcomes. In other words, CUA, in theory, complies with welfare economics and provides efficiency in production and product mix, reflecting technical efficiency and allocative efficiency, respectively. However, several economists consider the use of QALYs as utility measurements as not being appropriate because the individuals determine their own preferences and the underlying amount of absolute utility does not exist for comparing or aggregating QALYs across the individuals[3]. For instance, Bleichrodt indicates that the possibility of utility aggregation among individuals is questionable[6]. Based on Von Neumann and Morgenstern's theory of expected utility, utility itself can be exchanged and compared. The welfarists view QALYs as utility measures. They are tempted to

extrapolate the possibility of interpersonal comparison of utility to QALYs. However, a monetary notion of utility is needed to facilitate exchanges and comparisons and QALYs do not have this notion. Therefore, QALYs and CUA may not embed well in welfare economic theory.

Extra-welfare economics was proposed to explain both CEA and CUA in theory[3]. Extra-welfarism does not simply include individual utilities in the analysis. It replaces utility with health as the primary outcome for economic evaluation. The objective of extra-welfarism is therefore to maximize health from a given budget, which is consistent with the general objective of health care budget as same as the decision maker approach. Also, health outcomes (or QALYs) are viewed more as capabilities and less as utilities, from having good health. Scientists assign an equal value to the capabilities and then a comparison of values given by different persons at different health states can be made. The health outcomes or health as capabilities are then maximized, which is an ultimate goal of health care or health care budgets. When the focus is on health instead of utility, the question concerning equity among those people who need special health, e.g. the handicapped, is solved. Even though they are not productive, they are still alive, and entitled to minimize their health problems. The extra-welfarist also counts on non-health implications related to health, e.g. age. It therefore corrected the equity consideration in the non-health aspect as well. In doing so, it indirectly maximizes their utilities. In conclusion, the extra-welfarism approach tends to inform the decision makers. It is, however, not likely a prescription for making decisions, e.g. providing rank of alternatives. It not only implicitly notifies the maximization of a social welfare function, which is similar to traditional welfare economics, but also allows possible violations of the Pareto-criterion, e.g. the issue of individual utility comparison.

Comparisons of the international economic evaluation guidelines

Among economic evaluation in health care, several countries focus greatly on the evaluation of pharmaceuticals. Many countries have developed national economic evaluation guidelines which are worth exploring before Thai HTA guideline is recommended.

A total of 28 pharmacoeconomic guidelines across 22 countries were reviewed by Tarn and Smith[7]. A comparison of the key features, such as main policy objectives, preferred analytical techniques, target population, subgroup analysis, time horizon, modeling, sensitivity analysis, and discounting outcomes, etc., of the guidelines is provided. The preferred analytical techniques in the reviewed guidelines are composed of all types of economic evaluation, including CMA, CBA, CEA, and CUA. Among the 22 countries, a total of 12, 19, 20, and 11 countries included CMA, CEA, CUA, and CBA, respectively, in their guidelines. CEA and CUA are the most frequently used in the economic evaluation of pharmaceuticals. One reason could be that most pharmaceutical outcomes, similar to other health outcomes, are ready to be used in CEA and CUA. Another reason, as previously provided, is that CBA requires the analysts to monetize the outcomes, which is counterintuitive from a health care perspective.

From the review, all guidelines can be divided into four major groups: 1) guidelines that allow all four types of analysis with justifications, such as the guidelines of Australia, Belgium, Finland, France, Germany, Ireland, Norway, Portugal, Russia, Scotland, and Switzerland. 2) guidelines that recommend CEA and CUA, from countries such as Italy, Netherlands, Poland, Spain, Sweden, and England & Wales. 3) guideline that recommends CBA and CUA, such as the guideline from Canada. 4) guidelines that recommend only CUA, such as New Zealand. Even though some countries use the same types of analysis, the reasons or logics used in their guidelines may not be exactly the same. However, it would be laborious if every guideline were discussed here. Only the guidelines of Australia, England & Wales, Canada, and New Zealand as examples of groups 1 to 4, respectively, are included here.

The Commonwealth Department of Health and Ageing of Australia published guidelines for the pharmaceutical industry on the preparation of submissions to the pharmaceutical benefits advisory committee in 2002[8]. Since all four types of economic evaluation are allowed in the guideline, it does not provide specific discussions for selection. Only definitions and examples of CMA, CEA, CUA, and CBA are included in the Australian guideline. However, CBA is specifically not encouraged and it is claimed that it is not likely to be helpful for advisory committees in their deliberations.

The National Institute for Health and Clinical Excellence (NICE) recommended CEA and CUA since clinical effectiveness is usually measured in health care[9]. The selection between CEA and CUA depends on the nature of the clinical problem addressed. CUA

can provide a comparison of relative value of health gain from alternatives in different diseases. Even though NICE recognizes an increase in applications of contingent valuation methods in health economic evaluation, CBA is not suggested in the guideline. CMA is also not recommended unless equal effectiveness is demonstrated.

In 1997, the Canadian Coordinating Office for Health Technology Assessment (CCOHTA) launched a guideline for the economic evaluation of pharmaceuticals[10]. The Canadian guideline is unique because CBA and CUA, instead of CEA and CUA, are preferred. A reason provided in the guideline is that CBA is based on the theoretical foundations of welfare economics and the normative principle of a potential *Pareto improvement* and therefore it has the soundest theoretical background. Also, it is the only technique that allows for comparisons across health and other sectors. Additionally, a reason for excluding CEA can be that CUA is generally viewed as a special case of CEA, in which the measure of effectiveness is QALY.

The Pharmaceutical Management Agency (PHARMAC) of New Zealand defines economic evaluation as "Cost Benefit Analysis", which is composed of CMA, CEA, CUA, and CBA[11]. The guideline agrees with the advantage of CUA that can be used in a comparison of different areas of health care, while CEA can compare only one area of health care. Two major drawbacks of CBA are addressed. First, there are significant difficulties in placing a dollar value on health outcomes. No robust technique exists. Further research of developing techniques is required before CBA can be considered more seriously. Second, people implicitly assign different values to different types of health outcomes. For instance, people are willing to pay more for life-saving drugs than other kinds of drugs. It is considered easier in CUA. Finally, PHARMAC provides reasons for choosing CUA in the guideline. One reason is that CUA is achievable and practical, yet still enables comparisons across different health care areas. It helps PHARMAC prioritize competing alternatives and opportunities, without the problems of value judgment of health outcomes. Also, PHARMAC claims that the CUA approach can be used to consider past funding decisions as well as future funding decisions. For instance, it can provide an analytical foundation for decisions to limit access to drugs where the evidence suggests that these drugs are only cost-effective for patients with specific conditions or severity. In doing so, it can free up funds for more worthwhile alternatives currently waiting funding. Another major advantage mentioned in the guideline is when CUA is done properly; it clarifies the assumptions and methods used in coming to a decision. For instance, when calculating a cost per QALY, several things are examined e.g. what costs are included and why? What benefits are included and why? Is a QALY for one person equal to one for another? What time frame is relevant?

In conclusion, each country's guideline has its own preferred types of economic evaluation. Reasons used in the selection vary across the countries. The decision is based on an analytical framework of each type of analyses and also on the perspective of readiness of data information availability in the countries.

Recommendations for Thai HTA Guideline

In the recommendations for Thai economic evaluation guideline, not only do the theoretical foundations of each economic evaluation type need to be considered but also their feasibilities. The availability of data, skilled scientists, and funds are the main factors for any valid analysis. Unfortunately, the available guidelines are of countries with different economic backgrounds from Thailand. Theoretical foundations can be shared with the guidelines from those countries, but feasibilities and other considerations must be taken into account.

Based on Drummond et al.'s recent book, only CEA, CUA, and CBA are methods of full economic evaluation[1]. Most health technologies or drugs do not have equal effectiveness. In the health technology or drug market, new products usually have incremental benefits from existing products. Assuming that an economic analysis is only required when added-value is claimed for the new drug products, CMA is irrelevant in this context. It is also usually not easy to demonstrate that two or more alternatives have equivalent outcomes. Therefore, CMA can be excluded.

CBA may have strong support from the welfare economic theory. However, it requires a robust method to assign values to health outcomes. Extra efforts from scientists are needed. Therefore, CBA is not suggested for Thai HTA guideline. The reason given by NICE of England & Wales and PHARMAC of New Zealand can be borrowed to explain the exclusion of CBA in Thai guideline.

CEA and CUA are recommended to be methods of choice for Thai guideline for two major reasons. First, CEA and CUA are generally used alternatives to CBA since CBA has certain limitations of value judgment and analysts may be unwilling or unable to monetize

health outcomes. It is counterintuitive to place a monetary value on any life saved. On the other hand, clinical effectiveness measured in health care can be directly used in both CEA and CUA. It is intuitive for health care decision makers to present outcomes as clinical effectiveness or quality-adjusted clinical effectiveness. Another reason is that even though CEA and CUA may not embed well in the traditional welfare economic theory, they are supported by extra-welfarism, which is consistent with the general objective of health care budget. CEA can measure technical efficiency, while CUA can measure both technical efficiency and allocative efficiency in the welfare economic approach. The extra-welfarism allows CUA to correct equity problems.

The selection between CEA and CUA depends on the nature of the clinical problems. Both CEA and CUA have advantages and disadvantages. For the advantages of CEA, it can deal with intermediate outcomes, which are usually measured as health outcomes. Also, it basically requires less resource because its outcomes measure only clinical effectiveness, excluding qualitative adjustment. Additionally, the results of CEA are easily interpreted. However, there are at least three major drawbacks of CEA. First, because the measure of primary effectiveness may differ from alternative to alternative, CEA cannot be used to make comparisons across a broad set of alternatives. Second, health care decision makers with a limited budget must not only determine if a new alternative is cost-effective but must also determine which alternative to use to reduce or free up budgets for a new alternative. CEA cannot measure the opportunity costs of funding the new alternative. In other words, CEA cannot measure the allocative efficiency. Third, in any alternative there is usually more than one outcome of interest. In reality, typically there are a large number of relevant outcomes resulting from health care alternatives. Some outcomes are more important than others. A valid justification is needed.

Drummond et al suggests a number of situations where CUA should be used[1]. Certainly, when health-related quality of life is an important outcome, CUA should be conducted. For instance, cancer treatments usually have an impact on patients' daily life and obviously affect their quality of life. CUA should be applied when alternatives affect both morbidity and mortality and a common unit of outcome is required for a combination of both effects. This also leads us to when alternatives compared have a broad range of different types of outcomes and a common unit of outcome is required for comparison, CUA can help in this regard. Similarly, any alternative needs to be compared with an existing alternative that has already been evaluated with CUA, and then CUA should be the method of choice. CUA can deal with a limited budget situation when decision makers need to determine which alternative use to reduce, eliminate, or free up funds for a new alternative. Basically, CUA can measure not only technical efficiency but also allocative efficiency. However, CUA has limitations. It requires extra resources to determine quality-adjusted outcomes. The measurement of QALYs is still controversial and requires further research. Perfect measurement does not exist. Some health care decision makers are still skeptical about the issue of QALYs.

After considering all the advantages and disadvantages of CEA and CUA, CUA is recommended for Thai HTA guideline to be the method of choice when data and resources are available, or when possible, since it provides a more complete picture than the other alternatives. Technically, when CUA is completed, CEA can be examined from the same set of data. However, CEA is more appropriate in case only intermediate outcomes of the compared alternatives are available.

The economic evaluation of health care in Thailand is still in its infancy. In fact, no matter which types of analysis are recommended, there are still some difficulties. The difficulties can be divided into two major categories, which are general difficulties and CEA or CUA technical difficulties. For general difficulties, Thailand lacks information, resources, and experts in this area of research. These difficulties are, in fact, embedded in economics since economics assumes limited resources. To overcome these difficulties, efficient resource allocation is needed. Also, government authorities need to understand and strategically handle the difficulties. For instance, human capacity building seems to be the very first step that should be taken to strengthen the economic evaluation in health care. In this regard, the government authorities need to not only think about training more researchers, but also needs to create demand for the researchers in this area, especially in early phase of capacity building.

For technical difficulties, that are specific to CEA and CUA in Thailand, most health outcomes and health-related quality measurements are from studies in other countries. Translating, converting or applying these analyses to the health care system in Thailand requires extra effort. However, good management, such as working diligently, team work, and strong support will eventually solve the problems. The development

of guidelines of economic evaluation and networking with international communities will also help.

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References

1. Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ, Stoddart GL. Methods for the economic evaluation of health care programmes. 3rd ed. New York: Oxford University Press; 2005.
2. Briggs AH, O'Brien BJ. The death of cost-minimization analysis? Health Econ 2001; 10: 179-84.
3. Brouwer WB, Koopmanschap MA. On the economic foundations of CEA. Ladies and gentlemen, take your positions! J Health Econ 2000; 19: 439-59.
4. Birch S, Gafni A. Cost effectiveness/utility analyses. Do current decision rules lead us to where we want to be? J Health Econ 1992; 11: 279-96.
5. Garber AM, Phelps CE. Economic foundations of cost-effectiveness analysis. J Health Econ 1997; 16: 1-31.
6. Bleichrodt H. Health utility indices and equity considerations. J Health Econ 1997; 16: 65-91.
7. Tarn TY, Smith MD. Pharmacoeconomic guidelines around the world. ISPOR Connections 2004; 10: 5-15.
8. Commonwealth Department of Health and Ageing. Guidelines for the Pharmaceutical Industry on Preparation of Submissions to the Pharmaceutical Benefits Advisory Committee (PBAC): including major submissions involving economic analyses. Canberra: Public Affairs, Parliamentary and Access Branch; 2002.
9. National Institute for Health and Clinical Excellence. The guidelines manual 2007. Available from: http://www.nice.org.uk/
10. Canadian Coordinating Office for Health Technology Assessment. Guidelines for economic evaluation of pharmaceuticals. 2nd ed. Ottawa: CCOHTA; 1997.
11. Pharmaceutical Management Agency (PHARMAC). A prescription for pharmacoeconomic analysis. Volume 1.1. New Zealand: PHARMAC; 2004.

การกำหนดชนิดของการประเมินความคุ้มค่าทางการแพทย์

สุรฉัตร ง้อสุรเชษฐ์

วัตถุประสงค์ของบทความเพื่อเสนอแนะชนิดของการประเมินความคุ้มค่าทางการแพทย์ในคู่มือการประเมินเทคโนโลยีด้านสุขภาพสำหรับประเทศไทย โดยอาศัยการวิจัยเอกสารที่เกี่ยวข้องกับชนิดการประเมินความคุ้มค่าทางการแพทย์รวมทั้งคำจำกัดความและทฤษฎีพื้นฐาน นอกจากนั้น มีการทบทวนคู่มือการประเมินความคุ้มค่าทางการแพทย์ของชาติต่าง ๆ ท้ายที่สุดข้อมูลที่ได้ทั้งหมดจะถูกนำมาประมวลเพื่อการเสนอแนะในคู่มือการประเมินเทคโนโลยีด้านสุขภาพสำหรับประเทศไทย โดยทั่วไปชนิดของการประเมินความคุ้มค่าทางการแพทย์มีทั้งหมดสี่ชนิด ได้แก่ การวิเคราะห์ต้นทุน-ผลได้ การวิเคราะห์ต้นทุนต่ำสุด การวิเคราะห์ต้นทุน-ประสิทธิผลและการวิเคราะห์ต้นทุน-อรรถประโยชน์ ซึ่งสามารถอธิบายด้วยทฤษฎีเศรษฐศาสตร์สวัสดิการแบบดั้งเดิมและแบบพิเศษ พบว่าจากคู่มือของประเทศต่างๆ มีการเลือกใช้ชนิดของการประเมินความคุ้มค่าทางการแพทย์แตกต่างกัน ส่วนใหญ่แนะนำให้ใช้การวิเคราะห์ต้นทุน-ประสิทธิผลและการวิเคราะห์ต้นทุน-อรรถประโยชน์มากที่สุด สำหรับคู่มือของประเทศไทยเสนอแนะให้ใช้การวิเคราะห์ต้นทุน-อรรถประโยชน์เป็นหลัก อย่างไรก็ตามสามารถใช้การวิเคราะห์ต้นทุน-ประสิทธิผลได้ โดยเฉพาะอย่างยิ่งในกรณีที่มีเพียงการวัดผลลัพธ์คั่นกลางของทางเลือกที่นำมาเปรียบเทียบกัน
