

Measurement of Costs

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Costing plays an important role in health economics, particularly economic evaluation. However, there are some controversial issues: concepts, methods and reference values. Hence, it is pivotal to standardize costing methods and use these as national guidelines to produce comparable studies. This report is divided into 3 parts: theoretical issues, international guidelines comparison, and recommendations for the Thai health technology assessment guidelines. Each section is composed of three general costing steps: identification, measuring and valuation. It is recommended to measure economic or opportunity cost mainly in societal perspective. Cost category is composed of direct medical, direct non-medical and indirect costs. The level of reliability of each kind of costing source data is provided. Valuation of resource use based on national standard cost menu is recommended for national policy making. The recommendations on cost measurement are appropriate for the Thai context and in the current situation.

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Cost refers to the value of resources used to produce something⁽¹⁾. It is the core of economics. In terms of health economics or pharmacoeconomics, measuring costs or costing involves identifying, measuring and valuing all resource changes that occur as a certain health care intervention is carried out⁽²⁾. Furthermore, cost measuring is employed to estimate economic burden due to illness. It is applied in economics evaluation and outcome research. For health care planning, recent trends and future disease costs are information used for setting priorities and cost containment measures^(3,4). There are several hurdles in conducting the economic analyses including costing⁽⁵⁾. Problems in costing may be categorized as controversial issues in concepts (e.g. including productivity cost)⁽⁶⁾, methods (e.g. human capital approach versus friction cost method)⁽⁷⁾, and reference values (e.g. discount rate)⁽⁸⁾. Hence, it is pivotal to standardize costing methods for further studies. Then the studies can be comparable and used as inputs into national health

policy decision making. This article is presented into 3 parts: theoretical issues, international guidelines comparison, and recommendations for Thai health technology assessment (HTA) guidelines. Each section is presented based on three general costing steps: identification, measuring and valuation^(2,9).

1. Theory

1.1 Identification of resource use

Identification of resources covers two topics: types of resource use that are relevant for the disease and the intervention studied, and level of detail that has to be measured and valued⁽¹⁰⁾. However, for the theory, some other related issues are added.

Economic versus accounting costs

Economics is based on three fundamental concepts⁽¹¹⁾: *scarcity* – resources are insufficient to support all demands; *choices* – because of resource scarcity we need to choose between alternative ways of using them; *opportunity cost* – by choosing to use available resources in one way, we forgo other opportunities to use these same resources. So cost or economic cost or opportunity cost of engaging in an activity or producing a product refers to the sum of all

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other benefits that can be generated by the same amount of resources taken away for this activity⁽¹²⁾. On the other hand, accountants measure costs by the historical outlay of funds. So, accounting cost is the acquisition price of a product.

Perspective

Perspective is an important issue of a health economic study. Perspective determines the types of costs that should be taken into account. The analysis can be conducted from various viewpoints or perspectives. Defining the objectives of the study allows researchers to select the perspective that is the most appropriate. Perspectives can be classified as patient (first party), provider (second party), purchaser or payer (third party), employer or other sponsor (fourth party), government, and societal perspective⁽¹³⁾.

Time horizon

Time horizon is used to define the period of time needed to observe resource use. Ideally, the time horizon should be chosen in such a way that all cost consequences of the intervention under study can be taken into account in the analysis⁽²⁾.

Types of costs

Drummond *et al*⁽¹⁴⁾ proposed 3 groups of resources used in health care: health care resource use (*e.g.* hospital resources and community care resources), patient and family resource use (*e.g.* transportation, sick absence and care givers), and resource use in other sectors (*e.g.* social welfare).

Cost classification is divided into three category costing types: direct medical, direct non-medical and indirect costs⁽¹⁵⁾. Direct medical costs refer to those resources whose consumption is wholly attributable to the use of the health care intervention in question⁽¹²⁾. These include costs of diagnosis, treatment, follow-up, rehabilitation, and terminal care, and are both institutional and non institutional. Direct non-medical costs are out-of-pocket expenses for goods and services outside the medical care sector⁽¹⁶⁾. These include costs of transportation, meals, accommodation, facilities, services, and informal care. Indirect cost refers to lost productivity (paid or unpaid) resulting from morbidity or mortality⁽¹²⁾ i.e. cost of productivity loss due to sick leave, permanent disability or premature death.

Cost of informal care

Informal care is care provided by family

members, friends, acquaintances or neighbors of patients without financial compensation^(2,17). Providing informal care entails giving up work and leisure time, investing energy and making fewer social contacts. In terms of societal perspective, the loss of time for informal care giving should be assessed in the form of opportunity cost. Regarding categorization, informal care is sometimes considered as indirect cost⁽¹⁵⁾. Informal care is classified as household activities of daily living (HDL), health care activities (HCA), activities of daily living (ADL), and instrumental activities of daily living (IADL)⁽¹⁸⁾. HDL includes preparing food and drinks, shopping, doing chores and taking care of children. HCA includes preparing medication, doing rehabilitation, contacting health care providers and organizing home facilities for the patient. ADL includes assistance such as toilet activities, moving around the house, eating and drinking. IADL includes management matters, *e.g.* banking, shopping or traveling.

Indirect cost

As labor is a scarce resource in economic concepts, absence of an individual from work can be quantified in terms of the value of the lost productivity. Productivity cost is a synonym of indirect cost. Another concept is time cost. This concept includes value of both work time and leisure time. Therefore, productivity cost is defined as “the cost associated with lost or impaired ability to work or to engage in leisure activities due to morbidity and lost economic productivity due to death⁽⁹⁾”. Work time is divided into paid working time and non-paid working time. Productivity costs refer to loss of production due to illness and mortality. Time loss can be classified as time spent receiving treatment and time spent recovering at home. The patients’ time spent receiving treatment is recommended to be classified as direct cost. This classification style can have an effect on the result in case indirect cost is not included⁽⁶⁾. Indirect costs are those costs that are not actually paid. They are defined as productivity lost due to illness. There are two forms of indirect costs: morbidity and mortality costs. Morbidity costs include the value of production losses of those who are sick, absent, unemployed or restricted from working due to an illness. Mortality costs are calculated as the present value of lost production due to premature death caused by illness⁽¹⁵⁾.

Transfer payment

There are some payments, such as sickness compensation, that are a financial cost of a social

security fund or government, and also a financial income of the patients. They are not social costs because this money does not reflect resources consumed due to illness. They will be exchanged with patients' utility which is not related to the illness. This money is called transfer payment, and is not included in the cost of illness. In contrast, cost of payment administration is included because the payment is a consequence of the illness⁽¹⁹⁾.

Future health care cost

Future health care cost or health costs in extended years of life are the costs associated with patients who live longer and consume health care resources as a result of a given intervention. Regarding lifesaving interventions, we have to consider future medical care cost, both related and unrelated to the diseases. Unrelated medical care is care given to treat another disease that is necessitated by the effectiveness of the intervention.

Taxes

It was argued that direct and indirect taxes and social premiums should be excluded from cost analyses since they do not represent costs for society⁽⁹⁾. However, in practice, in most situations it is difficult to exclude, so is included⁽¹⁰⁾.

1.2 Measuring resource use

The measurement of resource use is used to determine the quantities of resources used as part of a given intervention⁽¹³⁾.

Increment versus total in resource use

A comparison of alternative interventions, for example cost-effectiveness analysis, reflects the difference in resource use of the intervention and comparator. This increment in resource use can be measured directly by determining the amount of increased (or decreased) resource use. It is the incremental use of resources that is of interest rather than the total cost of an intervention. This means that the same resources used by both intervention and comparator are not necessarily to be measured⁽⁹⁾.

Start-up cost

The start-up period is counted from approval of the project to the time when the service or intervention can be provided. The start-up period may take several years consuming labor, time, materials and the use of capital assets. To calculate the total start-up

cost, the cost of capital assets has to be annualized. Similarly, if the project period is several years, the start-up cost has to be annualized⁽¹⁹⁾.

Management of missing or censored data

In economic evaluation alongside clinical trials, missing data due to dropouts and censored data (survival times are censored) are common. These data can affect the study results and should not be ignored. It is proposed to classify the analysis of incomplete data into naïve and principled methods^(20,21).

1.3 Valuation of resource use

Cost of medical services

Unit costs used in the valuation process can be from primary or secondary sources. They can be from direct cost measurement, accounting data, standard unit cost, price list, expert opinion and from other studies⁽¹³⁾. In the case of evaluation for country policy making, standard unit costs are preferred. For direct measurement, there are some aspects to be considered in the valuation of resource use. These are adjustment of cost at different time (discounting), valuation of time loss (indirect cost), and prices (market and shadow prices). Regarding decision-modeling techniques, secondary data are employed. Sources of cost data and health effects may be derived from clinical trials, observational studies, administrative databases, case series, expert opinion and/or secondary analysis (such as meta-analysis). Sources are ranked from 1 to 6. Number one refers to the most appropriate⁽²²⁾. Rank 1 refers to cost calculations based on reliable databases or data sources conducted for specific study – same jurisdiction. Rank 2 refers to recently published cost calculation based on reliable databases or data sources – same jurisdiction. Rank 3 refers to unsourced data from previous economic evaluation – same jurisdiction. Rank 4 refers to recently published cost calculation based on reliable databases or data sources – different jurisdiction. Rank 5 refers to unsourced data from previous economic evaluations – different jurisdiction. Lastly, rank 6 refers to expert opinion.

Cost of informal care

There are two main methods of valuing time spent on informal care: revealed preference methods and stated preference methods⁽¹⁷⁾. Revealed preference methods use real-life decision data to value informal care. This means that preferences of informal caregivers are deduced from informal caregivers' decisions or from decisions in the market for close substitutes of informal

care. Revealed preference methods can be calculated based on opportunity costs or replacement cost. Replacement cost is valued time spent on informal care at (labor) market prices of a closed market substitute (proxy goods). Stated preference methods may be contingent valuation or conjoint analysis. Contingent valuation assesses the minimum amount of money an informal caregiver would need to receive to be willing to provide a certain or an additional amount of informal care. Conjoint analysis is a method for the analysis of respondents' preferences for a set of multi-attribute alternatives.

Indirect cost

To estimate indirect cost, frequently used methods are the human-capital cost approach, willingness to pay, and the friction cost approach^(4,7,23-25). The human capital cost approach is the most often employed. This approach is based on the concept of a potential loss of production as a result of illness. It is assumed that a vacant position will never be filled and that society will continuously lose the production of those patients until retirement. This means that the labor markets are in equilibrium without unemployment. The market wage rates are used for morbidity cost calculation. Per capita GDP is usually used in the calculation of mortality cost. Furthermore, the earnings in the future are discounted at a constant annual rate. There is a comment that the real production loss can be much smaller than the potential loss because the workers who are sick can be replaced for little payment. This is a weak point of the human capital approach. In an attempt to measure "actual" rather than "potential" production loss, an alternative method has been developed called the friction cost method. The basic idea of this approach is that those patients on short-term leave from their work can make up for the loss of production when they return, or can be taken care of by internal labor resources, or that non-urgent work may be canceled or postponed. For long-term work absence, patients can be permanently replaced by someone who is unemployed. The actual productivity loss from the work continues only during the period of time required for worker replacement. This period is called the "friction period". It is assumed that workers who are on sick leave will be replaced after completion of the friction period. This means that if the period of work missed by the patient is shorter than the friction period, all production loss during the absent period is valued as indirect costs. However, if patients are absent from work for longer than the friction period,

production loss will be limited to only the friction period. Therefore, the friction period has the role of a cut-off point in determining indirect costs. In practice, more information is needed for this method. Such information is not available in most countries. Thus, it is not popular for estimating indirect costs.

Another alternative method is willingness to pay (WTP) or contingent valuation. This method relies on the view of individuals who are asked hypothetical questions regarding how much they would be prepared to pay to avoid their probability of death or morbidity. WTP could be helpful in indicating how individuals value health and life and in deriving social preferences regarding health policy. Furthermore, WTP might be especially helpful in assessing the burden of pain and suffering which are intangible and not amenable to be evaluated in terms of the monetary value of resources used or forgone. However, this approach is used less frequently because it is difficult to apply and it is affected by income. The lower income earners tend to be willing to pay less than higher income earners.

Market prices and shadow prices

Prices in the health care market do not represent opportunity costs since it is not a free market. Health care is usually regulated by health authorities and government. Market prices may be higher than opportunity costs due to monopolies or tax systems. On the other hand, they may be lower than the opportunity costs due to government subsidies. Ideally, opportunity cost is preferred to market prices. In practice, market prices can be applied in some situations where opportunity costs are not available or feasible. Opportunity costs of goods with distorted market prices or without market prices are called shadow prices⁽¹⁹⁾.

2. Comparisons of the international economic evaluation guidelines

This section is a review based on the report titled "Pharmacoeconomic Guidelines Around the World⁽²⁶⁾". The report covers 23 countries and 28 guidelines consisting of 21 pharmacoeconomics guidelines, 6 submission guidelines for formulary listing and 1 for journal publication. Full guidelines are available from the website of the International Society for Pharmacoeconomics and Outcomes Research. The report covers 32 key features and the review presents 8 costing-related features. Some details of 4 outstanding countries in pharmacoeconomic applications: Canada, Australia, the United Kingdom and the Netherlands, are presented.

2.1 Identification of resource use

Although economic cost is needed for economic evaluation, there are some countries that use accounting cost. In the UK, resources are valued using the prices relevant to the National Health Services (NHS)⁽²⁷⁾. Most countries employ a societal perspective which includes other perspectives. Some countries, *i.e.* Finland, Sweden, Germany, the Netherlands, and United States of America, use only societal perspective. For time horizon, most countries state that the time horizon of the study needs to be long enough to cover effects of both the health interventions and the consequences of illness. Regarding types of costs, direct medical, direct non-medical and indirect costs are included in most countries. Cost composition is up to the study's perspective. It is recommended that indirect cost be presented separately.

In Canada, buildings and equipment that are used for more than the recommended time have been written off in accounts and no longer incur a depreciation cost. From an economic point of view, they still have opportunity cost. The excluded costs are research related costs (*e.g.* extra test to confirm pathogen), transfer payment (*e.g.* sickness pay), and unemployment insurance and welfare payments. Furthermore, future health care cost (the costs associated with patients who live longer and consume health care resources as a result of a given intervention.) is excluded due to the difficulty of identifying if it is a direct consequence of the program, and availability of data⁽²⁸⁾. In England and Wales, value added tax (VAT) is excluded from all economic analysis, although included in budget impact analysis⁽²⁷⁾.

For the Netherlands, from a social perspective, the costs cover direct cost both within and outside the healthcare system (direct medical cost and direct non-medical cost, respectively). They also cover indirect cost outside the health care system or productivity loss. Indirect cost within the healthcare system or medical cost during life-years saved may be separately included if there is a clear relationship with the intervention. For productivity loss, the friction cost method is recommended⁽²⁹⁾. Regarding cost of taxes, although including taxes is controversial, the Dutch manual determines that these taxes should be included because in most situations they are difficult to exclude⁽¹⁰⁾.

2.2 Measuring resource use

In Canada, actual measurement of resource use based on trials is recommended as an appropriate

source of resource quantities. For international trials, resource quantities cannot be directly imported into the Canadian system. This is because there are major differences in the way that health care is delivered in many countries. In some practical cases, they may be transportable into Canada but re-validation, explanation and justification are required⁽²⁸⁾. Similarly, the Dutch guidelines for pharmacoeconomic research states that "The deployment of people and resources during a treatment must first be described in natural (non-monetary) units, such as hours, tasks, nursing days or daily doses. All cost data obtained from international studies must be validated for use in the Netherlands⁽²⁹⁾".

The Danish Institute for Health Technology Assessment published the Health Technology Assessment Handbook⁽³⁰⁾. It stated that there are two sources of resource use: patient-specific (stochastic) data and non-patient-specific (deterministic) data.

2.3 Valuation of resource use

Most countries employ a reference/standard list of costs, prices or reimbursement rates. Italy uses micro-costing carried out through studies performed at health care structures. In Canada, a national list of provincial costs for health care is published and used as a source of standard cost⁽³¹⁾. The UK's NHS published a reference cost manual^(32,33). In the Netherlands, the "Dutch manual for costing: methods and standard costs for economic evaluations in health care" is referred to as a sources of standard costs⁽¹⁰⁾. In Australia, the book titled "Manual of Resources Items and Their Associated Costs" is used as a source for reference costs⁽³⁴⁾.

3. Recommendations for the Thai health technology assessment guidelines

The guidelines are proposed based on theories, methods, international experience and current feasibility in Thailand. The feasibility is considered based on availability of cost-related data and the skill of Thai researchers. Publications are reviewed as a proxy of researcher's skill.

3.1 Identification of resource use

Economic versus accounting costs

Economic or opportunity cost is the first priority used in economic evaluation⁽¹²⁾. However, in practice, market prices (charge from price list) with appropriate adjustment can be applied as a reasonable proxy of opportunity costs⁽¹³⁾.

Study perspective

Major sources of health finance in Thailand come from the government. The government budget allocated to national health insurance comes from the contribution of society in terms of taxes. Therefore, societal perspective needs to be gauged when economic evaluations are undertaken⁽¹⁴⁾. If we are unable to use a societal perspective, a health sector or health system perspective is used. As a tool of efficiency management for hospital administrators, provider or hospital perspective is used. To study compliance of patients, patient and family perspective is necessary. This is more useful to study illnesses that are not covered or only partly covered by health insurance schemes. In addition, for payers with a capitation payment system (Universal Health Coverage Scheme-UC, and Social Security Scheme-SSS), it is difficult to determine cost from the payer's perspective. For the Civil Servant Medical Benefit Scheme (CSMBS) and some benefit packages of the UC and SSS that employ a fee-for-service payment system, a third party payer perspective can be employed in some situations. In conclusion, Thailand should employ societal, health system, third party payer, provider, and patient perspectives.

Time horizon

For economic evaluation of health interventions, the time horizon must be long enough to capture all effects of the interventions⁽²⁾. In the case of a cost of illness study, the study has two alternatives: prevalence-based and incidence-based approaches⁽¹⁵⁾. For the prevalence-based approach, the study time should be at least one year to avoid seasonal effects on the unit cost analysis of medical services and clinical symptoms. The other approach is an incidence-based cost of illness. This approach measures the economic burden from the start to the end points of illness. It observes only new cases occurring in a given period and monitors them until the end point.

Types of costs

Costs to be included depend on the study perspective. Direct medical, direct non-medical and indirect costs are included in most cases⁽¹⁵⁾. It is recommended that they be presented separately. Direct medical costs cover treatment cost at the study site(s) and other sites, *e.g.* at private clinics, drug stores, and traditional medicine suppliers. Direct non-medical costs cover personal facilities, travel, food, accommodation, time lost while receiving treatment, informal care and

paid personal care. Indirect costs cover morbidity and mortality costs. For cost-effectiveness analysis, if quality-adjusted life years (QALYs) are the measure of effectiveness, indirect or productivity cost are not included. This is to avoid double-counting since QALYs have included morbidity and mortality effects⁽²⁾. In some interventions, for example disability prevention, costs incurred in non-health sectors, *e.g.* welfare and education, should be included. Details are in Table 1. Transfer payment and future health care cost are not included⁽¹⁹⁾. In contrast, since it is difficult to separate taxes, taxes are included⁽¹⁰⁾.

3.2 Measuring resource use

Increment versus total in resource use

A comparison of alternative interventions reflects the difference in resource use of the intervention and comparator. The incremental use of resources is of interest rather than the total cost of an intervention. This means that the same resources used by both the intervention and the comparator do not necessarily need to be measured⁽⁹⁾.

Start-up cost

A start-up period may take several years, consuming labor and time, materials and use of capital assets. To calculate the total start-up cost, the cost of capital assets has to be annualized. Similarly, if the project period is several years, the start-up cost has to be annualized^(19,35).

Management of missing or censored data

In economic evaluation alongside clinical trials, missing data due to dropouts and censored data should be treated properly. Both the naïve and the principled methods should be applied^(20,21).

3.3 Valuation of resource use

Cost of medical services

There are two alternative sources of cost of medical services used in the valuation: reference unit cost and setting specific unit cost⁽¹³⁾. For reference unit cost, we have "reimbursement rate of public health facilities" used for the Civil Servant Medical Benefit Scheme. The national standard cost menu should be used instead when it is available. For setting specific cost, the unit cost of medical services should be calculated based on the national guidelines when they are available. For country policy planning, studies should employ unit cost of medical services from the national standard cost menu.

Table 1. Description of costs classified by study perspectives

Cost		Source of services/ information	Resource identification	Valuation by perspective				
Category	Subcategory			Patient	Provider/ hospital	Third-party payer	Health system	Societal
Direct medical	Treatment/ health care	Study health setting	medical services	charge	cost	reimburse ment	cost	cost
		Other health facilities	medical services	charge	-	reimburse ment	charge (cost if available)	charge (cost if available)
Direct non medical	Personal facilities	Patient or family	home modification/ special devices/ social services	charge	-	-	-	charge (market price)
	Travel	Public/ owntrans- portation	travel distance, vehicle type	charge or estimated cost	-	-	-	charge (market price) or estimated cost
	Food	Patient or family	extra food	charge	-	-	-	Charge (market price)
	Accom modation	Hotel	days of stay	charge	-	-	-	charge (market price)
	Time loss while receiving treatment ⁽⁶⁾	Time loss of patient	hours or days	income loss	-	-	-	produc- tivity cost
	Informal care	Time loss of caregiver	hours or days	income loss	-	-	-	produc- tivity cost
	Personal care/ assistance	Paid helpers	person-day/ month	charge	-	-	-	charge (market price)
Indirect	Morbidity cost	Working time loss	days of illness	income loss	-	-	-	produc- tivity cost
	Mortality cost	Working time loss	work-absence years from death to retired age	income loss	-	-	-	produc- tivity cost
Other sectors	Welfare	Occupation rehabilita- tion	services	fee/travel/ food/ material	-	reimburse- ment	-	cost
	Education	Special education	services	fee/travel/ food/ material	-	reimburse- ment	-	cost

Cost of informal care

Valuation methods for informal care should be conducted using both opportunity cost and replacement cost⁽¹⁷⁾. Opportunity cost calculation of informal care should correspond to that of the indirect cost of the patient. For replacement cost, wage rates used in this method should be obtained from the national survey of the Ministry of Labor and the National Statistical Office^(36,37). Based on the survey, the category of health and social work should be used in the cost calculations of the health care activities (HCA) and the activities of daily living (ADL). The category of household work should be used in the cost calculations of the household activities of daily living (HDL) and the instrumental activities of daily living (IADL).

Indirect cost

Although it is claimed that the friction cost method is more accurate than the human capital method⁽⁶⁾, in Thailand, we do not have the information (the friction period) needed for the friction cost method. Therefore, the human capital approach is recommended. To comply with the concept of equality in health, all kinds of time, *i.e.* paid work, non-paid work and leisure time are covered. In addition, to select reference rates for the calculation, the national average wage should be used to value the time of different workers equally⁽⁶⁾. The national average income from the socioeconomic survey conducted by the National Statistics Office should be applied for the calculation.

Market prices and shadow prices

Ideally, opportunity cost is preferred to market prices. However, in practice, market prices can be applied to some situations where opportunity costs (shadow prices) are not available or feasible.

Final remarks

In conclusion, the measuring cost guidelines are proposed by a review of theories and international related guidelines. The drafted guidelines are commented on by a panel of experts. The guidelines may be different from those of other countries. It is aimed to develop the guidelines that are appropriate for the current Thai situation. The application of these guidelines will improve the quality of health economics evaluation studies. The study results can then be more valuable for health care management at both local and national policy levels. It is important to note that the guidelines still need improvement and should be revised periodically.

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การประเมินต้นทุน

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การประเมินค่าต้นทุนมีบทบาทที่สำคัญในการศึกษาเศรษฐศาสตร์สาธารณสุขโดยเฉพาะอย่างยิ่งในการประเมินความคุ้มค่าทางการแพทย์ แต่การประเมินค่าต้นทุนนี้มีบางประเด็นที่ยังหาข้อสรุปไม่ได้ แบ่งเป็น 3 กลุ่มได้แก่ แนวคิด วิธีคำนวณ และค่าอ้างอิงที่ใช้ในการคำนวณ ดังนั้นการจัดทำคู่มือมาตรฐานการประเมินต้นทุนแห่งชาติเพื่อให้ผลการประเมินสามารถเปรียบเทียบกันได้ จึงเป็นสิ่งสำคัญอย่างยิ่ง บทความนี้มีเนื้อหาประกอบด้วยพื้นฐานทฤษฎี การเปรียบเทียบคู่มือของประเทศต่าง ๆ และข้อเสนอคู่มือของประเทศไทย แต่ละส่วนประกอบด้วยส่วนย่อยของขั้นตอนพื้นฐานในการประเมินต้นทุนได้แก่ การแจกแจงทรัพยากรที่ใช้ การวัดปริมาณทรัพยากรที่ใช้ และการแปลงปริมาณทรัพยากรที่ใช้ให้เป็นมูลค่าของเงิน การวัดต้นทุนทางเศรษฐศาสตร์หรือต้นทุนเสียโอกาสควรวัดในมุมมองของสังคมเป็นหลัก ต้นทุนประกอบด้วยต้นทุนทางตรงด้านการแพทย์ ต้นทุนทางตรงที่ไม่เกี่ยวกับการแพทย์ และต้นทุนทางอ้อม มีการเสนอแนะระดับความน่าเชื่อถือของแหล่งที่มาของข้อมูลต้นทุนเอาไว้เป็นแนวทาง ในการแปลงปริมาณทรัพยากรที่ใช้เป็นมูลค่าในรูปแบบตัวเงิน แนะนำให้ใช้รายการต้นทุนต่อหน่วยมาตรฐานของประเทศสำหรับการวิเคราะห์เพื่อความเหมาะสมสำหรับใช้เป็นข้อมูลการตัดสินใจเชิงนโยบายของประเทศ ข้อเสนอแนะสำหรับการประเมินต้นทุนนี้เหมาะสมในบริบทของประเทศไทยในสถานการณ์ปัจจุบัน
