

CHAPTER II

REVIEW OF LITERATURE

The literature review in this study is to give background to the main question why casemix classification is an alternative payment method in mental health service care. This review covered the overview of health care and payment system, the government's role in mental health service, the costing methodology, the predictors of resource use for mental health care and the psychiatric casemix systems.

1. Health care and payment systems

1.1 Health care insurance markets

According to the World Bank (2001), market mechanism plays an important role in distributing available resources efficiently. Demand for goods and services depends upon not only customer tastes, preferences and needs but also ability to pay for such goods and services.

On supply side, producers will generally produce their services at the lowest possible resources even it is very hard to find in normal market situation. On demand side, buyers normally justify value of services in relation to information on service quality available for buyers.

Demand, need, and utilization in health care service have normally different meanings. Health care demand is the amount of various health care services a consumer desires at given money prices, incomes, etc. Health care need refers to the amount and types of services that are effective in improving health; and health care utilization refers to the types and amounts of different services actually consumed.

In health care service industry, need is a key factor for the distribution of health care, where entry and exit barriers still exist.

Information asymmetry in health care services exists between patients and professionals, creating imbalance of power, usually supply-side has more power service

than consumer. Information asymmetry creates an independence between demand and supply, violating a basic condition for efficient, well-functioning market.

According to the World Bank (2001), illness for an individual is unpredictable, however, illness for a large group of individuals can be predicted and can be arranged to minimize risk through risk pooling. In health care services, varieties of insurance arrangements are proposed and insurance benefits can be in the form of indemnities and reimbursement of costs.

Market failure, as result of inefficient allocation of resources, can be identified into three areas: economies of scale, moral hazard, and risk selection.

Economies of scale means that as a company grows and production units increase, a company will have a better chance to decrease its costs (Heakal, 2003). According to theory, economic growth may be achieved when economies of scale are realized (Heakal, 2003).

Moral hazard is the tendency that misbehavioural responses are induced and create losses. Moral hazard can happen as follows:

1. Insured individual may take fewer precautions to prevent losses, if he has financial coverages for the losses.
2. Insured patients may demand a greater quantity of services. Service providers may increase the recommended treatments and the service prices.

Similarly, risk selection can be classified into:

1. Adverse selection, whereby low-risk individuals opt out of the insurance pool, leaving only high-risk individuals in the pool.
2. Cream-skimming, the profit-taking actions by insurers who are able to differentiate high-risk and low-risk individuals better than the individuals themselves.

According to the review of health care provider payment reform in selected countries in Asia and Latin America (Bitran & Yip, 1998), there are five key actions available for government intervention to correct market failure as follows.

1. providing information to individuals and organizations to help them make more informed decisions,

2. regulating individuals and organizations to affect both how and what activities they undertake,

3. mandating individuals and organizations to undertake certain activities,

4. financing health care with public funds, and

5. providing or delivering the necessary services.

1.2 Financing health care

According to the World Bank (2001), the fund for health care services comes from various sources e.g. financing, funding, and remuneration. Due to very high health care costs, individuals with limited financial sources cannot afford to pay full costs, however health system cannot be ignored. Some governments are likely to pay for essential health care services for some population groups as others raise fund to pay for discretionary services. In general, health care payments come from different sources.

Direct payment is the money that people pay for services in case of no insurance coverage or as cost-sharing provisions for some insurance policy. **Private insurance premium** is the payment that people pay fee to insurers for expected health-service expenditures. **Social insurance contribution** is the payment for average expected expenditures without refund in case of not using it. Some payment schemes may link payment to employment, which will collect premium as a payroll tax. Taxes and other kinds of general government revenues are partly used for financing health care. These can be either direct or indirect taxes. Direct taxes are such as personal income tax, corporate income taxes. Indirect taxes are excise duties, value-added-tax, etc.

Efficiency aspects concerning financing scheme consists of administrative efficiency and economic efficiency. The administrative costs associated with collecting the revenue, which varies significantly by revenue sources as economic efficiency raises from either market failure or taxes.

Different payment-raising options have different equity implications. Direct payments and private insurance premiums are likely to comparatively put higher burden of paying for health services on low-income groups. The equity implications of different payment-raising options and financing mixes can vary dramatically regarding the rules governing eligibility, the contribution rate, and the coverage level. An evaluation of equity

in the burden of paying for health services can be combined with an evaluation of equity in the benefits of consumption of health services. High-income households may pay a larger share of total health care costs (World Bank, 2001); (Barnum, Kutzin & Saxenian, 1995).

1.3 Payment methods

According to the World Bank Group and Barnum, Kutzin & Saxenian (2004) as seen in Figure 1 and Table 1, 2. Payment schemes leading to efficient, equitable, and sustainable health care systems, can be developed in variety forms based on elements described below.

The involved parties generally include government agencies, insurers, service providers, health care organizations, and beneficiaries. Health fund holder shall pay expenditures for personal health cares. The health fund holder may receive revenues from many sources e.g. wage-based tax or premium from employers, subsidy from government, and voluntary payments from citizens.

Payment methods to service providers consist of six types as follows:

1. Fee-for-service payment is the payment method which health care provider receives payment after service was provided. Since payment depends upon the number of services given, efficiency high intensity of treatment and over service are the major concern.

2. Diagnosis-based payment is the payment method which service provider receives a fixed, pre-specified payment for a case treated. This type of payment encourages technical and cost-effectiveness efficiency in both production of services and use of services. Adverse effect is observed when provider adversely selects to treat less severe cases in each diagnosis category.

3. Capitation payment is the payment method which service provider receives a fixed, pre-specified payment per time period. Under this method, a service provider also assumes to play an insurer role which bears financial risk. This method is appropriate for sizable pool of people, which gives incentives to both under-service and cream-skimming by selecting into one's care relatively healthy individuals whose expected costs are below the capitation rate.

4. Global budget payment is the payment method which service providers receive a total budget to provide services for a specific period of time. This payment method relies upon historical costs, number of services provided, number and type of treatment, the population served, etc. Therefore, global budget can be simply the sum of capitation payments for all providers which accept responsibility.

5. Salary payment is the payment method which a health professional receives a pre-specified sum of money to carry out specified responsibilities for an organization. This method is neutral in respect of under or over provision of services for any given patient and the provision of particular types of services;

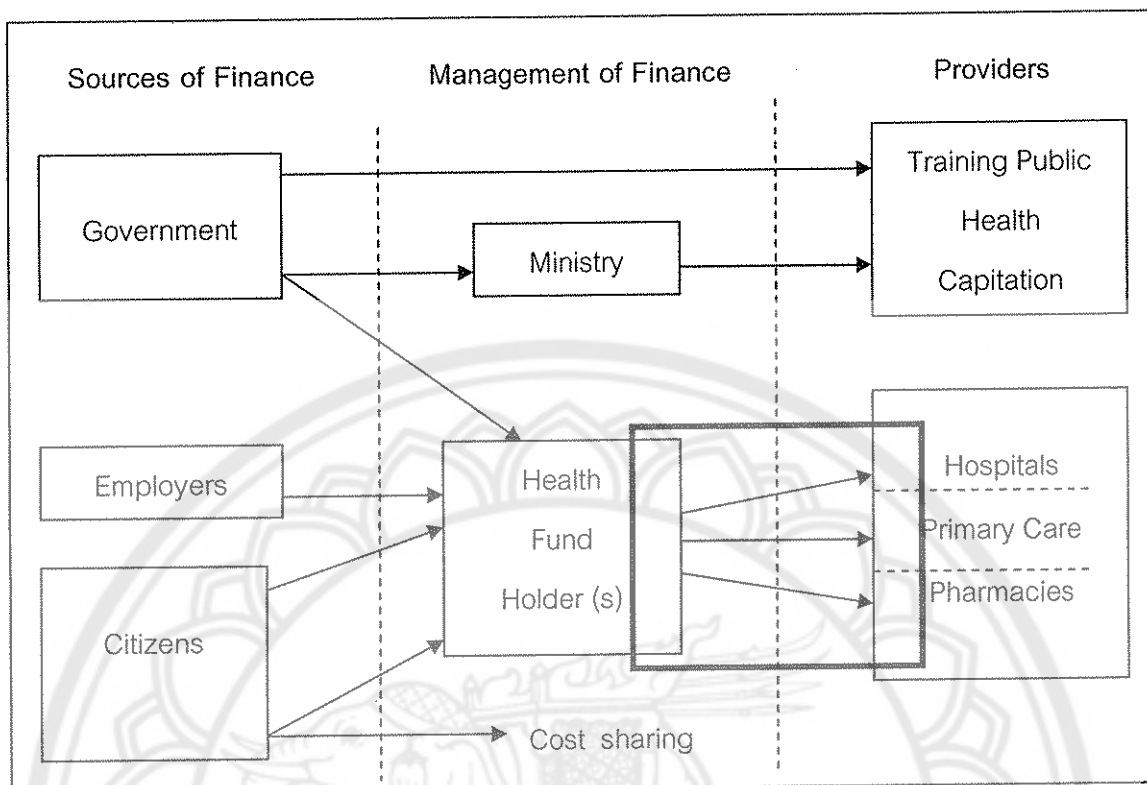
6. Wage payment is the payment method which service provider receives a pre-specified payment per hour of work. The incentives for this method are similar to salary, except payment is even more closely tied to time spent at the workplace (World Bank, 2001); (Barnum et al, 1995).

A review of health care provider payment reform in selected countries in Asia and Latin America (1998) (Bitran & Yip, 1998) reminds us that during the last two decades, private sector in many countries has rapidly grown in terms of financing and provision of care. Countries can be classified into three groups as follows:

1. Traditional payment is the one which hospitals are paid by budgets and physicians on salary basis as private practice are reimbursed by the fee-for-service method. Countries in this category includes India, Malaysia, Sri Lanka, and Pakistan and Bangladesh.

2. In this category, countries have implemented some degree of social health insurance which health financing systems are closer to the Bismarck model. This group includes Taiwan, Japan, Korea, and the Philippines.

3. The countries appears to be moving from a British model with public sector (this is public not mention on private)delivery and financing of care toward one based on social insurance. This group includes Thailand, Indonesia, and Vietnam.



Source: Barnum, Kutzin & Saxenian (1995)

Figure 1 Flow of funds under generic reforms

Table 1 Summary of incentives in pure reimbursement systems

Reimbursement Type	Underlying Incentives for:			
	Cost/Unit	Services/Case	Quantity (of cases)	Risk Selection
Global budget	--	--	-	0
Fee for Service				
Unconstrained	-	++	+	0
Fixed	--	++	+	+
Capitation	--	--	--	++
Case Based	--	--	++	+

Legend: -- -- strong incentive to reduce; - moderate incentive to reduce; 0 no clear incentive;

+ moderate incentive to increase;

+ + strong incentive to increase.

Source: Barnum, Kutzin & Saxenian (1995)

Table 2 Advantages and disadvantages of provider payment alternatives

Payment method	Main advantages	Main disadvantages	Measures to minimize disadvantages
Line Item Budget	<ul style="list-style-type: none"> · Allows strong central control, desirable where local management very weak · Predictable expenses for fund holder (unless supplemental budgets provided) 	<ul style="list-style-type: none"> · No direct incentives for efficiency · Provider may under provide services · Imposes fixed resource use, directly impeding efficiency 	<ul style="list-style-type: none"> · Monitor performance to encourage best use of resources within constraint of fixed factors of production
Global Budget	<ul style="list-style-type: none"> · Predictable expenses for fund holder, low administrative costs · Unified budget permits resources to be used efficiently 	<ul style="list-style-type: none"> · No direct incentives for efficiency · Provider may under provide services 	<ul style="list-style-type: none"> · Monitor performance. · Provide performance based incentives (link global budget to performance, bonuses)
Capitation	<ul style="list-style-type: none"> · Predictable expenses for the fund holder · Provider has incentive to operate efficiently · Eliminates supplier-induced demand · Moderate admin. costs 	<ul style="list-style-type: none"> · Financial risk may bankrupt provider. Provider may seek to minimize risk by "cream skimming"--enrolling low-risk patients. · Provider may under provide services 	<ul style="list-style-type: none"> · To minimize excessive provider risk capitation "carve outs" and adjusting capitated payments to reflect underlying risks of population enrolled · Enforce contracts to ensure services provided
Fee for Service (no fee schedule)	<ul style="list-style-type: none"> · Incentives to provide services 	<ul style="list-style-type: none"> · Unpredictable expenses for fund holder · Cost escalating: strong incentives for supplier-induced demand 	
Fee for Service with Fixed Fee Schedules	<ul style="list-style-type: none"> · Incentives to operate efficiently · Efficiency is greatly enhanced when combined with a global budget cap 	<ul style="list-style-type: none"> · Unpredictable expenses for fund holder · Cost escalating: incentives for supplier-induced demand · Higher administrative costs (price controls must be established, revised periodically and enforced) 	<ul style="list-style-type: none"> · Reduce unpredictability of expenses and cost escalation by capping total expenditures within a preset limit, and adjusting prices to keep expenditures within limit
Case-Based	<ul style="list-style-type: none"> · Strong incentives to operate efficiently 	<ul style="list-style-type: none"> · Unpredictable expenses for fund holder, high administrative costs (but less than fee for service) · Provider has incentives to select low-risks within case categories · Case based payment less suitable for outpatient care (difficult to define case) 	<ul style="list-style-type: none"> · Adopt detailed case-mix category system · Adopt mixed payment system

Source: Barnum, Kutzin & Saxenian (1995)

1.4 Principles for creating payment schemes

According to the World Bank (2001), to ensure efficient, equitable and sustainable health care system, general principles are needed as follows:

1.4.1 Balancing the prospective and retrospective elements. In funder's point of view, prospective element of payment encourages care cost minimization by service providers. Further, cost control exists from total fixed expenditures. From service provider's perspective, provider is likely to select undertreatment of case and select patient with favourable risks for treatment.

1.4.2 Effective pool of financial risk. Sharing the financial risk between a funder and a funded organization is paramount, especially sharing unit of payment and type of payment (prospective or retrospective). Any change might shift financial risk from one party to another.

1.4.3 Minimization of self-interest strategy or manipulative responses by a funder organization. This is to make sure that critical element to payment is not controlled by a funder.

1.4.4 Availability of administrative and managerial capacities. Fee-for-service method needs ability to monitor thousands of claims as capitation method needs ability to determine risk and set charge rate. Salary method seems to require lowest administrative demand but to require higher monitoring.

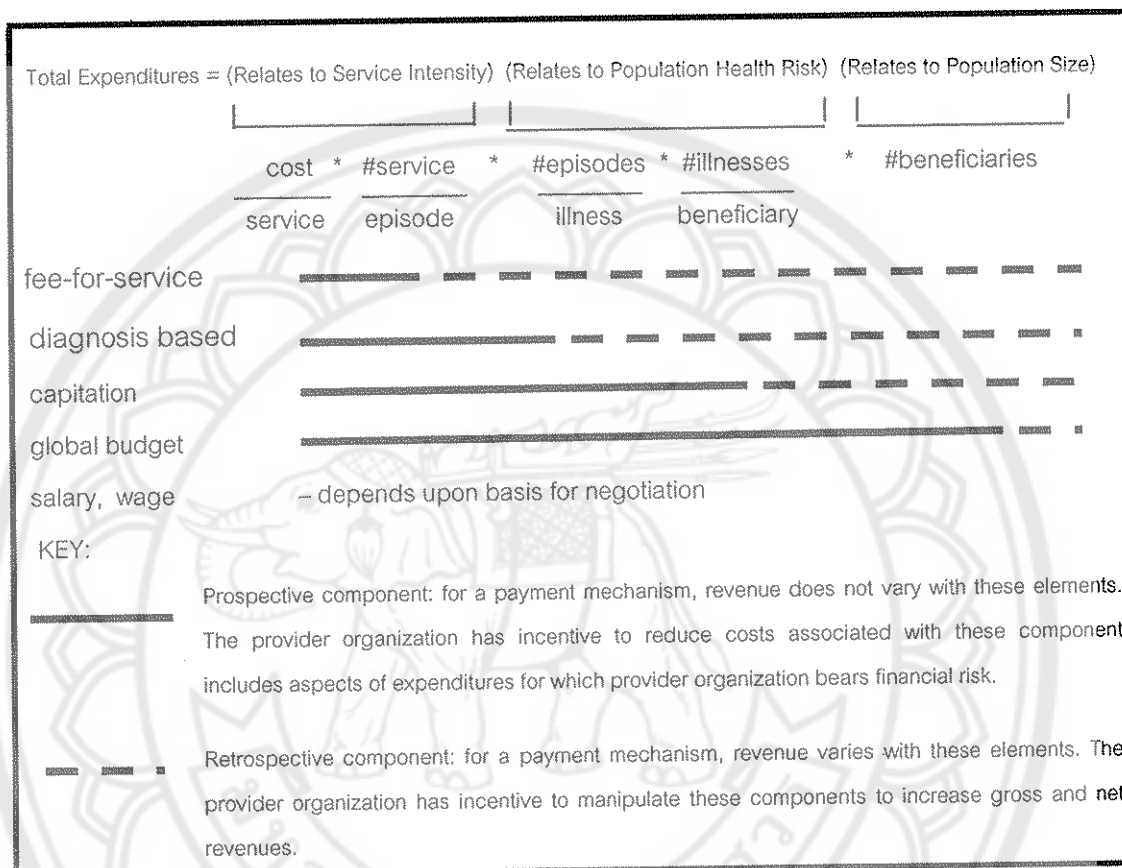
1.4.5 Well-matched payment mechanism. In real world, there is no one best payment method. Fee-for-service seems appropriate when critical activities can be well represented and negative effect can be easily controlled. Capitation and salary methods might be more appropriate with complex case than fee-for-service.

There are three basic approaches that influence service provider's behavior and other parties as follows:

1. **Unilateral determination by the funder** is possible when the funder has market power e.g. the US Medicare system;

2. **Negotiation between the payer and the payee** is widely used with both publicly and privately financed systems e.g. physician fees in Canada and Europe;

Market-based approach allows service providers to set fees. Even it is less common but it can be found in some private insurance systems (World Bank, 2001); (Barnum et al., 1995).



Source: The World Bank (2001)

Figure 2 Prospective and Retrospective Elements of Alternative Payment Mechanisms

1.5 Conclusion of health care and payment system

According to Barnum et al. (Barnum, Kutzin & Saxenian, 2004), in the enabling environment, payment schemes to the institutions and the capacity of any particular country are needed to tailor the payment systems under some broad generalizations.

1. There is actually no one fit-for-all payment scheme. To select appropriate payment method, various factors e.g. economic, social, and institutional context are needed. In general, disadvantage of one payment method can be addressed by another.

2. Fee-for-service and case-based payment schemes are inappropriate with low-income countries, especially for the public health as primary services. Prepaid capitation scheme with good monitoring is appropriate in low-income countries.

3. Middle-income countries service-based or cost-based schemes are appropriate because they can overcome the system administrative costs. Detailed payment schemes are appropriate with high-income countries.

4. More complex payment schemes play important roles in changing enabling environment in most socialist economic countries, except the limited institutional and private health sector.

5. Competition among service providers are one of the key components of payment reform in both public institutions and regulated markets. The service providers can reform payment by improving management, especially in the increasing efficiency and quality environment.

6. Combined payments to service provider is more reliable than single method due to more administrative practical and minimal adverse incentives from one payment mechanism.

7. Cost-escalating incentives of unregulated fee-for-service payment should be avoided due to excess services being encouraged by service providers.

8. Efficiency and equity are inextricably intertwined in the real world.

2. Government's role in mental health service

Mental health problems are quite common around the world. In fact, approximately 450 million people worldwide currently suffer from mental health problems. Mental and behavioral disorders are presently at any point in time about 10% of the adult population. Around 20% of all patients seen by primary health care

professionals have one or more mental disorders. It was estimated that, in 1990, mental and neurological disorders accounted for 10% of the total disability adjusted life years (DALYs) lost due to all diseases and injuries. Moreover, the spread of mental illness is increasing. The current level is 12% of the total burden from disease with projections to reach 15% in 2020. For example, depressive disorders are the fourth leading cause of disease and disability worldwide. They are expected to rank as the second leading causes of global disease burden by 2020, second only to ischemic heart diseases. For example, 20% of all patients in the US had a mental illness, and in China 15.7%. In Europe, one in five persons will develop depression during their lifetime (World Bank, 2001).

Appropriate treatment of mental and behavioral disorders implies the rational use of pharmacological, psychological and psychosocial interventions in a clinically meaningful and integrated way. The management of specific conditions consists of intervention in the areas of prevention, treatment and rehabilitation (World Health Organization, 2001).

Government, as the ultimate stewards of mental health, needs to set policies within the context of general health systems and financing arrangements that will protect and improve the mental health of the population. In terms of financing, people should be protected from catastrophic financial risk; the healthy should subsidize the sick; and the well-off should subsidize the poor. Government has a responsibility to give priority to mental health. In addition, international support is essential for many countries to initiate mental health programmes. The actions to be taken in each country will depend on the resources available and the current status of mental health care. Mental health policy should be reinforced by coherent alcohol and drug policies, as well as social welfare services such as housing. Policies should be drawn up with the involvement of all stakeholders and should be based on reliable information. Policies should ensure the respect of human rights and take account of the needs of vulnerable groups (World Health Organization, 2001).

The World Health Report 2001 "Mental Health" recommended that mental health care in developing countries should:

1. provide treatment for mental disorders within primary care
2. ensure that psychotropic drugs are available
3. replace large custodial mental hospitals by community care facilities

backed up by general hospital psychiatric beds and home care support

4. launch public awareness campaigns to overcome stigma and discrimination
5. involve communities, families and consumers in decision-making on policies and services

6. establish national policies, programmes and legislation
7. train mental health professionals
8. link mental health with other social sectors
9. monitor mental health; and support research (World Health Organization, 2001).

When comparing the mental health resource allocation in various countries, the total health expenditure portion of GDP and mental health budgets vary from country to country. The percentage of the GDP spent on health care differs widely; the poorest countries often allocate the smallest share. The percentage of the health care budgets spent on mental health varies greatly, from no budget allocation at all in some countries, to over 20% in others (Rutz, 2003).

In 2001, 33% of countries did not have a specific mental health budget within their overall public health budgets. Another 33% allocated less than 1% of their overall health budgets to mental health. The remaining countries allocated less than 5% as shown in figure 3 (Rutz, 2003).

The mismatching by the size and effectiveness of demands as evidently seen by patients around the world who did not obtain treatment was still in higher rate:

1. In US, 80% of patients did not obtain treatment.
2. In China, 70% of patients did not obtain treatment.
3. In Australia, 31% of patients in the community were untreated.

4. In European Region:

4.1 About 47% of people suffering from major depression remain untreated

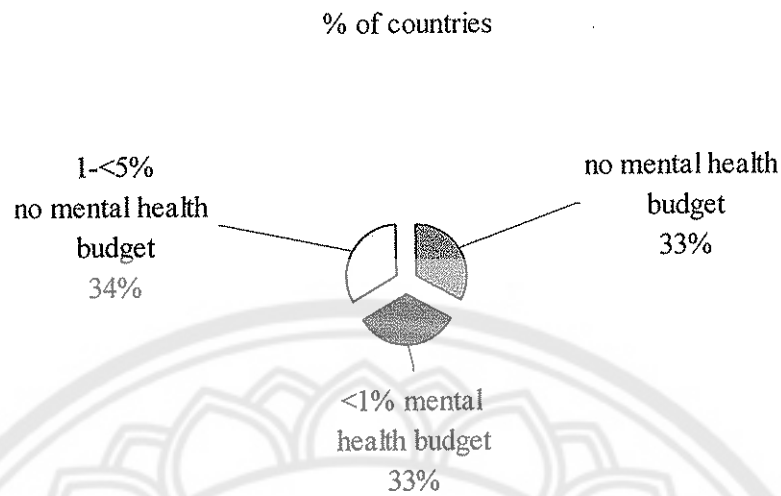
4.2 About 36% to 45% of people suffering from schizophrenia were untreated

4.3 More than 60% of epileptics were untreated (Rutz, 2003).

The ratios of psychiatrists and psychiatric beds per population were high in developed countries; more than 10 psychiatrists per 10,000 population, especially in the US and Australia. While, Thailand and China, the ratio of psychiatrists per population were less than 1 per 10,000. In terms of psychiatric beds, it was highest in the EU countries. In Australia, the ratio of psychiatric beds per population was low due to the government policy of promoting community psychiatric programs. Thailand had a low ratio of both psychiatrists and psychiatric beds due to budget limitations as seen in table 3 (Rutz, 2003).

Table 3 Governments' Role in Mental Health Budget

	US	EU	Australia	Japan	China	Thai
GDP per capita \$7,900 (2002 est.)	\$37,600 (2002 est.)		\$27,000 (2002 est.)	\$28,000 (2002 est.)	\$4,400 (2002 est.)	\$6,900 (2002 est.)
Total health expenditure As percentage of GDP	13% (Zhang, 2001)			7% (Zhang, 2001)	5% (Zhang, 2001)	
Mental health budget (of Total health budget)	5.7% (APA, 2002)	<3% (WHO, 2001)	5-10% (WHO, 2001)			3.5% (Phuaphanprasert, 2003)
Patients with mental illness	20% (APA, 2002)				15.7% (Doris F., 2001)	
Patients did not obtain treatment		47%-major depression 36-45%-schizophrenia >60%-epilepsy (WHO, 2001)	31% community pt. (Victoria Auditor, 2002)		70% (Gao et al. 2001)	
Psychiatrists per 10,000 people	>10 (WHO, 2001)	>5.1 (WHO, 2001)	>10 (WHO, 2001)	5.1-10 (WHO, 2001)	0-1 (WHO, 2001)	0-1 (.3) (WHO, 2001)
Psychiatric beds per 10,000 people	3.6 (WHO, 2001)	9.3 (WHO, 2001)	1.0 (WHO, 2001)	3.6 (WHO, 2001)		0.3 (WHO, 2001)



Source: The World Health Organization. (2001)

Figure 3 Countries and their mental health budgets compared to total health budget

3. Thai government's role in mental health service

Mental health service system in Thailand has been mainly the responsibility of the public sector. Thai public health budget accounted for 4.0% (41 billion Baht) and 4.2% (42 billion Baht) of the total country budget (one trillion Baht) in 2002 and 2003 respectively. In the total country budget, mental health budgets were approximately 0.16% in 2002 and 0.15% in 2003. This has been allocated mainly through the mental health department, which is divided into 4 major activities as follows: research and development plan, curative plan, aids program and drug related program. The biggest share (>80%) was curative activity involving mainly inpatient care shown in Table 4 (Command of the Ministry of Public Health, 2001).

Table 4 Mental health budget in fiscal years 2002 and 2003

Government plan- project	Annual Budget 2002		Annual Budget 2003	
	Amount (million baht)	%	Amount (million baht)	%
Country budget	1,023,000	100	999,900	100
Ministry of Public Health budget	41,501	4.06	42,263	4.23
Mental Health Department budget	1,592	.16	1,483	.15
a. research and development plan	55	3.47	183	12.31
b. curative plan				
1. preventive and curative disease	1,444	90.74	1,202	81.07
2. infrastructure project	34	2.16	27	1.85
c. aids programme	6	0.35	20	1.37
d. drug related programme	52	3.28	51	3.40
Total		100.00		100.00

Source: Office of Prime Minister, (2002)

Public mental health service system can be categorized into 4 service levels (primary, secondary, tertiary, and supra-tertiary care). Each level has its own characteristics and has clearly distinguished management, organization structure, resources allocation, etc. Currently, within the universal coverage scheme, budget allocation for psychiatric care is different in each level as follows:

1. Primary and Secondary Level:

The primary and secondary care hospitals (or district hospitals) have been allocated by capitation budget for all diseases (both acute and sub-acute and non-acute care). Hospitals charge patients who have no universal coverage scheme (30 baht card).

2. Tertiary Level:

The tertiary care hospitals (provincial hospitals and mental hospitals) are paid apart from the function as primary level for their catchment populations, and inpatient care is paid according to DRG with global budget. The psychiatric inpatient case, the hospitals are paid at the rate of 165 baht per day for a maximum of 15 days.

3. Supra-tertiary Level:

The supra-tertiary level hospitals are composed of medical school hospitals and the two hospitals under the mental health department, Srithanya Hospital in Nonthaburi province and Somdejchaopraya Hospital in Bangkok. The payment system is like the tertiary hospitals except no ceiling payment for reimbursement cases (Phuaphanprasert et al., 2003); (Command of the Ministry of Public Health, 2001).

Problems found in Thai mental health service system were classified as budget allocation, budget efficiency, human resources, fiscal and monetary database, costing calculation and referral charges among hospitals (Phuaphanprasert & Pannarunothai, 2003).

4. Costing approach

4.1 Costing methods

Most current accounting systems capture and distribute resource costs by one of the following methods:

Organization Element Accounting

This system was created to provide management with information on the costs of organizational elements. This model is totally inadequate for making decisions on output variations. There is no application of costs to the ultimate output, activities or process flows of the organization. (reference)

Budgetary Accounting

The tracking of program costs by budgetary account is very similar to that of the organizational element. The major objective of budgetary management was to fully use the resources assigned rather than to enhance productivity or to reduce expenses, because any attempt to conserve resources led to a reduction in the future budget resource level. Like organizational accounting systems, there was no attempt to capture cost output or even to define output. (reference)

Traditional Cost Accounting

Revolving funds involved with industrial operations or depot operations must have full cost accounting systems to support the cost allocation and capturing process. Most of these organizations are customer reimbursed based on sales of their goods and services. These cost accounting operations use the classic model of cost distribution which was designed around the major factors of production: direct labor, direct materials and overhead (World Bank, 2002).

An activity based costing system (ABC)

Most costing studies fails to meet the full requirement for management information that occurs as the result of a redesign of the organization or any part of the organization. An activity based costing system (ABC) is a more representative distribution of resource use since the cost allocations are based on the direct cost drivers inherent in each of the work activities that make up the organizational structure. ABC applies resource use directly to the output products and services based on the actual work activities of the process that produces the output with limited arbitrary allocations of indirect or overhead costs. (reference)

ABC is a technique to quantitatively measure the cost and performance of activities, resources and cost objects, including when appropriate, overhead. It measures process and activity performance, determines the cost of business process outputs, and identifies opportunities to improve process efficiency and effectiveness. It captures organizational costs for the factors of production and administrative expenses, and applies them to the defined activity structure. It captures quantified cost and time data and translates this into decision information. It is the critical decision support element of the total process. It is an essential part of the functional process improvement and reengineering effort.

ABC is a consistent, disciplined process that is necessary to the functional process improvement effort in both an analytical and evaluation role. This creativity does not invalidate the basic integrity of the idea, but is rather a necessity to bridge the gap from the traditional accounting data to the new process methodology. This idea will become more evident when ABC is compared to the traditional methods of costing.

Although ABC is still an evolving discipline, it offers great advantages over these more traditional methods. Although evolving, ABC is nevertheless applied with sound accounting principles to translate cost data and to provide a reliable information source upon based on managerial decisions.

ABC identifies and quantifies activity cost and performance data into a format which stratifies decision variables into a configuration which makes the decision clearer and easier to make. It will be more beneficial to see how this takes place and the benefits.

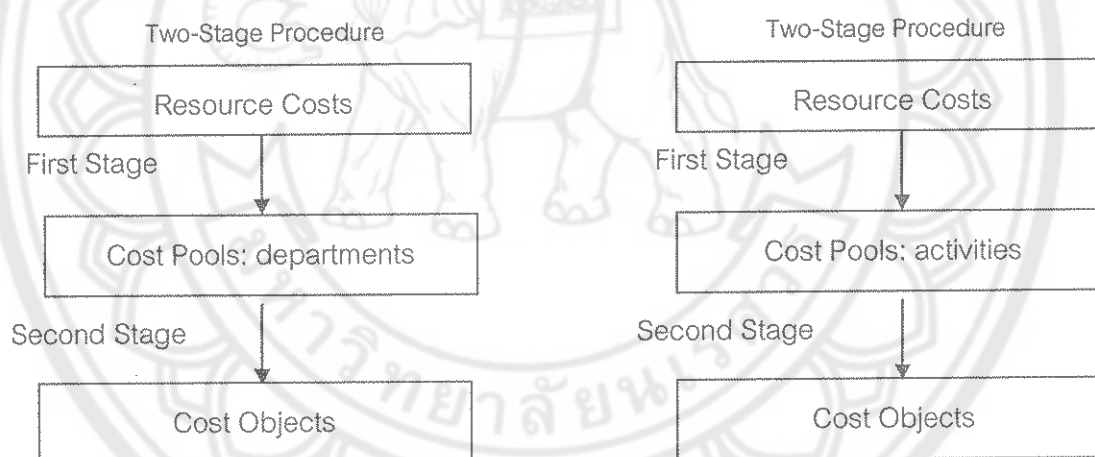
The ultimate decision will be probably some mixture of the two extremes into a blended action that minimizes cost and time while creating a better outcome, a better decision than that first proposed. This additional alternative is only possible because of the quantified data which is created from the analysis of cost and activity information. The additional activity-based data improves the process and enhances the quality of the final decision.

The major difficulty in using activity-based costing has been the variance of the practices, methods, definitions, procedures, and standards applied under it.

With the recent advent of activity accounting, it has been discovered that the traditional cost accounting methodology can create a significant difference in output cost because of the manner in which overhead costs are allocated to output rather than traced to output. This difference in distribution can skew the ultimate price of the output and lead to poor management decisions.

ABC differs from traditional costing systems by modeling the usage of a firm's resources on activities performed by these resources and then linking the cost to cost objects such as products, customers, or services (Rutz, 2003). An analysis of the comparative differences between the current methods of accounting and that proposed as activity-based accounting indicates that the new applications are more representative and, therefore, more useful to the managerial decision-making process. The traditional method applies overhead directly to the output that can overstate or understate the true cost. It first assigns hospital overhead costs to departmental cost pools or cost centers

and then to production outputs (see Figure 4). The overhead of traditional cost was allocated directly to the output based on the amount or share of total output production rather than through the activity utilization. This can overstate or understate the actual amounts of overhead that is actually used by each of the outputs. Because of hidden, or less than apparent, internal process flow differences and actual resource uses, the traditional distribution does not align the amount of activity that is consumed individually by each output directly to the appropriate output. While activity-based methodology more fairly distributes costs with fewer arbitrary distributions normally associated with traditional cost accounting procedures. ABC gives a more accurate picture of output costs by tracing overhead cost through the activities that are actually used to produce the output rather than straight allocation.



Source: Department of Defense (2002)

Figure 5 The activity-based costing system

Figure 4 The traditional costing system

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4.2 Inpatient care costs

The costing process distributes 'core' costs (salaries, administrative infrastructure costs, overheads and services) to two categories of 'products': patient care products and non-patient care products. Costs of the first were allocated to individual patients according to a range of statistics and subsequently aggregated from episode costs. The unit for counting patient care products is 'patient day'. This is 'rolled up' into cost per episode of care, which becomes the dependent variable used in the development of this study classification. Costs of non-patient care products are also distributed into 'non-patient attributable activities'. Total costs assigned to those activities become separate 'final products'. Developing the costing methodology requires the team to cross new ground, since there are no precedents for distributing common pools of staff time (and associated costs) of inpatient. The costing data are combined with the clinical attribute and service utilization data to form an integrated database for analysis (Bitran & Yip, 1998).

Four steps are used to determine the costs of inpatient services by ABC approach. The following briefly summarizes those steps and discusses them in details.

Step 1: Identify and classify the activities related to inpatient service.

Activities in all areas of the value chain must be included, called an activity dictionary. Analyzing all resources and activities needed for inpatient service are divided to five-level hierarchy of resources and activities.

1. Unit-level resources and activities are acquired and performed specifically for individual units of service.
2. Batch-level resources and activities are acquired and performed to make a group, or batch, of similar products.
3. Product-level resources and activities are acquired and performed to produce and sell a specific service.
4. Customer-level resources and activities are acquired and performed to serve specific customers.
5. Facility-level resources and activities are acquired and performed to provide the general capacity to produce services.

Step 2: Estimate the costs of activities identified in step 1.

The costs are for both human resources and physical resources. Information must include employee data from personal interviews and financial data from the accounting department. Then calculate the total cost of each activity.

Step 3: Calculate a cost-driver rate for each activity.

The activity cost data from step 2 is used to calculate a cost-driver rate that patient service can use for assigning activity costs to services. This rate should use a base that has some causal link to the cost.

Step 4: Assign activity costs to products.

The cost-driver rates prepared in step 3 are used to assign activity costs to services (Bitran & Yip, 1998).

According to research studies in Thailand, it is found that;

The study "Unit cost of mental health services by the Mental Health Department" is a preliminary study of how to collect data benefit to a further health economic analysis for mental health department. This research is beneficial to reasonable service pricings which was be fair to service providers and patients. Moreover, it is likely to be a beneficial management tool for middle up management of the public health department in making appropriate budget planning and budget allocation and also be a guideline for developing appropriate mental health services in line with public health economic methodology.

The study "Charges and relative weights of diagnosis related groups in psychiatry" shown that RW and average LOS of Psychiatric DRGs are different from those of Diagnosis Related Groups Thai version 2 depending on procedures and average LOS of physical diseases. RW and average LOS of Psychiatric DRGs need to be specifically reconsidered of optimal allocation of budget for hospitals in Psychiatric department.

The study "Cost of psychiatric care by casemix approach, Suan Prung Psychiatric Hospital" shown that psychiatric care and medical care have very different cost structure. The score from mental health assessment can be used for psychiatric patient's classification. It was able to use multi-factors for psychiatric patient's classification which this makes the MH-CASC better than Thai's DRG version 3.

The study "Effect of 30 baht policy in relation to the psychiatric service system: Thailand's overall view and case study of psychiatric hospitals in the Northern region of Thailand" showed that primary and secondary health service facilities are responsible for 57% of the total psychiatric inpatients, where the budget has been allocated on a capitation budget which is considered inappropriate. There is inequity of resource use so doctors and bed capacity are concentrated in major cities.

5. Predictors of resource use for mental health care

Factors associated with the prevalence, onset and course of mental and behavioural disorders include poverty, sex, age, conflicts and disasters, major physical diseases, and the family and social environment. The management of mental and behavioral disorders perhaps more particularly than that of other medical condition-calls for the balanced combination of three fundamental ingredients: medication, psychotherapy and psychosocial rehabilitation. The amount needed will vary as a function not only of the main current stage of the disease. In other words, treatments should be tailored to individual needs (diagnosis), but also of any physical and mental co-morbidity, the age of the patient and the change of patient's living condition (World Health Organization, 2001).

It is found that there are many factors to predict mental health cost which these factors are different from physical's predictors e.g. risk of harm to self or others, level of functioning and social support, socio-demographic characteristics. The predict factors of mental health cost according to literature review of MH-CASC are composed of a minimum set of 7 factors as follows (Buckingham et al., 2003).

5.1 Diagnosis

Diagnosis is one factor to predict psychiatric care cost. In the acute psychiatric inpatient setting, diagnosis is not an adequate predictor of resource use by itself. For adults, diagnosis alone explains between 2%-19% of the variance in length of stay. Schizophrenia and major affective disorders are associated with longer lengths of stay and high readmission rates.

5.2 Severity of Symptoms

Severity of symptoms has an influence on mental health care cost. Clinicians themselves rate severity as the greatest predictor for care cost. This is evident in nursing classification instruments adopting severity as a factor, which is predictive of high nursing dependency, and treatment guidelines pointing to specific differences in treatment depending on whether a person's symptoms are mild, moderate or severe.

Severity of symptoms has been differently used to refer to:

1. The type of acute symptoms
2. The number and intensity of acute symptoms
3. The persistence of acute symptoms, or their responsiveness to

Treatment

4. The type and level of 'negative' symptoms, such as flattened affect
5. The impact of symptoms on personal functioning
6. A range of attributes, such as level of functioning, history of

hospitalization.

5.3 Risk of harm to self or others

Risk of harm to self or others has consistently shown the suicidal idea to be predictive of greater lengths of stay. In the long-stay inpatient setting, danger to others has been shown to be associated with higher levels of resource use, long-stay inpatient classification that initially splits on aggressive or self-destructive behaviors.

5.4 Level of functioning and social support

The lower level of functioning is associated with higher number of bed days. On the other hand, shorter lengths of stay is associated with higher level of social support.

5.5 Co-morbidity

The co-morbidity may influence patterns of care and care cost, which can be categorized into three groups as follows:

1. Psychiatric co-morbidity
2. Substance abuse
3. Physical co-morbidity

5.6 Socio-demographic characteristics

The socio-demographic factors can predict individual patient care cost. However, some of the characteristics that have been identified as predictive of care cost would be difficult to defend in the design of a reimbursement system (e.g., socio-economic status, and marital status) (Buckingham et al., 2003).

5.6.1 Age:

The older the psychiatric inpatient, the higher admission and readmission rates, and longer stays, than the younger (Buckingham et al., 2003).

5.6.2 Gender:

There are different patterns of care. Women as higher users of services and have been shown to be more likely to make use of primary prevention and early intervention services, while men have been found to be more likely to use 'after care' facilities (Buckingham et al., 2003).

5.6.3 Socio-economic status:

Low socio-economic status is associated with high care cost (Buckingham et al., 2003).

5.6.4 Marital status:

The unmarried and without dependant group have been shown to be correlated with longer hospital stays, higher readmission rates, and difficulty in treatment (Buckingham et al., 2003).

5.6.5 Ethnicity:

Ethnicity is correlated with care cost. Higher readmission rates are associated with lower ethnic minorities (Buckingham et al., 2003).

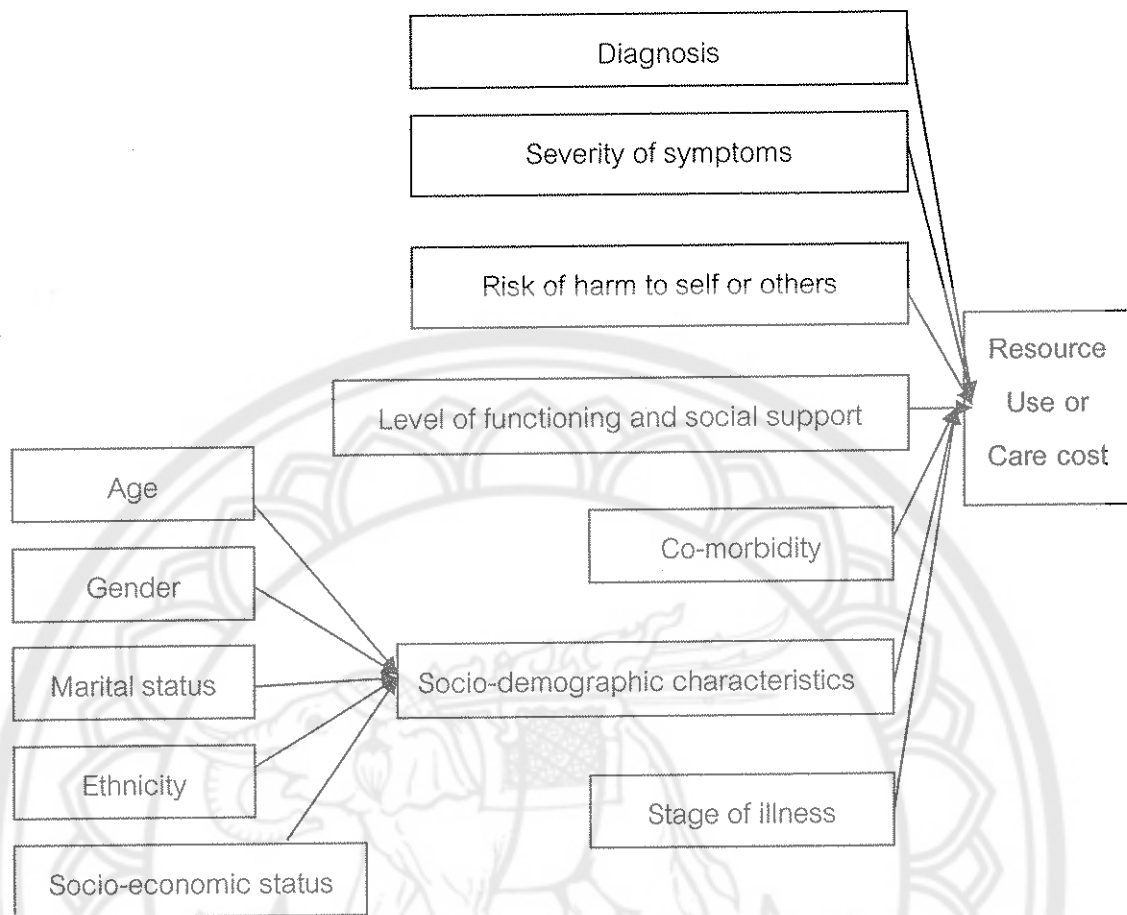
5.6.6 Stage of illness:

Care cost varies along different stages of illness. In particular, long-term chronic patients have been shown to require more and longer stay compared with their more recent onset counterparts (see a detail in Figure 6) (Buckingham et al., 2003).

In summary, there is evidence that resource use will differ with stage of illness. In particular, long-term chronic patients have been shown to require more and longer hospitalisations compared with their more recent onset counterparts, although there is also a recognition that initial episodes may require additional resource inputs (Buckingham et al., 2003).

The preliminary validation study indicated that:

1. there was a reasonable distribution of cases across the initial patient classes (consistent with a requirement for adequate numbers in each class in the classification);
2. there was reasonable differentiation of resource use between classes (consistent with the requirement that classes be resource homogenous); and
3. the initial classes were workable, and acceptable to the clinical community as a hypothesis to be tested (consistent with the requirement that classes be clinically meaningful).



Source: Buckingham et al., (2003)

Figure 6 Hypotheses on predictors of care cost

6. Clinical panels

In the MH-CASC Project (Buckingham et al., 2003), the Clinical Reference Group resolved that the best way to sample available knowledge from experienced practitioners was through a clinical panel process. Five clinical panels were convened, organised around diagnostic clusters, with each panel meeting for between four and six hours. Diagnostic clusters were chosen as a starting point partly because the major mental health classification systems are based on diagnosis and also because areas of clinical expertise and patterns of care could be readily identified. In addition, separate, supplementary panels were convened to survey the views of consumers and carers.

Each panel was asked to identify the key patient attributes that differentiate patients within each diagnostic category on the basis of the type of treatment required and resource use.

Panel members were then asked to refine the attribute list. They were asked to ensure that each attribute was measurable and was not redundant (in the sense that it measured the same underlying concept as another attribute). They were also asked to consider interaction among attributes, and ensure that attributes were included which did not in them predict resource inputs but were important in combination with other attributes.

Finally, panel members were asked to identify the major classes of patients within the diagnostic category, in terms of their relative resource requirements and their key attributes identified above.

The clinical panels identified a total of 50 initial consumer classes, distributed across nine 'diagnostic super classes', which were used as working hypotheses for classification development. The super classes, and the attributes considered important within each are summarised in Table 5 (Buckingham et al., 2003).

Table 5 Attributes likely to predict cost by diagnostic super class

Diagnostic super class	Attributes identified as potential predictors of resource use
Schizophrenia, paranoia & acute psychotic disorders	<ul style="list-style-type: none"> • recency of onset • receipt of psychiatric treatment within six months • substance abuse • risk of harm to self or others • co-operation with treatment • level of functioning
Mood disorders	<ul style="list-style-type: none"> • diagnosis • risk of harm to self or others • melancholia • psychotic symptoms • history of treatment • personality disorder
Anxiety disorders	<ul style="list-style-type: none"> • depression • psychiatric co-morbidity • substance abuse • severe avoidance symptoms • requires detoxification treatment • major depressive illness • suicidal
Eating disorders	<ul style="list-style-type: none"> • diagnosis • stage of illness • adequacy of social support • identifiable precipitating event • first episode of the disorder • suicidal • psychiatric co-morbidity • physical co-morbidity
Obsessive compulsive Disorders	<ul style="list-style-type: none"> • psychiatric co-morbidity • poor insight • poor motivation • receiving detoxification services • obsessive slowness • history of poor treatment response
Personality disorders	<ul style="list-style-type: none"> • Axis 1 psychiatric conditions • substance abuse • chronic medical conditions • intellectual disability • antisocial behaviour • major social disruption • risk of harm to self or others • presence of psychotic symptoms • multiple agencies involved in the care of the person
Stress and adjustment Disorders	<ul style="list-style-type: none"> • brief episode • psychiatric co-morbidity • intellectual disability • substance abuse • risk of harm to self or others • existence of a recurring stressor
Child and adolescent Mental disorders	<ul style="list-style-type: none"> • psychotic disorder • first presentation • risk of harm to self or others • juvenile correctional system involvement • major family dysfunction
Organic disorders	<ul style="list-style-type: none"> • risk of harm to self or others • high levels of social disruption • grossly inappropriate behaviour • persistent wanderings • significant physical illness • mental disorder co-morbidity • family/social complications • accommodation problems • level of dependency

7. Psychiatric casemix systems

7.1 History of DRG

The casemix classification system is the grouping methodology that incorporates multi-factors together to explain both cost and medical perspectives. The casemix classification system has long developed over a long period of time. The first casemix system was developed in the USA by the "Yale diagnosis related group" in 1977. Since then many derivatives of DRG have been developed. For examples, five years later, Health Care Financing Administration Diagnosis Related Groups (HICFADRG) was developed when the US Health Care financing Administration decided that payment for hospital care would be on a prospective payment system based on acute care DRG. Later in 1992, Australia had its own DRG called Australian Diagnosis Related Group (AN-DRG). Thai DRG first was developed in 1993, similar to Denmark's and Finland's as see a detail in Table 6 (Fisher, 1995).

Table 6 Casemix classification periods

Country	1977	1983	1992	1993	1995	1996	1997
Sweden							SRG****
Denmark & Finland					Nord- DRG*		
Thai				Thai DRG*			
Australia			AN- DRG*			AN-SNAP**, MH-CACS***	
USA	Yale DRG*	HICFADRG*					

Abbreviates: * Diagnosis Related Group (DRG)

** The Australian National Sub-Acute and Non-Acute Patient Classification (AN-SNAP)

*** Mental Health Classification and Service Costs (MH-CASC)

**** State Related Group (SRG)

Diagnosis Related Group (DRG) is a globally accepted patient classification system for acute disease. DRG is derived mainly from diagnosis and operating room procedure so it has some limitations when applying it to sub-acute and non-acute disease including mental illnesses, because it inadequately takes into account the special circumstances of patients requiring a long hospital stay. It is unable to take into account the severity of symptoms which has few group classification and service types (Buckingham et al., 2003); (Phuaphanprasert et al, 2003); (Pfeiffer & Hofdijk, 2002); (Lee et al, 1998); (Casas et al, 1993).

Because DRGs did not adequately describe costs for rehabilitation medicine, and as consequence, quality of care deteriorated, as measured by changed length of hospital stay, increased readmission rate and a rising number of nursing home admissions. Therefore Sub-Acute and Non-Acute Patient Classification (SNAP) has been developed since 1992 first in the USA (Phuaphanprasert et al, 2003); (Pannarunothai, 1999); (Lee et al, 1998); (Fisher, 1995).

SNAP system reflects the goal of management, a change in functional status or improvement in quality of life rather than the patient's diagnosis. It will complete the existing DRG classification. SNAP divides into 2 categories; sub-acute and non-acute patients. Sub-acute care comprises palliative care, rehabilitation, psychogeriatric care, geriatric evaluation and management, while non-acute care comprises maintenance care (Phuaphanprasert et al., 2003); (Pannarunothai, 1999); (Lee et al., 1998).

So developed countries in health budget allocation by casemix approach like Australia have different methodology for acute, sub-acute and non-acute disease and it has specific casemix system for psychiatric disease. Psychiatric casemix system should be user-friendly, create new knowledge base, predict service costs of psychiatric care and service outcome, and also assess appropriate clinical practice guideline. Many developed countries e.g. Australian and Sweden have long experienced in developing psychiatric casemix systems. Details are shown as follows:

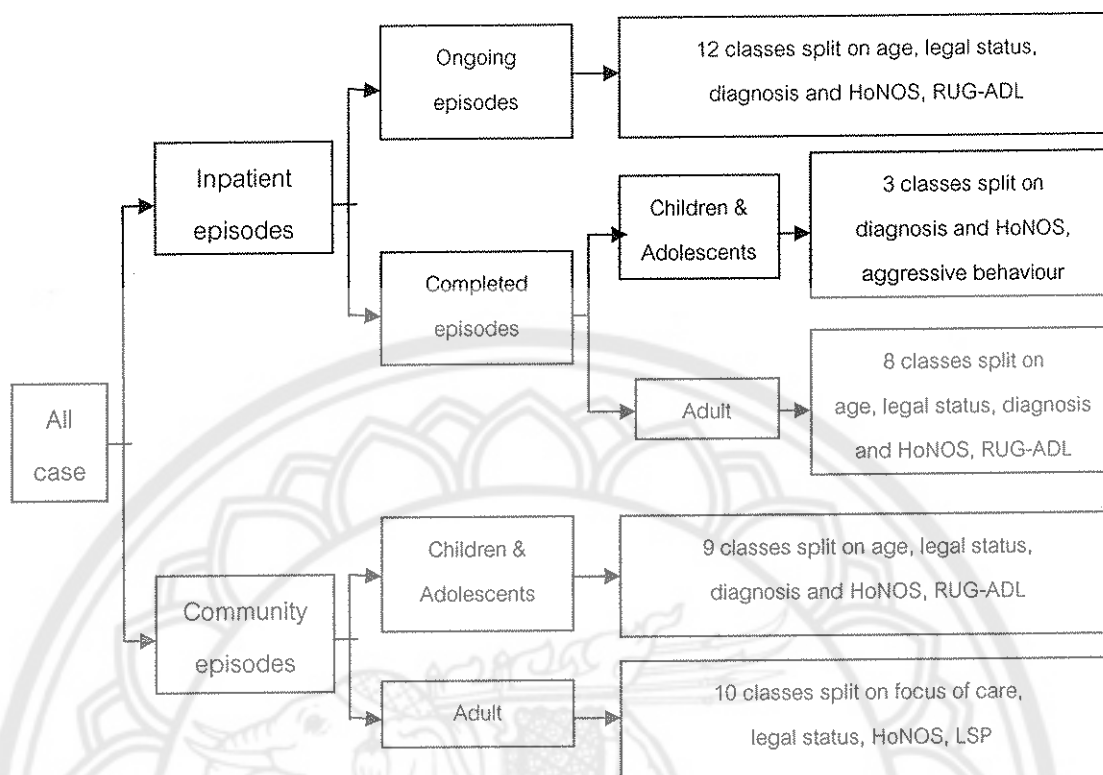
7.2 Experience from Australia

Australia has developed several version of DRGs e.g. Australian National DRG

(AN- DRG), Australian Refined DRG (AR- DRG). Due to DRG limitation in predicting only cost of acute inpatient cases, Australian government has supported the development of case mix system for sub-acute and non-acute patient for budget allocation called the Australian National Sub-Acute and Non-Acute Patient Classification (AN-SNAP) and casemix for psychiatric care called the Mental Health Classification and Service Costs (MH-CASC) since 1997 (Buckingham et al., 2003).

AN-SANP divides sub-acute and non-acute patients into 5 categories: palliative care, rehabilitation, psychogeriatric care, geriatric evaluation and management, and maintenance care. Variables for psychiatric classification consist of diagnosis and mental severity from adaptability measurement. For outpatient, considerations consist of stage of disease and adaptability measurement by the Health of the Nation Outcome Scales (HoNOS). And for inpatient, the HoNOS, medical care level, disease type, phase of disease can classify patients into 13 groups (7 for outpatient and 6 for inpatient) (Siriwanarangsarn, Likanapichitkul & Chakapandhu, 2001); (Lee et al, 1998).

MH-CASC has come to mental health policy since 1997 with a 3 year phasing. It classifies patients by clinical symptom and similar resources use, which categorizes services into 3 groups: acute inpatient units, non-acute inpatient units and community services as shown in figure 7 and Table 7-8 (Buckingham et al., 2003).



Source: Buckingham et al., (2003)

Figure 7 Summary of MH-CASC setting-specific classifications

Table 7 MH-CASC classification for adult completed inpatient episodes

Code	Age	Diagnosis	Status	HoNOS	ADL dependency
ACI-1	<65	Other than schizophrenia or mood or eating disorder			
ACI-2	<65	Schizophrenia or mood or eating disorder	Voluntary	< 25	
ACI-3	<65	Schizophrenia or mood or eating disorder	Voluntary	>=25	
ACI-4	<65	Schizophrenia or mood or eating disorder	Involuntary	<22	
ACI-5	<65	Schizophrenia or mood or eating disorder	Involuntary	>=22	
ACI-6	65-85				=4-7
ACI-7	65-85				>7
ACI-8	>85				

Split points used for class definition:

HoNOS-10 < 25 = low-medium severity

HoNOS-10 < 22 = low/medium severity no aggressive

RUG = 4-7 = low ADL dependency

HoNOS-10 >= 25 = high severity

HoNOS-10 >= 22 = high severity

RUG > 7 = with high dependency

Source: Buckingham et al., (2003)

Table 8 MH-CASC classification for adult ongoing inpatient episodes

Code	Age	Diagnosis	status	HoNOS	ADL dependency
AOI-1	<=33	schizophrenia or organic disorder	Voluntary		
AOI-2	<=33	schizophrenia or organic disorder	Involuntary	< 3	
AOI-3	<=33	schizophrenia or organic disorder	involuntary	≥ 3	
AOI-4	<=33	Other than schizophrenia or organic disorder			
AOI-5	34-64	schizophrenia or organic disorder		= 1	
AOI-6	34-64	schizophrenia or organic disorder		= 2-5	
AOI-7	34-64	Other than schizophrenia or organic disorder			
AOI-8	65 ⁺	schizophrenia or substance abuse or mental retardation			= 4
AOI-9	65 ⁺	schizophrenia or substance abuse or mental retardation			= 5-18
AOI-10	65 ⁺	organic disorder			≤ 15
AOI-11	65 ⁺	organic disorder			≥ 16
AOI-12	65 ⁺	Other than schizophrenia or organic disorder			

Split points used for class definition:

HoNOS item 1 < 3 refer to low aggressive

HoNOS item 1 ≥ 3 refer to high aggressive

HoNOS item 1 = 1 refer to no aggressive

HoNOS item 1 = 2-5 refer to with aggressive

RUG = 4 refer to no ADL dependency

RUG = 5-18 refer to with ADL dependency

RUG ≤ 15 refer to low-medium ADL dependency

RUG ≥ 16 refer to high ADL dependency

Source: Buckingham et al., (2003)

7.3 Experience from Sweden

Similar to casemix Australia, Sweden has developed a patient classification system such as DRG since the 1990s. By similar reasons that DRG is not a good predictor of cost for psychiatric care, an alternative casemix has been developed since 1997 called "State Related Groups: SRG". This casemix is applied for resources use by applying clinical factors diagnosis, age, patient's adaptability level called Global Assessment of Functioning Scale (GAF). GAF has been currently practiced in Sweden. After classification patient according to diagnosis into 13 groups, GAF and age further split patients into 2-3 sub groups, with the total of 26 sub groups. Applying this logic of classification to inpatient data, the case mix could reasonably predict the cost of care as shown in Table 9 (Pfeiffer & Hofdijk, 2002).

Table 9 Diagnosis groups and splitting criteria of State Related Groups (SRG)

SRG	Diagnosis groups	splitting criteria		
11-12	Organic disorder	GAF < 50	GAF ≥ 50	
21-22	Alcohol and drug related	GAF ≤ 40	GAF > 40	
31-34	Schizophrenia	Age < 35	Age 35 - 49	Age ≥ 50
42-44	Other Psychoses	GAF < 30	GAF 31 - 40	GAF > 41
52-54	Bipolar	GAF < 50; Age < 50	GAF < 50; Age ≥ 50	GAF ≥ 50
61-62	Other Depression	GAF ≤ 50	GAF > 50	
71-74	Anxiety Syndrome	GAF < 40	GAF 41 - 60	GAF ≥ 61
80	Somatoform Disorders	N.A.		
91-92	Eating Disorder	GAF < 50	GAF ≥ 50	
100	Crises	N.A.		
110	No Psychiatric Diagnosis	N.A.		
120	No diagnoses	N.A.		
131-132	Personality Disorders	GAF ≤ 40	GAF > 40	

Source: Pfeiffer & Hofdijk (2002)

7.4 Experience from Thailand

Thailand has researched casemix systems especially on DRG since 1993 after the implementing the Road Traffic Accident Protection Act. DRG 1st version was used in the reinsurance payment in the public welfare card in 1998 and the voluntary health card in 1999. Later in 2000, DRG 2nd version, after adjusting reference database to cover all disease codes was released, and 3rd version, the latest one, in 2003. This version has detailed in disease classification according to its severity and complications and co-morbidities. There are 7 additional disease groups for psychiatric inpatients to the 14 groups in 1999 to be 21 groups in 2003 as stated in Table 10 (Rutz, 2003); (Ministry of Public Health (2001).

Table 10 Comparing between Thai's DRG in 2nd version and 3rd version

DRG	THAI-DRG version II	DRG	THAI-DRG version III
424	O.R. Procedure w Principal Diagnoses of Mental Illness	1901	Acute Psychotic Disorders w ECT
425	Acute Adjustment Reaction and Psychosocial Dysfunction	1902	Chronic Psychotic Disorders w ECT
426	Depressive Neuroses	1903	Major Affective Disorders w ECT
427	Neuroses Except Depressive	1950	Acute Psychotic Disorders
428	Disorders of Personality and Impulse Control	1951	Chronic Psychotic Disorders
429	Organic Disturbances and Mental Retardation	1952	Major Affective Disorders
430	Psychoses	1953	Other Affective and Somatoform Disorder
431	Childhood Mental Disorders	1954	Acute Reaction and Psychosocial Dysfunction
432	Other Mental Disorder Diagnose	1955	Anxiety Disorder
		1956	Eating and Obsessive Compulsive Disorder
		1957	Personality and Impulse Control Disorders
		1958	Childhood Mental Disorders
		1959	Organic disturbance and Mental Retardation
		1960	Other Mental Disorders
		1961	Sexual Dysfunction
433	Alcohol/Drug Abuse or Dependence, Left AMA	2050	Alcohol Intoxication and Withdrawal
434	Alc/Drug Abuse or Depend, Detox or Other Symp w CC	2051	Drug Use Disorders and Withdrawal
435	Alc/Drug Abuse or Depend, Detox or Other Symp w/o CC	2052	Alcohol Use Disorders and Dependence
436	Alc/Drug Depend w Rehabilitation Therapy	2053	Opioid Use Disorders and Dependence
437	Alc/Drug Depend, Combined Rehab & Detox Therapy	2054	Psychostimulant Use Disorders and Dependence
		2055	Other Drug Use Disorders and Intoxication

7.5 Comparison of secondary psychiatric inpatient classification: Experiences from other countries.

According to experiences in Australia, psychiatric patient classification under MH-CASC has less variance than AN-SNAP. This implies more equity in budget allocation. Services charge payable under activity base was derived from a number of service activities, severity of symptom. This encourages more productivity e.g. shorter length of stay. Table 11 shows comparison of psychiatric patient classification by casemix used in Australia, Sweden and Thai (Buckingham et al., 2003); (Pfeiffer & Hofdijk, 2002).

The psychiatric patient classification needs variable cost predictors. The most perfect model is MH-CASC classification, which determines key predictive factors that have an impact on resource use into 9 sub-groups: diagnosis; severity of symptoms;

risk of harm to self or others; level of functioning and social support; co-morbidity; socio-demographic characteristics; and stage of illness (Buckingham et al., 2003); (Pfeiffer & Hofdijk, 2002).

The measurement that is used in Australia which is different from Sweden, but there was a study that found GAF could be comparable to HoNOS. The MH-CASC uses many measurements. The measurements are the same as those used in AN-SNAP (Buckingham et al., 2003); (Pfeiffer & Hofdijk, 2002).

Table 11 Characteristic of the secondary psychiatric patient classification

Characteristic	Type of classification				
	Thai-DRG v. II	Thai-DRG v. III	SRG	AN-SNAP	MH-CASC v. I
1. Country	Thai	Thai	Sweden	Australia	Australia
2. Year	1998-1999	2002-2003	1997 up	1994-1997	1995-1997
3. Resource used	Charge	Charge	Cost	Cost	cost
4. Design for	Psychiatric and acute patient	Psychiatric and acute patient	Psychiatric patient	Sub-acute and non acute disease	Psychiatric patient
5. Coding system	ICD	ICD	ICD & DSM	ICD & DSM	ICD & DSM
6. Type of patients	Inpatient	Inpatient	Inpatient & Outpatient	Inpatient & Outpatient	Inpatient & Outpatient & Patient in community
7. Number of class	14	21	26	13	42
8. Structure of Episodic	No	No	No	Yes	Yes
9. Factors' involved resource used	Diagnosis	Diagnosis, Age, Complication, co-morbidity	Diagnosis, Age, Complication, co-morbidity, mental health severity	Diagnosis, Age, Complication, Comorbidity, mental health severity, level of functioning & social support, risk of self-hurt and others, socio-geography	Diagnosis, Age, Complication, Comorbidity, mental health severity, level of functioning & social support, risk of self-hurt and others, socio-geography, phase of the disease
10. Assessment	No	No	GAF	RUG-ADL, HoNOS	LSP, RUG-ADL, RCI, HoNOS, HoNOSCA, CGAS
11. Budget Allocation	-use DRG for health insurance scheme & civil servant's scheme		-use DRG for payment	-use AN-DRG for Acute case -use SNAP for Sub-acute and non acute case -use MH-CASC for Psychiatric case	

Source: Phuaphanprasert, Sanichwannakul & Pannarunothai (2003)

8. Summary of the chapter

Conclusions from literature review are as follows:

8.1 Government's role and responsibilities for psychiatric care

Government, the ultimate stewards of mental health, need to set policies within the context of general health systems and financing arrangements that will protect and improve the mental health of the population. Government should set policies in mental health budget covering psychiatric outpatient, inpatient, and patients in community. And they should allocate mental health budget be related to the burden of disease to decrease the mismatch by the size and effectiveness of the response it demands; decrease number of psychiatric patients who do not obtain treatment.

8.2 Thai's government's role and responsibilities for psychiatric care

Problems found in Thai mental health service system were classified as budget allocation, budget efficiency, human resources, fiscal and monetary database, costing calculation and referral fee charges among hospitals. Public mental health service system can be categorized into 4 service levels (primary, secondary, tertiary, and supra-tertiary care). Currently, after the 30 Baht scheme budget allocation for psychiatric care system is different in each level.

8.3 Predictors of cost for psychiatric care

There are many factors to predict mental health cost. There are different from physical's predictors. The importance predict factors of mental health cost are composed of minimum of 7 factors composing of diagnosis, severity of symptoms, risk of harm to self or others, level of functioning and social support, co-morbidity, socio-demographic characteristics (e.g. age, gender, socio-economic status, marital status, ethnicity), and stage of illness.

8.4 Psychiatric casemix systems:

The psychiatric patient classification needs variable cost predictors. The most perfect model is MH-CASC classification, which determines key predictive factors that have an impact on resource use into 9 sub-groups: diagnosis; severity of symptoms; risk of harm to self or others; level of functioning and social support; co-morbidity; socio-

demographic characteristics; and stage of illness. Psychiatric casemix system has long developed e.g. MH-CASC of Australian. The measurement that is used in Australia which is different from Sweden, but there was a study that found GAF could be comparable to HoNOS. The MH-CASC uses many measurements. The measurements are the same as those used in AN-SNAP. According to experiences in Australia, this Australia psychiatric patient classification under MH-CASC has less variance than AN-SNAP. It is more equity in budget allocation and encourages more productivity.

8.5 Costing psychiatric inpatient care:

Cost study in Thailand has been a traditional costing accounting approach which creates overcosting of routine services or undercosting of special investigation. This is different from activity-based costing (ABC) system which gives more precise cost. Traditional cost approach applied to psychiatric care normally calculate average cost which gives less weight to patient services in terms of individual, group, and special treatment, etc. This leads to lack of information for allocating appropriate resources for psychiatric services.

As shown above, the potential of Thailand's budget system for psychiatric inpatient care can be improved if case-mix for psychiatric care is developed. The new case-mix system should reflect cost accurately, therefor increase the equity of resource allocation among health providers and thereby diminish conflicts.