CHAPTER VIIII

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter is organized as follows: First, the conclusion section presents the results and the answers of the research questions. Second, the implication section reveals the impacts and the contributions of this dissertation in the field of mental health budget allocation. Finally, the recommendations of the Thai mental health casemix classification (TMHCC) is discussed below.

1. Conclusions of the study

Thai psychiatric inpatients have been currently paid under TDRG. The problem of this payment method leads to many conflicts of interests in relation to public budget allocation among stakeholders especially in public psychiatric hospitals and medical schools. According to experiences in other developed countries, which separate payments for mental health from others, TMHCC has been developed. TMHCC was developed as an alternative budget allocation method for mental hospitals in Thailand. This study shows that TMHCC is more efficient and equitable in terms of the severity level of disease of patient. Therefore, the patient who has higher severity in disease shall have more budget than that of less severity. The study aims to analyse and compare performance of TMHCC with TDRG by collecting and analyzing 1,950 inpatient's data from two public psychiatric hospitals under Thai mental health department. When evaluating performance of TDRG and TMHCC, TMHCC is better than TDRG in terms of structure model, statistic performance, and experts' opinions as TDRG might be better in cost implication and workload. I believe the TMHCC can replace the current system in order to increase equity and fairness and to improve quality. Should this system is implemented, many systems should be prepared and placed e.g., training clinical score

rating, modifying computer system, auditing system. The TMHCC classification offers a potential base for many future developments in the mental health sector.

This study shows the superiority of the new allocation by casemix approach in all aspects. It is better in not only giving statistic results but also supporting mental health service in connection to quality, strategy, future study, etc. The new allocation used patient attribution data such as clinical symptom and functioning. However, the new method implementation should not add on cost or labor over the existing system. Weighting between benefit and cost is a necessary process to answer the question of how efficient/effective and suitable the payment system is. Influential factors towards a success of the implement new allocation depend on many parties.

Upon the development of this study, six big questions have been answered as shown in Table 65.

Table 65 Summary of the study findings

Objective	Summary of the study findings
1. Can psychiatric inpatient care costs be calculated? Do calculated costs provide appropriate weight for using in mental health casemix classification?	Costs can be calculated in each service and activity as shown in Chapter IV. Additionally, in Chapter VIII, costs give sensible relative weights for casemix classification and funding.
2. Is there an appropriate mental health measurement for using as a tool in data collection for mental health casemix classification?	Yes, the T-HoNOS that is developed by this study has good psychometric properties. It can be use as a tool for classification.

Table 65 (Cont.)

Objective	Summary of the study findings
3. What is the superior of the TMHCC model than TDRG model?	TMHCC is an appropriate mental health budget allocation model. It has a better performance than TDRG in three aspects: structure, statistic performance, and experts' opinions as shown in Chapter V.
4. What are Thai alternative mental health budget allocation model from the study?	There are two models, TDRG and TMHCC as shown in Chapter VIIII.

2. Can psychiatric inpatient care costs be calculated?

Are costs provide appropriate weight for using in casemix classification?

In Chapter IV, Thailand has a few studies in relation to Thai's psychiatric health care with their own different conceptual frameworks and methods. All used traditional method (TM) that is less accuracy and some activities care costs were not known and could be support budget allocation system and policy. Therefore, activity-based costing (ABC) that is more accurate than TM is our choice. It describes here methods for identifying cost centers; activities; and drivers, data collecting, and cost calculating both by TM and ABC. Data collection and costing were collected from two Thai representative psychiatric hospitals under Thai mental health department. It found that inpatient services had 23 major activities such as admission, psychotherapy, electroconvulsive-therapy, discharge, etc. By TM, The full costs per diem was 192 Thai baht or 5.3 US Dollar and per inpatient stay was 9,558 Thai baht or 266 US Dollar. While by ABC, the costs per inpatient day was 141 Thai baht or 3.9 US Dollar and per in-patient stay was 8,738 Thai baht or 243 US Dollar. Therefore, the hospital care cost by ABC was less than TM 30%. This result of the study indicates that the cost on psychiatric care will support planning health system and policy.

In Chapter VIII, costs give sensible relative weights for classification that severe care get more cost than mild or moderate case or less severe disease cluster get less cost than more severe case. To use costs data for reimbursement is limited due to lower than actual. This study separates costs of each inpatient service activity from non-inpatient service activity. Therefore, costs were only inpatient service activity costs. While in real situation, this study could not clearly separate inpatient service activity costs from others. The cost results provide full cost and material cost of service care. In allocation filed, what is an appropriate cost using in the system.

Table 66 compares the costing study results in this study with Sirivanarungsan, et al. 2000 and Surapanon, et al. 2004. It found costs by TM were similar with other studies but costs by ABC were lower than others sources.

Table 66 Compare inpatients service costs

	Study 1	Study 2	Study 3	
Researcher	Sirivanarungsan, et al.	Surapanon, et al.	This study	
Type of patient	Psychiatric patient	Psychiatric patient	Psychiatric patient	
Subjects	17 psychiatric hospitals	17 psychiatric hospitals	2 psychiatric hospitals	
Time	2000	2004	2004	
Methods	TM	TM	TM	ABC
Inpatient service				
-LOS(day per case)	31	38	21	
-Full cost (Thai baht per case)	19,632	20,438	8,738	
(Thai baht per diem)	513	656	457	
Outpatient service				
-Full cost (Thai baht per case)	529	599	346	

3. Is there an appropriate measurement for using as a tool in data collection for mental health casemix classification?

From Chapter V, it described the behavior of the psychiatric measurements used in Thai's specialized psychiatric service settings and users' opinion towards measurement usage in budget allocation purpose. This study was a cross-sectional survey by collecting data from questionnaires survey with a 50.5% responsive rate of questionnaires returning from doctors and nurses working in Thai's specialized psychiatric hospitals. All subjects highly agreed to use measurement for budget allocation and measurement. Their ideal measurement should be convenient for nurses and users should spend time less than 10 minutes. Therefore, appropriate measurements for budget allocation were the Global Assessment of Functioning Scale (GAF), the Clinical Global Impressions (CGI), and the Health of the Nation Outcome Scales (HoNOS), respectively. I propose that Thai budget allocation can be developed through psychiatric measurement usage by GAF or CGI or HoNOS.

From chapter VI, the 12 items outcome measurement for adult mental health outcome scale was developed in the Great Britain and an assessment of the preliminary psychometric properties of the version. The HoNOS was translated into Thai by using the standard "forward-backward" translation procedure. Two well trained psychiatric nurses interviewed subjects together but independently rate scores. The subjects were 23 acute inpatients and 23 sub-acute inpatients. I found internal consistency of the Thai HoNOS with 0.68 cronbach's alpha coefficient. Most items had inter-rater reliability, intra-class correlation coefficients (ICC) by two-way ANOVA, high intra-class correlation coefficients > 0.70. It had high concurrent validity (r's > 0.80) by comparing among the Global Assessment of Functioning Scale (GAF), Clinical Global Impression (CGI), and the Brief Psychiatric Rating Scale (BPRS) mean scores. The 2-tailed significant difference of the scores was examined by using wilcoxon rank sum Test. In addition, it had a satisfactory power (p < 0.05) in discriminate (divergent validation) the overall clinical outcomes between acute and sub-acute psychiatric inpatients. Finally, the factor structure of the questionnaire was extracted by performing principal component analysis using oblique

factor solution. The results suggest that the Thai version of the HoNOS was sensitive to differentiate acute and sub-acute patient groups, and had sufficient degree of both reliability and validity to fulfill the requirements of a mental health outcome scale for routine use in clinical settings in Thai psychiatric inpatients.

4. What is Thai mental health casemix classification models?

Results in chapter VII considered performance of TDRG and TMHCC in many major areas: model structure, statistic performance, and experts opinions. The comparing results shows that TMHCC was a better model than TDRG.

The two models share similarities and differences in essential factors. Both share common similarities in principle diagnosis in the first node of classification and age in the next step of classification. Differences in essential factors were that TDRG uses patient's procedure and addition diagnosis for classification but TMHCC uses clinical symptom from mental health measurement. The clinical symptoms from TMHCC measurement comprise problems resulting from veractive/aggressive/disruptive/agitated behavior, suicidal thoughts or behavior, detoxification, cognitive problems, depressed mood, other mental and behavioral problems, and problems making supportive social relationships.

Statistic performance of each model can be considered in 3 main aspects as follows: reduction in variance (RIV), coefficients of variations (CVs), and number of subclasses.

When comparing the results of statistic performance in two models, it was found that TDRG provided 4 major disease categories (MDCs) or 18 diagnosis clusters (DCs) or 57 subclasses which inpatients are currently made available in 29 subclasses. While TMHCC provided 4 MDCs or 18 DCs or 51 subclasses which inpatients are currently made available in 49 subclasses. In comparing total cost per case, TDRG had 6.15 %RIV and 1 subclass (CV more than 1) as TMHCC had 21.15 %RIV and no TDRG subclass with CV more than 1. In view of length of stay per case, TDRG provided 7.84

%RIV and 3 subclasses (CV more than 1) as TDRG provided 40.01 %RIV and no TDRG subclass with CV more than 1.

The development of TMHCC here was built on the foundation of many years through Ph.D. work. The experience gained through this process allowed clinical refinements and improvements in precision to be made, along with modeling of the implications of using casemix for funding purposes. This research has formally and informally consulted with many experts e.g., psychiatrists, policy makers, providers, funders. Developing clinical protocols or pathways should fund alongside with professional supports.

Formally meeting and hearing had been held one round which can be summarized as follows:

1. Factors for grouping should rely on Thai context rather than direct foreign experience without adjustments.

2. Factors for grouping should be concentrated on patient attribute factors rather than hospital attribute factors.

3. Measurement implication has added extra workload and cost to nurses. Benefits and costs are needed to be compared on how effective measurement usage is.

4. To avoid over reimbursement, it needs to check reliability and validity of the measurement and rating.

5. Ideal budget allocation model should support by and is concordant with the National Mental Health Strategy.

5. What are mental health budget allocation model from the study?

From Chapter VII, this study constructed mental health classification model under the name of Thai mental health casemix classification (TMHCC). This dissertation proposed a new budget allocation approach, TMHCC, for evaluating an inpatient cost of the psychiatric hospital in Thailand.

This research collected and collated inpatients data from two psychiatric hospitals that passed our inclusion criteria, Suang Prung and Nakhon Rachasema Psychiatric Hospitals. This study started November, 2003 till October, 2006. The study began with system analysis for activity-based costing method, followed by development of psychiatric measurement and, collection of data on inpatient psychiatric measurement and activity-based costing in order to develop the Thai mental health casemix classification model.

Total sample size was 1,950 giving an average full cost of 9,742 Thai baht per case, an average material cost of 3,289 Thai baht per case, and an average drug cost of 355 Thai baht per case. The Thai Health of the Nation Outcome Scales (T-HoNOS) had been developed through standard procedure from translating, back translating, and re-correcting by experts. When tested its psychology properties, it was found that the T-HoNOS possessed good properties. The model formulated has been considered in three areas: recording ability, technique compatibility, and statistical compatibility. The final for this study consisted of four major diagnostic categories (MDCs), 18 disease clusters (DCs) and 57 subclasses.

Results from this study were in line with other previous mental health casemix studies e.g. the Mental Health Classification and Service Cost (MH-CASC) in Australia. The T-HoNOS was good psychiatric measurement and provided significant data for Thai mental health casemix classification (TMHCC). When comparing the results of grouping by TMHCC with TDRG the reduction in variance (RIV) for TMHCC was four folds better than for TDRG (%RIV for TMHCC was 36 and for TDRG were 8. Moreover, TMHCC was even better when considering the lower coefficients of variations (CVs) for each subgroup.

TMHCC performed better than the existing TDRG. This study explored standard service activities, measures standard care costs that provided support for service quality development, and uses as a reference for casemix grouping. The new casemix system is an appropriate choice for budget allocation in terms of clinical and

budgetary aspects and promotes equity as well as quality development according to the objectives of the national mental health policy.

6. Is the TMHCC suitable to use in special mental health service setting?

TMHCC was compared to TDRG. Such an analysis is seen as desirable or statistically credible and so this line of analysis was pursued in TMHCC to create more equity. First, TMHCC based on patient characteristics such as patient severity of symptom for more equity while TDRG based on diagnosis and procedures. Second, their statistics are concordant with %RIV, CV, and number of distribution subjects with panel expert for classified subclass. The RIV and CV produced by the proposed method were better than those by the existing DRG method. Additionally, the new model is more efficient and more clinical compatible in each subclass than the DRG method.

The TMHCC has advantages over the TDRG in terms of its capacity to explain inpatient cost variation and the statistical homogeneity of its classes. Perhaps more importantly, it avoids distortion of incentives created when a classification is implemented which payment is made by level of severity and function.

The proposed mental health casemix classification method produces more accuracy in grouping solutions. There will be different views on this issue, depending on which aspects of the study findings are given prominence.

However, the new method can be employed for Thailand national mental health systems in many aspects as follows:

1. To allocate more appropriate and equitable budgets allocation to all parties in terms of severity level, patient which higher severity should receive more budget than those with less severity. Consequently, diminishing conflicts among related parties (funder, service provider, and service receiver) might be diminished.

2. To support the management and service system planning.

3. To give new relative cost benchmark of mental health care cost due to the cost study is based on activities-based costing.

4. To support service quality by using mental health measurement in routine inpatient practice. This made services tangible measurement and assessment, distinguished from existing non-standardized system. By this way, scores from measurement provide data for casemix grouping evaluation service outcome.

5. To be reference data for further psychiatric grouping development.

6. To develop competitive capability in psychiatric hospitals with possessing similar structure, extensive study of costing is needed. They do this by providing a method to describe the products of health care delivery that controls differences between providers caused by those providers treating different types of patients. By controlling for patient differences, the contribution made by provider differences to patient costs and outcomes can be better understood.

From the above, it is believed that the benefits to the National Mental Health Strategy of the mental health casemix model are sufficient to justify its adoption of the first version of the TMHCC.

7. Can TMHCC be used as an alternative funding under Thai context?

While the adoption of the classification is ultimately a decision for fund provider of mental health services, two issues should be considered to reach a final judgment.

The first issue concerns the purposes of a casemix classification that become synonymous with funding models for health services in Thai. Its origin was motivated not by a desire for new funding arrangements, but instead, by the need for tools to support quality assurance and utilization review. In deciding whether the TMHCC should be pursued, will need to assess the range of use of the model funder, provider, and patients. These approaches affect many purposes include:

1. **Costing and benchmark:** The TMHCC provides data to be used in developing cost benchmark information, enabling provided service to make comparisons with other hospitals on costs and treatment days for similar cases. This can have an influence on practice, and by itself, strengthen the differentiation of care patterns provided to different patient types.

2. Clinical protocols: The classification provides a base for the development of clinical protocols, in terms of establishing a framework for determining what package of services each group should receive. The objective here would be to amplify the classification/costing signal, and encourage more normative practice.

3. **Funding purposes:** The utility of the classification for funding will need to be assessed by funder and provider, taking account of the adequacy of their existing approaches for funding. In its current form, the classification is likely to be useful as a management and clinical information tool that can inform funding decisions by providing data of receiver of mental health resources.

4. Outcome measurement: A longer term monitoring of clinical attributes will assist in determining the outcome of treatment interventions. Several measurement instruments upon which the classification is based were designed explicitly to monitor change over time.

5. **Quality management:** Involving parties especially services hospital may wish to collect the data to monitor the quality of services over time. For example, complexity-adjusted worker caseloads could be generated from the new data, along with the extent of change over time.

The second issue for consideration concerns the alternatives to the TMHCC. From panel expert meeting, all parties especially expert from medical school are likely to be cautious of immediate use of the classification for funding purposes because the comparatively heavy load needs scoring from mental health measurement while TDRG does not require patient rating scores. However, this will depend on whether they regard the current historical or input based funding systems as preferable.

Currently, a subset of the data is collected in standardized form in psychiatric inpatient services, generally collect basic demographic and diagnosis data, although collection is variable and data quality believed to be poor, which record Principal Diagnosis, Age, Clinical Severity, and Length of stay and other patient information under their hospital's standard. Other clinical attribute data are less widely collected. Collection of clinical attribute data of the type required for the classification is collected by only a small proportion.

Considerable change in the collection and reporting arrangements would be required, therefore, to introduce the type of data required by the new classification. The changes are needed as part of a broader set of improvements in mental health data systems to ensure they support quality service delivery.

If TMHCC is used as a tool for allocation, many processes must be needed during pre-implement, implementing, and post-implementing. All parties (provider, funder, insurance) must cooperate during this period.

The preparing phase contains both mental health measurement usage training and data collection. The implementation phase contains data collection software for data collection. And the post-implemented phase should compose of maintaining old system during changing period for double check and make back up data. Auditing by consulting the foreign expert cover rating score clinical symptom and data collection.

8. How can TMHCC be prepared to implement under Thai context?

The knowledge from this study is a preliminary stage of developing policy of budget allocation. Firstly, it should propose the findings to all involving parties: service providers, funders, policy makers.

The decision making mainly depends on funders and providers. The TMHCC is likely to be the effective method in all aspects. But it needs more attention in collecting data and computing cost. Acceptance from all parties is also needed, this system would not work if there is insufficient cooperation available from all parties.

After approval, if the TMHCC is implemented as a tool for budget allocation, many processes must be needed during pre-implement, implement, and post-implement to protect problems from over and under diagnosis, and over rating of severity and function score for rising reimbursement (Jacobson, 1998); (Cohen, 1989). All parties (provider, funder, insurance) must cooperate during these periods.

The preparation phase should consist of training for both mental health measurement use and data collection. In preparation phase, considerable changes in collection and reporting arrangements would be required to introduce the type of data required by the new classification. The changes are needed as a part of a broader set of improvements in mental health data systems to ensure the support quality service delivery. TMHCC contains both mental health measurement usage training and data collection. Preparation stage consists as follows:

1. To disseminate how to use mental health measurement and how to apply measurement for budget allocation to the target groups from both management and practice levels.

2. To set measurement training courses to create positive attitude, to increase cooperation, and to reduce resistance from users.

3. To encourage nurses to be users.

4. To eliminate time consumption, development of software package for data collection is needed.

The implementation phase should compose of using software for data collection. It is important to collect and collate reference or necessary data. These variable data might be benefit in various fields in the future such as developing new construction casemix models, evaluating economic status, and study epidemiology.

During implementation and post-implemented phases, it needs to maintain old system during changing period for double checking and back up data at all time. Auditing by consultation, the foreign expert would cover rating score clinical symptom and data collection.

9. What are the recommendations for Thai mental health casemix classification?

To develop the study of casemix classification model as an alternative funding for Thai psychiatric inpatients, a number of pointers for future funding model design are still questionable as follows:

9.1 Recommendations for costing study

9.1.1 The different cost between the two co-research sites might lead to weakening the classification model if the cost is used as independent variation. The potential for providers to distort the patient signal was a frequent issue raised by clinicians during the study. While there was the broad consensus that inpatient clinical attributes should be the major drivers of treatment costs, frequent expedient was expressed that the study would find any clear pattern in the type of care delivered to similar patients. This prediction was based on the view that there is little standardization in the types of services provided by Thai mental health clinicians. Even where master protocols from previous study (AR-DRG, TDRG, and MH-CASC) have been developed, processes have not been established to train the workforce in their use, not are systems in place to monitor adherence to the standards.

9.1.2 Design of outpatient and community by an activity-based funding system or the number of services a person receives in a time period is needed. Inpatient cases should be paid on cost per visit basis. But psychiatric outpatient and patients in community should be paid on activity-based funding system or the number of services a person receives in a time period. So the study should be extended to explore how appropriate of funding for psychiatric outpatient and patients in community under Thai context. Defined periods of time should be made on the basis for funding community programs.

9.1.3 These costing study has many limitations. Firstly, main difficulty of developing this model were how to identify activities and their drivers. This can avoid by limiting the number of cost drivers through introducing a third allocation step between the activity groups and activities. By doing so, time consumption weighted by some

factors of treatment complexity, because the main allocation principle, instead of using a large number of different cost drivers.

9.1.4 The detailed definitions and multi-step allocation principle yielded a refined cost calculation, some assumptions made during the development of the model, may result in a slight distortion of the calculated costs. Whatever attempt in correcting limitations would have rendered the model much more complex, requiring programmatic adaptations when applying of the calculated costs. When adopting such as model for daily practice, however, one should be aware of the potentially impeded distortions related to the specificity of the model's design.

9.1.5 Even there is good coordination from both staffs and hospitals, information from records are not completely given. Several parts of information have been missed due to substantial data correction (database insufficiency and staff non-realization). However, a researcher has recognized this potential problems and carefully collected information and back-up database from other sources. For example, numbers and types of services recorded by staffs will be rechecked with daily operation record back-up.

9.1.6 A number of aspects for future funding still questioned in this cost study. In our study, I could not know each activity based cost. It did not reveal important activity-based costing and cost by psychiatric care cost. We cannot present the picture of how much each service activity cost is and propose the actual cost of each activity. Therefore, activity services and non patient service activities (consultation liaison, teaching, training, research, community development) will need to be explored for funding propose.

9.1.7 This study covers only specialized mental health hospitals, the costs of others settings (medical hospitals, primary hospitals, secondary hospitals) should be investigated before any attempt to apply this costs since the cost characteristics are different among type of hospitals.

9.1.8 This study did not base on 'good practice'. This study based on average provide service activities. The TMHCC classification is based on the costs of 'average practice' as providers supply. Concerns were raised by various groups about using this as a base to fund future services, as it may not be consistent with 'appropriate care'. A concern expressed here was an average cost that may underestimate the cost of 'good practice' care. To test the validity of this concern, consideration should be given to use the TMHCC classification to establish cost estimates for each of the classes based on 'good practice' clinical protocols. This approach defines the critical pathway for each of the classes based on good practice guidelines developed through clinical consensus. Cost estimates are then assigned to the various elements of the critical pathway to establish a 'good practice' price for each class. Such an approach provides funders with the option of setting prices on the basis of the critical pathway, not only average cost we got.

9.2 Recommendations for mental health measurement for allocation

9.2.1 Doctors and nurses working in psychiatric hospitals had many recommendations on budget allocation. Most of them view mental health budget allocation should be sufficient for psychiatric services because most patients were poor and treatment time was long. While respondents think budget was insufficient and needed more budget.

9.2.2 Most doctors and nurses had not known, realized, and used mental health measurement. Mental health measurement should be developed or created to fit for Thai which is appropriate emphasizing on convenience and time spending.

9.2.3 Budget allocation for mental health should concern on the real situation that some patients are abandoned by relatives and others are not been accepted by society. Mental health staffs should, therefore, be sufficient and quality of medication should be of concern in using public hospitals.

9.2.4 According to limitation of budget and medical personals, few knowledge and realization of using measurement, view as burden to relatives and society, low quality of medication, related government agencies should be promptly acted to respond the aforementioned.

9.3 Recommendations for casemix classification model for allocation development

Although this study succeeds its mission, developing the casemix classification model as an alternative funding for Thai psychiatric inpatients for future funding model design still remained as follows:

9.3.1 In clinical review and refinement from the outset, the study worth was to develop the classification that was clinically credible. A key step in the further development of the classification is to establish similar clinical review processes in each subclass. TMHCC has aspects that could be substantially improved by the following clinical review. For example, the ongoing type subclass whose length of stay more than 91 days per admission was noted to be clinically heterogeneous, and the intended same day subclass which had not enough data to be discussed.

9.3.2 There remains considerable scope for classification between acute phase and sub-acute or non-acute phase in one admission. From funding model of this study, only inpatient with acute phase in specialized mental health hospital is funded. In our hypothesis, all subjects in model construction were inpatients with acute phase. Its scope could not split inpatients with sub-acute or non-acute phase whose need less resource from acute phase for more resource. From the model, only inpatients with acute phase in specialized mental health hospital are funded.

9.3.3 The study has identified those patients in specialized mental health hospitals, which may be different from other settings. The future study should explore how appropriate the TMHCC is for other settings such as general hospitals, primary hospitals, secondary hospitals, medical hospitals, and child and adolescent psychiatric hospitals. It is also possible to identify patients who may be treated in different service settings, and to create funding incentives for this to occur or introduce utilization review systems.

9.3.4 How to funding non patient service activities other than patient service activities. If casemix funding is introduced to specialised mental health hospitals, then there will be other services' that need to be funded apart from casemix, specifically:

brief assessments, consultation liaison, teaching, training and research, community development, etc. All of them were out of scope of this study.

9.3.5 From previous studies, it found that it was differently characterised between different settings such as costing structures, and patterns of care. However, this should be investigated further before any attempt applied to the new model classification outside the other mental health settings. Additionally, it should evaluate how the TMHCC model interfaces with other classifications from different sectors, specifically TDRG. The statistical evidence does not support the use of TDRG for adult mental health services in Mental Health Department, although such judgments need to be made by funders and providers, taking into account of the relative costs and benefits of the extra data involved. The study cannot draw any conclusions on whether TMHCC or TDRG should be used in general hospitals or medical school sector where a person receives a psychiatric principal diagnosis. The costing and classifications of TMHCC have been studied on units with the range of specialised mental health staff, who often are not available in general hospitals without a designated psychiatric unit.

9.3.6 Design of outpatient and community by an activity-based funding system or by the number of services a person receives in a time period. Inpatient cases should be paid on cost per occasion of service basis. But outpatient and patients in community should be paid on an activity-based funding system or on the number of services a person receives in a time period. So that the study should be extended to explore how appropriate of funding for outpatient and patients in community under Thai context. Defined periods of time should be made on the basis for funding community programs.

9.3.7 Funding of an 'intended same day admitted' patient class or episode type should be on depth study. From the AR-DRG and the MH-CASC Projects, it suggests that 'intended same day' should be constructed in the funding model especially, ECT same-day and Intoxication same-day. Funding of a separate category of 'intended same day' patients carries considerable potential to skew practice towards

hospital outpatient work, by creating incentives to bring inpatients for hospital-based programs rather than treating them in the community.

9.3.8 Resolution of how to best deal with the 'ongoing type' category within the mental health classification will be needed. They may be classified as 'ongoing type', depending on the funding incentives. It is also clear that problems caused from this ambiguity are increasing. The patient admission may be increasing due to need of reimbursement. Ongoing type uses more resources than complete inpatient type. Additionally, the long term admission pattern has similar pattern as sub-acute and non-acute or rehabilitation. So funding system is inappropriate, it leads to distort funding system. Data presented in the study provide no evidence to this subclass. Therefore the 'ongoing type' has insufficient information to look at. It recommends a review of a representative sample of ongoing type, from both a clinical 'appropriateness' and a costing perspective.

9.4 Recommendations for future data collection

These variables are likely to be useful for further development in mental health casemix classification. The necessary data collection can be classified into 5 major parts as follows:

9.4.1 Identifier Variables consists of personal identification numbers, hospital main codes, hospital codes, hospital numbers, admission numbers, ward codes, and doctors

9.4.2 Socio-demographic and Environmental Variables consists of gender, age, nationality, province, district, postal code, marriage status, occupation, household income, insurance class, and children over 5 under care.

9.4.3 Clinical Detail Variables consist of psychiatric service history, time since first psychiatric treatment, principal diagnosis, additional diagnosis, procedure code, clinical severity– assessment, and clinical function– assessment.

9.4.4 Psychiatric Service Detail Variables consist of type of new patient, first contact date, last seen date, and episode type.

9.4.5 Charge Variables consist of insurance type, admission date, discharge date, charge item, charge per item, type of payment, total charge, uncovered paid