THE IMPACT OF THE UNIVERSAL COVERAGE POLICY ON EQUITY OF THE THAI HEALTH CARE SYSTEM

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ABSTRACT

In 2001, the government of Thailand implemented a universal coverage (UC) policy for access to health care by introducing a tax-funded health insurance scheme, the UC scheme, to approximately 47 million people who were not previous beneficiaries of the Civil Servant Medical Benefit Scheme (CSMBS) or the Social Security Scheme (SSS). The UC policy resulted in a significant change in health care financing arrangements and financial barriers to health services. The purpose of this research was to explore the likely impact of the UC policy in terms of the following factors: changes in health care use, equity in health care finance, and the distribution of public subsidies on health among different socio-economic groups of Thais. In addition, the effectiveness of the UC policy in protecting households against financial hardship as a result of medical care costs was explored at the household level. Benefit incidence analysis (BIA) was employed as a tool to assess equity in health service use and the distribution of public subsidies. Two case studies of renal replacement therapy (RRT) for end-stage renal disease (ESRD) patients and cardiac operations for heart disease patients were employed as tracers to explore the impact of the UC scheme's benefit package for better-off and less well-off households. Different choices of socio-economic group indicators (household income per capita or an asset index) and the use of aggregate and regional unit subsidies to calculate benefit incidence were also applied.

Research results indicate that the UC policy did expand health care coverage to include nearly all Thais and increased the pro-poor nature of the Thai health care system, as well as the distribution of public health-related subsidies. Ambulatory service use and hospitalization of poorer quintiles significantly increased after the UC policy was implemented. The poorest quintiles gained the highest amount and proportion of public subsidies both prior to and after implementation of the UC policy. There was no change in conclusions regarding the distribution of public subsidies among different socio-economic groups when different choices of socio-economic indicators or different levels of government unit subsidies were used. The analysis of financing incidence between 2000 and 2002 also showed less regressive overall health care finance, a greater decrease

in household expenditure for health care among poorer quintiles, and a decrease in the catastrophic expenditure incidence in 2002, compared to 2000.

The decision to exclude RRT from the UC benefit package resulted in a considerable financial barrier to health services and a substantial economic impact on poorer ESRD patients. Infrequent access to haemodialysis and the inability to obtain essential and expensive medication (erythropoietin) was shown to be a major cause of patients' death. Financial barriers to RRT prevented poorer ESRD patients from benefiting from access to essential health services, and the financial burden of RRT meant all poorer patients were inevitably faced with financial catastrophe as a result. Poorer ESRD patients adopted various financial strategies to cope with high health care expenditures, which impacted not only the ESRD patients themselves, but also other household members and relatives who had to provide supplemental financial support to help cover the costs of RRT. In contrast, neither poorer nor richer heart disease patients under the UC scheme experienced significant payments for the health care costs of open heart surgery due to the effectiveness of the scheme in financial risk protection. During the operation, a few poorer heart disease patients experienced financial burdens for travel costs and food expenditures for their relatives, but they were able to manage this financial burden by using their savings or taking loans, all without a significant financial impact on household living standards.

In conclusion, the UC policy does appear to have overall improved equity in health care use and health care finance, and the distribution of public subsidies. Achievements of the UC policy in Thailand were most likely caused by the following three financing strategies: 1) the expansion of public health insurance to nearly universal coverage; 2) the removal of financial barriers to health services; and 3) the promotion of primary care use which is preferentially accessed and utilized by the poor in rural areas.

DECLARATION OF CANDIDATE'S ROLES IN THE RESEARCH INVESTIGATION

The research investigation reported in this thesis was conceptualized, analyzed, and written by myself while I was a Ph.D. student at the London School of Hygiene and Tropical Medicine.

Secondary data used for analyzing equity in health care finance and health care use prior to and after UC included the Socio-economic Survey (SES) and the Health and Welfare Survey (HWS), both collected by staff at the National Statistical Office of Thailand (NSO). Verification of input and output data from public health facilities for the purpose of estimating unit costs of health service provision was carried out by two research assistants supervised by myself. The qualitative investigation of households was assisted by two research assistants under my supervision in Nakorn Ratchasima Province, Thailand. Four investigating tools for the qualitative approach were partly modified using the South African Costs and Coping Study (SACOCO) project conducted in South Africa as a model. With these exceptions, the entire investigation as reported here is my own work, with support provided by my Ph.D. supervisor, Professor Anne Mills, my co-supervisor, Dr. Natasha Palmer, and my Ph.D. advisory committee members: Dr. Saul Morris, Kath Moser, and Migresh Bhatia. Additional advice and support also came from Dr. Viroj Tangcharoensathien, director of the International Health Policy Program (IHPP), Dr. Komatra Chuengsatiansup, director of Society and Health Institute (SHI) of the Thai Ministry of Public Health (MOPH), and Dr. Preecha Ueytrakul from Nakorn Ratchasima Ratchapatra University during my fieldwork in Thailand.

Phusit Prakongsai

I confirm the accuracy of the above statement.

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ABBREVIATIONS

ARV	Anti-retroviral Drug
BIA	Benefit Incidence Analysis
BMA	Bangkok Metropolitan Administrative
CGD	Comptroller's General Department
CSMBS	Civil Servant Medical Benefit Scheme
CUP	Contractor Unit of Primary Care
DHS	District Health System
DRG	Diagnostic Related Groups
ESRD	End-stage Renal Disease
FIA	Financial Incidence Analysis
FY	Fiscal Year
GDP	Gross Domestic Product
HD	Haemodialysis
HH	Household
HWS	Health and Welfare Survey
ILO	International Labour Office
LIC	Low Income Card
LSMS	Living Standards Measurement Study
LSHTM	London School of Hygiene and Tropical Medicine
MOPH	Ministry of Public Health
NHA	National Health Accounts
NHSO	National Health Security Office of Thailand
NSO	National Statistical Office of Thailand
OECD	Organization for Economic Cooperation and Development
OOP	Out-of-pocket payments
PCA	Principal Component Analysis
PCMO	Provincial Chief Medical Officer
PCU	Primary Care Unit
PD	Peritoneal Dialysis
PHC	Primary Health Care
PHO	Provincial Health Office
PMC	Primary Medical Care
RRT	Renal Replacement Therapy
SES	Socio-economic Survey
SHI	Social Health Insurance
SMC	Secondary Medical Care
SSS	Social Security Scheme
SSO	Social Security Office of Thailand
TMC	Tertiary Medical Care
UC	Universal Coverage
VAT	Value added Tax
VHC	Voluntary Health Card
WDR	World Development Report
WHO	World Health Organization

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I dedicate this thesis to the poor people and ESRD patients of Thailand, and most importantly, Dr. Sanguan Nittayarumphong, the former Secretary General of the National Health Security Office (NHSO) of Thailand, who dedicated himself to health care reform and the development of the health insurance system in Thailand over the past two decades.

SECTION 1: BACKGROUND

CHAPTER ONE

INTRODUCTION

1.1 Background

Universal coverage (UC) in access to health care is an important health policy aimed at guaranteeing universal access to effective health services regardless of a person's income or social status, and to protect household income and assets from medical care costs (Mills 1996; Nitayarumphong 1998; Kutzin 2000; World Health Organization 2005; Carrin, Evans et al. 2007; Mills 2007). Policy makers in both developed and developing countries accept that achieving universal health care coverage is a desirable goal for health policy in their respective countries (Mills 2007). International development organizations such as the World Health Organization (WHO) and the International Labour Organization (ILO) also support the efforts of achieving universal coverage in all countries. In May 2005, the 58th World Health Assembly adopted Resolution 58.33 urging Member States to work towards universal coverage and to ensure that their populations have access to needed health interventions without the risk of financial catastrophe (World Health Organization 2005a).

In general, countries achieving universal coverage employ a variety of health financing arrangements and different benefit packages in accordance with their national income levels and the development of their health care system. Evidence shows that the combination of financing sources and provision arrangements within a universal coverage system, and the degree of equity achieved, vary widely among countries (Hsiao and Liu 2001; Preker, Langenbrunner et al. 2002; Gottret and Schieber 2006; Mills 2007). Typically, health financing arrangements in high-income countries rely on general tax or social health insurance because large segments of the population work in the formal sector which makes it easy for governments to tax their people at source and to design health care systems financed by either general or payroll taxes. In contrast, health financing arrangements for low- and middle-income countries often rely on household

out-of-pocket payments because a large share of the population in these countries lives in rural areas and works in the informal sector. This difficulty, coupled with a poor political will to enhance social welfare, often means that governments in developing countries usually fail to effectively collect taxes and pool resources for financial risk protection. Hence, people in low- and middle-income countries often have no effective risk pooling, while governments in high-income countries generally provide universal access to health services and financial risk protection for the entire population (ILO 2002; World Health Organization 2005b).

Most developed countries achieving universal coverage generally employ two alternative types of health financing arrangements—contribution-based employment-related social security (the "Bismarck Model") and tax-financed public health insurance (the "Beveridge Model") (Saltman and Figueras 1997; Saltman, Figueras et al. 1998; Musgrove 2000). The "Bismarck model" refers to a health financing arrangement which is predominantly funded by social insurance. This model was first developed in Germany and has been adopted by many countries throughout Europe including Belgium, France, and the Netherlands. The "Beveridge Model" is a tax-based health insurance system which can be found in the United Kingdom, Denmark, and Sweden. Prior to 2000, it was noted that the core of health care funding for many countries moving towards universal coverage was compulsory social insurance, not general tax revenues (Mills 1998). The option of tax-based health insurance or the "Beveridge Model" was not attractive for many governments because of limited government health resources and low political acceptance (Nitayarumphong 1998). This is evident in three Asian countries (Japan, the Republic of Korea, and Taiwan) as well as some developing countries in Latin America (Mexico and Costa Rica), which achieved universal or close-to-universal health insurance coverage by building on the Bismarck Model (Ikegami and Hasegawa 1995; Moon 1998; Nitayarumphong 1998; Acuna, Gattini et al. 2001; Kwon 2002). Although there are two main types of health financing arrangements, core guiding principles of achieving UC must include enhancing pre-payment for health services, determining household contributions according to the ability to pay, and introducing risk pooling (Carrin, Evans

et al. 2007). These principles imply solidarity between the healthy and the sick, and between population groups of different socio-economic status.

Evidence indicates an increasing trend of middle- and low-income countries having a mixture of health care finance from five financing sources: general taxation, social insurance contributions, private insurance premiums, community financing, and household out-of-pocket payments (Hsiao and Liu 2001; Gottret and Schieber 2006). In light of an attempt to move towards universal coverage, many less developed countries rely on a mixture of general tax funding and mandatory social health insurance to achieve policy goals of universal coverage in equal access to health care, and protecting households from catastrophic health care payments (Mills 2007). Less of a tax base and less capability to collect taxes is a key concern in financing health care in low- and middle-income countries (Hsiao and Liu 2001). However, it has been argued that raising additional general tax revenue is feasible and has been successfully done by a number of these countries such as Bolivia, Armenia, Bulgaria, Estonia, and Slovakia (Wagstaff 2007). In addition, to collect Social Health Insurance (SHI) revenues requires substantial management demands, and possibly leads to leakage of public resources, for instance, from corruption in the Columbian system, or a discretionary transfer by the Social Fund in the case of Kyrgyzstan (Mills 2007).

Limited government health resources, inadequate infrastructure of health services, lack of political support, and poor administrative and technical capacity of the government, have all been identified as key constraints for low- and middle-income countries to move towards universal coverage (Nitayarumphong 1998; Mills 2007). The shortage of public resources is confirmed by an estimate of the expenditure gap in achieving universal access to health services at low-income levels through public finance (i.e. general tax and social insurance), which currently ranges from 40-50 billion USD (Jha, Mills et al. 2002) and is expected to reach over 100 billion USD by 2015 (Preker, Langenbrunner et al. 2002). In addition, many technical issues such as appropriate sources of funding, methods of resource allocation to financial intermediaries, payment methods for health

care providers, and regulation and sustainability of the system, have been raised as policy questions for developing countries aiming to achieve universal coverage (Mills 1998).

The absence of financial risk protection for the great majority of the population in low- and middle-income countries often leads to impoverishment for those households with excessive health care costs (World Bank 1997; ILO 2000; World Health Organization 2000). Many of the world's 1.3 billion poor still do not have access to effective and affordable medicines and health services due to weaknesses in health care financing strategies (Preker, Langenbrunner et al. 2002). Poor financing arrangements lead to the situation wherein large segments of the population in developing countries rely heavily on out-of-pocket payments instead of risk-sharing arrangements, and have to face direct payments for health care costs. In addition, the absence of health insurance is likely to prevent the poor from accessing and utilizing health services because they cannot afford health care costs, particularly when expensive and long-term care is needed (Ranson 2002). In the event of a serious illness, the poor are vulnerable to financial consequences of health care payments in terms of out-of-pocket payments and income losses (McIntyre and Thiede 2003; Russell 2005). A recent study indicates that every year, approximately 44 million households worldwide, or more than 150 million individuals, face catastrophic health expenditures (Carrin, Evans et al. 2007). Of these, about 25 million households containing more than 100 million people are pushed into poverty by medical care costs.

Empirical evidence for households facing catastrophic health care payments indicates a positive correlation between the proportion of households with catastrophic health expenditures and the share of out-of-pocket payments in total health expenditures (Xu, Evans et al. 2003; Limwattananon, Tangcharoensathien et al. 2005; van Doorslaer, O'Donnell et al. 2005). Three factors influencing the severity of catastrophic health expenditures are: 1) the lack of pre-payment for health insurance; 2) the availability of health services requiring household payments; and, 3) the household's low capacity to pay for health care. Low- and middle-income nations in Asia, Latin America, and other countries in transition experience higher rates of catastrophic household spending on health care because of the low percentage of people with financial risk protection (Xu,

Evans et al. 2003; van Doorslaer, O'Donnell et al. 2005). Many studies indicate that people in poor households can be protected from catastrophic health expenditures by government policies which would reduce the proportion of people relying on out-of-pocket payments for health care and provide more financial risk protection (ILO 2002; Jha, Mills et al. 2002; Preker, Langenbrunner et al. 2002; Ranson 2002; Xu, Evans et al. 2003).

Apart from providing financial risk protection for health care, a government policy on health financing reform is an effective tool to improve the efficiency of health care systems and reduce health care inequalities (Hsiao and Liu 2001; McPake, Kumaranayake et al. 2002; Than Sein 2002; World Health Organization 2005). To achieve improved efficiency, governments have to spend on public goods or health services that have positive externalities to society, and provide or contract for public health services where the private sector is negligent (van de Walle 1996; Castro-Leal, Dayton et al. 2000). To reduce health care inequalities, governments employ health care financing to determine the availability of health care and provide effective health services through public subsidies or free of charge for those who are in need. With this objective, health care financing arrangements also address the issue of poverty reduction through the redistribution of public resources and government health care subsidies (Hsiao and Liu 2001; Preker, Langenbrunner et al. 2002). The degree of financial protection against catastrophic costs of illness is determined by the depth and breadth of the benefit package. With these mechanisms in place, a universal coverage policy comprising well-designed health care financing arrangements can achieve the policy goals of enhancing financial risk protection, and improving both the overall efficiency and equity of the health care system.

Given the importance of financial risk protection and key constraints in low- and middle-income countries, achieving universal health care coverage is a key challenge for policy makers and health care reformists in the developing world. In addition, lack of financial risk protection for the poor in these countries poses a serious concern for international organizations and the government of each country, who need to expand health insurance

coverage and improve equitable access to health services. The Thai experience in achieving universal coverage (UC) using the Beveridge Model should be useful for other low- and middle-income countries, to learn from the successes and failures of this policy implementation in the Thai context, and its impact on the overall health care system.

1.2 Universal health care coverage in Thailand

Thailand, a lower middle-income country, launched a policy on universal coverage (UC) in April 2001 due to a political commitment from a new government to provide universal access to health services and a considerable increase in public concern over inequitable access to health care. Objectives of the UC policy in Thailand were to provide accessible and equitable quality health services, and reduce the national, as well as household, health care expenditures through a minimal co-payment of 30 Baht (around £0.48 or US$0.95) per ambulatory visit or hospital admission, as shown in the following government statement.

> *(7) Provide universal health insurance with a view to reducing the overall cost to the country and the people in acquiring health care capping each hospital visit at 30 baht. All Thai people will be guaranteed equal access to a nationally acceptable standard of health care.*
>
> (Government Policies of H.E. Prime Minister Thaksin Shinawatra delivered to the National Assembly on Monday, 26 February 2001)

The universal coverage policy introduced a tax-funded health insurance scheme, the so called "UC scheme", to approximately 47 million people who were not beneficiaries of the Civil Servant Medical Benefit Scheme (CSMBS) or the Social Security Scheme (SSS). Health services included in the UC benefit package comprise ambulatory care and hospitalization, essential interventions for health promotion and disease prevention, and a wide range of expensive medical services. Main health care providers are designated, district based networks including health centres, community hospitals, and cooperating provincial or regional hospitals at the provincial level. Eligible persons are required to register with their primary care network and obtain a free insurance card which requires a nominal 30 Baht co-payment for each ambulatory visit or hospital admission. Those who

were former beneficiaries of the Low Income Card (LIC) scheme (children aged less than 12 years, the elderly aged over 60, and the disabled) were exempt from the UC scheme's co-payment. However, when the new government came into power in November 2006. the Minister of Health declared the termination of the 30 Baht co-payment for everyone (Treerutkuarkul 2006).

After the UC policy was introduced in 2001, there were three major public schemes providing health insurance for the entire population. These were:

- the Civil Servant Medical Benefit Scheme (CSMBS) which covers around six million government employees and their dependants;
- the Social Security Scheme (SSS) which protects employees in the formal sector from non-work related health care expenditures; and,
- the UC scheme which covers the rest of the population and replaces all previous government-subsidized health insurance schemes, namely the Voluntary Health Card (VHC), and the Low Income Card (LIC) scheme for the poor, the disabled, the elderly, and children aged less than 12 years.

As a result, the combination of these three schemes makes up the UC coverage arrangements in Thailand.

1.3 Health financing reform under the UC policy in Thailand

The Thai government introduced health care financing reform as a crucial tool in achieving both efficiency and equity goals under the universal coverage policy in Thailand. Prior to 2001, government health resources were allocated to public health facilities on a historical basis without a link to either performance or registered population. After the implementation of the UC policy, contracted health care provider networks received government budgets according to the number of people registered with each primary care network and the types of health services provided. The government pays both public and private health care providers by using a contracting model which includes capitation payment for ambulatory care, and diagnostic related group (DRG) case payment within a global budget for hospitalization. The amount of government

subsidies for UC beneficiaries has increased from 1,202.4 Baht (approximately £19.1 or US$38.3) per capita per year in 2001 to 1,308 Baht (approximately £20.8 or US$41.6) in 2004 (Towse, Mills et al. 2004), and has reached 1,899.7 Baht (approximately £30.1 or US$60.1) per capita in 2007 (NHSO 2007a). In 2005, the total government budget for the UC scheme was estimated at 27% of total national health expenditures and accounted for 45% of government health care spending (Tisayatikom, Patcharanarumol et al. 2007). With these new financing strategies, the core of health care financing for the Thai health care system has shifted from household out-of-pocket payments to general taxation (Towse, Mills et al. 2004; Limwattanonon, Tangcharoensathien et al. 2005).

The UC scheme promotes use of primary care at the district level by shifting health service delivery from tertiary care hospitals to primary care provider networks through the contracting payment method. The government contracts a contractor unit for primary care or 'CUP' as the main provider to deliver health care for its registered population. The CUP comprises all health centres in a district along with a primary unit set up in the community hospital. Patients can access either health centres or the community hospital associated with their contracting unit, and will be referred to a provincial or regional hospital at a higher level of care if necessary. The CUP receives a capitation budget for ambulatory care according to the number of people registered and reimburses the expenses for inpatient care from a provincial budget based on diagnostic related group weights. As a result, evidence suggests that government health resources have tended to shift from urban hospitals to primary care facilities, and more public health care subsidies have been allocated to rural areas (Jongudomsuk 2002a). In addition, the promotion of primary care is likely to increase access to health care services of the poor in the countryside (Vasavid, Tisayatikom et al. 2004).

After the UC policy was implemented, an interesting question was raised regarding who benefits from government health resources under UC. This is because the poor and disadvantaged groups in Thailand were previously protected by targeted government-subsidized health insurance schemes, namely the Low Income Card (LIC) Scheme, Social Security Scheme (SSS), and Voluntary Health Card (VHC) Scheme. The LIC was

launched in 1981 and provided health insurance to the disadvantaged including those who were identified as poor, elderly, disabled, and children aged under 12 years (Pannarunothai 2001). The SSS has protected formal employees from health expenditures caused by non-work related illness since the Social Security Act was enacted in 1990. The VHC provided health insurance for those who were ineligible for the LIC scheme and could afford to pay an annual premium of 500 Baht per household. With the expanded coverage of public health insurance, the question of whether the poor or non-poor benefit more from the new universal coverage policy has been widely raised by social scientists and the public media in Thailand (Na Ranong and Na Ranong 2002; Siamwala 2002).

1.4 UC benefit package

The UC scheme comprises a comprehensive benefit package which includes ambulatory care, hospitalization, disease prevention, health promotion, and many expensive medical services such as radiotherapy and chemotherapy for cancer treatments, surgical operations, and healthcare for accident and emergency illnesses. Prescription drugs are also free of charge. UC beneficiaries are guaranteed universal access to health services by registering with primary care networks, after which they can then obtain health services when needed. If the registered hospital cannot provide appropriate treatment, patients are transferred to a higher level health facility such as provincial or regional hospitals, and sometimes university hospitals. Although the UC benefit package is quite comprehensive, some expensive medical care has specifically been excluded due to high costs of certain procedures and the limited government health care resources (Jongudoumsuk 2002; Tangcharoensathien, Kasemsup et al. 2005).

In March 2001, the Thai government decided not to include renal replacement therapy (RRT) for end-stage renal disease (ESRD) patients and anti-retroviral drugs (ARV) for HIV/AIDS patients due to their long-term, high costs and the risk of overburdening the UC budget. It was estimated that if the UC policy provided universal access to RRT and was implemented without any strategy in place to reduce the costs of RRT or without

appropriate selection criteria for eligible ESRD patients, the government would expect to spend more than five billion Baht in the first year of policy implementation. Projections also showed that the government budget for universal access to RRT would increase to more than 74 billion Baht (approximately £1.17 billion or US$2.36 billion) by the sixteenth year of implementation if the government played a passive role in controlling access to ESRD treatment and RRT costs (Tangcharoensathien, Kasemsup et al. 2005).

The decision to exclude RRT from the UC benefit package created a public debate over the objectives of the UC policy and concerns the financial burden of the scheme would place on the overall government health budget (Tangcharoensathien, Kasemsup et al. 2000; Tangcharoensathien, Teerawattananon et al. 2001). A recent study revealed that the exclusion of RRT from the UC benefit package was likely to result in a considerable financial barrier to such health services and substantial economic burden of health care costs on ESRD patients, especially those in poor families (Tangcharoensathien, Kasemsup et al. 2005).

1.5 Knowledge gaps

Experiences in achieving universal coverage in industrialized countries show the attainment of more equitable access to health care of the population and a higher degree of financial risk protection from the costs of illness, compared to low- and middle-income countries. However, empirical evidence indicates that socio-economic disparities in health and health care use in some high-income countries still remain (DHSS 1980; Whitehead and Diderichsen 1997; Diderichsen, Whitehead et al. 2001; Kwon 2002; Mossialos and Dixon 2002b; Veugelers and Yip 2003). For example, specialist medical services in Canada were underused by lower socio-economic groups and may even contribute to a widening of the socio-economic gap (Veugelers and Yip 2003; Health Disparities Task Group 2005). Even in some of the healthiest countries in Western Europe – Finland, the Netherlands, and the United Kingdom – a gradient in health across the social spectrum was experienced (Whitehead and Diderichsen 1997). Hence, questions regarding financial and non-financial barriers to health services. along with

factors influencing the effectiveness of a universal coverage policy in reducing health disparities, are raised in both developed and developing countries.

Since relatively few developing countries have achieved UC, much is still unknown about how a universal coverage policy can promote equity of health care systems in low- and middle-income countries, especially within different health care systems and social contexts. Limitations of current research on the linkage between health care financing arrangements and achievements of health care systems, especially in low- and middle-income countries, includes factors such as the absence of well designed large scale evaluations on the effect of health financing interventions, a lack of control groups, insufficient socio-economic data, and a short timeframe of existing studies (Palmer, Mueller et al. 2004). It is hoped that an assessment of the impact of the universal coverage policy on the Thai health care system can help address international knowledge gaps and limited current information. This would contribute to the body of knowledge and provide lessons for other developing countries moving towards universal coverage. The availability of national household surveys on health service use, and existing input and output reports of public health facilities, provide a good opportunity to explore changes in health service use and the distribution of public subsidies on health, or 'benefit incidence', for the whole Thai health care system, prior to and after universal coverage. In addition, an investigation into the impact of the UC policy and its relationship to changes in health financing arrangements would be useful for knowledge and further research on health care financing, equity in health, and health risk protection.

The shortage of experiences regarding the adoption of tax-based public health insurance for achieving universal coverage in low- or middle-income countries is another interesting point in support of the need to evaluate the impact of the UC policy on the Thai health care system. The shift of health care financing sources from household out-of-pocket payments to general taxation raises a question as to the impact of the UC policy on changes in equity in health care finance and financial burden for health payments borne by households from different socio-economic groups. In addition, the exclusion of certain expensive medical services from the UC benefit package such as RRT for ESRD

patients, poses a question to the financial impact on Thai households of different socio-economic status. The extent of inequitable access to RRT and the magnitude of financial consequences from direct payments for RRT between better-off and less well-off households are unknown.

At the heart of assessing the impact of UC policy on health equity lies in how poorer and more vulnerable groups are defined. Criticisms have been made over using monetary measures, either income or expenditure, to assess household living standards or individual socio-economic status in developing countries (Filmer and Pritchett 2001; Sahn and Stifel 2001; Oakes and Rossi 2003). Limitations in national household surveys on socio-economic status, problems of accuracy in household income and expenditure reporting, and sampling biases in low- and middle-income countries, have led to a search for an alternative tool to classify individuals or households into different socio-economic groups (Morris, Carletto et al. 2000; Filmer and Pritchett 2001; Sahn and Stifel 2001). Use of a non-monetary measure, such as an asset index, to assess health disparities in developing countries is quite rare. A comparison of the effect of using monetary and non-monetary tools on equity in health care use, and the distribution of public subsidies on health, would be useful for developing countries, where individual and household socio-economic data are limited.

1.6 Purpose and contents of thesis

1.6.1 Purpose

The aim of this research is to describe changes in health care use, equity in health care finance, and financial burden of health care payments borne by different socio-economic groups of Thais prior to and after the UC policy implementation, and to analyze the role of the UC policy in any changes observed. In addition, the distribution of public subsidies on health or benefit incidence prior to and after UC and the economic impact of the UC benefit package on poorer and richer households are all investigated. The ultimate purpose is to draw lessons from UC policy implementation in a developing

country like Thailand for presentation to the international audience and to contribute to the body of knowledge. Finally, the sensitivity of conclusions on choice of socio-economic group indicator (household income per capita or the asset index), and the use of aggregate and regional unit subsidies to calculate benefit incidence, are also explored.

With this research aim, the five specific objectives of this thesis are to:

1. analyze changes in health care use and the distribution of public subsidies on health gained by different socio-economic groups of Thais prior to and after universal coverage, and to describe the role of the UC policy in any changes observed;

2. investigate changes in progressivity of health care finance, financial risk protection, and financial burden on households for health care payments prior to and after universal coverage;

3. explore differences between the use of an asset index and household income per capita to categorize individual socio-economic status, and the use of an aggregated and regional unit subsidy, to calculate benefit incidence;

4. explore the economic impact of the UC benefit package on poorer and richer households, comparing the exclusion of RRT and the inclusion of open heart surgery; and,

5. provide lessons learnt and policy recommendations for improving equity in the Thai health care system and other developing countries through the introduction of universal coverage and health financing reform.

It should be noted that the UC policy comprises several health financing strategies which tended to affect the whole health care system and population covered by the UC and other health insurance schemes. Therefore, an assessment of the impact of the UC policy on equity in health care use and health care finance requires an investigation on changes in equity for the overall population.

1.6.2 Contents

The thesis is divided into four major sections. The remainder of Section 1 consists of Chapters 2, 3, and 4, and provides a theoretical background related to this research, background information on the Thai health care system and characteristics of the UC policy, and then the purpose as well as scope and methodology of the research. Chapter 2 describes the theoretical background and philosophies of equity in health and health care use, health care finance, universal coverage, methods and databases for assessing health equity. Chapter 3 presents background information on the Thai health care system, main features of the UC policy, the UC benefit package, and previous studies which evaluated the UC policy in Thailand. Chapter 4 identifies objectives of the study and justifies the choice of research methodology.

Section 2 consists of three chapters presenting secondary data analyses and the quantitative approaches of the thesis. Chapter 5 assesses changes in health care use among individuals of different socio-economic status prior to and after the implementation of the UC policy. Chapter 6 explores benefit incidence on different socio-economic groups of Thais prior to and after the universal coverage policy. Chapter 7 presents an assessment of equity in health care finance and changes in financial risk protection prior to and after the UC policy.

Section 3 presents findings of the economic impact of the benefit package of the UC scheme on Thai households with different socio-economic status. A case study of two expensive medical services, renal replacement therapy (RRT) for end-stage renal disease patients (ESRD) and open heart surgery for heart disease patients, which are respectively excluded and included in the UC benefit package, are explored in terms of three aspects: equity in access to health services; financial consequences for households; and coping strategies adopted by richer and poorer households.

Section 4 comprises two chapters and annexes. Chapter 9 discusses the research findings from both the quantitative and qualitative approaches, and how the UC policy had an

impact on changes in health care use, equity in health care finance, and benefit incidence gained by different socio-economic groups of Thais. Limitations of the study, along with strengths and weaknesses of the study's methodology, are also presented. Chapter 10 presents conclusions of the study, policy implications and lessons learnt for Thailand as well as other countries, and further research needs. Annexes of the thesis include advantages and disadvantages of different household socio-economic indicators, with an emphasis on using an asset index for measuring household living standards in Thailand, the 2002 SES and the 2003 HWS questionnaires, the UC benefit package, investigating tools of the qualitative household study, patient information sheet and informed consent forms, and ethical approval documents from the Thai MOPH and LSHTM.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, a review of the relevant literature is presented in three sections. The first section describes the importance and definitions of equity in health, philosophies and the principles of equity in health related to the universal coverage policy. The second section focuses on the literature about universal coverage, health care financing reform, roles of universal coverage and public health insurance in improving equity in access to health services, and financial risk protection, especially in developing countries. The last section provides a literature review of methods and potential databases for assessing equity in health.

2.1 Equity in health

Equity in health has been recognized to be an important objective of health care systems in many countries, and has recently received greater attention from key international organizations (International Society for Equity in Health 2005; The World Bank 2005; World Health Organization 2005). During the past three decades, concerns over equity in health have been acknowledged by several international initiatives, beginning with the Alma Ata Conference on Primary Health Care in 1978 (WHO 1978), followed by a number of global and regional health equity initiatives including WHO Initiative on Equity in Health and Health Care, Rockefeller/Harvard University Global Health Equity Initiative, Southern African Development Community (SADC) Regional Network on Equity in Health, World Bank Study on Equity in Health in Latin America and the Caribbean, and finally the Millennium Development Goals of the United Nations (United Nations 2005), which had explicit statements on gender equity, especially in health and education. To help achieve the policy goal of equity in health, many countries in Southeast Asia and Latin America have employed a universal coverage (UC) policy in access to health care as both a means and an ends to achieve this objective (Tangcharoensathien, Wibulpolprasert et al. 2003; Frenk 2006). In May 2005, the 58th

World Health Assembly adopted Resolution 58.33 urging member states of WHO to work towards universal coverage and to ensure that their populations have access to needed health interventions without the risk of financial catastrophe (World Health Organization 2005). The International Conference on Social Health Insurance in Developing Countries held in Berlin in 2005 also recommended that governments should promote and expand universal health protection through pre-paid, pooled, and solidarity-based social health insurance schemes with good and effective government stewardship (International Labour Office, Deutsche Gesellschaft fur Technische Zusammenarbeit et al. 2006). Most recently, the 2006 World Development Report expressed its concerns over health inequalities caused by market failures for health insurance and health care, especially in developing countries where inappropriate and inefficient flows of health resources are highly prevalent (The World Bank 2005).

Health inequalities appear to be pervasive both between and within nations across the globe (Evans, Whitehead et al. 2001; Coburn and Coburn 2007). For example, infant mortality among blacks in South Africa was five times higher than that among whites (Gilson 1997), maternal mortality in the poor province of Quinghai in China was ten times higher than in more prosperous areas such as Zhejiang Province (Hsiao and Liu 2001), and the share of children under age 5 years who were stunted was higher in rural parts of Malawi, Vietnam, and China than in urban parts of these countries (UNICEF 1999). In addition, a similar pattern of health inequalities is evident among affluent countries such as the United States (Murray, Michuad et al. 1998), the Netherlands, Finland, and the United Kingdom (Whitehead and Diderichsen 1997; Allin, Masseria et al. 2006). It can be said that regardless of whether a country is rich or poor and whether it has high aggregate or low health status, opportunities for good health and health care are highly unequal between the rich and the poor across the globe.

It is estimated that 1.3 billion people worldwide do not have access to effective and affordable health care (GTZ-ILO-WHO-Consortium on Social Health Protection in Developing Countries 2006). The poor are the most vulnerable as they are less able to recover from the financial consequences of out-of-pocket payments and loss of income

associated with ill health. WHO estimates that every year, more than 150 million individuals in 44 million households face financial catastrophe as a direct result of having to pay for health care (World Health Organization 2005). About 25 million households or more than 100 million individuals are pushed into poverty by the need to pay for health services. There is an urgent need for governments in developing countries to set improvement of financial risk protection and equity in health as their policy objectives.

From a social justice perspective, Sen explained the importance of equity in health in the following three aspects.

- First, health is among the most important conditions of human life and a significant component of human capabilities that must be valued. The opportunities of an individual to achieve good health (i.e. free from avoidable illness and afflictions, and premature mortality) should be informed by the conception of social justice and be a high priority of health policies in both developed and developing countries;

- Second, process and procedural fairness have an inescapable relevance to social justice, thus governments must go beyond health achievements and the capability to achieve health; and,

- Third, health equity cannot only be concerned with inequality of either health or health care, and must take into account how resource allocation and social arrangements link health with other features of states of affairs (Sen 2002).

Given Sen's perspective and the current situation of health inequalities, achieving equity in health requires a host of interventions and measures to deal with many issues, both inside and outside the health sector. In addition, policy makers and international organizations need a clear understanding of the situations and must develop policy goals of improving health equity.

2.1.1 Philosophies of health equity

Philosophies of social justice bearing on the issue of equity in health are diverse. This leads to debates about the meaning of equity in health and how best to achieve it. To

understand the philosophies of social justice and the different viewpoints of health equity. there are three clear philosophical approaches: libertarianism, utilitarianism, and egalitarianism.

Libertarianism emphasizes a respect for natural rights, focusing in particular on two of Locke's natural rights—the rights to life and to possessions (Gillon 1986). This provides a belief that people can acquire and transfer their properties without violating other rights. In health care, the libertarian concept is concerned that a minimum standard of health care should be provided to all people, while additional health care can be obtained depending on an individual's purchasing power and preference. Libertarians view access to health care as "part of society's reward system" and people should be able to use their income and wealth to get more or better health care than their less wealthy fellow citizens if they wish. Thus, a libertarian health care sector should be privately financed and health care should be rationed primarily according to willingness to pay. State involvement should be limited to ensure a minimum standard of care for the poor.

The second philosophy, utilitarianism, has different concepts and goals. Utilitarianism aims to maximize the sum of individual utilities or welfare. It gives equal weight to each individual's happiness. Therefore, in health care, utilitarianism has much in common with the notion of efficiency, allocating resources according to the likelihood of medical success. During the eighteenth and nineteenth century, the utilitarian concept was passionately adopted by advocates of radical social reform which sought to redistribute income, health care, and other utility-yielding goods from the rich to the poor (Williams and Cookson 2000). Redistribution is bound to be a good thing for a utilitarian, since the gain in happiness by the poor from one more unit of the benefit is assumed to be greater than the loss in happiness by the rich from one less unit (diminishing marginal utility).

The last philosophy is egalitarianism, which seeks to reduce inequality. Egalitarian health care should be financed according to ability to pay, while the delivery of health care should be allocated on the basis of need, which would promote equality in health. Williams (1993) supported this concept in his view of "access to health care being every

citizen's right" that ought not be influenced by income and wealth. Therefore, from an egalitarian viewpoint, a publicly financed system should dominate in health care financing, and health care should be distributed according to "need" and financed according to "ability to pay" (Wagstaff and Doorslaer 2000).

Each of the three aforementioned broad viewpoints generates a distinctive health care system with very distinctive characteristics, each different from the other. In a libertarian system, willingness and ability to pay are the determinants of access, and this is best accomplished in a market-oriented private system. In a utilitarian system, basic health services are available for every citizen and effective health services should be prioritized where they maximize the sum of utilities. Finally, equal opportunity of access for those in equal need is the determining rule in an egalitarian system, and this requires the establishment of a social hierarchy of need which is independent of who is paying for care. This equal access is best accomplished in a publicly financed health system.

In practice, health care systems in low- and high-income countries are financed and delivered by a mixture of systems relying on different philosophies. Policy-makers in European countries give the impression of being much more inclined towards the egalitarian viewpoint in health care matters (Hurst 1991; Wagstaff and Doorslaer 2000) rather than leaning towards a more libertarian philosophy, like the US and some countries in Asia (Havighurst 2006; Mettanando Bhikkhu 2007). Most studies of equity in health in European countries begin with the premise that payments towards health care should be related to ability to pay rather than to use, and health care should be distributed according to need rather than willingness or ability to pay (Andersen 1975; Le Grand 1978; Hurst 1991).

2.1.2 Definitions of health equity and underlying social advantage

In general, different social, political, economic and cultural contexts suggest the need for different ways of defining and explaining health equity (Braveman and Gruskin 2003). However, clarity in the principles and definitions of health equity and health disparities

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has important policy implications and practical consequences. A clear definition is required to determine when different definitions represent substantially different paradigms and the implications of adopting these paradigms in particular contexts. In addition, an unequivocal definition can help to guide which measurements are relevant for monitoring health disparities at different levels (e.g. national, state/provincial, and local levels), and help to enhance accountability for the effects of policy actions.

Equity means social justice or fairness; it is an ethical concept, grounded in principles of distributive justice. Equity in health has been widely defined as the absence of socially unjust or unfair health disparities (Whitehead 1992). Evidence from the literature review indicates that there was little consensus about what these terms mean during the 1990s. At present, however, common to most definitions of health equity is the idea that certain health differences or health disparities are unnecessary, avoidable, unfair and unjust (Macinko and Starfield 2002). In addition, equity in health refers to the circumstance which allows for all persons to have fair opportunities to attain their full health potential, to the fullest extent possible given their context and situation (Whitehead 2000). The International Society of Equity in Health defines health equity as "the absence of potentially remediable, systematic differences in one or more aspects of health across socially, economically, demographically, or geographically defined population groups or sub-groups" (International Society for Equity in Health 2005). For the purposes of operationalization and measurement, a recent study characterized equity in health as the absence of systematic disparities in health or in the major social determinants of health between social groups who have different levels of underlying social advantage and disadvantage (Braveman and Gruskin 2003).

Underlying social advantage and disadvantage refers to wealth, power, prestige, and other attributes that define how people are grouped into social hierarchies. Advantaged and disadvantaged social groups include socio-economic groups (typically defined by measures of income, economic assets, occupational class, and/or educational level), racial/ethnic or religious groups, or groups defined by gender, geography, age, disability, sexual orientation, and other characteristics relevant to a particular setting. It is

suggested that a health disparity must be systematically associated with social advantage, that is, the associations must be significant and frequent or persistent, not just occasional or random (Starfield 2001). For instance, the efforts of the World Health Organization to define and measure health equity using only individual-based health status in the World Health Report 2000 (World Health Organization 2000) were criticized by many social scientists (Braveman, Krieger et al. 2000; Almeida, Braveman et al. 2001). These scientists argued that such an approach of the WHO would: 1) ignore important social determinants of health inequalities; 2) prevent social disparities in health from occupying an important place on the global research and policy agenda; 3) ignore ethical considerations at the population level that would favour guiding resources to those with both poorer health and lower social position; and, 4) undermine current global efforts aimed at the study of social determinants of health.

The terms "equity" and "equality" are often used interchangeably, despite the fact that their concepts are quite different. In general, equity is fairness, impartiality, justice according to natural law or right, and freedom from bias or favouritism (Merriam-Webster 2008). Equality, on the other hand, is defined as the state of being equal. This in turn is defined as having the same rights, privileges, ability, rank, or being the same quantity, size, number, value, degree, intensity and quality (Kluthe 2002). On the one hand, equality is a dimensional concept, simply referring to measurable quantities, while equity is a political concept, expressing a moral commitment to social justice. The concept of health equity focuses attention on the distribution of resources and other health-related processes that drive a particular kind of health inequality, that is unjust or unfair (Braveman and Gruskin 2003). Given this understanding, aims of policies to achieve equity in health are not to eliminate all health differences so that everyone has the same level and quality of health, but rather to reduce or eliminate those which result from factors which are considered to be both avoidable and unfair.

Like most concepts, equity in health is difficult to measure directly. However, operational definitions of equity in health based on meaningful and measurable criteria have been proposed. For example, Mooney suggested seven possible definitions of

equity in health after the publication of the Black Report[1] and a wide discussion on this issue in the UK during the 1980s. These definitions included: 1) equality of expenditure per capita; 2) equality of input per capita; 3) equality of input for equal need; 4) equality of access for equal need; 5) equality of utilization for equal need; 6) equality of marginal need; and 7) equality of health (Mooney 1983). Whitehead (2000) also proposed the following seven main determinants of health differentials which can be identified as just or unjust:

1. Natural and biological variation;

2. Health-damaging behaviour if freely chosen, such as participation in certain sports and pastimes;

3. Transient health disadvantage of one group over another when that group is first to adopt a health-promoting behaviour (as long as other groups have the means to catch up fairly soon);

4. Health-damaging behaviour where the degree of choice in lifestyles is severely restricted;

5. Exposure to unhealthy, stressful living and working conditions;

6. Inadequate access to essential health and other public health services; and,

7. Natural selection or health-related social mobility involving the tendency for sick people to move down the social scale.

The consensus from the literature suggests that health differences determined by factors in categories 1, 2 and 3 above would not normally be classified as inequity in health, whilst those factors in categories 4, 5, 6 and 7 would be considered by many to be unfair and unjust.

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[1] Black Report was published in 1980 by a committee led by Sir Douglas Black. This report tacked the patterns of inequalities in health across Britain and made recommendations for health improvement. Though many of the recommendations were not implemented, the discussions surrounding its finding continue to this day.

2.1.3 Debates on vertical equity and procedural justice

Considerations of equity in the health policy literature have mainly focused on horizontal equity (the equal treatment of equals) and as a consequence have tended to overlook vertical equity (unequal treatment for unequal needs) (Mooney and Jan 1997). Typically, horizontal equity applies to people in the same status or situation, and people who are alike should be treated in the same fashion, in other words, equal treatment for equal need. For example, patients with the same health needs should receive an equal share of health care resources and treatments. In contrast, vertical equity focuses on the difference between individuals or groups of people, and people who are unlike in relevant respects (e.g. income, health needs), and states that the differences should be treated differently in a just way. For example, people in a lower economic group should receive more priority in public support than higher economic groups, and people with higher health needs should receive more treatment. Evidence from the literature shows that it is relatively easy to argue who is equal and the terms of horizontal equality (e.g., people who have equal health needs, people who are equally sick). What is more problematic is vertical equity which needs to first determine how great any inequalities in terms of health needs are, and then determine how great any differences in policy responses should be to these inequalities. Such judgements are clearly subjective and difficult to measure or address with a formula. This requires a much more concerted effort on the part of health economists and researchers to tackle issues of vertical equity, which is highly prevalent in many countries and between countries. At present, the quantity of literature related to horizontal equity is far greater than that of vertical health equity.

In general, equity strategies within the health sector have focused on establishing mechanisms for achieving horizontal equity in health care delivery (e.g. equal access for all or universal access), whilst recognizing the importance of vertical equity in relation to health care payment mechanisms or ability to pay (McIntyre and Gilson 2002). However, there is an increasing concern that vertical equity should receive more attention as a health policy goal, particularly in countries where there are substantial differences in health status between different groups in society (Mooney and Jan 1997). In addition,

possibilities to incorporate vertical equity into health care policy through distributive and/or procedural justice have also been explored. Given this perspective, distributive justice focuses on the distribution of health outcomes across individuals and groups within society, whilst procedural justice approaches emphasize fairness with respect to processes (e.g. access and financing) rather than outcomes. Difficulties with a purely distributive justice orientation to vertical equity include the possibility that it would advocate health equality regardless of genetic, environmental, or behavioural differences (Macinko and Starfield 2002).

Evidence from the literature review indicates that a practical mechanism through which concerns for procedural justice and vertical equity can be reflected is currently under exploration. Mooney and Jan (1997) suggest that in determining resource allocation patterns which reflect a vertical equity goal, it is unavoidable to consult widely within a society to identify which groups should be prioritized in policy action and how much additional weight they should receive compared to other groups. Other specific actions which put the needs of the poorest at the heart of health policy development and implementation include: 1) establishing or strengthening mechanisms for ensuring the accountability of health services to the population; 2) initiating participatory processes which can help direct local level health action; 3) strengthening the technical systems of supervision and accountability which safeguard clinical care; and, 4) developing national strategies to establish citizen's rights and allow the implementation of those rights to be monitored (Gilson 1998).

It should be noted that the scope of health equity should not be limited to equity of health care use or access. Recent debates on health equity have expand its scope to also include the distribution of health within the population (Evans, Whitehead et al. 2001). Sen (2002) took this further and argued for an even broader scope, equity in the opportunity to health. Given this perspective, health equity should also consider how "resource allocation and social arrangements link health with other features of states of affairs" (Sen 2002).

2.1.4 Government roles in improving health equity

The World Health Organization has summarized government roles in integrating a principle of health equity in overall health policy as follows:

> The underlying principle of equity in health care requires that [health care] be distributed according to need and regardless of ability to pay. In practical terms, this means providing universal access to the poor to comprehensive and good quality health services without regard to financial barriers. The government will need to assume a key role in ensuring that the principle of equity is interpreted into specific and concrete actions through the design and monitoring of overall health policy (Whitehead 1992).

In addition, WHO views the principle of "equal access to essential health services" as a human right among its member states (World Health Organization 2005). This aims to ensure that health care is financially accessible to the entire population and there is no financial barrier to health services when needed.

> Striving for equity in health and health care means doing what is necessary to (1) reduce avoidable, unfair, and unjustifiable differences in health status, health determinants, and risk factors; (2) improve access to and utilization of quality health care services by all population groups according to need; and, (3) create an enabling inter-sectoral policy and resource environment for establishing and sustaining equity in health and health care as national development policy (World Health Organization 1999).

Based on principles of health equity and the context of the WHO's Health for All policy, equity in health is concerned with creating equal opportunities for health, and with bringing health differentials down to the lowest possible level. Seven principles of action for addressing global health inequities proposed by the WHO include: 1) improving living and working conditions; 2) enabling healthier lifestyles; 3) decentralizing power and decision-making and encouraging citizen participation in policy-making; 4) conducting health impact assessments of multi-sectoral actions; 5) keeping equity on the global health agenda; 6) assuring that health services are of high quality and accessible to all; and, 7) basing equity policies on appropriate research, monitoring, and evaluation (Whitehead 2000).

In recognition of the important role of member state's legislation in further reform of health-financing systems with a view to achieving universal coverage, during the 58th WHA in 2005, the WHO urged member states to: 1) ensure that health-financing systems include a method for pre-payment of financial contributions for health care, with a view to sharing risk among the population and avoiding catastrophic health expenditure and impoverishment of individuals as a result of seeking care; 2) ensure adequate and equitable distribution of good-quality health care infrastructures and human resources for health so that citizens will receive equitable and good-quality health services according to the benefits package; 3) ensure that external funds for specific health programmes or activities are managed and organized in a way that contributes to the development of sustainable financing mechanisms for the health system as a whole; 4) to plan the transition to universal coverage of their citizens so as to contribute to meeting the needs of the population for health care and improving its quality, to reducing poverty, to attaining internationally agreed development goals, including those contained in the United Nations Millennium Declaration, and to achieving health for all; 5) to recognize that, when managing the transition to universal coverage, each option will need to be developed within the particular macroeconomic, socio-cultural and political context of each country; 6) to take advantage, where appropriate, of opportunities that exist for collaboration between public and private providers and health-financing organizations, under strong overall government stewardship; and, 7) to share experiences on different methods of health financing, including the development of social health insurance schemes, and private, public, and mixed schemes, with particular reference to the institutional mechanisms that are established to address the principle functions of the health-financing system (World Health Organization 2005a).

2.1.5 Access to and utilization of health care and barriers to health services

Many policy makers use the terms "access to" and "utilization of" health care synonymously, while some social scientists strongly argue that there is a clear distinction between "access to" and "utilization of" health care and these two phrases should not be used interchangeably (Le Grand 1982; Mooney 1983; Gulliford, Hughes et al. 2001).

However, the distinction between access to and utilization of health care is not widely appreciated, either by policy makers or academics (Wagstaff and Doorslaer 1993). Thus, the two terms are often used interchangeably in various studies related to equity in access to health care in both developed and developing countries.

Access to health care is concerned with the relationship between need, provision, and utilization of health services (Acuna, Gattini et al. 2001; Gulliford, Hughes et al. 2001). Access describes the potential and actual entry of a given individual or population group into the health care delivery system. In general, indicators to assess equity in access to health care include availability of health resources, waiting time, user charges, and other barriers to health services.

Utilization of health care is a function both of individual attributes of the patient and organizational factors including the availability and accessibility of health care services. Among individual attributes, the severity of a person health problem or illness, his or her perception of vulnerability, cultural and psychological attitudes towards health care systems, influence utilization behaviour of individuals (Andersen 1975). Organizational factors include economic costs, availability, distance, and location of health care services.

Barriers to health services are significant factors which lead to inequitable access to and utilization of health services. They can be classified into various categories depending on the type of health care provided, places of analysis, and who is conducting the analysis. Barriers in access to health care can be classified as physical, financial, attitudinal and process barriers (California Health Care Foundation 2000).

Categories for understanding barriers to health care are presented as follows.
1. Physical barriers:
    a. Lack of available health services in area; and,
    b. Lack of resources for overcoming physical barriers (e.g. handicap, transportation).
2. Financial barriers:

     a. High cost of health services; and,

     b. Lack of health insurance coverage.

3. Attitudinal barriers:

     a. Cultural discordance between patients and providers; and,

     b. Perception of health service importance relative to other priorities.

4. Process barriers:

     a. Lack of knowledge of eligibility for public assistance, health service coverage, and/or enrolment processes; and,

     b. Limited office hours and employers who do not provide time off for utilizing health services.

Evidence from the literature indicates that financial barriers in terms of user fees or patient charges hamper access to and utilization of health care, especially for low-income households (Carrin and Hanvoravongchai 2003). For instance in China, the collapse of rural insurance in the 1980s and the growth in importance of user fees have dramatically affected access to health care (Hsiao and Lui 1996). In some African countries, access to essential health care was reduced because of financial barriers when a user fee policy was implemented (Creese 1997). A study of two low-income communities in Colombo, Sri Lanka shows that changes in health system financing and delivery were likely to impose higher illness cost burdens on poor households. Sri Lankan households often required additional resources to meet illness costs and income-poor households had weak social resource endowments to draw upon (Russell 2001). In addition, research by Rand Health Insurance in the US indicates that low-income patients exempted from user charges experienced significant improvements in visual acuity and better control of blood pressure, compared with non-exempt patients (Brook, Ware et al. 1983).

2.1.6 Equity in health care finance

The way in which health systems are organized and financed is one of the key determinants of overall population health and access to essential health care (McPake 2000; Palmer, Mueller et al. 2004). From an equity perspective, health care financing is

important for two reasons. First, financing determines the availability of health care as well as who can access it, as highlighted in the previous section. Second, financing mechanisms provide financial protection against catastrophic costs of illness (Hsiao and Liu 2001). Due to the unpredictable manner of illness and health care costs, governments play a crucial role in protecting households from impoverishment caused by costs of illness and ensuring that all individuals have an equal opportunity to access essential health care.

Health care financing has become a central issue of health sector reform in many middle- and low-income countries for three reasons. First, considerable evidence indicates that a large proportion of households in these countries mainly rely on out-of-pocket payments for health care and have been impoverished by a high level of household spending on health (World Health Organization 2000; Rannan-Eliya 2001; O'Donnell, Doorslaer et al. 2005). Second, the large gap between limited government resources and increasing demand for health care due to epidemiologic and demographic transitions requires effective public resource allocation and government interventions (Kutzin 2000; Newbrander, Collins et al. 2000). Lastly, the advancement and adoption of expensive medical technology has put additional pressure on limited government health resources. As a result, WHO stressed its concerns about health care financing reform by adopting a resolution on 'sustainable health financing, universal coverage, and social health insurance' at the 58th World Health Assembly in May 2005 (World Health Organization 2005).

Health care financing involves three basic functions: collecting revenue, pooling resources, and purchasing health services (World Health Organization 2000). These functions often involve complex interactions among key stakeholders in the health sector (e.g., purchasers, public and private health care providers, employers, public and private insurance organizations, health insurance beneficiaries and their household members). Therefore, policies concerning these functions provide an opportunity to reform the health sector in the areas of financing, payments, organization, regulation, and persuasion (Roberts, Hsaio et al. 2004). Revenue collection is the way health systems raise money

from individuals, households, businesses, external sources, and governments. Pooling deals with the accumulation and management of revenues so that members of the pool share health risks, thereby protecting individuals from large, unpredictable health expenditure. Pre-payment allows pool members or the government to pay for average expected costs in advance, relieving individuals of uncertainty. It is worth noting that pooling with pre-payment enables the establishment of insurance and the redistribution of health spending between high- and low-risk individuals or risk subsidies, and between the rich and the poor or equity subsidies (Gottret and Schieber 2006).

One challenge in reforming health care finance is to harmonize these three functions in such a way that health systems can financially protect individuals from expensive medical care costs and provide appropriate incentives for health care providers so that providers are motivated to improve population health and the quality and efficiency of health services. However, most countries have a fragmented set of administrative structures for collecting revenue, as well as limited resources for pooling and purchasing health services, which require better design and stronger regulatory functions. This, therefore, creates an opportunity as well as a challenge for governments to improve their health care financing systems.

2.2 Universal coverage

Universal coverage (UC) has been defined as 'a situation where the whole population of a country has access to good quality services according to health needs and preferences, regardless of income, residency and other social circumstances (Mills 2007). Typically, UC refers to the extension of two health insurance functions to the entire population: 1) equitable access to effective health services when needed; and, 2) protection of household income and assets against expensive medical services (Mills 1996; Kutzin 1998). According to this definition, UC includes two important equity-related health policy objectives, notably equity in access to effective health services and the broader social welfare objective of poverty avoidance from expensive medical care. Thus, a policy to enhance health insurance within health systems involves two dimensions:

- Breadth of coverage, meaning the proportion of the total population with effective health care risk protection; and,

- Depth of coverage, referring to the range of health services available to beneficiaries without exposure to out-of-pocket payments.

The latter dimension is closely associated to the protection function of health insurance against expensive medical care, and refers to the extent of the benefit package provided by health insurance schemes.

2.2.1 Benefit package of public health insurance

In general, public health insurance provides financial risk protection against costs of illness through the list of health services included in its benefit package. The benefit package is not only a means for encouraging an appropriate use of medical care, but it also indicates the extent of risk protection against medical care costs obtained by beneficiaries of the health insurance scheme, and which types of health services require either direct out-of-pocket payments or public subsidies (Kutzin 1998; Kutzin 2000).

In low and middle income countries, the issue of the benefit package being guaranteed by health systems has received intense attention since the publication of the World Development Report (WDR) in 1993 (The World Bank 2005). Since the 1993 WDR specified a basic package of health care for low and middle income countries, health services included into the packages have been mainly justified by using economic analysis in the form of either cost-effectiveness or cost-utility analysis of health service interventions (Drummond, Torrance et al. 1993; Eichler, Kong et al. 2004; The World Bank 2005). This notion of health care priority setting has been favoured by health economists and policy makers since efficiency concepts rose to dominate health sector reform in the early 1990s (Gwatkin 2000).

However, the extent of the benefit package guaranteed by health systems has been debated over the years. Although the 1993 WDR suggested that health services or medical interventions which are not cost-effective should not be financed by public

resources, concerns over financial risk protection against unanticipated high-cost medical care, which is an important function of health insurance, were also raised (Hammer and Berman 1995; Soderlund 1998). In addition, in terms of practical implementation, Soderlund (1998) argues that the development of benefit packages based wholly or mainly on cost-effectiveness has yet to be seen at a national level anywhere in the world. Moreover, in political terms, explicitly limiting the health services available to a large segment of the population has proven quite difficult (Eddy 1991; Glasziou and Mitchell 1996; Glasziou 1998). In addressing these debates, Kutzin has suggested that the validity of the arguments in favour of an "essential package" or a "catastrophic package" cannot be addressed in isolation from the other elements of the insurance function. The benefit package, and options for reform, need to be considered in the light of the comprehensive financing system, allocation mechanisms, and associated institutional features (Kutzin 1998).

Differences in the principles of equity in health valued by policy makers imply differences in the scope of the benefit package. The application of cost-effectiveness and the burden of disease analysis to determine how best to generate overall health gain with limited health resources reflects the utilitarian goal of pursuing the "greatest good for the greatest number". At the same time, the idea of an essential package seems to be compatible with the Rawlsian notion of equity as requiring the worst-off in society are provided with a decent, basic minimum of health care (Gilson 1997). According to this perspective, inequitable distribution of health services, which supports the delivery of a minimum standard of care to the most needy, is considered to be equitable. However, both perspectives of equity in health are criticized by egalitarians who judge equity in health by assessing whether health care is distributed according to need and financed according to ability to pay (Doorslaer and Wagstaff 1993). They argue that aggregate health gains, which are of concern to utilitarians may be achieved even whilst the poorest gain little or nothing. In other words, the situation of the poorest relative to other groups may worsen even when the goals of achieving maximum health gain are achieved.

A key issue for countries moving towards universal coverage is whether the benefit package should include all levels of care or only health services that are more costly (Mills 2007). It is clear that the very poorest generally can not cope with any level of health expenditure, and costs of health services can force them into poverty. In contrast, wealthier households can often afford primary care expenditure, and sometimes even the costs of hospitalization or chronic illness. This is a challenge for the design of any UC policy in developing countries where health resources are quite limited.

2.2.2 Financing options for achieving universal coverage

The essence of financing arrangements for universal coverage is to ensure financial risk protection against medical care costs for everyone. In developing countries, financing universal coverage is a crucial tool to reduce the often high out-of-pocket payments for health care, and to increase the share of progressive health financing sources such as general tax and social health insurance contributions. Health care financing systems in many countries rely on a mixture of health financing sources, namely general taxes, mandatory social insurance contributions, private insurance premiums, community financing, and direct out-of-pocket payments. Each health financing source has different equity implications for overall health care finance. To elaborate on the relationship between each financing source and equity in health care finance, the main features of these financing sources are summarized below.

General taxes have long been used in every nation to finance a major portion of health care. In general, developing countries and low-income nations often rely on general taxes to finance the public health care system because fewer technical and administrative complexities are required compared with private and social health insurance. Moreover, the high proportion of the informal sector in low- and middle-income countries leads to difficulties in collecting insurance premiums and social health insurance contributions.

Although tax-based health financing arrangements imply a greater likelihood of pursuit of public health objectives, criticisms over this sort of finance are evident in many ways

(McPake 2000). For instance, employment rights and the status of civil servants in many countries result in a lack of pressure for improving the efficiency of the system performance of public health insurance for civil servants. There are counter-efficiency incentives implicit in traditional budgeting systems: over-centralized systems can be unresponsive to the needs of populations remote from the capital city, and there is often a lack of market discipline enforcing efficiency throughout the public sector.

During recent years, a number of civil service reforms aiming to improve effective use of public resources have been carried out (Lethbridge 2004). An attempt to reduce the size and levels of the bureaucratic system and the introduction of incentives with respect to performance of public employees are two examples of initiatives for reforming bureaucratic government services (Cassels 1995). Furthermore, budgetary reforms, namely a performance-based budgetary system (PBBS), have been introduced in several countries (McPake 2000). In addition, decentralization and managed market reforms, including contracting in and contracting out, are other approaches for improving the efficiency of bureaucratic systems (Walford and Grant 1998; Palmer, Strong et al. 2006; Liu, Hotchkiss et al. 2008). It is worth noting that any assessment of the effectiveness and efficiency of tax-based health financing must include an assessment of the management of public finances from their collection through to their application in purchasing health services for the population.

Social health insurance (SHI) has two distinguishing characteristics from private health insurance (Hsiao and Liu 2001). First, SHI is compulsory, and eligible individuals must enrol and pay a specific contribution in exchange for a set of benefits. Second, premiums of social insurance and its benefits are described in social contracts established through legislation. Premiums or benefits can be altered only through a formal political process. In general, SHI contributions tend to be less progressive than tax health financing because the contributions are often a proportion of income with caps at a specified income level (Gottret and Schieber 2006; Mills 2007), though to some extent subsidies to lower income members may offset this shortcoming (Wagstaff 2005) In most cases, the agencies responsible for SHI are public or quasi-public. with a certain degree of

autonomy in financing and administration. Possibilities to pursue a public health agenda are likely to exist, but are less direct and tend to be weaker than in a tax-based system.

Evidence shows that low coverage and lack of solidarity are usually identified as among the main problems of SHI in most developing countries (Kutzin and Barnum 1992; Wagstaff 2007). Although some developing countries in Asia such as China, Indonesia, Thailand, Vietnam, and the Philippines have had social health insurance for several years (Ensor 1999), the major challenge remains to extend health insurance coverage to the informal sector, which accounts for the majority of the population. In some countries, such as Thailand and Vietnam, social health insurance does not cover the beneficiary's spouse, dependents, or other family members (Than Sein 2002).

Inefficiency and cost-containment are two major concerns influencing reforms to social insurance systems (McPake 2000). A decrease in income levels of beneficiaries, especially during economic decline, and an increase in medical care costs have resulted in a crisis in the social insurance systems of many countries. Reforms in favour of competition and providing choice of insurers have been introduced to social health insurance systems by some countries in Latin America (Jimenez de la Jara and Bossert 1995). However, health system analysts have argued that although such reforms introduced pressure for efficiency and consumer responsiveness, at the same time they weakened other pressures to promote public health objectives (Yepes and Sanchez 2000). For example, epidemiological surveillance in Colombia suffered in the wake of social health insurance reforms.

Experiences in the implementation of social health insurance in two developing countries, China and Vietnam, reveal that five factors facilitate the transition of health insurance systems in a developing country to a social health insurance system: 1) an increase in level of income; 2) a sufficient administrative capacity by the government to run health insurance; 3) a sufficient level of solidarity within the society; 4) voices of the population towards their policy makers; and, 5) a strong political will (Carrin 2002). Based on the current situation and previous experience in these developing countries, predictions were

made that it would take another 35 to 50 years for Vietnam and China to achieve universal coverage (Carrin and James 2005).

Private insurance is a private contract offered by an insurance company to exchange a set of benefits for a payment of a specified health insurance premium which is usually based on an individual's risk characteristics. In general, this kind of health insurance exists in the formal, urban sector, and largely serves richer groups of the population who can afford insurance premiums (Colombo and Tapay 2004; Sekhri and Savedoff 2005). In low-income countries, private health insurance forms a very small part of the market. Major concerns over private health insurance are buyers' adverse selection, small scale dis-economies, and moral hazard (Hsiao and Liu 2001; Donaldson, Gerard et al. 2005). Creese and Bennett (1997) proposed a distinction between 'Type 1' private health insurance which focuses on coverage of high cost expenditures with low frequency events, and 'Type 2' private health insurance which focuses on covering low cost expenditures with high frequency events.

This type of voluntary insurance appears to be least conducive to achieving objectives of cost control within the health care system. Concerns by private insurance agencies about uncontrollable and rising costs of health services are illustrated by low-benefit ceilings and many excluded conditions, or highly differentiated packages in which only the most expensive cover 'catastrophic' medical services (Chollet and Lewis 1997). This implies a 'Type 2' focus and implicit reliance on the public sector as the insurer of last resort. Theoretically, depending on the nature of the market and insurers, competition of private health insurers certainly leads to concerns over inefficiency and adverse selection. The World Bank's Health, Nutrition and Population strategy concludes that: "Because of cost and the pronounced market failure that occurs in private health insurance, this is not a viable option for risk pooling at the national level in low- and middle-income countries" (World Bank 1997).

Direct out-of-pocket payment is made by patients to either public or private health care providers at the time when health services are utilized. Although such payments have

always been used by private health care providers to obtain revenue, suggestions of the World Bank in the mid-1980s encouraged an increase in user charges for public services in low-income and developing countries. The proponents of user fees believed that the fees would increase revenue to improve quality of public health services and expand coverage (Litvack and Bodart 1993). However, the major objection raised to the implementation of user fees has been on equity grounds, in particular that the poor would not be able to afford to pay, and thus would not be able to access necessary health services when needed (Reddy and Vandemoortele 1996; Gilson 1997; Save the Children 2005).

In Asia, another World Bank study estimated that private health expenditure constituted 58% of the total health expenditure in China in 2002 (Smith, Wong et al. 2004). In addition, results from the Equity in Asia-Pacific Health Systems (EQUITAP) project revealed that health care finance of two least developed Asian countries, Nepal and Bangladesh, also relied heavily on out-of-pocket payments (O'Donnell, Doorslaer et al. 2005).

Experience with the introduction of user fees for public health services providers, as mentioned earlier, has been unsatisfactory in many countries around the world, and has resulted in a decrease in utilization of essential health services with public health implications. For example, user fees may be responsible for a resurgence of tuberculosis in China (World Bank 1993), the failure to raise significant revenue (Creese and Bennett 1997), and the failure to protect the poor through exemptions (Gilson 1997). However, some evidence suggested that better experience with user fees could follow if user fees are part of effective civil service reform, budgetary reform, and introduction of market mechanisms into the public sector, and decentralization (Litvack and Bodart 1993; McPake 2000).

Evidence from a comprehensive literature review on the economic burden of illness for households shows that direct payments for health care costs are regressive. imposing a greater burden on poor families than on better-off households (Fabricant, Kamara et al.

1999; McIntyre and Thiede 2003). Although the poor in general spend less on treatment than other income groups due to lack of access, inability to pay, and greater use of public services, this spending makes up a higher proportion of monthly and annual income for poor people than for those with higher incomes (Russell 2003).

Community financing is a type of health insurance scheme characterized by three principles: community cooperation, self-reliance, and pre-payment (Hsiao and Liu 2001). Members of a community pay a contribution in advance, either in cash or in kind, to a community-organized entity for a health care benefit package. The community entity then organizes and provides preventive care, primary health care, and medication when members are in need. Community financing is organized and managed by the community, often by community-based organizations, although the government may subsidize or provide technical support to establish the program. Self Employed Women's Association (SEWA) in India and *Dana Sehat* in Indonesia are two examples of successful community health insurance schemes in the South-East Asia region (Ranson 2002; Thabrany, Gani et al. 2004).

It is clear from the literature review that a health system where individuals must pay out of their own pockets at the time of health service use creates equity concerns. Such payments can lead to exclusion of the poorest members of society from the use of health services, restricting access to only those that can afford the fees. In contrast, a health system predominately funded by public sources, including general tax and social health insurance, can provide equitable access for all to basic and essential health services (though this goal is not always achieved). Public funding enables health risks and corresponding funds to be pooled together to serve as a safety net for members of health insurance schemes and avoids the need to pay at the time and point of health service use. Pre-payment based financing arrangements can reduce the financial burdens associated with medical care costs.

Equity in the health care finance of a country depends not only on the incidence of individual financing sources, but also on the share of each financing source in total health

care finance (Mills 2007; O'Donnell, van Doorslaer et al. 2008d). Countries where progressive health financing sources (e.g. general tax and SHI contributions) have a higher share than regressive financing sources (e.g. out-of-pocket payments and private health insurance premiums) will also have a progressive pattern of overall health care finance.

2.2.3 Provider payment methods for universal coverage

The provider payment method is one of the key elements in purchasing arrangements. An appropriate payment method is vital for achieving and sustaining universal coverage, since it can greatly affect the UC policy cost (Carrin and Hanvoravongchai 2003). The responses of health care providers often rely on incentives embedded in different types of payment methods. Evidence indicates that fee-for-service payment tends to encourage cost inflation through an increase in the volume of health services, which are sometimes unnecessary (Kwon 2002; Sriratanaban 2002). In contrast, payment methods offering greater control over costs when compared with fee-for-service include case-based methods, capitation, global budgets, and block contracts (Mills 2007). These provider payments have different advantages and disadvantages, which relate to their nature and the incentives they provide for over- or under-provision of health services, as well as quality of care. For example, in capitation payment where there is no direct link between the payment method and the costs of health services consumed by an individual, the incentive to provide excessive health services tends to disappear and there is clearly an incentive to provide less costly treatment (Tangcharoensathien, Supachutikul et al. 1999; Mills, Bennett et al. 2000; Carrin and Hanvoravongchai 2003). Experiences from many countries also show that using capitation with other close-ended payments including case-based payment methods, block grants, and global budgets, can contain costs and simplify administration which is a strong advantage, especially in developing countries (Dixon, Langenbrunner et al. 2002; Mills 2007). However, it is evident that paying health care providers is often one of the most sensitive issues in designing and implementing a universal coverage policy, since it affects the interests of some key

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stakeholders such as Medical Associations, and public and private health care providers (Kwon 2002).

2.2.4 Key challenges and the impact of universal coverage on equity in health

In countries which have recently acquired developed country status, the issue of financing coverage for disadvantaged groups has been a major concern of health systems which rely heavily on mandatory insurance funding, since health insurance premiums can be collected easily only in the formal sector. To extend coverage of social health insurance towards those outside the formal sector and then achieve universal coverage has tended to take a considerable amount of time. However, it is argued that the speed of achieving universal coverage through social health insurance among developed countries has tended to increase, as compared to Germany which took approximately 127 years for achieving universal coverage (Carrin and James 2005).

In low- and middle-income countries, to extend universal health care coverage through compulsion (i.e. mandatory contributions into a national health insurance scheme), is not feasible. Limits in the extension of compulsory contributions beyond salaried employees in the formal sector are mentioned in many studies (Ensor 1999). Difficulties in registration, assessing income levels, and collecting contributions, are found among developing countries whose economy relies mainly on the informal sector. Due to these limitations, policy-makers and social scientists have turned their attention to tax-funded health insurance with appropriate supply-side cost sharing (Wagstaff 2006; Pannarunothai 2008).

Apart from the scope of the benefit package, strategies to make health services equitably accessible are vital to achieve universal coverage. An adequate infrastructure of health services and human resources for health are key to the implementation of universal coverage in developing countries (Mills 2007). In addition, once the infrastructure of health services is in place, another concern to be addressed is access to health services for

marginalized groups of the population and in some settings, women are the most disadvantaged whom require special attention (Gideon 2007).

Though evidence shows considerable and desirable improvements of health equity through the implementation of a UC policy, UC is not a panacea with respect to equity. For example, an assessment of universal coverage in Canada reveals disparities in health still persist (Veugelers and Yip 2003). Universal coverage of family physician and hospital services in Nova Scotia ameliorated the socio-economic differences in mortality, but specialist services were underused in lower socio-economic groups, bearing the potential to widen the socio-economic gap in health.

2.2.5 Targeting vs. universal approach in reducing health inequity and poverty

A key strategic choice of governments in redressing health inequalities is to decide whether limited health resources should be directly targeted to the poor and the disadvantaged or to universally provide for all, irrespective of their income or other social circumstances. The debate around these two choices aims to find the best way to raise the well-being of the poor and the disadvantaged by transferring health resources to them (Hanson, Worrall et al. 2008). Though these two approaches have a similar goal, they have distinctly different characteristics. Under a universal approach, all members of a given population are eligible to receive health benefits, while under a targeted approach, health benefits are restricted to specific sub-groups of the population.

In general, policy makers in developing countries are often recommended to employ a targeted approach for providing health benefits to the population for three reasons: equity, efficiency, and sustainability. On equity, policy makers often commit themselves to provide or finance essential health services for the entire population, while health resources are very scarce. As a result, they are often unable to achieve such commitment due to a lack of resources, weak public administration, or having social and environment obstacles in reaching particular population groups. By focusing limited resources on those who are identified as being in need, a targeted approach allows the needy to benefit

disproportionately, consequently resulting in improvements of health equity (Savedoff 2007). On efficiency grounds, channelling health resources directly to those in greatest need ensures that these limited resources are most effectively used. In addition, a targeted approach can improve efficiency by reducing the overall costs of interventions, compared with universal benefits. The efficiency goal can also be enhanced if limited resources are used to induce behaviour which has positive externalities (Hanson, Worrall et al. 2008). On sustainability, fiscal sustainability can be achieved if limited health resources are used for those in greatest need only. In addition, political sustainability may be another achievement related to continued political commitment and support for targeting.

However, Gilson (1997) has argued that using a targeted approach in health care delivery, compatible with the egalitarian perspective, may lead to the creation of a tiered and segmented health system. The withdrawal of public benefits from the middle and higher income groups in targeted approaches may create a vicious cycle in which the better off withdraw their political support for the public health system, which is known as the 'paradox of targeting' (Besley and Kanbur 1993; Gelbach and Pritchett 1997). This could result in differences in access to and quality of health services obtained by different income groups. As the poor tend to rely on health services subsidized by the government, a decline of support from higher income groups could lead to a decrease in financial support and a decline in quality of health services available to them, whilst the middle- and high-income groups move towards the private sector and a much larger benefit package (Gilson 1997).

Arguments about drawbacks of the targeted approach comprise three categories: availability of good information for the targeting approach, importance of incentive effects created to providers and users, and the potential costs of targeting (Hanson, Worrall et al. 2008). The targeted approach usually requires good information on population distribution and indicators of deprivation for programme design and evaluation. Given that targeting mechanisms can create either a positive or negative impact on health care providers and users, monitoring the impact of the targeted approach

on the incentives of providers and users is essential. Finally, the costs of targeting must be compared with that of universal coverage in order to gain a complete understanding of the relevant trade-offs.

2.3 Methods and potential databases for assessing equity in health

Typically, health equity is the absence of systematic health differences between more and less socially advantaged groups. To document the existence or magnitude of health inequalities, data required for equity analyses include: 1) a measure of health; and, 2) a measure of social status or advantage, called an equity stratifier, which defines strata in a social hierarchy. The magnitude of health inequalities across different social strata can be summarized in many forms using simple calculations such as rate ratios and rate differences, or more complex calculations of the slope index of inequality including the concentration and the Kakwani index[2], the Gini coefficient[3], and the like. Potential database which provide data on health equity range from censuses to small-area databases and administrative data from health programmes.

2.3.1 Health measures

Many studies related to health equity indicate that core health indicators should cover a range of health-related categories including health status, health care and other determinants, as well as the social and economic consequences of ill health (Nolen, Braveman et al. 2005; Gwatkin, Rutstein et al. 2007). In general, useful health status indicators for equity analyses include mortality, morbidity, nutritional status, functional status or disability, and quality of life. Health care indicators often include access to and utilization of public health services, health insurance coverage and quality of health services obtained, and allocation of financial and human resources for health. Finally,

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[2] The Kakwani index is defined as twice the area between the concentration curve of health payment and the Lorenz curve of household income. The value of the Kakwani index ranges from -2 to 1. A negative Kakwani index value indicates the regressive nature of health care payments. In contrast, a positive value indicates the progressive nature of health care payments.

[3] The Gini coefficient is a measure of statistical dispersion used for measuring inequality of income distribution. It is defined as the area between the Lorenz curve and the 45-degree line of income equality. The value of the Gini coefficient ranges from 0 to 1. A low Gini coefficient indicates more equal income or wealth distribution, while a high Gini coefficient demonstrates more unequal distribution.

there is an increasing focus on social and economic consequences from acute and chronic ill health among different socio-economic strata, which can cause or exacerbate household poverty among disadvantaged groups. It should be noted that there is no single population-based database containing all health-related categories. Therefore, each country must develop its own appropriate population-based databases including a wide range of health measures and equity stratifiers. In addition, the technical and political ability to use information in implementing pro-equity health interventions or policies is also necessary (Nolen, Braveman et al. 2005).

2.3.2 Equity stratifiers

In general, social advantage varies by four general equity stratifiers: socio-economic status, gender, ethnicity, and geographical areas (Evans, Whitehead et al. 2001; Gwatkin, Rutstein et al. 2007; Tangcharoensathien, Limwattananon et al. 2007).

Socio-economic status can be reflected in economic resources (e.g. household income or expenditure), education, occupation, and more recently an asset index. Economists prefer household expenditure to income because household income, especially in developing countries, tends to vary over the course of a year, and a large proportion of household income is shared by the informal sector and the self-employed. Given the difficulty in measuring household income in developing countries, education and occupation have occasionally been used as proxies of economic status. Though these proxies are easier to measure, it is recognized that neither education nor occupation is purely economic. Given these limitations, household assets and an asset index are an increasingly meaningful measure of economic resources, especially in developing countries where accurate household income and expenditure is difficult to collect (Morris, Carletto et al. 2000; Filmer and Pritchett 2001; Gwatkin, Rutstein et al. 2007). Empirical evidence indicates that the asset index is robust, produces internally coherent results, and provides a similar result to other socio-economic indicators (Filmer and Pritchett 1998; Falkingham and Namzie 2001). International development agencies such as the World Bank use this measure to assess and monitor health inequalities in many developing countries (Gwatkin, Rutstein et al. 2007).

Gender is a meaningful equity stratifier for many health measures. For example, analyses of differences in prevalence rates of malnutrition between boys and girls in Bangladesh (Braveman and Tarimo 2002) indicate discriminatory treatment, and in Russia gender differences in life expectancy show differentials in health risk behaviour in alcohol consumption (Shkolnikov, Field et al. 2001).

Disparities in health among different ethnic and racial groups are prominent and quite serious in some countries (Kubzansky, Krieger et al. 2001; Mayers and Couzos 2004). Indicators used in characterizing ethnicity include self-identification, social perception of race or ethnicity, religion, language spoken at home, and status as a native-born citizen.

Finally, people can be advantaged according to the geographical area where they live or work (e.g. urban versus rural, or better- and worse-off provinces or districts). Resources are often allocated on a geographical basis, reflecting logistic and political power issues (Nolen, Braveman et al. 2005). Comparing allocations of health measures across different provinces and districts is useful, and such comparisons are easily understood by policy makers and non-specialists.

2.3.3 Health equity and socio-economic classification

At the heart of the debate surrounding equity in health lies the issue of how to define poorer or more vulnerable groups. Typically, socio-economic status comprises two broad dimensions: socio-economic class and status (Krieger, Williams et al. 1997). The former refers to social groups arising from interdependent economic, social and legal relationships among a group of people, whilst the latter signifies diverse components of economic and social well being that differentiate persons of different social classes, including both resource-based and prestige-based measures (Morris, Carletto et al. 2000). In general, data on socio-economic class and status in developed countries are accessible. By contrast, such data in developing countries, especially in rural areas, are scarce. This leads to difficulties in evaluating and monitoring equity in health care in developing countries.

Criticisms have been made over the use of monetary measures, either income or consumption data, to assess household living status and socio-economic status in developing countries. One criticism is that using a monetary indicator does not take into account how money is earned and how much time is spent working (Piachuad 1987). Moreover, Sahn and Stifel illustrate five problems with using household income or expenditure as a tool for classifying socio-economic status in the developing world:

1) the quality of income and consumption expenditure data is most likely to be poor, particularly in middle and low-income countries;

2) data are collected on the basis of recall, usually for 14 days or one month, and recall data are prone to measurement errors;

3) prices of goods, nominal interest rates and depreciation rates for semi-durable or durable goods are difficult to discern when constructing consumption aggregates;

4) consumer price indices in developing countries are often unavailable or unreliable, especially when inflation tends to be high or variable. In addition, regional and seasonal price indices in most developing countries are widely variable and uncommon; and,

5) although purchasing power parity numbers are widely used for inter-country comparison, these numbers are rough approximations and are subject to considerable error (Sahn and Stifel 2001).

Furthermore, problems of sampling bias, under-reporting of income and difficulties in converting household products into monetary terms are also raised. Non-monetary indicators of household welfare, such as an asset-based index, have been introduced and developed as alternative methods for classifying household socio-economic status (Morris, Carletto et al. 2000; Filmer and Pritchett 2001; Sahn and Stifel 2001; Oakes and Rossi 2003). Advantages and disadvantages of different indicators for grouping household socio-economic status are discussed further in Annex 1.

2.3.4 Assessing government subsidies for health

It is common for poor people to shoulder the greatest burden of disease but receive a smaller share of health care resources than the healthy and better-off (Diderichsen 2004). In other words, health care resources are distributed inversely in relation to health need, which is known as "the inverse care law" (Hart 1971). This is prevalent both from country to country and within countries across socio-economic groups.

Subsidizing health care, as discussed above, is a major tool of governments in protecting the poor and reducing inequity in health. Public expenditure in health care generates transfers which improve the well-being of beneficiaries, and enhance their longer-run income-earning potential. Concerns over these transfers are; 1) who benefits from the government subsidy; and, 2) whether poorer groups obtain a fair share of government subsidies. It is vital that governments monitor this for their health systems, and in recent years methods have been developed to assist with these concerns.

Aaron and McGuire (1970) set out as a basic principle in assessing how individuals benefit from public expenditures: that a rationed, publicly-provided service should be evaluated at the individual's own valuation of the services. According to this principle, such valuation will vary from individual to individual. However, the difficulties inherent in estimating these valuations has led to the adoption of less demanding approaches, in which publicly-provided goods and services are valued at their marginal cost and individual preference on use. Benefit incidence analysis (BIA) is an approach combining the cost of providing public services with information on who is benefiting from their use. BIA is not based on individual valuations, and does not take into account the behavioural responses of individuals and households to changes in public health spending. However, BIA can assess who benefits from public subsidies as well as the degree to which the poor predominate amongst the recipients of the subsidies (Pearson 2002).

There are three principal steps to a health sector BIA. The first step is to estimate the unit subsidy of a particular service. The second step is to identify users of the service who in effect gain an in-kind transfer. The last step is then to aggregate users into sub-groups (e.g. by socio-economic status or gender) in order to compare how the subsidy is distributed across such groups (Castro-Leal, Dayton et al. 2000; Demery 2000).

The use of mean unit subsidies for calculating benefit incidence may mask inequality in public spending if the spending is unevenly distributed geographically. Demery supports the use of regional unit subsidies because they reflect variations in the benefit households derive from health services in different regions (Demery 2000). A study of benefit incidence in South Africa revealed that using aggregated and disaggregated unit subsidies made a significant difference in the BIA (Castro-Leal 1996). Therefore, variations in unit subsidies should be taken into account and disaggregated data should be used if such data are available. This will reflect inequality in the distribution of benefits which accrue from government spending.

2.3.5 Inter-group and inter-individual differentials

Measures for assessing equity in health fall into two main categories: inter-group and inter-individual differentials. The former refers to indicators of health inequalities across different socio-economic groups, while the latter includes descriptors of variations of health inequalities between individuals (Figure 2.1).

Figure 2.1: Two main categories of measures for assessing health equity

Inter-group differentials	
Two groups	**More than two groups**
• Rate ratio	• Slope index of inequality
• Rate difference	• Concentration index
• Low to high ratio	• Index of dissimilarity
• Shortfall	

Inter-individual differentials
• Gini coefficient
• Relative mean deviation
• Atkinson index

Source: (Anand, Diderichsen et al. 2001)

Much of the existing empirical literature on health equity is concerned with differences in health across different socio-economic groups. The classification by groups helps explain how differentials in health are related to socio-economic parameters. It has been suggested that inter-group differentials should be extended to include not just socio-economic status, but also gender, race, and geographical location (Anand 2002). These latter variables have been found to be powerful in identifying inter-group inequalities. Examples include race in South Africa (Gilson and McIntyre 2001), gender in Bangladesh (Bhuiya, Chowdhury et al. 2001), and region in China (Liu, Rao et al. 2001). Cross classifications of socio-economic and other variables also provide a deeper understanding of health inequalities.

Apart from explanation, there are other two reasons for investigating inter-group inequalities in health. First, it allows us to identify groups that are at high risk or suffer from poor health or the inability to access health services. Therefore, public health policy may target them directly in order to improve their health status and health differentials. Second, it allows us to uncover those inequalities in health that are identified as unjust or avoidable. Inter-group differentials will help policy makers address socio-economic inequalities in health rather than inter-individual inequalities in health that are either undifferentiated or unconditional on information about individuals (Anand 2002).

2.3.6 Potential databases to provide data on equity in health

There are five types of databases that are likely to provide useful data for monitoring and assessing equity in health: censuses, vital registration systems, household surveys, small-area databases, and administrative data (Nolen, Braveman et al. 2005; Tangcharoensathien, Limwattananon et al. 2007).

A census generally provides information about socio-economic status, ethnicity, and geographical area of the entire population, which is essential as denominator data. Given legal and ethical issues related to the confidentiality of data on individuals, census records generally do not have unique identifiers which results in an inability to link data at the individual level. Therefore, to employ census data for monitoring equity in health, legal frameworks for incorporating unique identifiers and sharing disaggregated data, while preserving anonymity and privacy, are urgently needed (Rogot, Feinleib et al. 1983; Rogot, Sorlie et al. 1986; Jaro 1995).

Vital registration systems, particularly birth and death registration, can reveal inequities in child mortality or differences in life expectancy according to socio-economic status, geographical area, gender, or occupation. A common disadvantage of vital registration is the coverage because in developing countries, the poor and disadvantaged tend to have the lowest registration coverage (Mathers, Ma Fat et al. 2005; Nolen, Braveman et al. 2005). Improvements are aimed at expanding registries to cover the entire population including causes of death, birth weight and individual or small-area identifiers, and at least one additional socio-economic stratifier.

Household surveys are useful in revealing health inequities, and are generally the primary source of health information for most developing countries. Surveys usually include a number of equity stratifiers as well as more health measures than censuses. Possible improvements of household surveys include a more regular repetition of surveys to track changes over time, and a harmonization of questions across countries and years to support comparative analyses (Tangcharoensathien, Limwattananon et al. 2007). In addition, an inclusion of additional health outcomes and an increase in the sample size

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would allow for more extensive analyses of health inequities (O'Donnell, Doorslaer et al. 2008c).

Small-area data can be useful in the absence of micro-data, which provide information on individuals and households in terms of population, birth and death rates, and socio-economic or demographic data for a province, country, or postcode. Small-area data are often derived from census data, but another source is demographic surveillance sites (DSS) (Nolen, Braveman et al. 2005). Although not nationally representative, the longitudinal data are extensive, complement the survey data, and allow for a streamlining of a facility-based health information system.

Administrative data from various governmental sectors, for example, health care use or immunization, are rarely used in equity analyses due to a lack of coverage and socio-economic stratifiers (Tangcharoensathien, Limwattananon et al. 2007). However, if the stratifiers and denominator data are available, administrative data information can be used for programme planning and an analysis of health inequalities and benefit incidence of a health programme.

Health information systems incorporating both population and facility-based data are essential for helping governments to demonstrate, monitor, and address health inequalities in their countries. Better information on health inequalities alone is not sufficient to resolve the problems, but supporting equity-oriented decision-making, continuous monitoring of health inequalities, and the country-level capacity to use this information for effective planning are all required for progress to be made towards health equity and movement towards social justice in health (Bambas 2005).

However, it is criticized that most national health information systems, especially in developing countries, lack the key information needed to assess and monitor health inequities at national and sub-national levels (Nolen, Braveman et al. 2005). Without reliable and representative data for monitoring and assessing such inequalities, policy interventions to improve health equity of the country are unlikely to be effective. Therefore, there is a need for urgent improvements in health information systems for

monitoring health equity in developing countries. In addition, a partnership among the statistics constituency of the country, the health system policy researchers, and policy makers, will serve to further strengthen the country's capability to use health information systems to address health equity challenges (Tangcharoensathien, Limwattananon et al. 2007).

2.4 Conclusions

Equity in health is of increasing concern to health policy makers. Different philosophies on equity in health care can be associated with distinctive health care systems whose characteristics and organization differ from one other. Empirical studies on equity in health care reflect the apparently pro-egalitarian bias among policy-makers in Europe, in contrast to a pro-libertarian bias in the US and most countries in Asia.

Most high income countries, with the exception of the United States, have achieved universal coverage which guarantees universal access to health services regardless of a person's income or social status. In contrast, very few low- and middle-income countries have been able to achieve UC due to limited resources and infrastructure. This means there is a limitation in the experience and existing literature regarding the development of UC among low- and middle-income countries. Moreover, evaluations of the impact of a UC policy on equity in health care, both health care financing and health service utilization, are scarce. Some empirical studies suggest that inequity in health service utilization may persist even after financial barriers are removed.

This literature review has indicated several key challenges, including health financing arrangements, scope of the benefit package, and resource allocation methods, in the implementation of equitable universal coverage in developing countries. To assess the impact of universal coverage on equity in health requires appropriate databases containing health measures and socio-economic stratifiers. In addition, the capacity of governments to use health information systems to address health inequalities in the country is also needed.

The research in this thesis examines the impact of the UC policy introduced in Thailand on equity in health service use and health care finance, as well as the distribution of public subsidies on health. Its aim is to increase understanding of how the specific design of the Thai UC policy affected equity in health in that country. It also examines how the interventions covered in the UC policy can impact households. The impact of health policies at the household level in Thailand has been rarely evaluated, while such assessments have been shown to be important in other countries. Understanding the impact of UC at the household level may guide policy-makers to improve the effectiveness of UC during the operation of the current policy. Finally, the introduction of UC is an important step of health policy development in Thailand. Therefore, it requires an evaluation against a theoretical backdrop in order to understand two key components, equity in health care use and health care finance.

CHAPTER THREE

BACKGROUND INFORMATION ON THE THAI HEALTH CARE SYSTEM AND THE UNIVERSAL COVERAGE POLICY

The aim of this chapter is to describe in detail the Thai health care system and its major drawbacks prior to the introduction of the UC policy in 2001. The drawbacks focus on key issues related to inequity in the health system, including a lack of health insurance coverage, inequitable access to and utilization of health services, and inequity in health care finance and public subsidies for health. Objectives of the UC policy and details about health financing arrangements and provider payment methods of the UC scheme, including its benefit package and an exclusion list of health services, along with the reimbursement for expensive medical care, are also presented. Finally, existing studies evaluating the UC policy and evidence of its impact on the Thai health care system have been reviewed, to identify the knowledge base prior to this study.

3.1 Development of the Thai health care system

The Thai health care system has evolved from one of self-reliance using local wisdom and traditional medicine in providing health services to one of western medicine and modernized health technology, beginning with the first western medical school, the Siriraj Hospital, which was founded in 1889 (Kachondham, Winichagoon et al. 1992; Wibulpolprasert 2002a). With assistance from the Rockefeller Foundation, the Ministry of Public Health was established in 1942 and helped fuel the development of western medical services and the public health system throughout the country. At present, the Thai health care system is characterized as a public-private mix system, where the public sector plays a major role in providing health services to the population; the private sector, both for-profit and not-for-profit, is also actively involved. The expansion of modernized health services in both public and private sectors, accompanied by considerable economic growth, has lead to a shift in the health care seeking behaviour of Thais from self medication and traditional healing to western facility-based health care. During the past two decades, several national

household surveys have shown that the share of self-care and self-medication in the health seeking behaviour of Thais has considerably decreased, while the use of health centres[1] and public hospitals has significantly increased, particularly after the economic crisis in 1997 (Table 3.1). Many national health policies on health sector reform and development have also influenced changes in the health seeking behaviour of the population.

Table 3.1: Share of different health seeking behaviour of Thais from 1991 to 2003 (%)

Health seeking behaviour	1991	1996	2001	2003
Not seeking health care	15.9	6.9	5.1	5.4
Traditional medicine and healing	5.7	2.8	2.9	2.6
Self-medication	38.3	37.9	22.5	19.9
Health centres	14.8	20.8	22.4	22.2
Public hospitals	12.9	12.9	32.7	30.7
Private clinics / hospitals	12.4	18.7	14.4	17.9
Others	-	-	-	1.3
Total	100	100	100	100

Sources: modified from the Thailand Health Profile 1999-2000 (Wibulpolprasert 2002a) and the Report of the 2001 and 2003 Health and Welfare Survey (NSO 2003).

The development of the health service system in Thailand has been guided since the early 1960s by the National Health Development Plan which is part of the National Economic and Social Development Plan. The first five-year national health development plan came into operation in 1961 with an emphasis on the construction and expansion of health facilities, especially at the provincial level. The Second and Third Plans put greater emphasis on maximization of resource use and reducing income gaps among the population. The coordination between planning at national, regional, and provincial levels was improved, which resulted in an increase in the resources available for public health facilities. A policy of free medical care for the poor was first implemented in 1975. Another crucial achievement, especially towards the end of the third plan (1972-1976), was an increase in the supply side capacity and training of qualified medical and health personnel. This was prompted by the need to expand the availability of public health facilities in rural areas.

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[1] A health centre is a public health facility at the sub-district level where health services are provided by health personnel (i.e. nurses, midwives, and sanitarians). Typically, a health centre is responsible for approximately 3,000 – 5,000 population.

The Fourth and the Fifth Plans aimed to reduce inequalities in access to public health services for the entire population. The goal of achieving "Health for All by the Year 2000" through primary care strategies was country-wide and inaugurated in 1979, beginning with training village health volunteers (VHV) and village health communicators. Furthermore, a goal to establish community hospitals in all districts in Thailand was set up and corresponded with a considerable increase in the production of medical and nursing personnel. At the end of the Fifth Plan (1982-1986), approximately 85% of all districts in Thailand had at least one community hospital and around 98% of all sub-districts were covered by at least one health centre (Kachondham, Winichagoon et al. 1992).

The Sixth (1987-1991) and Seventh Plans (1992-1996) aimed to expand government health facilities to cover all targeted areas, especially in remote areas, with an emphasis on public participation in health development. A policy called the "Decade of Health Centre Development" was implemented, aiming to achieve the goals of "Health for All" through universal access to qualified primary medical care and public health services provided at health centres. Two crucial milestones in the expansion of health insurance coverage towards specific targeted population groups were: 1) enactment of the Social Security Act in 1990 covering private employees in the formal sector; and, 2) expansion of the Low Income Card Scheme to cover the elderly aged over 60 years and children aged less than 12 years.

The Eighth Plan (1997-2001) focused on the development of human resources for health and the expansion of universal health insurance coverage to cover the whole population. The economic crisis occurred during the early stage of this plan and drastically restricted capital investment in the Thai health care system. However, with strong political support from the new government, universal coverage was implemented in 2001 through a tax-funded health insurance scheme, the UC scheme.

Within the Thai health care system, health services provided by public and private facilities in Thailand are categorized into five levels which include self-care, primary health care (PHC), primary medical care (PMC), secondary medical care (SMC), and

tertiary medical care (TMC). Details of each health care level and type of health facility are summarized below.

- Self care refers to health care which enhances people's capacity to provide self-care and make their own decisions about better health.

- Primary health care includes health services that are organized by the community, aimed at providing basic health care related to health promotion, disease prevention, simple curative care, and rehabilitation at the village level. Medical and health technologies relevant to a community's needs and culture are provided by village health volunteers (VHV) and staff from private not-for-profit or non-governmental organizations (NGO).

- Primary medical care entails health services provided by health personnel and general practitioners at the district and sub-district levels. In general, health centres and community hospitals are public health facilities; private clinics and drug stores are private facilities, all providing primary medical care at this level. Since the UC policy was implemented in 2001, the primary care units (PCU) located in health centres and community hospitals have also been identified as public health facilities providing primary medical care.

- Secondary medical care involves health services provided by government-owned community hospitals and private clinics/hospitals at the district and provincial levels. Health service provision at this level typically includes higher medical knowledge and health technologies provided by medical doctors and other health personnel such as dentists, pharmacists, nurses, and the like.

- Tertiary medical care refers to health services provided by specialized medical doctors and other health professionals at tertiary care facilities such as provincial and regional hospitals, general and other specialized hospitals, university hospitals, and some large private hospitals. Most public tertiary care facilities are under the supervision of the Ministry of Public Health (MOPH), and some belong to other public agencies such as the Ministry of Defence, public universities, or state enterprises. These tertiary care hospitals are primarily located in large cities and the Bangkok Metropolis.

Thailand's public health care delivery system comprises nine university hospitals, 95 regional or provincial hospitals, 725 community hospitals, 9,765 health centres, and 69,331 community primary health care centres. Despite this impressive development of health infra-structure, it is evident that a mal-distribution of health facilities and human resources for health exists, especially with regard to availability of medical doctors, dentists and pharmacists, among different regions (Wibulpolprasert 2005). Bangkok and affluent provinces have considerably higher bed-population and doctor-population ratios than provinces in more rural and remote areas.

Referral of patients from basic to more sophisticated levels of health care, and from rural areas to urban areas, has been well developed for many years. The objectives of the referral system are to increase the efficiency of the health care system with regard to health resource use, and to ensure people's access to sophisticated health care at the tertiary medical care level. In general, patients must seek care from health centres or primary care units first, and are then referred to community hospitals if they have a severe illness or more complicated case. The next step within the referral system is to transfer patients to a provincial or regional hospital in that province. University or specialized hospitals in large cities and the Bangkok Metropolis are the highest level health facilities in the referral system (Figure 3.1).

Figure 3.1: Level of health care and type of health facility in the Thai health care system

Type of health facility

Provincial, regional, general, or university hospital	
Community hospital	
Health centre	
Community PHC centre	

Tertiary care

Secondary care

Primary medical care

Primary health care

Referral system
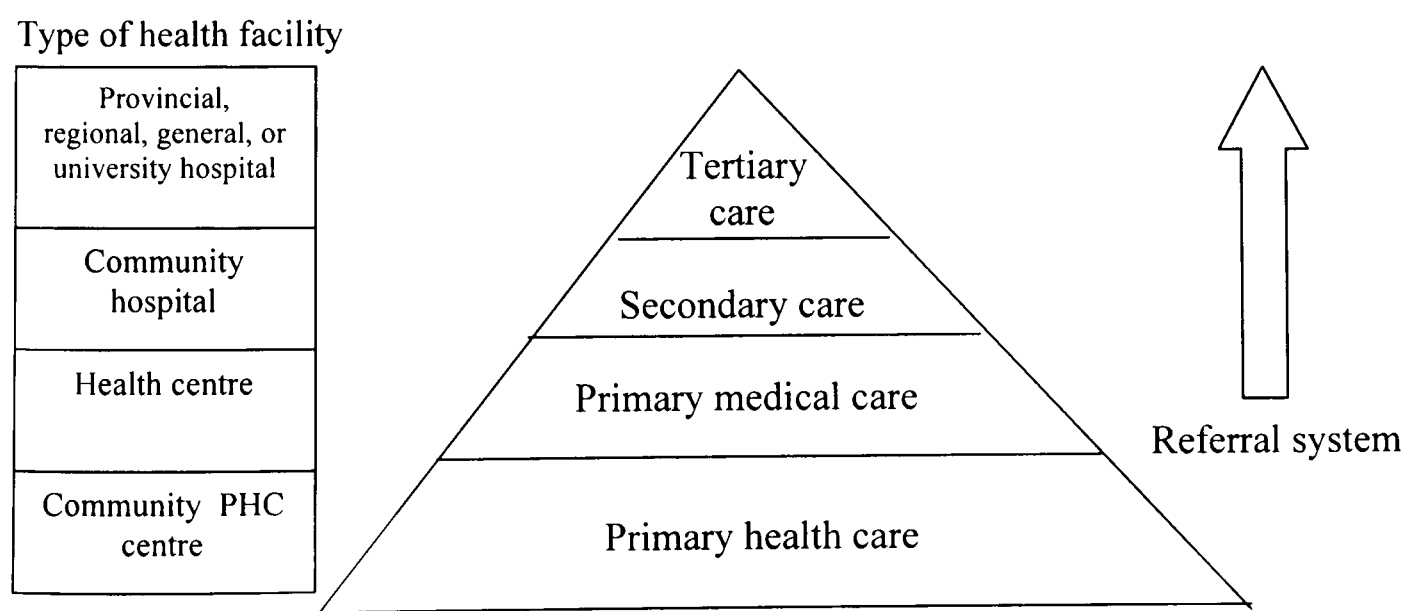
Source: modified from (Jongudoumsuk 2002b)

Prior to 2001, patients admitted to a government health facility could be referred to a higher level public health facility if they were in need. Beneficiaries covered by a public or private health insurance scheme did not have to pay user fees for health services if they were included in the benefit package of a health insurance scheme. However, beneficiaries had to bear costs of health care not included in their benefit packages, and those who were uninsured faced direct payments for health service user fees. This led to inequitable access to health care due to financial barriers, and sometimes high health care costs could consequently drive households into poverty (The Foundation for Consumers of Thailand 1999; Limwattanonon, Tangcharoensathien et al. 2005; Limwattananon, Tangcharoensathien et al. 2007).

3.2 Development of health insurance and social welfare prior to achieving UC

Since the early 1970s, successive governments of Thailand have employed a piecemeal approach to increase health insurance coverage towards various targeted groups of the population. This aimed to gradually achieve a more equitable health care system, improving financial risk protection, and reducing catastrophic payments for health care costs (Towse, Mills et al. 2004; Pachanee and Wibulpolprasert 2006). The "Worker's Compensation Fund" and "Free Medical Care for the Poor" were the first two public health insurance and social welfare schemes implemented during the mid-1970s, followed by the Civil Servant Medical Benefit Scheme (CSMBS), the Low Income Card (LIC), the Voluntary Health Card (VHC), the Social Security Scheme (SSS), and finally the UC scheme in 2001. The chronological events of the development of the health insurance system in Thailand are summarized in Table 3.2.

Table 3.2: Chronological events of the development of the Thai health insurance system

Year	Events	Health insurance schemes			
		SW	FB	CI	VI
1954	First Social Security Act (not implemented)			X	
1974	Workmen's Compensation Fund			X	
1975	Free Medical Care for the Poor	X			
1978	First private health insurance company				X
1980	Royal Decree for CSMBS		X		
1981	First issue of Low Income Card (LIC scheme)	X			
1983	Maternal and Child Health Fund (Phase 1)				X
1984	Voluntary Health Card Project (Phase 2)				X
1990	Social Security Act covers enterprises with 20 or more employees			X	
1991	Voluntary Health Card Project – insurance based pilot (Phase 3)				X
1992	Free medical care for the elderly	X			
1993	Traffic Accident Victim Protection Insurance			X	
1994	Social Security Act, extended to cover enterprises with 10 or more employees			X	
1994	Health Card Scheme (Phase 4), equal matching fund provided by the government				X
1994	Voluntary Health Card extended to cover community leaders and health volunteers, fully subsidized by the government		X		
1994	Medical Welfare Scheme, expanded free medical care to cover other indigent groups, the elderly and children up to 12 years	X			
1998	New financial regulations for the LIC scheme	X			
1998	CSMBS introduced co-payments by CSMBS beneficiaries (after economic crisis)		X		
2000	Social Security Scheme expanded to cover old age pension and child benefits			X	
2001	Implementation of universal health care coverage	X			
2002	Social Security Act, extended to cover enterprises with more than one employee			X	

Source: Adapted from (Tangcharoensathien, Srithamrongsawat et al. 2002)

Note: SW = Social welfare, FB = Fringe benefit, CI = Compulsory health insurance, VI = Voluntary health insurance

The policy of protecting the poor was first initiated by the Thai government through its 'Free Medical Care for the Poor' policy in 1975. This aimed to provide equitable access to health services for the poor and those in low-income households. In 1981, the Low Income Card (LIC) scheme was launched and aimed to provide tax-financed public health insurance for those who earned below the national poverty line, as well as those residing in poor households. A 'free card', which enabled the poor to obtain government health services free of charge, was issued through means testing, whereby

the community was involved in identifying eligible persons. Despite community involvement, local prejudice and nepotism was difficult to avoid (Kongsawat, Rodsawaeng et al. 2000). In 1994, the LIC scheme expanded its coverage to include more disadvantaged groups, namely the elderly aged over 60 years, children aged less than 12 years, and the disabled, with a low government subsidy relative to other public health insurance schemes. Evidence indicates that inadequate financial resources provided by the government led to poorer quality of health services obtained by LIC beneficiaries (Srithamrongsawat 1998; Wibulpolprasert 2002b). Moreover, public hospitals in Thailand collected user charges from those who were not free-card holders and from LIC members utilizing health services not included in the LIC benefit package, as well as payments for CSMBS beneficiaries, which were used in part to cross-subsidize the LIC scheme (Pannarunothai 2002; Towse, Mills et al. 2004).

The SSS is a tripartite contributory scheme in which employers, employees, and the government, all pay equal contributions to the Social Security Fund. The amount of contributions depends on the employee's pay, health benefits, and non-health benefits received (e.g. child birth, child assistance, pension, and unemployment benefits). The Social Security Office (SSO) is responsible for purchasing health services from public and private health care providers by using a capitation contracting model.

After using the piecemeal approach of targeted health insurance schemes for three decades, the health insurance system in Thailand comprised a number of different health insurance schemes with different scheme characteristics including: targeted population, benefit package, provider payment method, and the amount of government subsidy per capita (Table 3.3). This resulted in criticism about the ineffectiveness and disadvantages within the Thai health insurance system.

Fragmentation and duplication in the Thai health insurance system, and a failure to expand health insurance to cover the poor and the disadvantaged, led to an ongoing effort to introduce a universal coverage policy to the entire population. With strong political support from the new government, and technical support from health reformists, policy analysts, and movements from many civic groups in Thailand, the

government succeeded in implementing a universal coverage policy in 2001 (Tangcharoensathien, Srithamrongsawat et al. 2002; Tangcharoensathien and Jongudoumsuk 2004).

Table 3.3: Characteristics of different social welfare and health insurance schemes in 1999

Characteristics	The Low Income or Medical Welfare scheme	CSMBS	SSS	Workmen's Compensation Fund	Voluntary Health Card	Private health insurance	Uninsured
Scheme nature	Social welfare	Fringe benefit	Compulsory	Compulsory	Voluntary	Voluntary	None
Targeted population	The poor, elderly, children aged less than 12 years	Government employees	Private employees in the formal sector	Private employees in the formal sector	Non-poor households, ineligible for LIC	Better-off households	Marginal poor in rural & urban areas, self employed, employees in the informal sector
Population coverage in 1999, (in millions)	19.8	5.5	4.4	(same as SSS)	11.5	0.8	18.6
% coverage	33%	9%	7%	(same as SSS)	19%	1%	31%
Sources of health care finance	General tax	General tax	Payroll tax tripartite contributions (employer, employee, and the government)	Payroll tax from employers, ranging from 0.2-2% of wage with experience rating	Matching fund, general tax 1,000 Baht and household 500 Baht	Household health expenditure or employers	Household out-of-pocket payments
Government health subsidy per capita in 1999 (in Baht)	363 + additional subsidy	2,106	519 (only government contribution, does not include employer or employee contributions)	Administrative costs of Workmen's Compensation Fund office	250	Through income tax exemption for private insurance	Through public hospital subsidized user charges
Provider payment methods	Global budget	Fee-for-service	Capitation	Fee-for-service	Proportional reimbursement among primary, secondary, and tertiary care	Fee-for-service with ceiling	Fee-for-service
Majority of health care providers	Public providers in MOPH	Public providers	Private providers	Private providers	Public providers in MOPH	Private providers	Both public and private providers
Benefit package	Comprehensive package	Comprehensive package	Non-work related injuries & illness	Work-related injuries & illness	Comprehensive package	Depending on premiums	-

Source: (Tangcharoensathien, Srithamrongsawat et al. 2002)

3.3 Total health expenditure and health financing arrangements prior to UC

Prior to the introduction of universal coverage in 2001, the Thai health care system was financed by a mixture of health financing sources, namely general taxes, social insurance contributions, private insurance premiums, and direct out-of-pocket payments. The share of these different health financing sources changed from time to time according to the country's economic status and the government's health policies.

Between 1980 and 2000, total health expenditure for Thailand increased significantly at a rate higher than the GDP growth rate. Total health expenditure in actual values grew from 25.315 billion Baht or 3.8 % of the GDP in 1980 to 298.459 billion Baht or 6.1 % of the GDP in 2000 (Wibulpolprasert 2002a). Health expenditure per capita in nominal term rose from 545 Baht in 1980 to 4,832 Baht in 2000, a nearly nine-fold increase. During 1980-2000, total health expenditure in 1988 prices increased by approximately 4% per annum, while the GDP growth rate averaged just 3.4% per annum (Table 3.4).

Table 3.4: Total health expenditure and GDP for Thailand during 1980-2000 in actual values and 1988 prices

Year	GDP			Total health expenditure			
	Actual value (million Baht)	Value in 1988 prices (million Baht)	Percent increase (%) in 1988 prices	Actual value (million Baht)	Value in 1988 prices (million Baht)	Percent increase (%) in 1988 prices	THE as % of GDP
1980	662,482	913,733	--	25,315	34,916	--	3.8
1982	841,569	1,019,501	11.6	34,873	42,246	17.4	4.1
1984	988,070	1,138,353	11.7	52,241	60,187	29.8	5.3
1986	1,133,397	1,257,177	10.4	66,060	73,275	17.9	5.8
1988	1,559,804	1,559,804	24.1	89,968	89,968	18.6	5.8
1990	2,183,545	1,945,372	24.7	125,302	111,635	19.4	5.7
1992	2,830,914	2,282,572	17.3	157,965	127,368	12.4	5.6
1994	3,630,805	2,695,054	18.1	206,489	154,867	17.8	5.7
1996	4,598,288	3,095,041	14.8	265,486	177,781	12.9	5.8
1998	4,567,904	2,680,695	- 13.4	280,530	164,630	- 8.0	6.1
2000	4,904,725	2,825,302	5.4	298,459	171,923	4.2	6.1
Average per annum			**3.4**			**4.0**	

Sources: Modified from Thailand Health Profile 1999-2000 (Wibulpolprasert 2002a)

Health care financing sources in Thailand are grouped into two main categories: public and private health financing sources. The former comprises the following four types of financing sources: 1) central government health budgets for the Ministry of Public Health (MOPH) and other Ministries providing public health services; 2) government budgets for the CSMBS; 3) budgets for contracting health service provision of the SSS; and, 4) local government health budgets allocated for health-related activities. The latter comprises household out-of-pocket payments, private health insurance, traffic insurance premiums, and employee benefits. A recent study on the national health accounts (NHA) of Thailand indicates that the share of public financing sources has been increasing since 1994, and has constituted the majority of total health expenditure since the economic crisis in 1997 (Figure 3.2). An increase in government spending on health for the poor through the LIC and VHC schemes after the economic crisis, along with a rise in public spending on the CSMBS are recognized as the main factor which led to increases in the share of public health care finance (Tisayatikom, Patcharanarumol et al. 2007).

Figure 3.2: Shares of public and private health care finance of the Thai health care system during 1994-2001 and total values in real terms (1988 prices)
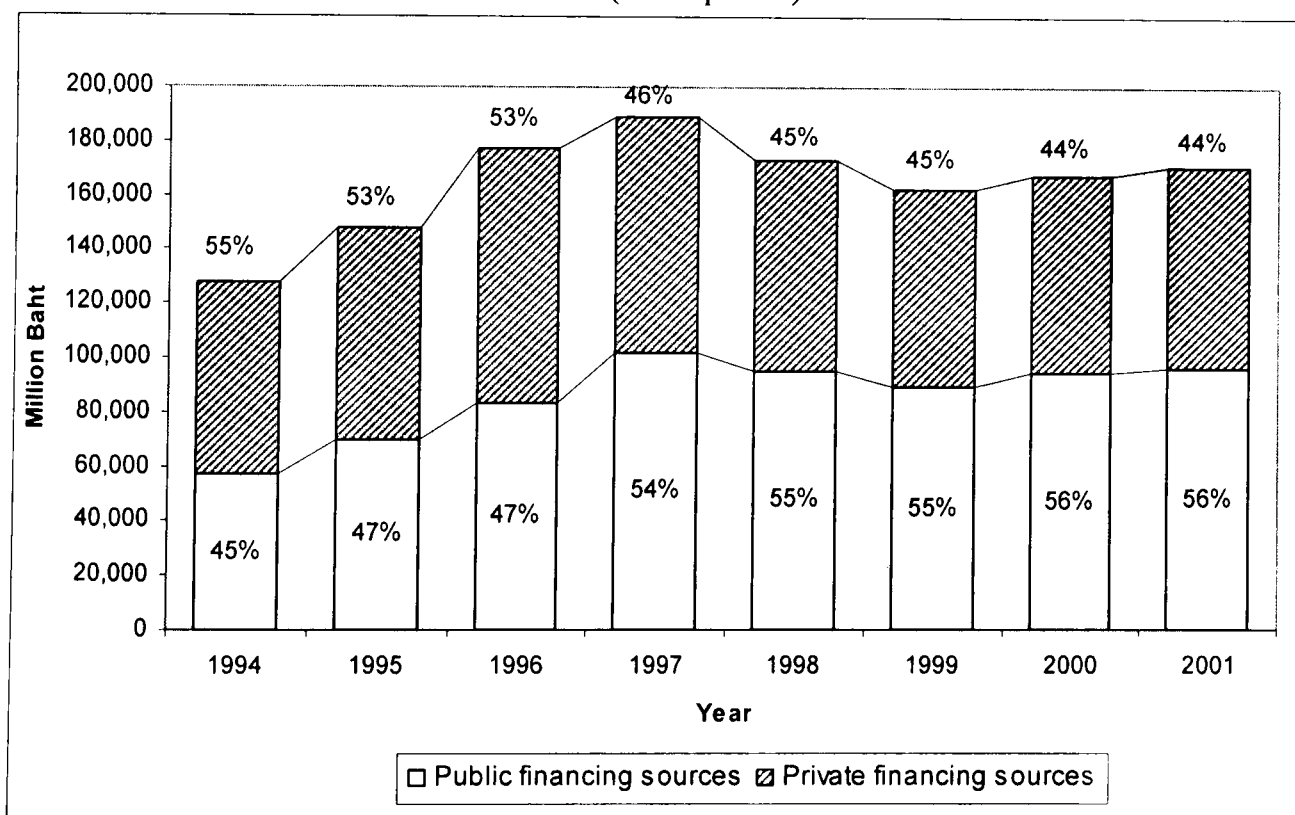
Sources: National Health Accounts in Thailand (International Health Policy Program 2007a).

The share of household out-of-pocket payments (OOP) for health, which has been an important health financing source of the Thai health care system, has consistently decreased since 1994 (Figure 3.3). Prior to UC, household OOP significantly dropped in 1997 due to the economic crisis (Tisayatikom, Patcharanarumol et al. 2007).

Figure 3.3: Shares of different health financing sources in total health expenditure during 1994-2001
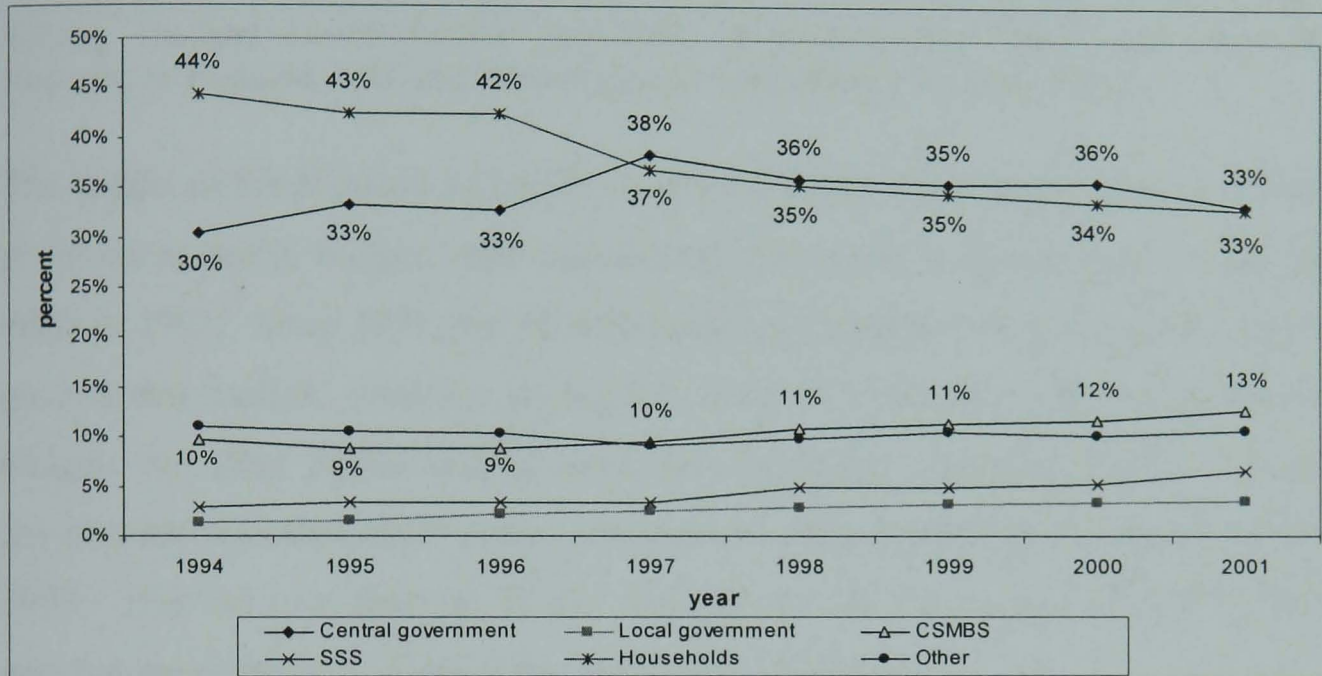
Sources: National Health Accounts in Thailand (International Health Policy Program 2007a)

Evidence from a series of household socio-economic surveys (SES) shows the fluctuation of household health expenditure according to the country's economy and national health policies. The 1988 to 2001 SES indicate that during the economic boom period, monthly household health expenditure reached the highest amount of 343 Baht per month in 1996, then decreased considerably after the economic crisis in 1997, and slightly dropped until the implementation of the UC policy in 2001. The monthly household health expenditure for health facilities significantly declined after the economic crisis, while the amount of household expenditure for self-medication slightly increased (Table 3.5).

Table 3.5: Monthly household health expenditure during 1988-2002 (Baht per month, nominal prices)

Health expenditure	1988	1990	1992	1994	1996	1998	1999	2000	2001
Health expenditure per month	143	185	226	262	343	287	273	263	264
Self medication	31	35	39	39	41	48	42	49	46
Health facilities	112	150	187	223	302	239	231	214	218
• Public facility	52	62	76	85	148	107	94	91	98
• Private facility	51	75	96	117	134	115	122	108	110
• Other	9	13	15	21	20	17	15	15	10

Source: Thailand Health Profile 1999-2000 (Wibulpolprasert 2002a) and National Health Accounts in Thailand 1994-2005 (International Health Policy Program 2007a)

The budget of the Ministry of Public Health (MOPH), which took the largest share of the government health budget, rose significantly for nearly a decade prior to the economic crisis in 1997. Since 1991, the MOPH budget comprised over five percent of the annual government budget, reaching its highest level of 7.7% in 1998 because government budgets for other public sectors were cut during the economic crisis. However, the government allocated more public resources to other sectors after economic recovery in 1999. This led to a decrease in the share of the MOPH budget relative to the overall national government budget during 1999-2001 (Figure 3.4).

Figure 3.4: The MOPH budget as a percentage of the total government budget during 1984-2001
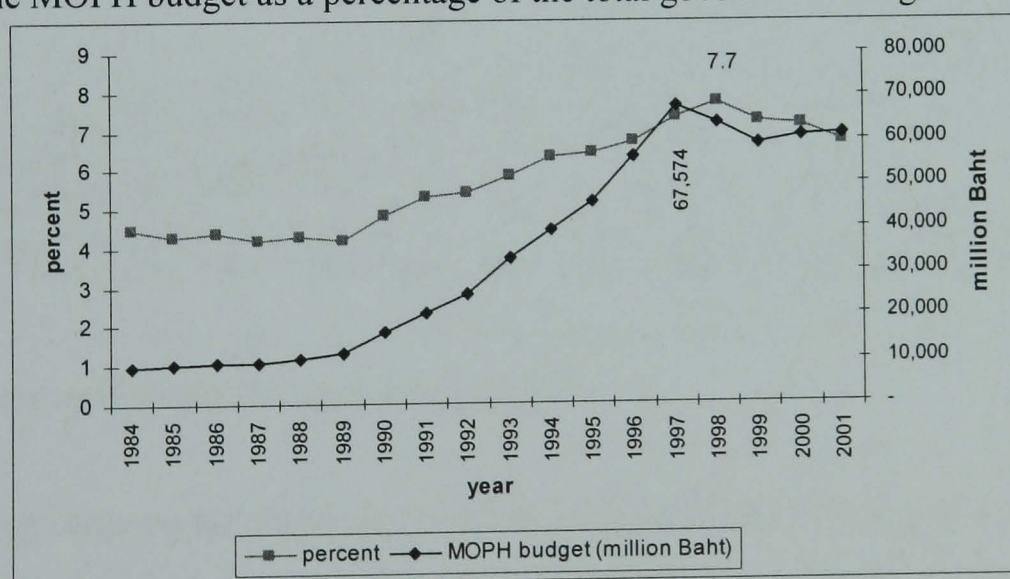
Source: Adapted from Thailand Health Profile 1999-2000 (Wibulpolprasert 2002a)
Note: The MOPH budget included the government budgets for the VHS during 1995-2001

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A recent study on health care finance in Thailand (International Health Policy Program 2007b) shows a continuous increase in the total expenditure for the CSMBS from 1988 to 2001, except for a couple of years after the economic crisis in 1997 (Figure 3.5). Apart from the increase in government health budget for the LIC and the VHC schemes, the consistent increase of the CSMBS expenditure is suggested to be another cause of the increasing share of the public health financing source (Tisayatikom, Patcharanarumol et al. 2007). The provider payment method of the CSMBS, which is a fee-for-service reimbursement, is suggested to be a major cause of the considerable increase in CSMBS expenditure (Sriratanaban 2002; Tangcharoensathien, Srithamrongsawat et al. 2002).

Figure 3.5: Total expenditure of the CSMBS in nominal price during 1988-2001
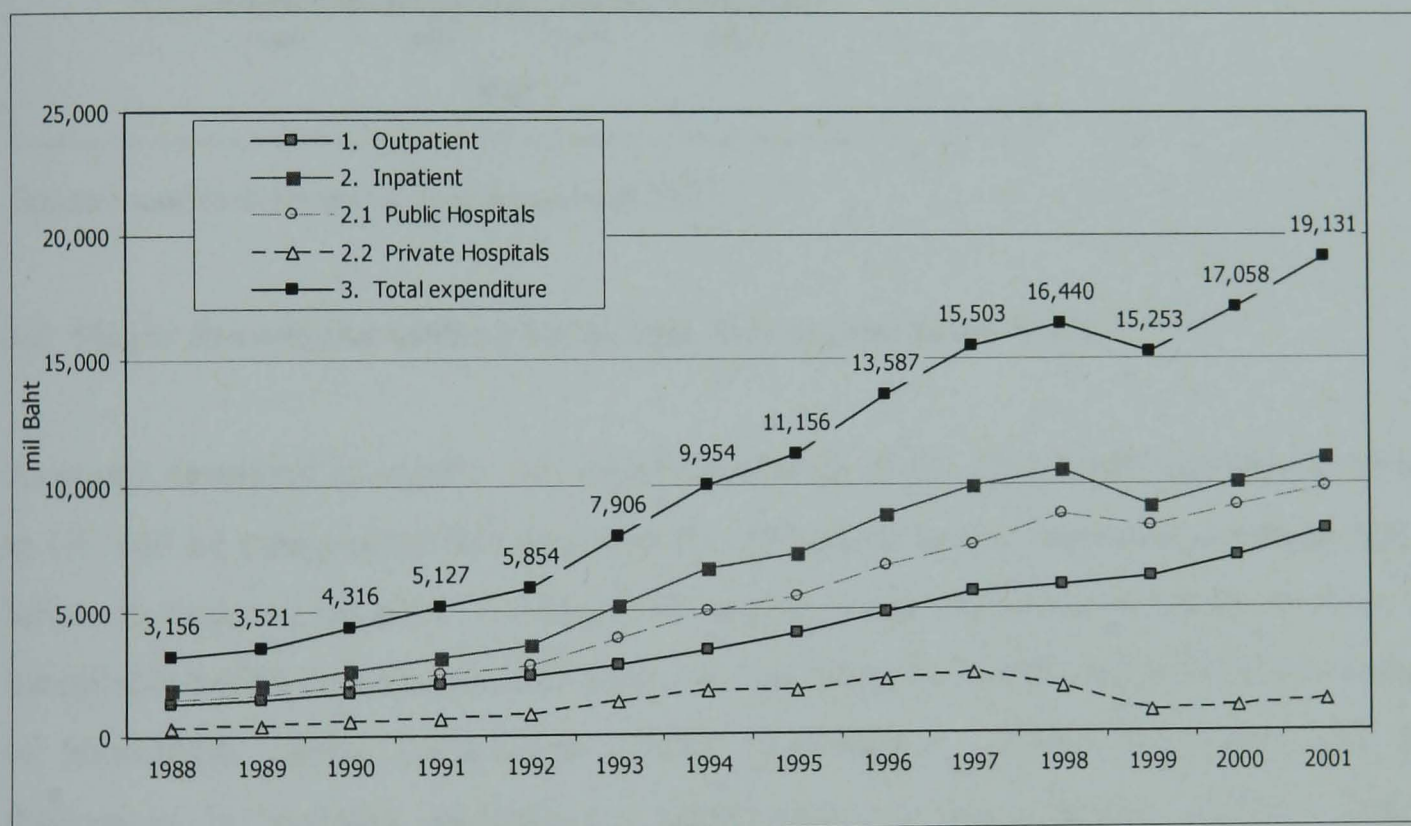
Source: (International Health Policy Program 2007b)

In contrast, the close-ended provider payment method of the SSS, a capitation contracting model, is credited with the success of the scheme in controlling health care costs (Tangcharoensathien, Laixuthai et al. 1999; Srithamrongsawat 2007). Per capita public subsidy of the SSS increased slowly from 1998 to 2001 (Figure 3.6). A significant increase in the per capita expenditure was observed in 2000 due to an increase in the capitation rate, and an increase in payments for expensive health services (e.g. RRT for

ESRD patients and ARV for HIV/AIDS patients), and an additional payment for health care providers with high utilization rate.

Figure 3.6: Subsidy per capita for SSS beneficiaries during 1998-2001
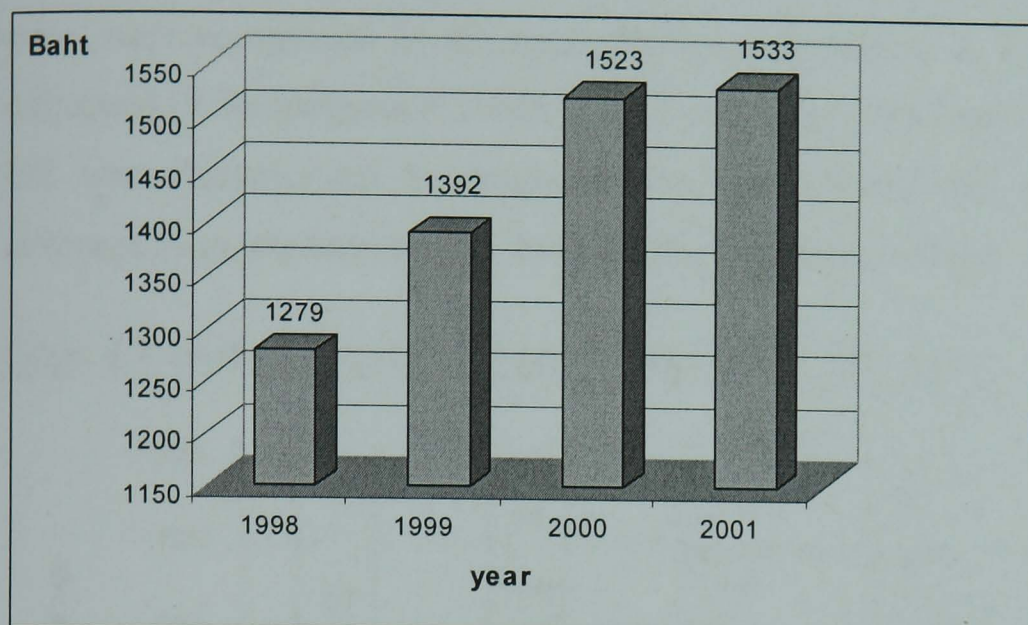
Source: modified from (Srithamrongsawat 2007)

3.4 Major drawbacks of the Thai health care system prior to UC

As partly described in section 3.2, major drawbacks of the Thai health care system prior to UC can be categorized into four groups: 1) lack of health insurance coverage and a failure in targeting the poor; 2) inequitable access to and utilization of health services; 3) inequitable health care finance and household spending on health; and 4) high percentage of households facing catastrophic health expenditure. These drawbacks and the differences in payment methods for health care providers among different health insurance schemes were described as the major causes of inequity in health and health care use prior to the UC policy implementation (Nitayarumphong and Pannarunothai 1998; Tangcharoensathien, Srithamrongsawat et al. 2002; Wibulpolprasert 2002a).

3.4.1 Lack of health insurance coverage and failure to target the poor

Prior to UC, the Thai health care system failed to achieve universal coverage by using a piecemeal approach to expand targeted public health insurance schemes, namely the Low

Income Card, the Voluntary Health Card, the CSMBS, and the SSS. Evidence from the MOPH revealed that in 2000 approximately 20% of the population or around 12 million Thais were still uninsured (Figure 3.7). Poor administrative capacity and inefficiency of the Thai government in issuing the Low Income Card, and difficulties in identifying the poor, were recognized as the main factors contributing to the high percentage of the uninsured (Wibulpolprasert 2002b). As a result, the Thai health insurance system prior to UC was characterized by fragmentation, duplication, and lack of health insurance coverage (Tangcharoensathien, Srithamrongsawat et al. 2002).

Figure 3.7: Health insurance coverage for Thais during 1991-2000
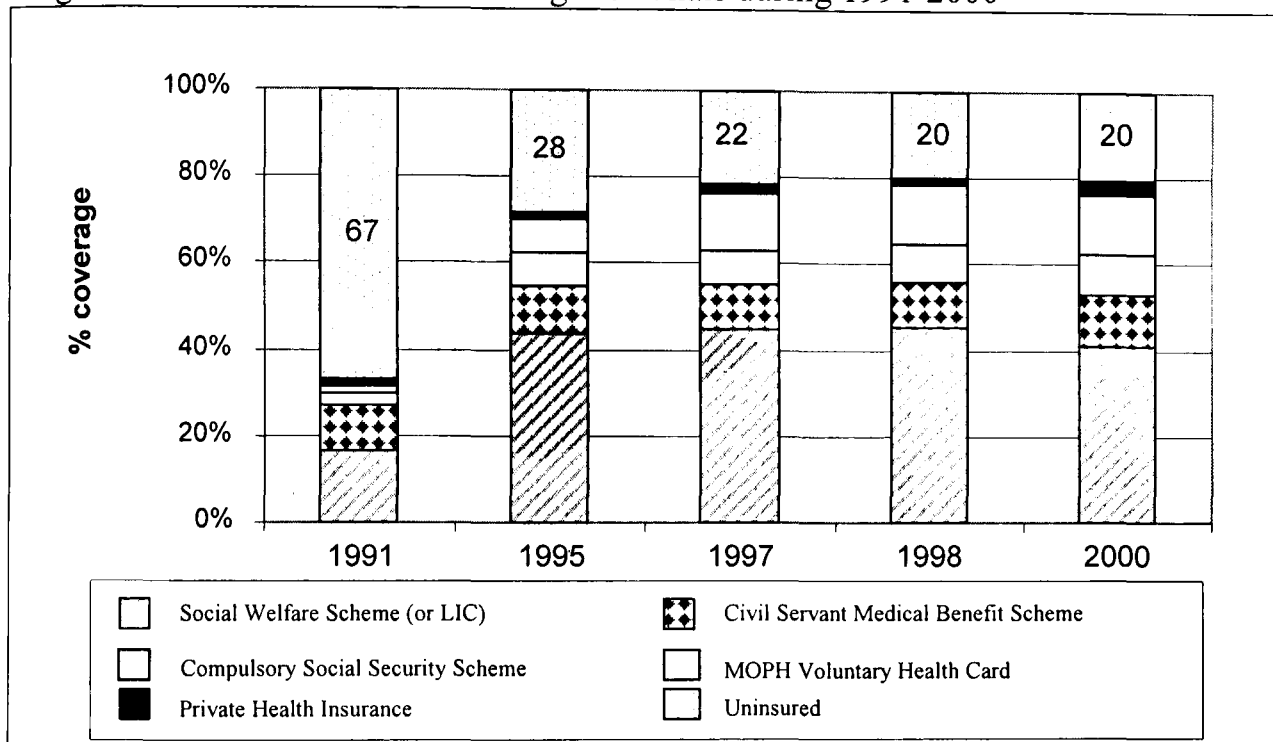
Source: Thailand Health Profile 1999-2000 (Wibulpolprasert 2002a)

In the LIC scheme, many studies revealed a high percentage of non-poor households obtaining the Low Income Card which aimed to assist only the poor and the disadvantaged in access to free government health services (Pannarunothai, Patmasiriwat et al. 2002). A household survey performed by Kongsawat et al. in 2000 showed that among 2,093 poor households, only 17% of them were covered by the Low Income Card (Kongsawat, Rodsawaeng et al. 2000). Furthermore, among 1,003 Low Income card holders, only 35% of them appeared to be genuinely poor, while 65% were non-poor (Table 3.6).

Table 3.6: The distribution of the Low Income card for poor households in 2000

Low Income card	Poor households		Non-poor households		Total	
	No. of households	%	No. of households	%	No. of households	%
Issued	353	17	650	12	1,003	13
Non-issued	1,740	83	4,942	88	6,682	8⁻
Total	2,093	100	5,592	100	7,685	100

Source: (Kongsawat, Rodsawaeng et al. 2000)

3.4.2 Inequitable access to and utilization of health services

An analysis of the 2001 HWS shows a significant difference in health service use among beneficiaries of different health insurance schemes in 2001 (Table 3.7). In ambulatory service use, those who were the rest of the population and CSMBS beneficiaries had a higher rate of ambulatory visits than the SSS and private insurance beneficiaries because of a higher share of children and the elderly and different provider payment methods (Pannarunothai 2002). In hospitalization, the CSMBS and private health insurance beneficiaries had a significantly higher admission rate than the SSS beneficiaries and the rest of the population. It is thought that a provider payment method of fee-for-service reimbursement employed by the CSMBS and private insurance schemes is the key factor of such a high hospitalization rate (Srirattanaban 2002). In addition, many studies indicate that factors contributing to inequitable access to and utilization of health services prior to UC were likely to be different provider payment methods, beneficiary characteristics, and the amount of public subsidies for each health insurance scheme (Tangcharoensathien, Srithamrongsawat et al. 2002).

Table 3.7: Ambulatory service use and hospitalization of Thais by health insurance scheme in 2001

	CSMBS	SSS	Private health insurance	Rest of the population	Total
Number of population	5,341,264	4,537,172	802,933	52,189,646	62,871,015
Ambulatory visits (no. of visits during last two weeks)	774,379	425,524	92,322	8,232,092	9,524,317
Ambulatory visit rate (no. of visits per capita per year)	3.77	2.44	2.99	4.10	3.94
Hospitalization (admissions during last year)	557,665	293,449	122,481	3,988,562	4,962,157
Hospitalization rate (admission per capita per year)	0.104	0.065	0.153	0.076	0.079

Source: The 2001 Health and Welfare Survey (NSO 2001)

In Thailand, inequitable access to and utilization of health care among individuals of different socio-economic status were found in many studies. For example, an analysis of a multi-centre study on inequality in health care use and household spending on health revealed that richer groups of Thais had a higher probability to obtain health care when sick, and were more likely to be seen by a medical doctor as well as receive medicines when they were ill, than the poorer groups (Makinen, Waters et al. 2000). A survey by ABAC-KSC International Poll in 2000 found that approximately 44% of the sample population of Thais experienced high and unaffordable health care costs. Around 62.5% of them were in debt and 17% had asked for an exemption for the poor and the disadvantaged (NSO 2002). In addition, Siamwala et. al. found that households with low education and income levels were likely to be unable to pay for health care costs when their family members became ill (Siamwala 2002). In some cases, people were denied medical treatment because they were uninsured, and could not afford medical care costs. A study in Songkla Province revealed that factors related to households facing catastrophic health expenditure were low educational level and low income (Sujariyakul and Chongsuwiwatwong 1999).

However, studies on equity in access to and utilization of health services among different socio-economic groups of Thais are quite limited because there have been very few socio-economic parameters in the national household survey of health care use, the Health and Welfare Survey (HWS), or in other studies.

3.4.3 Inequity in household spending and public subsidies on health

Prior to UC, household spending on health in Thailand was inequitable, even given the increase in government spending on health and the rising share of public sources of health care finance. Disaggregated data of household spending on health among different income deciles during 1992-2000 show that the poorest decile of Thai households spent, on average, a higher percentage of their household income than the richest decile (Figure 3.8). However, inequity in household spending on health has tended to improve because

the proportion of household spending on health to income of the first decile (the poorest) decreased from 8.17 % in 1992 to 4.58 % in 2000, whilst that of the richest decile has remained at 1.27% in the same period. The expansion of the LIC, the VHC, and the SSS, were key factors for improving inequity in household spending on health during 1992-2000. It is noteworthy that inequity in household spending on health in Thailand differs from other low and low-middle income countries in this region as shown in a recent large scale study of health care finance in Asia (O'Donnell, Van Doorslaer et al. 2005).

Figure 3.8: Household spending on health as a percentage of household income during 1992-2000
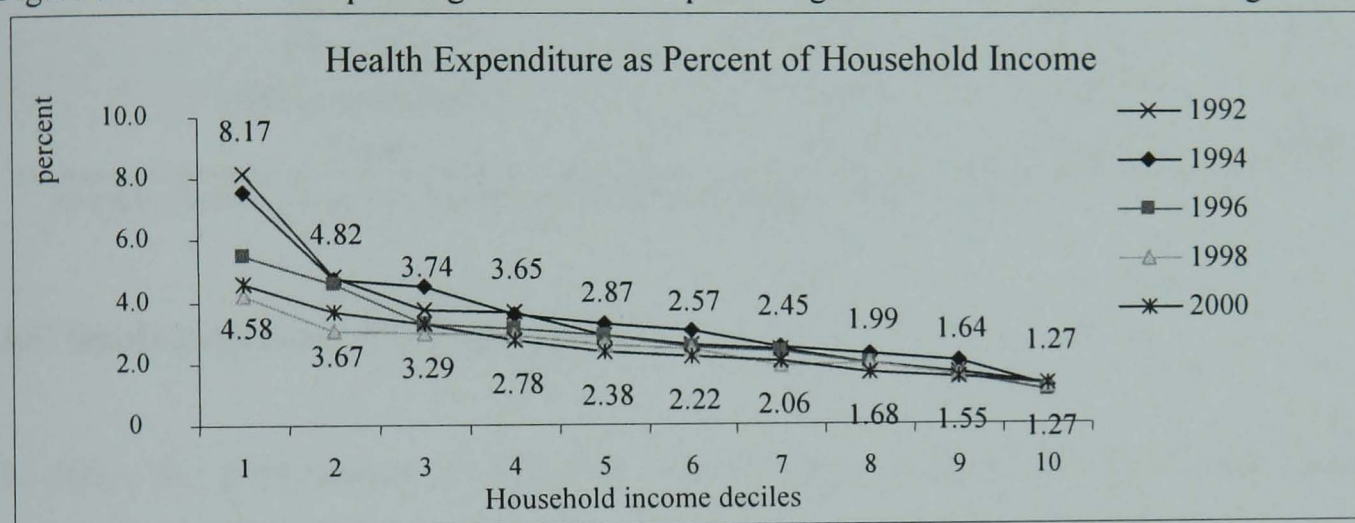
Source: Household Socio-economic Survey (SES), 1992-2000

The gap of public subsidies on health between the SSS beneficiaries and the rest of the population who were transferred to the UC scheme decreased after the UC policy was introduced. The inequitable public subsidies among different insurance schemes prior to UC shown in Table 3.3 reduced because in the fiscal year 2002, the amount of public subsidy for the UC scheme was 1,202.4 Baht per capita, and the subsidy for SSS was 1,217 Baht (Tangcharoensathien, Pitayarangsarit et al. 2002).

3.4.4 Catastrophic health expenditure of Thai households prior to UC

Data from the household Socio-economic Survey (SES) during 1996-2000 show that share of Thai households spending more than 25% of their non-food expenditure on health care decreased from 4.9 % in 1996 to 4.4% and 3.8 % in 1998 and 2000, respectively (Table 3.8). This indicates a decrease in the proportion of households

exceeding a commonly employed threshold of catastrophic health expenditure (Xu, Evans et al. 2003) prior to the UC policy implementation in 2001. In addition, it supports the previous findings of improvement in inequitable household spending on health during 1992-2000.

Table 3.8: Share of household non-food spending on health in Thailand during 1996-2000

% of non food expenditure on health	1996	1998	2000
0 to 0.5%	31.9	33.2	34.5
0.5 to 10%	51.3	51.5	50.8
10 to 25%	11.9	10.9	11.0
25 to 50%	3.5	3.6	3.1
More than 50%	1.4	0.8	0.7
Total	100.0	100.0	100.0

Source: Socio-economic Survey of Thai Households, 1996 – 2000

3.5 Implementation of the UC policy

In 2001, the government of Thailand successfully implemented its universal coverage policy by introducing a tax-funded health insurance scheme, called the "UC scheme", to the entire population. This scheme provides public health insurance to approximately 47 million people who are not beneficiaries of the CSMBS and SSS. Objectives of the UC scheme are:

a) **Universal coverage** which means every Thai is entitled to equal access to quality care according to their needs, regardless of their socio-economic status;

b) **Single standard** which refers to the same benefit package and quality of health care provided for all Thais; and,

c) **Sustainable system** which states that the health care system under UC should be sustainable in terms of policy, financial, and institutional sustainability. An efficient system, both in terms of allocative and technical efficiency, as well as adequacy and stability of the budget are needed for financial sustainability. Legislation is used to ensure the policy sustainability.

The main characteristics of the Thai health care system under UC are:

1) promoting the use of primary care as a gatekeeper;

2) using a close ended provider payment method;

3) ensuring quality of care by using accreditation;

4) using a standard benefit package which includes curative health services, health promotion interventions, and disease prevention;

5) attempting to harmonize with existing health insurance funds; and,

6) decentralization of fund management to the provincial level.

3.5.1 Budget estimation for the UC scheme

In April 2001, the MOPH proposed the budget requirement for the UC scheme. This proposal employed the morbidity rates and health service use of the population from the 1996 HWS, and unit costs of health care service provision of different levels of health facilities, for the estimation. The MOPH also estimated the budget for high cost care and accident/emergency treatment by using evidence from the Social Security Scheme in order to add on to the budget per capita. The budget estimated by the MOPH for the UC scheme in 2001 was on average 1,202.40 Baht per capita (Box 3.1). The government accepted this figure as a starting estimate for implementation of the UC scheme in 2001.

Box 3.1: Details of budget per capita (1,202.40 Baht) for the UC scheme in 2001	
Budget for curative care	**Budget for non-curative care**
• Ambulatory care 574 Baht • In-patient care 303 Baht • High cost care 32 Baht • Accident & emergency 25 Baht	• Disease prevention and health promotion 175 Baht • Capital investment 93.4 Baht • Administrative care = 10% of total budget • Contingency Fund = 10% of total budget

The public subsidy for UC beneficiaries increased from 1,202.4 Baht per capita in 2002 to 1,899.7 Baht per capita in 2007 (Figure 3.9), due to an increase in health service use, costs of health services, and the expansion of the benefit package which was expanded to cover more expensive health services such as ARV for HIV/AIDS patients, artificial organs and prostheses, neonatal screening for iodine deficiency, and the like.

Figure 3.9: Government subsidy per capita for UC beneficiaries in 2002-2007
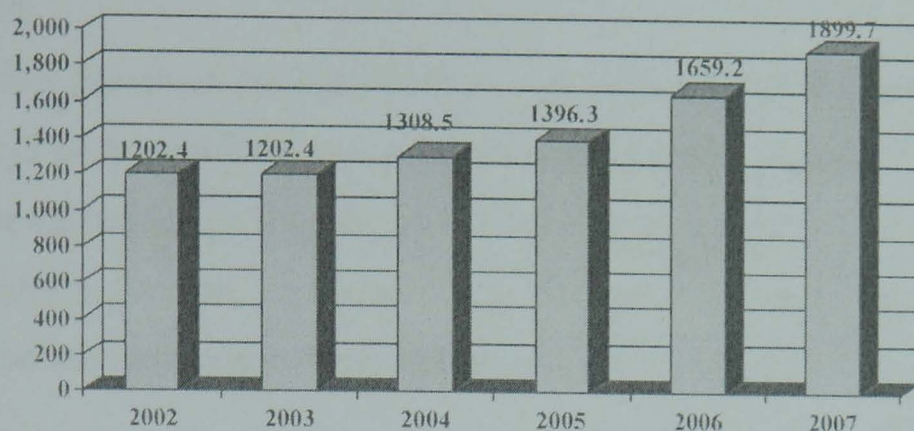
Source: modified from (Srithamrongsawat 2007)

3.5.2 Benefit package of the UC scheme

Types and scope of health services included in the UC benefit package are based on health services included in the SSS, VHC, and LIC benefit packages. The UC benefit package is comprehensive including primary, secondary, tertiary, and emergency health care, health promotion interventions, preventive health services, and a wide range of expensive health services. Diagnostic investigation, medicine and medical supplies whose quality is not below the quality of the National Drug List, hospitalization including general bed and nutrition, referral system in necessary cases, and health education and immunization according to the National Health Program, are also included in the UC benefit package. Details of the UC benefit package are shown in Annex 2.

The exclusion list of the UC benefit package comprises:

1. groups of medical services that are beyond the basic needs of the population such as infertility treatment, artificial fertilization, transgender operation, cosmetic surgery without any medical indications, and excessive examination, diagnosis or treatment without any medical indication;

2. groups of medical services for which a regular or specific budget from MOPH or other public organizations has been allocated such as mental illness requiring more than 15 days of hospitalization (as inpatient), drug-dependence treatment

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and rehabilitation as required by law relating to narcotics, and road-traffic accident victims who are entitled to care under the traffic accident insurance law; and,

3. other groups of medical services such as the same illness requiring more than 180 days of hospitalization, except for the case that requires continuous care due to complications or medical indications, experimental medical treatment, peritoneal dialysis for the end-stage renal failure, haemodialysis with artificial kidney machine, and organ transplantation.

To prevent health facilities from providing under-treatment for expensive health care, the National Health Security Office (NHSO) set up a centrally-managed fund, the "High Cost Reimbursement Fund", in order to provide appropriate compensation to tertiary health care providers who deliver specific types of expensive medical care included in the UC benefit package. The list of expensive health services and the upper limits of reimbursement are shown in Table 3.9.

Table 3.9: Reimbursement rate for high cost care under the UC scheme in FY 2003

List of medical treatments for high cost care	Upper limit of reimbursement
1. Treatments for acute renal failure	
• Haemodialysis	3,000 Baht per visit
• Peritoneal dialysis	500 Baht per day
2. Chemotherapy and/or radiotherapy for cancer patients	30,000 Baht per patient per annum
3. Open heart surgery	100,000 Baht per patient
4. Implantation of Prosthesis and Instrumentation	Cost of prosthesis and instruments have been announced by Ministry of Public Health (MOPH) and NHSO
5. Operations for disease related to brain	
• Open skull surgery excluding Burr hole operation	15,000 Baht per patient
• Open skull surgery with complications such as intra-cerebral infection, pneumonia, acute renal failure, etc.	30,000 Baht per patient
• Brain surgery with coma longer than 15 days	30,000 Baht per patient
• Operations for cerebro-vascular disease which	30,000 Baht per patient

List of medical treatments for high cost care	Upper limit of reimbursement
require special instruments	
6. Coronary artery bypass graft (CABG) surgery	100,000 Baht per patient
7. Percutaneous Balloon Valvuloplasty	20,000 Baht per patient
8. Treatments for cryptococcal meningitis	15,000 Baht per patient
9. Treatments for coronary artery dilatation by a balloon or by a rotator	30,000 Baht per visit, not more than twice per patient
10. Operation for epileptic patients	
• Investigation prior to operation for intractable temporal lobe epilepsy	120,000 Baht per patient
• Open skull surgery	30,000 Baht

Source: (NHSO 2003)

Open heart surgery, which was formerly included in the LIC and VHC benefit packages, has also been included in the UC benefit package since the start of the UC policy in 2001. Despite the coverage by the LIC and VHC, government health facilities favoured providing such expensive health services to the rich and CSMBS beneficiaries due to inadequate reimbursement from the LIC and VHC schemes. The reimbursement rate for open heart surgery under the High Cost Reimbursement Fund, which is up to 100,000 Baht per case, was intended to appropriately compensate tertiary health care providers for the expenses of such operations.

3.5.3 Allocation of government health budgets to health care providers

The UC scheme employs close-ended provider payment methods to achieve the objectives of the UC policy in improving equity and efficiency of the Thai health care system, and strengthening primary care of the country. The payment methods are the capitation contracting model for ambulatory care, and diagnostic related group (DRG) within a global budget for hospitalization. A contractor unit of primary care (CUP), which comprises all health centres in a district and a primary care unit set up in the community hospital, is contracted as the main provider to deliver health care for its registered population. At the beginning, the UC scheme employed a single rate of capitation to allocate government subsidies to health care providers throughout the country. However, the inequitable distribution of human resources and health infra-

structure between rich and poor areas resulted in budget deficits of government health facilities in affluent provinces which often have higher staff-population and bed-population ratio than the poorer provinces. As a result, from 2002, provinces were allowed to select an exclusive capitation payment where a CUP was paid using the capitation contracting model just for ambulatory care, and a DRG weighted global budget for in-patient care. In addition, since 2004, the salary of government staff at health facilities has been deducted from the overall government subsidies for the UC scheme before allocating it to health care providers.

Apart from using the close-ended payment method, the government adopted a demand side intervention of cost sharing to prevent moral hazard of the UC scheme. A nominal co-payment of 30 Baht (approximately £0.43 or US$0.88) per health visit or hospital admission was introduced to UC beneficiaries who were not the elderly, poor, disabled, or children aged less than 12 years. However, it was argued that the amount of co-payment was too small to prevent moral hazard, compared to the supply side interventions. Therefore, the government decided to terminate the policy on co-payment in November 2006 (Treerutkuarkul 2006).

3.5.4 Health care providers of the UC scheme

The majority of health care providers of the UC scheme have been public health facilities since the UC policy was introduced in 2001. Although the scheme allowed private providers to take part in health service provision in 2002, the low government subsidy was not attractive for private health care providers. In addition, the participation of private providers and the number of beneficiaries allocated to health care providers in each province had to be approved by the Provincial Chief Medical Officer (PCMO). A bias of the PCMO towards government health facilities was observed and experienced (Jongudomsuk 2002a).

Health care financing arrangements of the Thai health care system after UC are presented in Figure 3.10.

Figure 3.10: Health care financing arrangements of the Thai health care system after implementation of UC
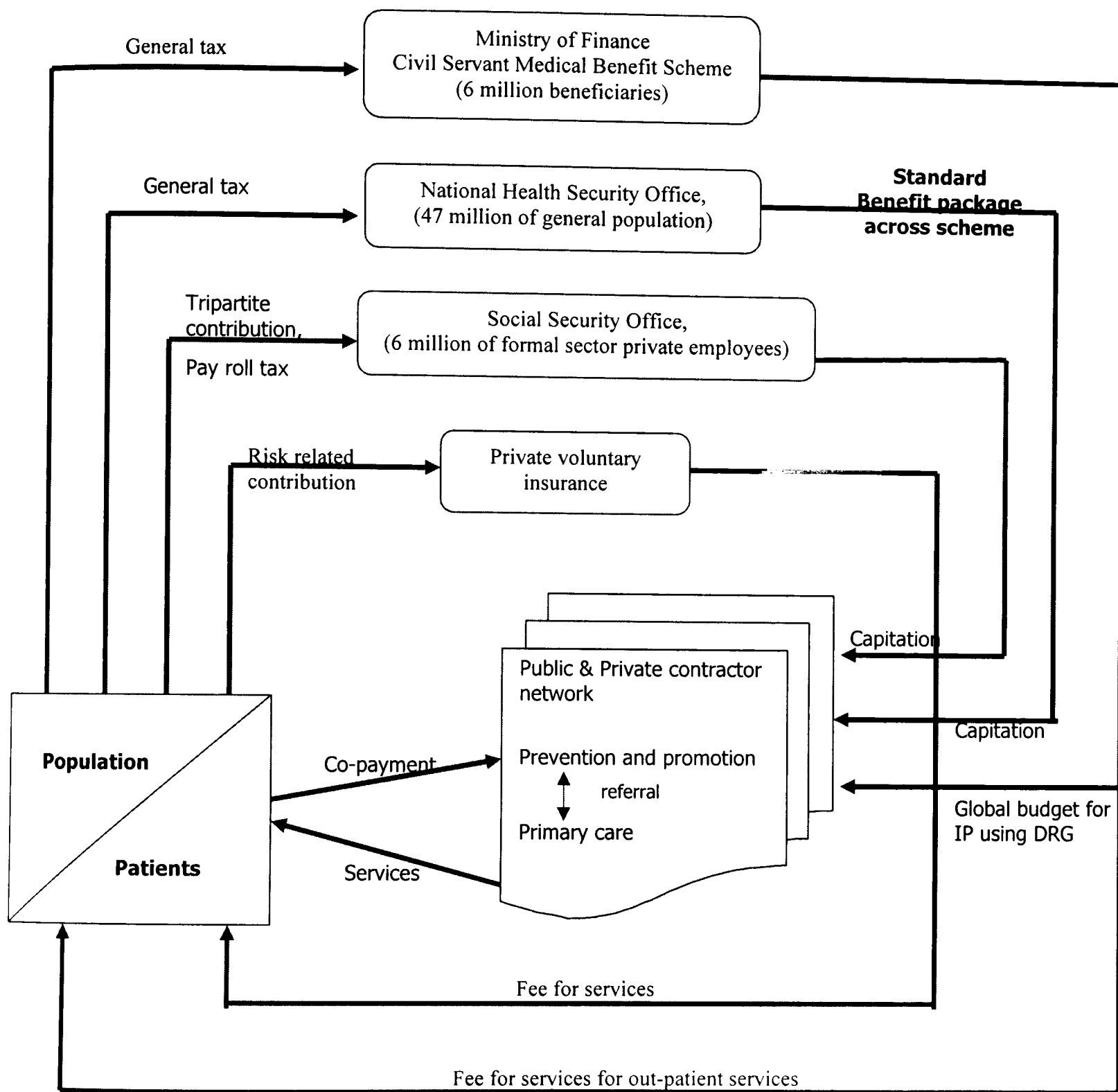
Source: (International Health Policy Program 2007b)

3.6 Policy context supporting the UC policy and health equity

During the UC policy implementation in 2001, there were legislative documents and a policy context supporting the universal coverage policy and improved health equity of the Thai health care system. Such documents and policy context are summarized as follows.

3.6.1 The 1997 Constitution of the Kingdom of Thailand

The 1997 Constitution (King Prajadhipok Institute 2004) was one of the most democratic constitutions in Thai history and indicated several statements and sections related to equity in peoples' rights and health. For example, Section 30 stated that every Thai, both men and women, would enjoy equal rights and would be protected equally under the law. In addition, unjust discrimination against a person on the grounds of differences in origin, race, language, sex, age, physical or health condition, personal economic or social status, religious belief, education or constitutionally political view, would not be permitted. Section 52 stated that a person would enjoy an equal right to receive standard public health services, and the poor would have the right to receive free medical treatments from public providers, as provided by law. Public health services would be provided thoroughly and efficiently and, for this purpose, participation of local governments and the private sector would be promoted as much as possible. The state would prevent and eradicate harmful contagious diseases for the public without charge. Moreover, Section 82 revealed an important statement related to equity in health care delivery—that the state would thoroughly provide and promote standard and efficient public health services for the entire population.

3.6.2 The 2002 National Health Security Act

Objectives of the 2002 National Health Security Act (NHSO 2007c) were to ensure universal access to qualified health services, and to provide equal right for all Thais to achieve standard and effective health services according to the benefit package provided by the Act and their needs. Moreover, health resource allocation would be a method that achieved the policy objective of improving equity and efficiency of the Thai health care system. The Act also granted the status of statutory public organization to the National Health Security Office (NHSO), which is the state agency responsible for the

administration of the National Health Security Board and the Standard and Quality Control Board of the UC scheme.

3.6.3 National public health policy of the Thai government

The former Thai government, led by ex-Prime Minister Thaksin Shinnawatra, declared the government policies to the National Assembly in February 2001. Objectives of the government's social policies were to develop the country's human resources, physically, mentally and intellectually. The government attempted to strengthen the society and made it sustainable with the aim of developing Thailand into a moral and balanced society. For public health services, the government was determined to create a system that provided public health services and health insurance to the public, so that the people of Thailand could enjoy good health and obtained universal health insurance coverage. To this end, the government undertook to reform the public health system in order to reduce the country's total public health expenditure as well as to reduce health care expenses incurred by households. The government guaranteed and created opportunities for access to essential medical and health care services that met an appropriate standard for the entire population on an equal basis.

3.6.4 Declaration of patient's rights

A declaration of patient's rights issued in April 1998 was jointly approved by five professional organizations: the Council for Registration of Medical Practice - Ministry of Public Health, the Medical Council of Thailand, the Nursing Council of Thailand, the Pharmacy Council of Thailand, and the Dental Council of Thailand. The declaration contained ten crucial issues of patient's rights following the 1997 Thai Constitution and the principles of human rights. Equitable access to and utilization of health services, and an equitable chance to obtain complete information about patient's health and illness, were recognized as the right of patients and the public.

3.7 Existing studies on the impact of the UC policy

After the UC policy implementation, several studies on the impact of the policy on the Thai health care system have been conducted. A couple of studies revealed a significant increase in ambulatory service use and hospitalization of the UC beneficiaries after the policy was implemented (Na Ranong and Na Ranong 2002; Pannarunothai, Patmasiriwat et al. 2002; Srithamrongsawat and Torwattanakitkul 2004; Suraratdecha, Saithanu et al. 2005). Another observed a greater use of the UC scheme by the poor rather than the richer groups (Pannarunothai, Patmasiriwat et al. 2002). A recent study showed an improvement in health service provision of primary care facilities, and an increasing workload of the health workforce after the UC policy was implemented and financial barriers to health care were removed (Srithamrongsawat and Torwattanakitkul 2004). It was concluded that the UC policy has achieved its main objective of improving equitable access to and utilization of health services. However, these studies assessed the UC policy in only a few provinces or among beneficiaries of different health insurance schemes. Moreover, some studies were conducted shortly after the implementation of the policy, at a time in the implementation process was still evolving.

Some studies have assessed the UC policy in terms of the policy process or a specific group of the population. For example, a study focused on policy formulation and the implementation process of the UC policy (Pitayarangsarit 2005) and another paid attention to policy formulation relating to anti-retroviral drug adoption in Thailand (Tantivess and Walt 2006). A study explored equity in health service use by the elderly after the UC policy was implemented (Srithamrongsawat 2004).

On equity in access to expensive health services, a policy analysis study of universal access to RRT revealed inequitable access to RRT among beneficiaries of different health insurance schemes in Thailand (Tangcharoensathien, Kasemsup et al. 2000). An economic analysis of RRT showed that haemodialysis (HD) and peritoneal dialysis (PD) for ESRD patients were not cost-effective because costs of PD and HD per life year saved were much higher than the benchmark of three times the GNP per capita per life

year saved (Teerawattananon 2005). A budget impact analysis of universal access to RRT estimated that the government budget for universal access to RRT would increase to 74,355 million Baht or around 12.2 % of total health expenditure by the sixteenth year of universal access to RRT, if the government played a passive role in controlling costs of RRT and in reducing the ESRD incidence (Kasemsup, Prakongsai et al. 2005). Another study argued that although neither HD or PD was cost-effective due to its expensive costs per life year saved, protecting households against financial catastrophe justified public funding for RRT, and to be feasible, rationing is unavoidable. The study advocated ESRD prevention and the provision of RRT to every ESRD patient up to an age cut-off or to every patient with a fixed number of RRT years by providing more years to the younger patients (Prakongsai, Tangcharoensathien et al. 2007). Anecdotal observation indicated RRT costs causing catastrophic health expenditure due to high costs of medical care and the chronic nature of the condition.

On equity in health care finance, several studies on the assessment of household out-of-pocket payments prior to and after UC revealed that the UC policy significantly reduced inequity in health care payments between the richest and the poorest deciles (Vasavid, Tisayatikom et al. 2005). Another study on the impact of the UC policy on equity in health care finance revealed that the incidence of catastrophic health expenditure (defined as out-of-pocket payments for health care more than 10% of total household expenditure) reduced from 5.4% in 2000 to 3.3% and 2.8% in 2002 and 2004, respectively (Limwattananon, Tangcharoensathien et al. 2005). A recent study revealed that households using in-patient services, especially at private hospitals, were more likely to face catastrophic health expenditure and impoverishment from health care payments (Limwattananon, Tangcharoensathien et al. 2007). Use of health services not included in the UC benefit package and bypassing the designated health care providers were the major causes of catastrophic health expenditures and impoverishment after implementation of the UC policy.

3.8 Gaps in knowledge

From the literature reviewed in this chapter, it is clear that there has been neither a nationwide nor large scale evaluation of UC using data from nationally representative household surveys, which will be used in this research. Also, the effect of the new financing arrangements on the distribution of public subsidies for different socio-economic groups of Thais, and the effectiveness of the UC policy in financial risk protection, has not yet been explored. An assessment on the impact of excluding RRT from the UC benefit package on poorer and richer ESRD patients would be useful for other developing countries moving towards universal coverage with limited health resources. Using the experience in Thailand, the design of the UC benefit package and the decision on which health services should be included in the UC benefit package of less developing countries can be discussed in greater detail.

CHAPTER FOUR

AIMS, OBJECTIVES, AND METHODOLOGY

This chapter summarizes the aims and objectives of the thesis, and outlines the methodologies used. The overall approach and the study framework are described first, followed by a brief description of the research methods and data sources used to achieve the objectives. More detailed descriptions of the methods are provided in the separate chapters with additional information in the annexes.

4.1 Aims and objectives

The overarching aim of the thesis is to assess the impact of the UC policy on equity of the Thai health care system in terms of changes in health care use, health care finance, the distribution of public subsidies for health, and the financial burden of health care payments borne by households of different socio-economic status in Thailand. This is intended to provide lessons on improving equity in the health care system of a developing country through the introduction of a UC policy and health financing reform. Two levels of investigation were employed in order to understand the impact of the UC policy on several dimensions of the Thai health care system: 1) an assessment at the national level using secondary data from nationally representative household surveys for an analysis of changes in health care use, equity of different health financing sources, and the distribution of public subsidies on health, prior to and after universal coverage; and, 2) an investigation at the household level using qualitative approaches to assess the impact of excluding some expensive health services from the UC benefit package.

With this overarching aim, the research has four main objectives which are to:

1) analyze changes in health care use and the distribution of public subsidies on health obtained by different socio-economic groups of Thais prior to and after universal coverage;

2) explore changes in the progressivity of health care finance, financial burden for health care payments borne by households of different socio-economic status, and the magnitude of households facing catastrophic health spending prior to and after universal coverage;

3) describe the economic impact of the UC benefit package on poorer and richer households, which excluded some expensive health services; and,

4) provide lessons learnt and policy recommendations on introducing the UC policy and health financing reform to foster an equitable health care system in other developing countries.

4.2 Overall approach and study framework

As described in the aims and objectives of this research, the assessment of the equity impact of the UC policy on the Thai health care system and households of different socio-economic status requires a comprehensive assessment in three areas:

1) equity in health care use and the distribution of public subsidies on health;

2) equity in health care finance and household payments for health; and,

3) the effectiveness of the UC policy on protecting poorer and richer households from costs of health services.

From the literature review, there are a number of ways to assess the equity impact of a health policy on households and the health care system (Anand, Diderichsen et al. 2001; Bowling 2002; Government Chief Social Researcher's Office 2003). Although a rigorous research approach is to assess the impact of a health policy between a control and an experimental group, the nationwide implementation of the UC policy in 2001 limited the feasibility to employ such a rigorous approach. With this limitation, this study employed another research design, a 'before-after' study, which has the potential to provide valid and reliable evidence to evaluate the impact of the UC policy on equity in health care use and health care finance, and financial risk protection. The assessment prior to policy implementation provided a baseline for comparing the impact of the UC policy on households of different socio-economic status in an assessment of a later period. In

addition, to address the drawback of the before-after approach in determining effects given confounding factors, a qualitative approach was employed as an additional investigation in order to shed further light on how the UC policy might have increased financial risk protection and improved equity in access to health care.

As described in chapter 3, this research improved previous small scale assessments of the UC policy by employing a nationwide or a large scale evaluation of health care seeking behaviour and health payments of Thai households prior to and after UC. Two national household surveys, the Health and Welfare Survey (HWS) and the Socio-economic Survey (SES), were used as the main data sources for assessing the impact of the UC policy on households of different socio-economic status. The former is a biennial and nationally representative household survey containing data on types of health insurance and health seeking behaviour of individuals. The latter is also a nationally representative household survey comprising information on household income and expenditure, changes in household assets and liabilities, and ownership of durable and semi-durable goods. Given that the UC policy was implemented nationwide in October 2001, this study employed the 2000 SES and the 2001 HWS for the assessment of the situation prior to universal coverage, and the 2002 SES and the 2003 HWS for the appraisal after universal coverage, as well as data sources covering unit subsidies for health service use of CSMBS, SSS, and UC beneficiaries at public and private health facilities.

As described in the literature review and elsewhere, socio-economic status is a crucial social determinant of health affecting inequity in access to and utilization of health services (Marmot 1999; Diderichsen, Evans et al. 2001). Lack of financial resources greatly prevent the poor from seeking and accessing health care, and also the financial burden of health care payments tends to create a greater negative impact on poorer households (Sauerborn, Ibrango et al. 1995; Kabir, Rahman et al. 2000; Russell 2005). With this evidence and the strong associations between an individual's socio-economic status and health inequality (Abel-Smith 1994; Macinko, Shi et al. 2003; Auger, Raynault et al. 2004), this study mainly focused on the impact of the UC policy on different socio-economic groups of Thais, and did not examine the impact of other social determinants

on health equity. Given that the HWS included an estimate of household monthly income and the SES contained information about household income and expenditure, per capita household income with an adjustment for household size using the OECD-modified equivalence scale (Hagenaars, de Vos et al. 1994; OECD Social Policy Division 2005) was used as a socio-economic stratifier. The concept of the equivalence scale is based on the principle of economies of scale in household consumption, and different needs of individuals (e.g. children or the elderly) for consuming resources.

Apart from per capita household income, an asset index was also used as an alternative measure to categorize households into different socio-economic groups, given its advantages (Annex 1). Potential errors from a single question on estimated household income, in cash and in kind, in the HWS also supported the decision to use the asset index as an alternative tool. The availability of information on household assets and housing construction in the 2003 HWS provided the possibility to compare results from the analysis of benefit incidence in 2003 between using per capita household income and the asset index as the socio-economic stratifier.

In this study, health service use was employed as a modified indicator for assessing the impact of the UC policy on equity in access to health care. Although various indicators of access to health care (such as availability of resources, waiting time, user charges, and other barriers to health services) might be assessed, the complex notion of access to health care is not easy to observe directly, especially in a national household survey. Given the availability of questions on health service use in the HWS questionnaire, the number of ambulatory visits and hospitalization of different income quintiles by type of health facility were employed as indicators for measuring the equity impact of the UC policy. Equity in health care use was assessed and quantified by using: 1) per capita ambulatory service use and hospitalization of different income quintiles; 2) the concentration index (O'Donnell, Doorslaer et al. 2008); and, 3) the concentration curve (O'Donnell, Doorslaer et al. 2008) of health service use by type of health facility. Changes in these indicators between 2001 (prior to UC) and 2003 (after UC) were analyzed and compared using the before-after approach.

Another assessment of the equity impact of the UC policy was the distribution of public subsidies for health or benefit incidence analysis – BIA (Castro-Leal, Dayton et al. 2000; Demery 2000). This analysis is widely used for assessing the links between public spending on health and consumption of health services as well as the distribution of public subsidies gained by different socio-economic groups, gender, or geographical areas. Benefit incidence is a powerful instrument, and can have a profound effect when presented to government officials or policy makers because it shows how equitable a given country is perceived to be and the results of BIA are easy to interpret by policy makers. There are four main steps to a BIA:

- First, ranking individuals with an appropriate socio-economic parameter;
- Second, linking individuals with health service use;
- Third, multiplying unit subsidies for health service provision by the amount of health service use to achieve total public subsidies for health; and,
- Four, estimating the net public subsidies for health across different socio-economic groups by deducting out-of-pocket payments for health from total public subsidies and analyzing the distribution by income quintiles.

In this study, changes in the distribution of public subsidies on health by income quintile, and the concentration index of benefit incidence prior to and after UC, were used as the indicators for assessing the impact of the UC policy on equity in the distribution of public subsidies for health. Methods to analyze benefit incidence prior to and after UC are detailed in Chapter 6.

Equity in health care finance and household payments for health were analyzed in order to present who paid for health care in Thailand prior to and after UC, and to what extent the UC policy had an impact on the health care finance of the Thai health care system. Given the various health financing sources of the Thai health care system as described in Chapter 3, per capita household payments for health including direct tax, indirect tax. out-of-pocket payments, social health insurance contributions, and private health insurance premiums, by income quintile, were explored. The concentration and the Kakwani indexes (O'Donnell, van Doorslaer et al. 2008) were used as tools to assess and

quantify equity in health care finance for different health financing sources prior to and after UC, which were likely to be the effects of health care financing reform strategies of the UC policy.

To explore the effectiveness of the UC policy in protecting households against financial hardship from medical care costs, this study employed an assessment of households facing catastrophic health spending to evaluate the financial risk protection function of the UC policy. A level of household health expenditure over 10% of household income was used as a benchmark of catastrophic health expenditure. This threshold payment has been widely used in the literature (Prescott 1999; Ranson 2002) because households having healthcare payments above this level tend to have to cut their consumption of other minimum needs, trigger productive asset sales or high levels of debt, and become impoverished (Russell 2004). Though another idea of assessing catastrophic health spending is the use of household capacity to pay (World Health Organization 2000), where household payments for basic consumption such as food are first deducted from total expenditure; this approach is problematic for analysis of the progressivity of health care finance (O'Donnell, van Doorslaer et al. 2008). With this framework, this research employed the payment threshold of over 10% of total household income to be the benchmark for the analysis of changes in the magnitude of catastrophic health expenditure prior to and after UC.

The last dimension of the investigation is to explore the economic impact of excluding expensive health services (e.g. RRT for ESRD patients) from the UC benefit package on households of different socio-economic status. To explore a complex issue of access to and utilization of expensive health services and the economic impact on households, a case study approach was designed for this investigation. This is because a case study can explore a social event in a real-life context of selected households in an explanatory and exploratory manner which is irrelevant to a quantitative approach (Yin 1994; Russell 2005). In addition, the case study approach can provide a deeper understanding of complex realities of household processes and contexts that are difficult to measure by a quantitative inquiry.

In this study, two expensive health services, RRT for end-stage renal disease patients and open-heart surgery for heart disease patients, were employed as the case studies because the former was not included in the UC benefit package, while the latter was. Poorer and richer households residing in rural and urban areas were selected for these case studies in order to reflect financial and geographical barriers to these expensive health services. The economic impact of accessing these health services, one included and the other excluded from the UC benefit package, was explored. Lessons from excluding expensive health services from the UC benefit package and the economic impact on households of different socio-economic status can be drawn for other developing countries moving towards universal coverage. In addition, findings of the case studies would reflect the effectiveness of the UC policy in Thailand in protecting households from high medical care costs.

Table 4.1 shows the relationship between the objectives and methods of this study, and Figure 4.1 describes the study framework.

Table 4.1: Relationship between objectives and methodology

Objective	Methodology
To analyze changes in health care use and the distribution of public subsidies on health obtained by different socio-economic groups of Thais prior to and after universal coverage	• Secondary data analyses on health service use in terms of ambulatory service and hospitalization among different socio-economic groups of Thais, • Benefit incidence analysis of public subsidies on health prior to and after universal coverage in Thailand, • Using different choices of socio-economic indicators, per capita household income and the asset index, for assessing benefit incidence.
To explore changes in the progressivity of health care finance, financial burden for health care payments borne by households of different socio-economic status, and the magnitude of households facing catastrophic health spending prior to and after universal coverage	• Secondary data analyses of different types of household health care payments (direct tax, indirect tax, out-of-pocket payments, social health insurance contributions, and private health insurance premiums) by income quintile, • Assessing the progressivity of different types of household health payments, • Comparing the magnitude of households facing catastrophic health expenditure prior to and after UC.
To describe the economic impact on poorer and richer households of the UC benefit package which excluded some expensive health services	• Case studies of two expensive health services, RRT for ESRD patients and open heart surgery for heart disease patients, and the economic impact on richer and poorer households.
To provide lessons learnt and policy recommendations on introducing the UC policy and health financing reform to foster equitable health care system for other developing countries	• Bring together findings from the research to discuss the impact of implementation of the UC policy and its benefit package on households of different socio-economic status in Thailand, and draw lessons learnt from the equity impact of the UC policy for other developing countries.

Figure 4.1: Study framework

Universal coverage elements:
- General tax as the main source of health care finance;
- Reduction in financial barriers to health services;
- Changes in government health resource allocation from historical allocations to close-ended payment methods;
- Promotion of the use of primary care at district and sub-district levels.

Prior to UC   **After UC**

Health service use
- **Utilization rate of different income quintiles by type of health care**
- **Concentration index**
- **Concentration curve**

Health service use
- **Utilization rate of different income quintiles by type of health care**
- **Concentration index**
- **Concentration curve**

Public subsidies for health
- **Benefit incidence analysis (BIA) at national and regional levels**
- **Comparing the use of income and asset quintiles as socio-economic stratifiers**

Public subsidies for health
- **Benefit incidence analysis (BIA) at national and regional levels**
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Equity in health care finance
- **Per capita for different types of household health payments**
- **Concentration and Kakwani indexes**

Equity in health care finance
- **Per capita of different types of household health payments**
- **Concentration and Kakwani indexes**

Case study of expensive health services excluded from the UC benefit package – RRT for ESRD patients:
- **Barriers and ability to access RRT;**
- **Financial burden for access to RRT;**
- **Coping strategies of households between poorer and richer households**

Case study of expensive health services included into the UC benefit package – open heart surgery for heart disease patients:
- **Barriers and ability to access open heart surgery;**
- **Financial burden for access to open heart surgery;**
- **Coping strategies of households between poorer and richer households**

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4.3 Data sources

In this study, three data sources were used for the secondary data analyses: the Socio-economic survey (SES); the Health and Welfare Survey (HWS); and, unit subsidies for health service provision of public and private health facilities.

4.3.1 Socio-economic Survey

The Socio-economic Survey (SES), formerly known as "The Household Expenditure Survey", has been conducted by the National Statistical Office (NSO) in Thailand since 1957. From the 1960s to late 1980s, this survey was conducted every five years, and after the rapid economic expansion, the survey was carried out every two years beginning in 1987. Objectives of the survey are to collect information on household income and expenditure, household consumption, changes in assets and liabilities, ownership of durable and semi-durable goods, housing characteristics, and household living conditions. The survey covers all private, non-institutional households residing permanently in municipal and rural areas of all regions in the country. A stratified, two-stage sample design has been adopted for the survey from 1988 until now. The number of sampled households in 2000 (prior to UC) and 2002 (after UC) were 24,747 and 17,489 respectively. In general, the SES contains nine groups of information about household socio-economic status, except the 2002 SES in which data on morbidity and health service use of household members were collected as an additional record (Record 10) due to the economic crisis (Table 4.2).

Table 4.2: Details of household data by record in the SES

Record	Household data
01	Household characteristics (e.g. household number, size), economic status, welfare and benefits of household members, summary of household income and expenditure, and household weight
02	Characteristics of household members (e.g. age, sex and marital status), medical welfare and type of health insurance, education, sources of income (e.g. wage and salary, profit from non-farm business, property income, etc.)
03	Information about income from other sources (e.g. pensions, disability payments, worker's compensation, interest from saving accounts, loans, bonds, shares, etc.)
04	Changes in household assets, liabilities, and debt
05	Housing characteristics, household assets, computer and internet use
06	Household consumption on goods and services
07	Food consumption
08	Summary of household income from various sources (impute from records 02-03)
09	Summary of household expenditure (impute from records 06-07)
10	Morbidity and medical care of household members (only the 2002 SES because of the economic crisis)

From the SES, household monthly income adjusted with the modified-OECD equivalence scale was estimated using data from Records 01 and 02. Data on household direct tax payments were available in Category 900 of Record 06. Household payments for indirect taxes were estimated from data on total household expenditure in Record 06 excluding VAT-exempt goods and services. Household payments for medical care costs, social health insurance contributions, and private health insurance premiums were also available in Record 06 with different categories and codes. Details of how to compute different types of household health care payments from the SES are presented in Chapter 7.

4.3.2 Health and Welfare Survey

The Health and Welfare Survey (HWS) is a nationally representative household survey on morbidity, health seeking behaviour, type of health insurance, and health service use of Thai households. This survey has been conducted by the NSO since 1974. Prior to 2001, this survey was conducted every five years, when it was changed to a biennial household survey in 2001. In this household survey, every member of sampled households are interviewed on morbidity and ambulatory service use in the previous two weeks in 2001 (or previous month in 2003), and hospitalization during the year prior to

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the interview. Data on health expenditure for the last health service use were also collected.

Information about household socio-economic status in the HWS is quite limited because this household survey focused on health seeking behaviour and health care use of household members. There was only a single question on estimated monthly income, both in cash and in kind, in the 2001 and 2003 HWS questionnaires. A difference between the 2001 and 2003 HWS was the record of individual monthly income which in 2001 was recorded in 15 income brackets, while that in 2003 was an open-ended question. In addition, a list of household assets and types of housing characteristics were available in the 2003 HWS, while such data were unavailable in 2001. This, therefore, provided an opportunity to compute the asset index as an alternative socio-economic stratifier in secondary data analysis of the 2003 HWS, compared to per capita household income. The differences between the 2001 and 2003 HWS are detailed in Chapter 5.

Table 4.3 summarizes the availability of household data in the SES and HWS which were used for the secondary data analyses in this study.

Table 4.3: A summary of household data in the 2000 & 2002 SES, and the 2001 & 2003 HWS

Topics	2000 SES	2002 SES	2001 HWS	2003 HWS
General HH characteristics	X	X	X	X
Educational level	X	X	X	X
Occupation	X	X	X	X
Monthly HH cash income	X	X	X (in 15 income brackets)	X (an open-ended question)
Monthly HH kind income	X	X	X	X
Monthly HH expenditure	X	X		
Health insurance coverage		X	X	X
Illness and ambulatory visit		X	X (last two weeks)	X (last month)
Type of health care provider for ambulatory visit		X	X	X
Health expenditure for last ambulatory visit		X		X
Chronic care & health promotive services				X
Types of health care				X

Topics	2000 SES	2002 SES	2001 HWS	2003 HWS
providers				
In-patient services during last year		X	X	X
Types of health care providers for hospitalization		X	X	X
Expenditure for last hospitalization		X	X	X
Dental health services				X
Housing characteristics and household assets	X	X		X
Household health expenditure	X	X		X
Household assets and housing characteristics	X	X		X

4.3.3 Unit subsidies for public and private health service provision

Unit subsidies for health service provision used for the analysis of benefit incidence were estimated by using secondary data from the monthly input and output financial report of MOPH health facilities and annual reports of the CSMBS and the SSS. Government health facilities of the MOPH are requested to send in monthly financial reports including budgetary and non-budgetary revenues, expenditure, and outputs of health facilities in terms of numbers of ambulatory visits, hospital admissions, and number of admission days. These secondary input and output data of public health facilities were used to estimate the mean unit of subsidies for ambulatory visits and hospitalization of MOPH health facilities in 2001 and 2003. An average ratio between the unit cost of a hospital admission and an ambulatory visit by type of health facility was employed as a conversion factor to combine ambulatory visits and hospital admissions into an equivalent output. This approach for the estimate of unit subsidy was employed instead of using the actual unit cost of health service provision because public health facilities in Thailand have rarely conducted costing studies of their health service provision, and an analysis of actual unit costs would take time. Details of the methods used to estimate the unit subsidies for health service provision of MOPH health facilities are presented in Chapter 6.

The annual reports of the CSMBS in 2001 and 2003 were used as the secondary data for the estimate of unit subsidies for health service use of the CSMBS beneficiaries. Many studies on health care finance in Thailand have showed differences in the quality and costs of health service provision for beneficiaries of different health insurance schemes, suggesting CSMBS has higher quality and higher costs due, at least in part, to the provider payment method of fee-for-service (Mongkolchart 2001; Limwattananon, Limwattananon et al. 2003). With these disparities, there is a need to estimate the unit subsidies for health service use of beneficiaries of the different health insurance schemes, especially the CSMBS beneficiaries. Details of the method used to estimate the unit subsidies for the CSMBS beneficiaries are presented in Chapter 6.

Finally, the annual report of the SSS was used as secondary data for the estimate of unit subsidies for health service provision of private health facilities. Given that the majority of SSS health care providers are private providers and the feasibility to access unit cost and financial data of private providers was low, estimating unit subsidies for health service provision of private providers was inevitable. From the annual SSS report, mean unit subsidies for health service use of SSS beneficiaries at private health facilities were estimated by using input and output data of the SSS in 2001 and 2003. The method to estimate the unit subsidies for SSS beneficiaries using health services at private health facilities is detailed in Chapter 6.

The relationship between assessed variables and data sources used for secondary data analyses of health service use, unit subsidies for health service use among different health insurance beneficiaries (CSMBS, SSS, UC), benefit incidence analysis, health care finance and household health payments, are shown in Table 4.4.

Table 4.4: Relationship between secondary data analyses, assessed variables, and data sources

Types of secondary data analyses (prior to and after UC)	Assessed variable	Data source
Health care use	• Ambulatory service use • Hospitalization • Individual socio-economic status	• The 2001 and 2003 HWS • Household income per capita (from the HWS) adjusted by modified-OECD equivalence scale
Unit subsidies for health service use of UC beneficiaries	• Unit subsidies for ambulatory visit and hospitalization by type of health facility	• Monthly input and output financial report of MOPH health facilities
Unit subsidies for health service use of SSS beneficiaries	• Unit subsidies for ambulatory visit and hospitalization by type of health facility	• The annual report of the SSS in 2001 and 2003
Unit subsidies for health service use of CSMBS beneficiaries	• Unit subsidies for ambulatory visit and hospitalization by type of health facility	• The annual report of the CSMBS in 2001 and 2003
Benefit incidence analysis	• The distribution of public subsidies on health • Individual socio-economic status: per capita household income vs asset indexes	• The 2001 and 2003 HWS • Unit subsidies for health service use by type of health facility and health insurance scheme • The estimated household income per capita and household assets in the 2003 HWS
Health care finance and household payments	• Household health payments by type of health care finance • Household socio-economic status	• The 2000 and 2002 SES • Household income per capita (from the SES) adjusted by modified-OECD equivalence scale

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4.3.4 Household case studies

Two expensive health services, RRT for ESRD patients and open heart surgery for heart disease patients, provided the possibility to explore in a detailed case study the effectiveness of the UC policy in protecting households from medical care costs because the former was excluded from the UC benefit package, while the latter was included. The research design of the qualitative case studies relied on the hypotheses that poorer and richer households would face different financial burdens from health care costs, along with different financial or geographical barriers to access expensive health services excluded from the UC benefit package. So three areas which were explored in the case studies were: 1) access to and utilization of expensive health services; 2) financial burden of health care payments borne by households; and, 3) coping strategies for costs of illness. Based on these hypotheses, households recruited into the case studies had different socio-economic status and resided in both urban and rural areas. The method to select ESRD and heart disease households is detailed in Chapter 8. In addition, details of investigating tools to achieve the objectives of the qualitative case studies, data collection, and ethical considerations are also presented in Chapter 8.

4.4 Units of analysis

There were two types of unit of analysis in this research. For the analyses of health care use and benefit incidence, the 'individual' was the unit of analysis because data on health service use were recorded on an individual basis. In addition, the analysis of benefit incidence was the combination of health care use and unit subsidy. Therefore, the distribution of public subsidies on health was analyzed on an individual level. The socio-economic status of individuals was categorized using per capita household income and the household asset index (in the 2003 HWS only).

In the analysis of health care finance, the 'household' was the unit of analysis because data on income and expenditure in the SES were collected on a household basis. In addition, the costs of illness do not only fall on the sick, but are generally borne by other

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household members. Therefore, household health expenditure, especially out-of-pocket payments, should be investigated at the household level.

It is important to note that changes in the mix of health insurance schemes between 2001 and 2003, and the existence of public subsidies to all public schemes, made it undesirable to assess the impact of the UC policy on the UC beneficiary population only. As discussed in Chapter 5, the CSMBS and SSS schemes continued largely unchanged between 2001 and 2003, whereas those who became UC beneficiaries in 2003 were previously a heterogeneous mix of the uninsured, LIC, VHC and private health insurance beneficiaries. It was appropriate for the study to assess the equity impact of the UC policy on the entire population, whether covered previously by public or private health insurance schemes, or previously uninsured.

SECTION 2: SECONDARY DATA ANALYSIS AND QUANTITATIVE APPROACHES

CHAPTER FIVE

ASSESSMENT OF EQUITY IN HEALTH CARE USE
PRIOR TO AND AFTER UNIVERSAL COVERAGE

The aim of this chapter is to describe changes in health care use among different socio-economic groups of Thais prior to and after achieving universal coverage in 2001. Since the policy objectives of universal coverage are to remove financial barriers to health care and ensure universal access to health services, an assessment of any changes in health care use of individuals between 2001 (prior to universal coverage) and 2003 (after universal coverage) would represent the impact of the UC policy on equity in health service utilization. Although there are some existing studies exploring the impact of the UC policy on access to and utilization of health services (Pannarunothai, Patmasiriwat et al. 2002; Suraratdecha, Saithanu et al. 2005; Srithamrongsawat 2007), these studies assessed the UC policy in only a few provinces or among beneficiaries of different health insurance schemes. There has been no assessment of the association between the UC policy and changes in health care use among individuals with different socio-economic status in a large-scale study or at the national level. Therefore, this study would fill the gap of knowledge about the impact of the UC policy on health care use by Thais, and show to what extent the UC policy has improved equity in utilization of health services.

5.1 Specific aims

The aims of this chapter are to:
1) describe changes in health care use in terms of ambulatory services and hospitalization among different socio-economic groups of Thais prior to and after implementation of the UC policy;
2) investigate changes in the concentration indexes and equity in health service use at different types of health care, namely health centres, community hospitals, provincial and regional hospitals, private clinics, and private hospitals, prior to and after the implementation of the UC policy; and,

3) explore the extent to which the UC policy has had an impact on health service use, and the association between the UC policy and changes in equity in health service utilization.

5.2 Methods

This section presents details of study design and data sources used for the analyses of health service use prior to and after implementation of the UC policy, classification of health care use, and how to categorize individual's socio-economic status using household survey data for 2001 and 2003.

5.2.1 Study design and data sources

This was a secondary data analysis of a cross-sectional household survey, the Health and Welfare Survey (HWS), which has been regularly conducted by the National Statistical Office (NSO) of Thailand since 1974. The HWS questionnaire comprises questions on general characteristics of respondents, types of health insurance enrollment, illness during two weeks or month prior to the interview, health seeking behavior, health expenditure, and monthly cash and kind income of all household members. During the past decade, the HWS has usually been carried out biennially in April of the survey year. It should be noted that five of the total 76 provinces of Thailand participated in a pilot project for the universal coverage policy beginning in April 2001. Therefore, the 2001 HWS can provide evidence on health service use of individuals prior to the UC policy. The 2003 HWS represents the status of health service use and health care seeking behaviour of individuals after the implementation of universal coverage.

Sample sizes of the HWS are nationally representative, and every household member in a sampled household is interviewed about illness, morbidity, hospitalization in the preceding year, and types of ambulatory service use. In 2003, the recall period for the latter was one month, and in 2001 it was two weeks. Health expenditure for the last ambulatory care and hospitalization is also asked about. A proxy respondent is allowed if a targeted interviewee is not present. The number of sampled households

was 62,165 in 2001 and 19,952 in 2003, and the number of household members interviewed was 222,470 and 68,433 in 2001 and 2003, respectively. A special purpose of the 2001 HWS on the survey of disability and health risk behavior of Thais produced the significant difference in the number of sampled households between 2001 and 2003. During data analyses, sampling weights were used to expand the results of the sample respondents to the entire population.

In this study, equity in health care use among different socio-economic groups of Thais was assessed and quantified by using the concentration index (O'Donnell, Doorslaer et al. 2008a) and the concentration curve (O'Donnell, Doorslaer et al. 2008b). The concentration index and related concentration curve are widely used in health equity literature and social science research as a means of quantifying the degree of income-related inequality within a specific health variable, for example, health service use, and government health subsidies. The concentration curve graphs on the x-axis the cumulative percentage of the sample ranked by living standards, beginning with the poorest, and on the y-axis the cumulative percentage of the health service use corresponding to each cumulative percentage of the distribution of the living standard variable. Accordingly, the concentration index is defined as twice the area between the concentration curve and the line of equality (the 45-degree line running from the bottom-left corner to the top-right). In the case where there is no income-related inequality, the concentration index is zero. The concentration index takes a negative value when the concentration curve lies above the 45-degree line of equality, indicating disproportionate concentration of health service use or other health variables among the poor, and a positive value when it lies below the 45-degree line of equality. In this research, a comparison of the concentration indexes and concentration curves of health service use between 2001 and 2003 was conducted to explore changes in equity in health care use prior to and after universal coverage.

5.2.2 Types of health care use

Analyses of health service use in this chapter are categorized into different types of health care according to answer choices available in the questionnaires of the 2001 and 2003 HWS. These include ambulatory care and hospitalization of health centres,

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community hospitals, provincial and regional hospitals, university hospitals, other public hospitals, private clinics, and private hospitals. Among these different types of health care, average health service use of individuals among different socio-economic groups is compared between the situations prior to and after UC. Likewise, the concentration indexes and concentration curves of health service use prior to and after UC are analyzed.

Differences between the 2001 and 2003 HWS questionnaires pose a concern for a comparative analysis of health service use prior to and after UC. For example, there was no question on the frequency of ambulatory visits during the last two weeks in the 2001 HWS. In addition, there were only four choices for the last hospital admission in the 2001 HWS, while seven choices of hospitals were provided in the 2003 HWS. Given these differences, this research could compare only those types of health service use that had similar answer choices in both the 2001 and 2003 HWS questionnaires. Table 5.1 summarizes differences in the questions on the duration of recall of illness, choice of ambulatory visits, and hospitalization, in the 2001 and 2003 HWS questionnaires.

Table 5.1: Differences in interview questions on illness and health service use between the 2001 and 2003 HWS

Topics	2001 HWS	2003 HWS
Illness	*During two weeks prior to the interview, did......get sick or feeling not well?*	*During one month prior to the interview, did.........get sick or feeling not well?*
Ambulatory visits	*(No question on frequency of ambulatory visits during last two weeks)*	*During one month before the interview, how many times did.....get sick?*
Choice of ambulatory visits	*Which type of ambulatory care did ....seek for the first day of last illness?*	*Which types of ambulatory health care did.........seek for his/her last illness? (allowing answers on three types of ambulatory care for last illness)*
In-patient services (1)	*During 12 months prior to the interview, was.....ever hospitalized?*	*During 12 months prior to the interview, was.........ever hospitalized (including delivery)?*
In-patient services (2)	*Which type of in-patient health services did ....seek for his/her last hospitalization? (**Four choices**: community hospital; provincial or regional hospital; private hospital; and others)*	*Which type of in-patient health services did ....seek for his/her last hospitalization? (**Seven choices**: community hospital; provincial or regional hospital; university hospital; other public hospital; private polyclinic; private hospital, other.)*

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Given these differences, Table 5.2 shows which types of health care use can be compared directly.

Table 5.2: Data on health service use by type of health facilities in the 2001 and 2003 HWS

Types of health facilities	Ambulatory visit		Hospitalization	
	Comparable	Note	Comparable	Note
• Health centre	✓		X *	
• Community hospitals	✓		✓	
• Provincial and regional hospitals	✓		✓	
• Other public hospitals outside MOPH	X	Available choice in the 2003 HWS only	X	Available choice in the 2003 HWS only
• University hospitals	X	Available choice in the 2003 HWS only	X	Available choice in the 2003 HWS only
• Private clinics	✓		X *	
• Private hospitals	✓		✓	

* There are no beds for hospital admissions at health centres or private clinics.

While differences in the questions on health service use between the 2001 and 2003 HWS raise some concerns on the interpretation of the comparative analysis between 2001 and 2003, the majority of choices for ambulatory care and hospitalization are comparable in both household surveys, as shown in Table 5.2. Almost all types of ambulatory service use, except at public hospitals outside MOPH and university hospitals, are comparable. Hospitalization at community, provincial and regional, and private hospitals is also comparable between 2001 and 2003, while that of the rest is incomparable due to limitations in the answer choices of the 2001 HWS, though that is not an issue for health centres and private clinics which do not admit patients. Moreover, ambulatory service use and hospital admissions between public and private health facilities were clearly separated in both household surveys. This allows the analysis to calculate health service use between public and private health facilities, and to estimate overall changes in equity in health service use, and the distribution of public subsidies on health which will be presented in the next chapter.

5.2.3 Categorization of individual socio-economic status

To assess changes in health service use among individuals with different socioeconomic status requires an appropriate parameter for grouping individuals into

different socio-economic groups. This research employs household income per capita as the socio-economic parameter for the analysis of changes in equity in health care use prior to and after universal coverage. This is because a short question on the estimate of monthly income, both in cash and in kind, of all household members was available in the 2001 and 2003 HWS questionnaires. In addition, a list of household assets and types of housing construction was obtained in the 2003 HWS. Hence, an analysis of equity in health service use in 2003, comparing the use of household income per capita and an asset index as socio-economic parameters is possible.

In the 2001 HWS, the individual monthly income in sampled households was recorded in 15 income brackets with some additional socio-economic parameters (e.g. occupation, education levels, etc.). This research took the mid-point of each income bracket as the individual monthly income, except for the upper-end bracket (more than 20,000 Baht per month), where the lower bound of 20,000 Baht per month was used as the estimate (Table 5.3). Since all household members usually share their financial resources, total household income was estimated by combining the monthly income of all household members. An individual monthly income was then derived by dividing total household income by each household's size adjusted using the *OECD-modified equivalence scale*[1] (Hagenaars, de Vos et al. 1994; OECD Social Policy Division 2005). After that, individuals were ranked in different income quintiles according to their household income per capita. The first income quintile is the poorest group, and the fifth income quintile is the richest category.

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[1] *"OECD-modified equivalence scale"* assigns a value of 1 to the household head, 0.5 to each additional adult member, and 0.3 to each child (under 18 years old). The concept of the equivalence scale relies on the principle of economies of scale in consumption, as well as different needs of different individuals (e.g. children or the elderly) for consuming resources.

Table 5.3: Income brackets and the mid-point of individual income estimated for each income bracket in the 2001 HWS

Income brackets in the 2001 HWS (Baht per month)	Mid-point of individual income (Baht per month)
• Less than 750 Baht	500
• 750 – 1,500	1,125
• 1,501 – 2,000	1,750
• 2,001 – 2,500	2,250
• 2,501 – 3,000	2,750
• 3,001 – 4,000	3,500
• 4,001 – 5,000	4,500
• 5,001 – 6,000	5,500
• 6,001 – 7,000	6,500
• 7,001 – 8,000	7,500
• 8,001 – 9,000	8,500
• 9,001 – 10,000	9,500
• 10,001 – 15,000	12,500
• 15,001 – 20,000	17,500
• more than 20,000 Baht	20,000

Criticism over the accuracy of the income brackets in the 2001 HWS, led the NSO to change the questions on individual monthly income in the 2003 HWS to an open-ended question on individual income both in cash and in kind, with a set of questions on household assets and housing characteristics. This allows for a better estimate of household and individual income in the 2003 HWS than in the previous 2001 household survey. In this research, income both in cash and in kind for each household member was combined together as total household income. Then, individual monthly income was calculated by dividing total household income by the household size adjusted with the OECD-modified equivalence scale, the same procedure as used for the 2001 HWS. After that, individuals were ranked in different income quintiles in accordance with the household income per capita.

5.2.4 Variables and analytical methods

To investigate the impact of the UC policy on any changes in equity in health care use, five areas related to health insurance and health care use were analyzed prior to and after universal coverage:

- Health insurance coverage of individuals in 2001 and 2003;
- Reported illness rate per capita per year among different income quintiles;

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- Average ambulatory service use per capita per year at
  - health centres,
  - community hospitals,
  - provincial and regional hospitals,
  - private clinics, and,
  - private hospitals;
- Hospitalization per capita per year in community hospitals, provincial and regional hospitals, and private hospitals; and,
- Concentration indexes of health service use among different types of health care prior to and after UC.

5.3 Results

In this section, results from the secondary data analyses of the 2001 and 2003 HWS are presented in four subsections: 1) health insurance coverage among different income quintiles; 2) self-reported illness rate; 3) ambulatory service use; and, 4) hospitalization.

5.3.1 Health insurance coverage prior to and after universal coverage

In 2001, approximately 71% of Thais were covered by a variety of health insurance schemes including the CSMBS, the SSS, the Voluntary Health Card (VHC), and the Low Income Card (LIC), while the rest of the population (29 %) was still uninsured. When the entire population was categorized into different income quintiles by using household income per capita, the fourth quintile contained the highest proportion of the uninsured (39%), while the first (poorest) quintile had the lowest proportion (20%) (Table 5.4). The major health insurance scheme for the poorest and the second income quintile was the Low Income Card, while the majority of the fourth and the fifth quintiles were uninsured. When health insurance coverage by income quintile was explored, it was found that more than two-thirds of the first and the second quintiles were covered by two public health insurance schemes, the LIC and the VHC schemes. In contrast, the majority of beneficiaries of the CSMBS, employee benefits, the SSS, and private health insurance were in the fifth or richest quintile.

Table 5.4: Share of health insurance schemes by income quintile in the 2001 HWS

Health insurance schemes	Quintiles of income per capita (%)					
	Q1	Q2	Q3	Q4	Q5	Total
No health insurance	20	24	31	39	34	29
CSMBS	3	2	4	11	27	8
Employee benefit	0	0	0	1	1	1
SSS and WCS	0	1	5	12	20	7
Voluntary Health Card	26	28	25	16	6	21
Low Income Card	50	42	32	18	7	32
Private health insurance	0	1	1	2	4	1
Others	1	2	2	1	1	1
Total	100	100	100	100	100	100

According to the 2003 HWS, approximately 95% of Thais were covered by public or private health insurance after the two-year implementation of the UC policy. Several studies indicate that approximately five percent of Thais were uninsured because of a lack of people's awareness, the absence of identification cards, and incorrect housing registration (Pannarunothai, Patmasiriwat et al. 2002; Health Systems Research Institute 2004). The UC scheme was the most comprehensive public health insurance scheme, covering around 75% of the population, while the proportion of those covered by the CSMBS and the SSS was only 9% each (Table 5.5). Private health insurance played a minor role, accounting for only one percent of the population in 2003. The majority of all income quintiles were covered by the UC scheme, especially the first and the second quintiles where more than 90% of them were UC beneficiaries. In contrast, the majority of the CSMBS, employee benefit, and private health insurance beneficiaries were in the richest category (fifth quintile).

Table 5.5: Share of health insurance schemes in different income quintiles in the 2003 HWS

Health insurance Schemes	Quintiles of income per capita (%)					
	Q1	Q2	Q3	Q4	Q5	Total
No health insurance	4	3	4	6	8	5
CSMBS	4	3	4	10	26	9
Employee benefit	0	0	0	1	1	1
SSS and WCS	0	3	8	16	22	9
UC scheme	92	91	83	66	40	75
Private health insurance	0	0	1	1	3	1
Total	100	100	100	100	100	100

Analysis on the shift of health insurance scheme membership from 2001 to 2003 indicates that more than 97% of the VHC and the LIC beneficiaries in 2001 transferred to the UC scheme in 2003, and more than a half of the uninsured in 2001 were UC beneficiaries two years later (Table 5.6). In addition, approximately 27% of those having private health insurance in 2001 shifted to the UC scheme in 2003. Only 2-3% of the CSMBS and the SSS beneficiaries in 2001 transferred to be UC beneficiaries two years later.

Table 5.6: Share of beneficiaries of different health insurance schemes in 2001 transferring to different health insurance schemes in 2003

Health insurance in 2001 (%)	Health insurance in 2003 (%)							
	Uninsured	CSMBS	Employee Benefit	SSS/ WCS	UC Scheme	Private Health Ins	Other	Total
Uninsured	44	0	0	3	**52**	1	0	100
CSMBS	0	98	0	0	2	0	0	100
Employee Benefit	0	2	84	3	11	0	0	100
SSS/WCS	1	0	0	95	3	0	1	100
Private Health Insurance	3	0	0	6	27	64	0	100
VHC	1	0	0	2	**97**	0	0	100
LIC	0	1	0	0	**99**	0	0	100
Other	15	0	0	3	67	0	15	100
Total	5	9	1	9	75	1	0	100

According to the 2003 HWS, more than 75% of the UC beneficiaries lived in rural areas, where most of the first quintile (86%) resided. The northeast region contained the highest share of the poorest quintile. The majority of the fifth quintile lived in municipality areas, especially in Bangkok.

Based on these findings, it can be summarized that:

- after the implementation of the UC policy, health insurance coverage of Thais increased from 71% in 2001 to approximately 95% in 2003;

- health insurance coverage of those in the lower income quintiles mainly relied on government subsidized health insurance schemes, namely the Low Income Card and Voluntary Health Card schemes in 2001, and the UC scheme in 2003; and,

- the majority of beneficiaries of the UC scheme were in the first and second income quintiles and primarily lived in rural areas. The majority of CSMBS

and SSS beneficiaries, and private health insurance members, were in the fifth quintile and largely resided in municipality areas.

5.3.2 Self-reported illness prior to and after universal coverage

In 2001, approximately 15.1% of Thais were ill or not feeling well during the two weeks prior to the interview. The analysis of the 2001 HWS reveals that the poorest quintile had the highest incidence of self-reported illness at 18.5 %, whilst the richest quintile had the lowest rate of 11.9 %. The average illness rate for the entire population in 2001 was 3.94 episodes per capita per year (Table 5.7), and the highest rate was in the first quintile (4.81 episodes per capita per year). The incidence of self-reported illness was lower in higher income quintiles, so self-reported illness was negatively associated with the socio-economic status in terms of income quintile. When the self-reported illness rate was plotted against the population ranked by household income per capita, the concentration curve of illness lay above the 45-degree line of cumulative population. The concentration index also showed a negative value of -0.096, which meant that self-reported illness was more concentrated in the lower income quintiles than the higher income categories.

In 2003, approximately 18.7% of Thais were ill or feeling unwell during the month prior to the interview. This figure is significantly higher than that of the 2001 HWS. Similar to the 2001 HWS, the first quintile had the highest proportion of illness (23%), while the fifth quintile had the lowest proportion (14.3%). The average illness rate for the entire population was 4.68 episodes per capita per year, an average increase of 18.8% compared to 2001. The first quintile also had the highest self-reported illness rate of 6.44 episodes per capita per year, followed by the second and the third quintiles. The concentration curve of the self-reported illness rate in 2003 lay above the 45-degree line, with a concentration index of -0.131. Similar to 2001, self-reported illness was more concentrated among the lower quintiles than the higher socio-economic groups. Furthermore, a larger negative value in 2003 compared to 2001 shows that the incidence of self-reported illness in 2003 was more concentrated among the poor than prior to UC.

This analysis reveals a substantial increase in the self-reported illness rate among different income quintiles and changes in its concentration index prior to and after UC (Table 5.7). The first (poorest) income quintile had the highest increase in self-reported illness at 34 %, followed by the second quintile, while the third quintile had a similar self-reported illness rate between 2001 and 2003. Using an unpaired t-test of unequal variances indicates statistical differences of the self-reported illness rate between 2001 and 2003 at the 1% level in all income quintiles.

Table 5.7: Percentage self-reported illness and mean illness rate per capita per year by income quintile in the 2001 and 2003 HWS

Income quintiles	Percent self-reported illness during prior two weeks in 2001 and prior month in 2003			Mean self-reported illness rate and 95% CI (episode per capita per year)		
	2001	2003	% change	2001	2003	% change
1	18.5	23.0	24.3	4.81 (4.72 - 4.91)	6.44 (6.15 - 6.74)	33.9 *
2	15.9	21.2	33.3	4.14 (4.06 - 4.23)	5.15 (4.90 - 5.40)	24.4 *
3	15.1	17.3	14.6	3.91 (3.83 - 4.01)	3.95 (3.74 - 4.17)	1.0 *
4	13.0	16.4	26.2	3.39 (3.31 - 3.47)	3.90 (3.68 - 4.12)	15.0 *
5	11.9	14.3	20.2	3.09 (3.02 - 3.17)	3.46 (3.25 - 3.68)	12.0 *
Total	15.1	18.7	23.8	3.94 (3.90 - 3.98)	4.68 (4.57 - 4.79)	18.8 *

Note: The concentration index of self-reported illness was -0.096 in 2001 and -0.131 in 2003
* unpaired t-test statistically significant at 0.00

5.3.3 Ambulatory service use prior to and after UC

The majority of health seeking behaviour for the first and the second quintiles in 2001 was primary care at health centres, followed by self-medication and provincial/regional hospitals. Approximately 40% of those in the first income quintile sought ambulatory services from health centres and community hospitals, but the proportion using health centres and community hospitals decreased in higher income categories. In the fourth and fifth income quintiles, self-medication was the most common health care seeking behaviour, followed by ambulatory service use at provincial/regional hospitals and private clinics. Prior to UC, health centres were the most common ambulatory service used by the first and the second quintiles, whilst

self medication was the most frequent health seeking behaviour for other groups. The proportion using ambulatory services in the private sector was significantly higher in richer quintiles than poorer categories.

In 2001, the analysis of ambulatory service use per capita per year by income quintile in public and private health facilities reveals that the poorer income quintiles utilized ambulatory services at public health facilities, including health centres, community hospitals, provincial and other public hospitals, more frequently than richer groups, and vice versa for ambulatory service use at private providers (Table 5.8). The concentration indices for all public health facilities present negative values which mean a pro-poor use of ambulatory services of government health facilities (Figure 5.1). The index of health centres shows the highest negative value, while the concentration indices of private clinics and private hospitals had positive values and their concentration curves lay below the equitable line, indicating that ambulatory care use of private providers in 2001 was pro-rich.

Table 5.8: Mean ambulatory service use at public and private health facilities by income quintile in the 2001 HWS

Income quintiles	Mean ambulatory service use (visits per capita per year)				
	Health centre	Community hospital	Provincial and regional hospital	Private clinic	Private hospital
1	1.197	0.711	0.721	0.344	0.046
2	1.011	0.567	0.624	0.372	0.054
3	0.746	0.432	0.688	0.431	0.088
4	0.450	0.235	0.691	0.451	0.169
5	0.137	0.164	0.611	0.558	0.365
Total	0.749	0.444	0.670	0.423	0.135

Figure 5.1: Concentration curves and indexes of ambulatory service use for different types of health facilities in the 2001 HWS

Conc. curve of ambulatory use at health centres
The 2001 HWS

Lorenz(hc_y) ----- Cum. Pop. Prop.

Concentration index = - 0.294

Conc. curve of amb use at community hospitals
The 2001 HWS

Lorenz(comh_y) ----- Cum. Pop. Prop.

Concentration index = - 0.271

Conc. curve of amb care use at prov and regl hospitals
The 2001 HWS

Lorenz(provh_y) ----- Cum. Pop. Prop.

Concentration index = - 0.036

Conc. curve of ambulatory service use at private clinics
The 2001 HWS

Lorenz(privclin_y) ----- Cum. Pop. Prop.

Concentration index = 0.093

Conc. curve of amb service use at private hospitals
The 2001 HWS

Lorenz(privhos_y) ----- Cum. Pop. Prop.

Concentration index = 0.431

A similar analysis of the 2003 HWS also shows that the poorer quintiles utilized ambulatory services at the primary care level (health centres and primary care units - PCU) and secondary care facilities (community hospitals) more frequently than the better-off (Table 5.9). In contrast, those in the richer quintiles utilized ambulatory

services at the tertiary care level, such as university and other public hospitals, more often than the worse-off. The negative values of the concentration indexes for ambulatory service use at health centres, PCU, and provincial/regional hospitals indicate the pro-poor nature of the ambulatory service provision of these health facilities (Figure 5.2). The positive values of the ambulatory service use at university and other public hospitals, and private health facilities confirm the pro-rich nature of ambulatory care at the higher public health care levels and the private health care providers after the implementation of the UC policy.

Table 5.9: Mean ambulatory service use of public health facilities among different income quintiles in the 2003 HWS

Income quintiles	Mean ambulatory service use (visits per capita per year)					
	Health centre	PCU	Community hospital	Provincial and regional hospital	Other public hospital	University hospital
1	1.728	0.042	1.650	0.306	0.188	0.008
2	1.193	0.072	1.162	0.310	0.085	0.017
3	0.641	0.028	0.832	0.307	0.109	0.022
4	0.549	0.012	0.581	0.327	0.171	0.051
5	0.181	0.011	0.250	0.239	0.376	0.059
Total	0.906	0.034	0.935	0.299	0.184	0.030

Similar to 2001, ambulatory service use of primary and secondary care facilities had a negative correlation with income quintiles, and vice versa for that of university and private hospitals. However, small income-related inequality in ambulatory service use at provincial and regional hospitals, other public hospitals, and private clinics, was observed. Figure 5.2 shows the pro-poor and pro-rich appearance of the concentration curves and the concentration indexes of ambulatory service use by type of health facility in 2003.

Figure 5.2: The concentration curves and indexes of ambulatory service use by type of health facility in the 2003 HWS

Conc. curve of ambulatory care use of health centre
The 2003 HWS

Lorenz(hc_y) ----- Cum. Pop. Prop.

Concentration index = - 0.357

Conc. curve of ambulatory service use of PCU
The 2003 HWS

Lorenz(pcu_y) ----- Cum. Pop. Prop.

Concentration index = - 0.267

Conc. curve of ambulatory care use of community hosp
The 2003 HWS

Lorenz(comhos_y) ----- Cum. Pop. Prop.

Concentration index = - 0.315

Conc. curve of ambulatory care use of prov/reg hosp
The 2003 HWS

Lorenz(reghos_y) ----- Cum. Pop. Prop.

Concentration index = - 0.051

Conc. curve of ambulatory care use of other public hosp
The 2003 HWS

Lorenz(pubhos_y) ----- Cum. Pop. Prop.

Concentration index = 0.156

Conc. curve of ambulatory care use of university hosp
The 2003 HWS

Lorenz(unihos_y) ----- Cum. Pop. Prop.

Concentration index = 0.352

Conc. curve of ambulatory care use of private clinic
The 2003 HWS

Lorenz(privcli_y) ----- Cum. Pop. Prop.

Concentration index = 0.031

Conc. curve of ambulatory care use of private hospital
The 2003 HWS

Lorenz(prvhos_y) ----- Cum. Pop. Prop.

Concentration index = 0.389

Figure 5.3 compares ambulatory service use at different health facilities by income quintile between 2001 and 2003. Ambulatory service use at both public and private health facilities, except provincial and regional hospitals increased significantly after the implementation of the UC policy. The rate of increase was highest at community hospitals, particularly for the first to fourth quintiles. In contrast, the utilization rate of provincial and regional hospitals decreased in all income categories, reflecting a shift in ambulatory service use from tertiary care (provincial and regional hospitals) to primary and secondary care levels. Furthermore, larger negative values of the concentration indexes in all public health facilities reflect an improvement of equity in the utilization of ambulatory services at all types of government health facilities after the UC policy was implemented. The increase in utilization of primary care and secondary care levels of the lower income quintiles lead to a significant improvement of equity in ambulatory service use. It is noteworthy that ambulatory service use of private clinics and private hospitals also increased in all income quintiles, especially the lower categories, after the implementation of the UC policy.

Figure 5.3: Ambulatory service use at different types of health facility by income quintile between the 2001 and 2003 HWS
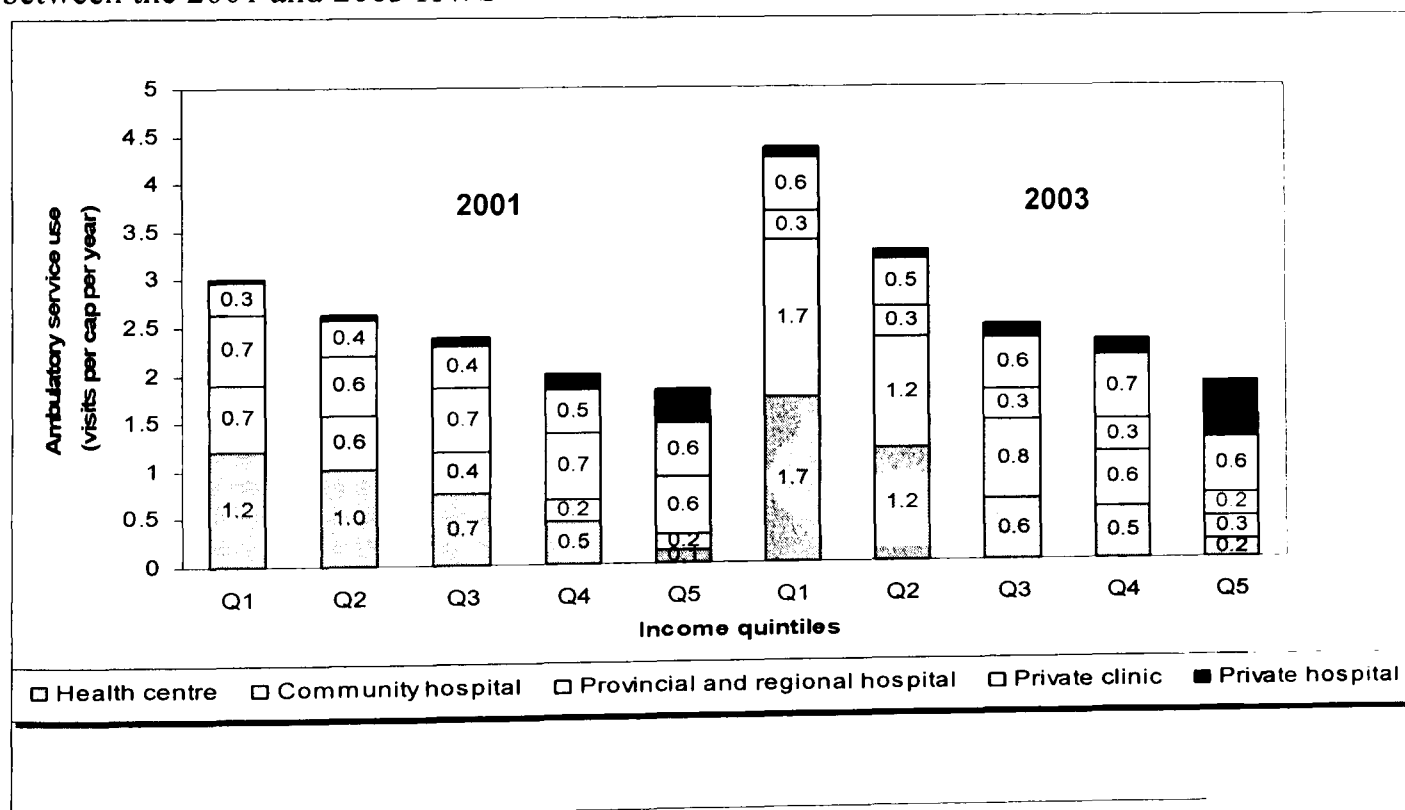
Comparing the concentration indexes of ambulatory service use by type of health facility between 2001 and 2003 indicates that ambulatory service use at primary and secondary health facilities was more pro-poor after the UC policy was implemented (Figure 5.4). Although ambulatory service use at provincial and regional hospitals

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was more pro-poor after UC, the degree of the pro-poor nature was significantly less than that of primary and secondary health care facilities. Private health care providers were less pro-rich after UC, especially private clinics.

Figure 5.4: The concentration indexes of ambulatory service use by type of health facility in 2001 and 2003

	Health centre	Community hosp	Prov/reg hosp	Private clinics	Private hosp
□ 2001	-0.294	-0.271	-0.036	0.093	0.431
▨ 2003	-0.357	-0.315	-0.051	0.031	0.389

Type of health facility
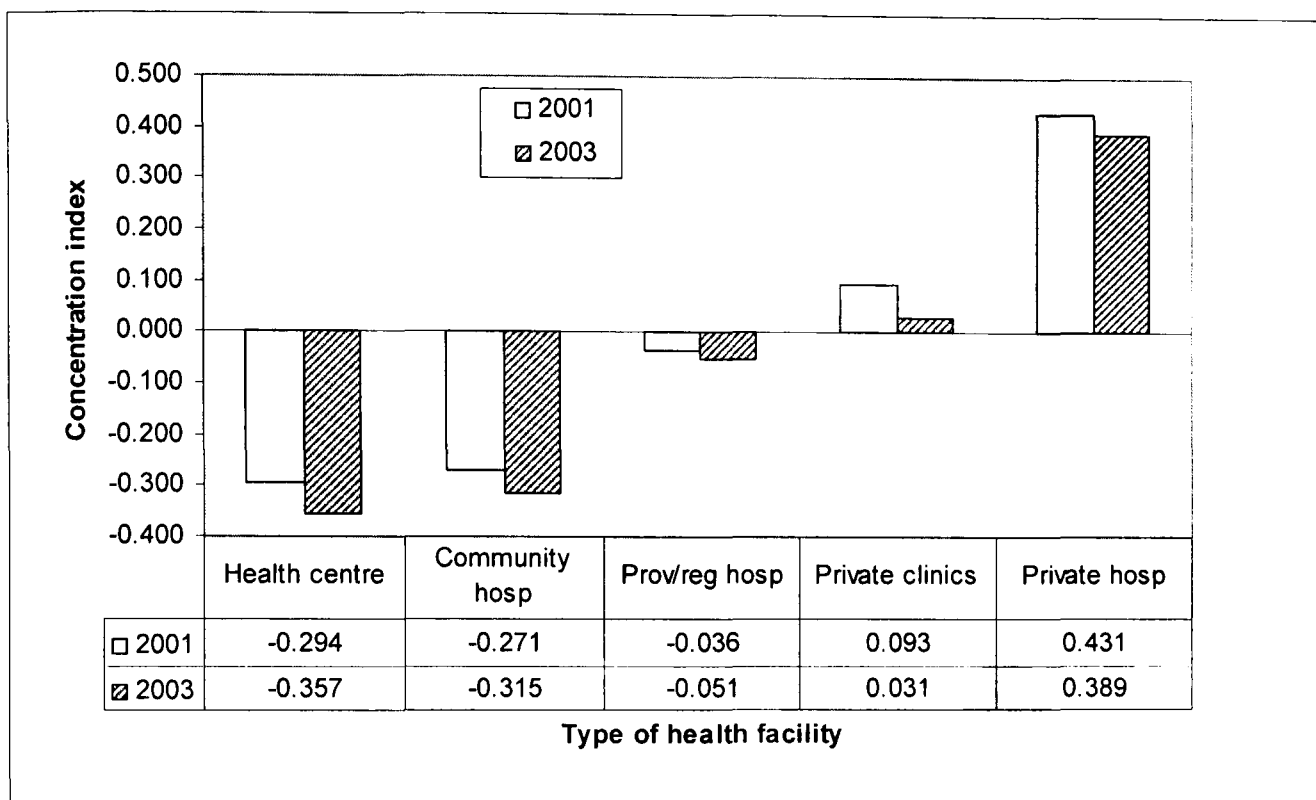
5.3.4 Hospital admissions prior to and after universal coverage

In 2001, approximately 6.4% of Thais were hospitalized during the 12 months prior to the interview. Those in the first quintile had the highest percentage of hospitalization at 7.4%, while those in the fifth quintile had the lowest proportion at 5.5%. On average, the hospitalization rate was 0.0789 admissions per capita per year and was negatively correlated to income quintile. The concentration index of hospitalization shows a negative value of -0.079, which means the overall hospitalization in 2001 was more concentrated among lower income quintiles than the richer groups. The first and second quintiles were more often hospitalized at community hospitals than the higher income categories. Hospitalization of the lower income quintiles at private hospitals was significantly lower than that of the richer groups.

Table 5.10 presents the mean of hospitalization by income quintile in public and private health facilities in 2001. The hospitalization rate in provincial and regional

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hospitals was highest with an average rate of 0.0466 admissions per capita per year. However, when the concentration indexes of hospitalization were analyzed, it was found that hospitalization in community hospitals had a higher negative value than other types of health facilities. Hospitalization in private health facilities was pro-rich.

Table 5.10: Mean hospitalization rate by income quintile of public and private health facilities in the 2001 HWS

Income quintile	Mean hospitalization (admissions per capita per year)			
	Community hospital	Provincial and regional hospital	Private hospital	Other types of hospital
1	0.0360	0.0522	0.0064	0.0001
2	0.0273	0.0474	0.0054	0.0001
3	0.0190	0.0488	0.0073	0.0003
4	0.0108	0.0481	0.0121	0.0005
5	0.0052	0.0342	0.0260	0.0002
Total	0.0209	0.0466	0.0109	0.0002

Figure 5.5 shows the concentration curves and the concentration indexes of hospitalization by type of health facility in 2001. The concentration curves of hospitalization at community, and provincial/regional hospitals lay above the 45-degree line of equality, while the curves of private and other types of hospitals were below the equitable line. This is associated with the concentration indexes, which confirmed the pro-poor nature of hospitalization in public health facilities.

Figure 5.5: Concentration curves and indexes of hospitalization by type of health facility in the 2001 HWS

Concentration index = - 0.316

Concentration index = - 0.069

Concentration index = 0.320

Concentration index = 0.154
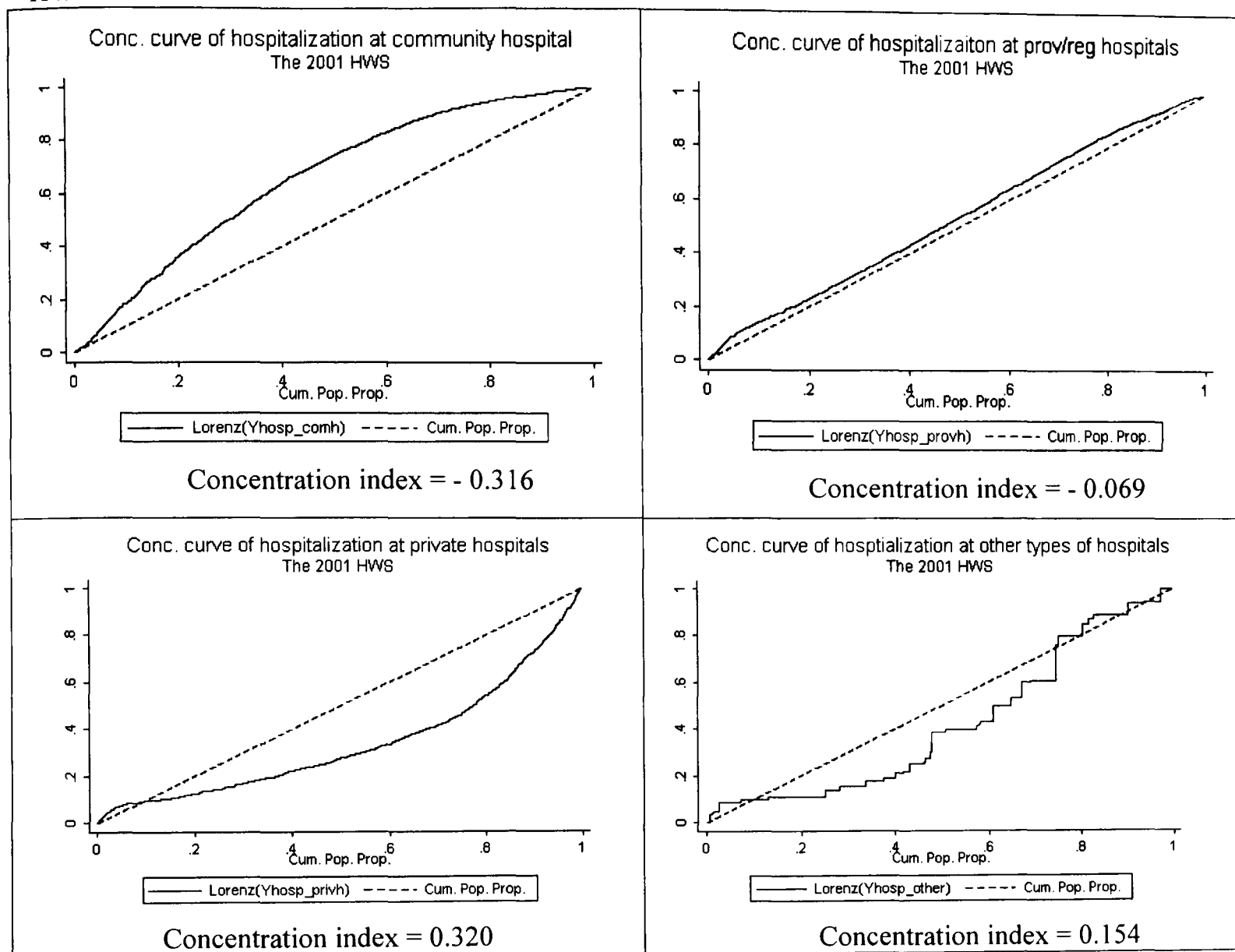
Similar to the findings from the 2001 HWS, the analysis of the 2003 HWS indicates that the first quintile had the highest proportion of hospitalization at 7.8%, while the fifth quintile had the lowest. In addition, hospitalization per capita per year was highest in the poorest quintile (0.105 admissions per capita per year), while the lowest rate was observed in the richest group (0.0598 admissions per capita per year). A negative value of the concentration indexes of overall hospital admission in 2003 indicates that hospitalization was more concentrated among the poorer quintiles than the richer categories.

In 2003, the analysis of the last hospitalization by type of health facility and income quintile indicates that nearly two-thirds of the first quintile (65%) utilized community hospitals, while the majority of the fifth quintile used private hospitals. The

proportion of hospitalization at community hospitals decreased when the income quintile increased, and vice versa for private hospitals. Admissions per capita per year were highest in community hospitals, and individuals in the first quintile had the highest use rate of hospitalization in community hospitals (0.0631 admissions per capita per year), while those in the fifth quintile had the lowest rate (Table 5.11).

Table 5.11: Mean hospitalization rate by income quintile of different types of health facility in 2003

Income quintiles	Hospitalization (admissions per capita per year)					
	Community hospital	Prov and reg hospitals	University hospital	Other public hosp	Private polyclinics	Private hosp
1	0.0631	0.023	0.0016	0.0071	0.0006	0.0054
2	0.0488	0.033	0.0010	0.0045	0.0001	0.0037
3	0.0341	0.021	0.0012	0.0081	0.0010	0.0101
4	0.0225	0.018	0.0016	0.0114	0.0007	0.0080
5	0.0111	0.012	0.0013	0.0077	0.0010	0.0220
Total	0.0374	0.0216	0.0013	0.0077	0.0007	0.0095

Concentration curves and indexes of hospitalization in public health facilities, except other public hospitals, were pro-poor because the curves lay above the 45-degree line of equality and the concentration indexes show negative values (Figure 5.6). Hospitalization in community hospitals was the most pro-poor, compared to other government health facilities. In contrast, hospitalization in other public hospitals, private clinics, and private hospitals was pro-rich. Although, the position of the concentration curve for university hospitals was unclear, the value of its index was negative.

Figure 5.6: The concentration curves of hospitalization by type of health facility in the 2003 HWS

Conc. curve of hospitalization of com hosp in the 2003 HWS

Concentration index = -0.293

Conc. curve of hospitalization of prov/reg hosp in the 2003 HWS

Concentration index = -0.137

Conc. curve of hospitalization of university hosp in the 2003 HWS

Concentration index = -0.051

Conc. curve of hospitalization of other public hosp in the 2003 HWS

Concentration index = 0.067

Conc. curve of hospitalization of private clinic in the 2003 HWS

Concentration index = 0.210

Conc. curve of hospitalization of private hospital in the 2003 HWS

Concentration index = 0.309

Comparing hospitalization by income quintile in 2001 and 2003, after the UC policy was implemented, hospitalization in community hospitals increased significantly in all income quintiles with the highest rate of increase in the fifth category (Figure 5.7). In contrast, hospital admissions at provincial and regional hospitals significantly decreased in all income groups. When hospitalization of the poorer quintiles is explored, it is apparent that the increase in hospitalization was mainly caused by a

substantial increase in hospital admissions at community hospitals, while the admissions in provincial and regional hospitals decreased. The reduction in hospitalization of the richest quintile was mainly the result of a decrease in hospitalization in provincial/regional and private hospitals, respectively.

Figure 5.7: The distribution of hospitalization at different types of health facility by income quintiles between the 2001 and 2003 HWS
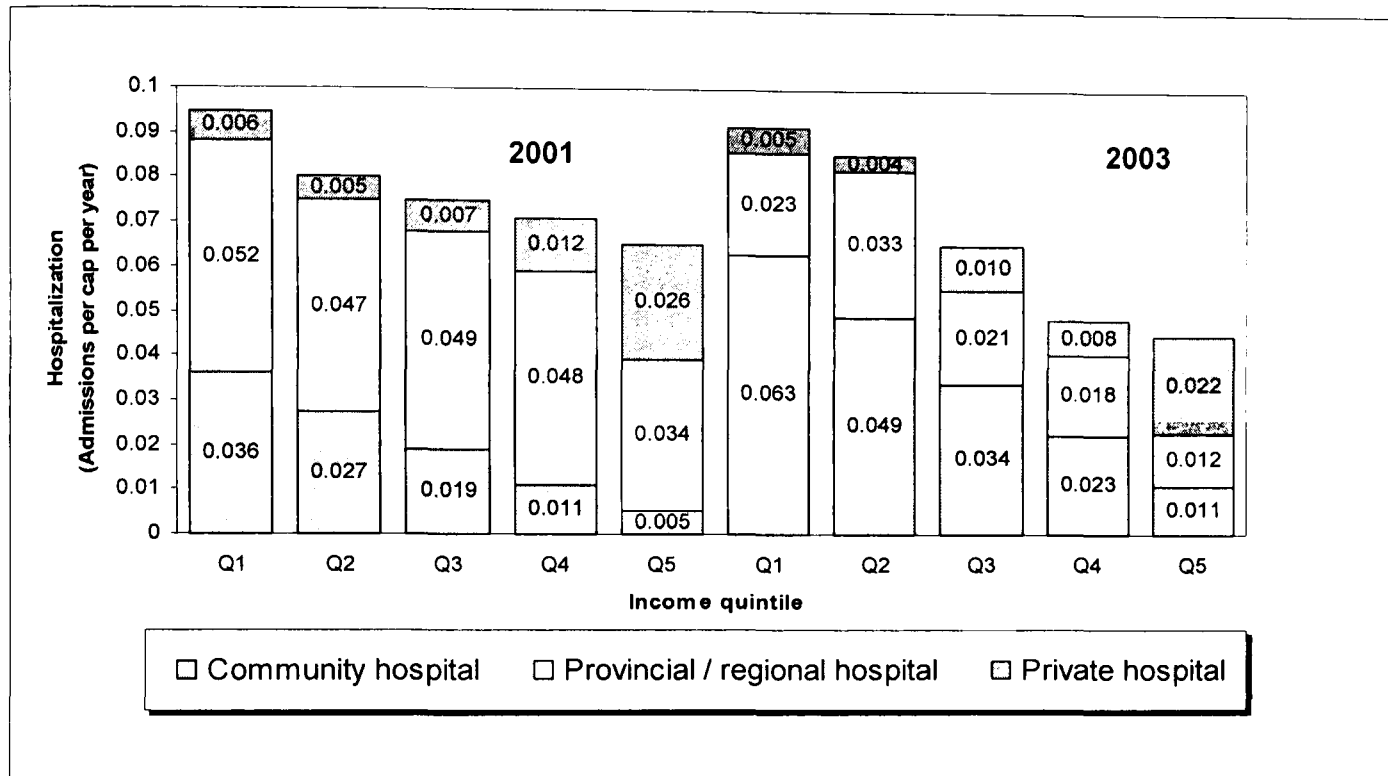
Comparing the concentration indexes of hospitalization by type of health facility between 2001 and 2003 shows that hospitalization in provincial and regional hospitals was more pro-poor after UC, while that of community hospitals was less pro-poor. In addition, hospitalization in private hospitals was less pro-rich in 2003 (Figure 5.8). A greater increase in hospital admissions at community hospitals for the richer quintiles in 2003 is likely to be a major cause of the reduction in the concentration index of community hospital hospitalization. In contrast, the reduction in hospital admissions of the well-off quintiles resulted in the more pro-poor nature of hospitalization at provincial and regional hospitals in 2003.

Figure 5.8 The concentration indexes of hospitalization by type of health facility in 2001 and 2003

	Community hosp	Provincial/regional hosp	Private hosp
□ 2001	-0.3157	-0.0691	0.3199
▨ 2003	-0.2934	-0.1375	0.3160

Type of health facility
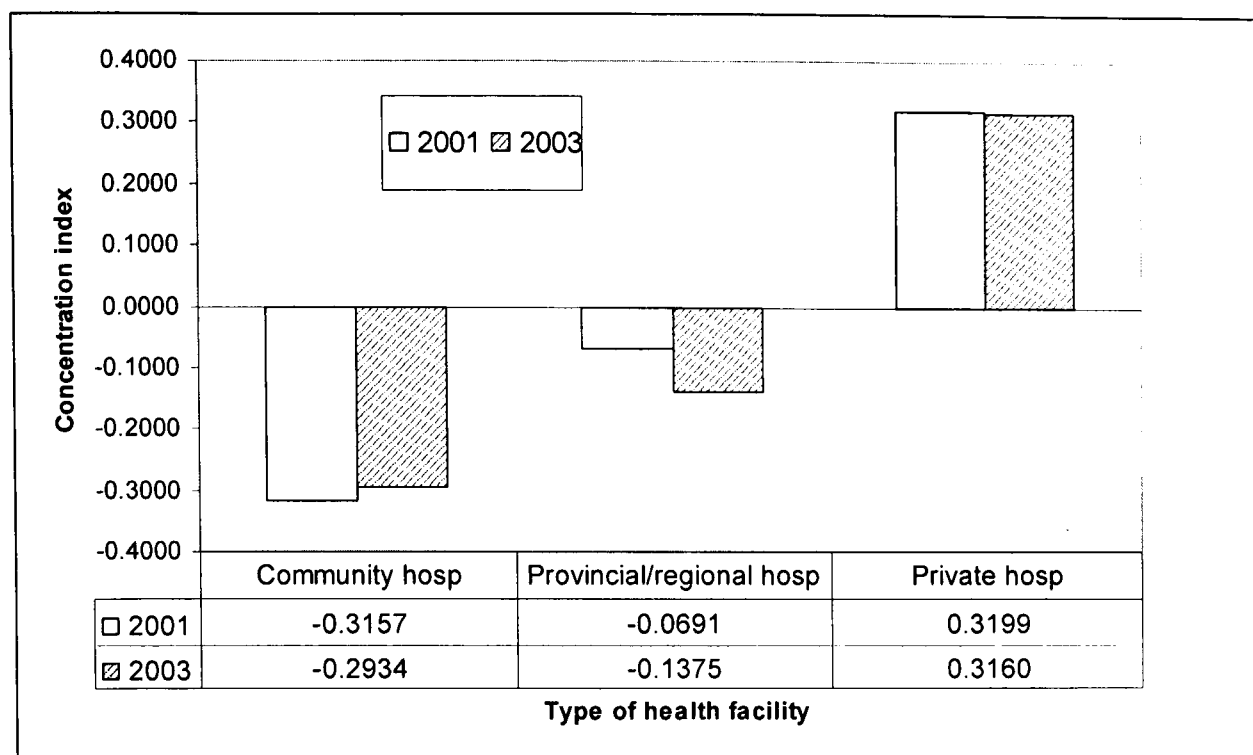
5.4 Discussion and interpretation of findings

This section presents a summary of research findings, discussion of data and methodological limitations in the analyses of health service use prior to and after UC, a general discussion on research findings, and conclusions on the impact of the UC policy on equity in health service utilization.

5.4.1 Summary of research findings

In this chapter, the results from the analyses of health insurance coverage and health service use prior to and after UC have been presented. Two years after the implementation of the UC policy, health insurance coverage increased from approximately 71% in 2001 to 95% in 2003. The majority of UC beneficiaries was in the first and the second income quintiles, and largely resided in rural areas. In 2003, a substantial increase in self-reported illness, particularly in the lower income quintiles, was observed. There was a significant increase in ambulatory service use of the first and the second quintiles, especially at primary and secondary care health facilities. In contrast, ambulatory service use at provincial and regional hospitals decreased in all income quintiles, reflecting a shift in health service use from tertiary care to primary

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and secondary care levels. The concentration indexes showed the more pro-poor ambulatory service use at health centres and community hospitals, compared to provincial and regional hospitals, and private health care providers. The analysis of hospitalization prior to and after UC showed a similar picture to ambulatory service use. There was a significant increase in hospitalization in community hospitals in all quintiles, but a reduction in hospitalization in provincial and regional hospitals, and private hospitals after UC. The increase in hospitalization for the richer quintiles in community hospitals led to a decrease in the concentration index of hospitalization in such health facilities in 2003.

5.4.2 Data and methodological limitations

A limitation in the analysis of health service use prior to and after UC was the lack of a rigorous welfare indicator to categorize individuals into different socio-economic groups. In this analysis of health service use, a single question on household income in the HWS adjusted by the household equivalence scale was used as the proxy for individual welfare. This is likely to contain some errors for categorizing individuals into different income quintiles. In addition, using the mid-point of each income bracket in the 2001 HWS to estimate monthly income of individuals increases the degree of uncertainty in the analysis of equity in health care use prior to UC. These data limitations pose concerns on the comparisons and interpretation of changes in health service use and the distribution of public subsidies for health in the next chapter.

Another difficulty in the analysis of health service use is the 2003 HWS questionnaire which allowed the interviewees to provide up to three instances of ambulatory service use for their illness during the last month before the interview. Since individuals may have sought more than one type of health care for their last illness, so an answer of more than one choice of health services for the last illness inevitably led to a problem in analyzing actual utilization of ambulatory services and benefit incidence. To deal with this problem, the researcher decided to drop the second and third choices of health care use, and employed only the first type of ambulatory service use for the analysis of ambulatory service use in 2003.

As stated in section 5.2.2, the differences in the interview questions between the 2001 and 2003 HWS surveys hinder the comparative analysis of health service use prior to and after UC. The absence of a question on the frequency of past illness and the number of ambulatory visits in the 2001 HWS would lead to under-reporting of illness and utilization of ambulatory services in 2001. However, the analysis of health service use prior to UC had to ignore this problem because there was neither strong evidence nor a relevant study to estimate the frequency of ambulatory service use in the two weeks prior to the interview. In addition, evidence from the analysis of the 2003 HWS shows that approximately one-third of those reporting illness during the last month got sick more than once. Therefore, the magnitude of those reporting illness during the shorter period of two weeks in 2001 would be smaller than one-third, and is likely to have had a slight impact on under-reporting of ambulatory service use in 2001.

A factor that might affect the increase in the self-reported illness rate in the 2003 HWS is the change in the recall period of past illness from "two weeks prior to the interview" in 2001 to "one-month prior to the interview" in 2003. This certainly would create some degree of recall bias in the data. In general, the interval of two weeks prior to the interview has been widely applied by various international household surveys such as the Living Standards Measurement Study (LSMS) (Grosh and Glewwe 1998), or the health seeking behaviour of households in the Demographic and Health Surveys (ORC Macro 2006). The period of one month prior to the interview in the 2003 HWS would capture more incidence of illness. but is more prone to recall bias.

As presented in section 5.2.2, details about the differences in the interview questions on types of health service use between the 2001 and 2003 HWS show that the majority of ambulatory service use and hospitalization in 2001 and 2003 are comparable. However, limitations in answer choices of health service use in the 2001 HWS might lead to some errors in the data collection if interviewers from the NSO could not find a relevant answer choice such as an ambulatory visit at or hospitalization in a university hospital in the 2001 HWS.

5.4.3 General discussion

The research findings of changes in health insurance coverage show that the poorer income quintiles mainly relied on public-subsidized health insurance schemes, namely the LIC and VHC schemes in 2001, and the UC scheme in 2003. The high percentage of LIC and VHC scheme membership in the first quintile in 2001 indicates that to some extent the government of Thailand had succeeded in providing public health insurance for the poor prior to UC. The transfer of almost 100% of VHC and LIC beneficiaries to the UC scheme, with more than 90% of the first and second quintiles covered by the UC scheme in 2003, proved that the Thai government could achieve its policy goals in providing public health insurance and financial risk protection to the poor. The analysis also shows that private health insurance, the CSMBS and the SSS, were health insurance schemes for the better-off. High insurance premiums of private health insurance and the employment-specific nature of the SSS and CSMBS are limitations in employing these health insurance schemes as a means to achieve universal coverage. This is because the poor are largely in the informal sector and in rural areas, generally lack financial resources for paying either premiums or contributions, and are disadvantaged in access to the formal sector and civil service employment.

The analysis of health service use shows that the Thai health care system was pro-poor prior to the introduction of the UC policy in 2001. This pattern differs from other studies which have shown that health services in developing countries are generally pro-rich and poorly targeted (Selowsky 1979; Castro-Leal, Dayton et al. 2000; Mahal, Singh et al. 2002). The former targeted health insurance schemes, namely the LIC and VHC, and the previous government policies on protecting the poor and disadvantaged groups, are likely to have contributed to this achievement. Though the poorest quintile could access and utilize government health services in 2001, the UC policy has made further progress in expanding health insurance protection and improving equity in health service use by using the strategy of universal access to essential health services and the removal of financial barriers to health care. This has primarily benefited the poor and those in rural areas.

A substantial increase in self-reported illness for the first and second income quintiles in 2003, compared to 2001, can be interpreted in different ways. Apart from the changes in the recall period between the 2001 and 2003 HWS questionnaires, as previously mentioned, the removal of financial barriers to health care from the UC policy is likely to be another factor allowing individuals to express their illness or feeling unwell, and increase their demand for health care. Evidence indicates that lack of money and financial barriers to health care are the main reasons preventing people from seeking care, particularly in poor households (Russell 2005; Save the Children 2005).

In 2003, changes in health seeking behaviour of ambulatory service use, which significantly shifted from tertiary to primary and secondary care levels, are explained by two key factors. The first one is the clear objective of the UC policy in promoting primary health care through resource allocation and the capitation contracting model. The UC scheme contracted a network of primary care units, known as the contracting unit of primary care (CUP), to be the main contractor and provide health services to the population registered with the network. According to the number of registered people, government resources are allocated to CUP through the capitation contracting model which is expected to improve efficiency and accountability of health care providers (Tangcharoensathien, Supachutikul et al. 1999; Srithamrongsawat 2007). The removal of financial barriers to health services at registered health facilities is likely to have encouraged UC beneficiaries to use primary and secondary care services as their first choice. As a result, UC beneficiaries who formerly decided to pay user fees for seeking health care from tertiary care facilities appear to have changed their health seeking behaviour to seek care from primary and secondary health care facilities, if they trust in the quality of health services provided. In addition, it is the design of the UC policy in using primary care as the gate-keeper and promoting the use of primary and secondary care at the district level to improve access to health care, especially for the poor in rural areas. Hence, this is likely to explain the more equitable and pro-poor health service system after the UC policy was implemented.

An increase in ambulatory service use of private clinics and private hospitals after UC by the first quintile can be explained by three hypotheses. The first one is an increase in individual income after the economic recovery in 2003. This could have led to an increase in individual and household ability to pay for user charges at private health services. This hypothesis is supported by findings of an analysis of average individual monthly income in the 2001 and 2003 HWS shown in Table 5.12. The second is the limitation of public health facilities to cope with the increase in health service use after implementation of the UC policy. Long waiting lists and over-crowded health services might have led to a shift of health service use to the private sector, especially for those in the first quintile, who might be more at risk of financial losses from illness. The last explanation might be that larger costs of health service use (i.e. hospitalization) were covered by the public health insurance scheme, so households might be able to pay more for ambulatory care. This, therefore, would lead to the shift of health expenditure patterns of households.

Table 5.12: Mean individual monthly income (in nominal terms) by income quintile in the 2001 and 2003 HWS

	Mean individual monthly income (Baht)	
	2001	2003
Q1	510	735
Q2	1,583	2,104
Q3	2,804	3,445
Q4	4,742	5,599
Q5	10,543	14,266
Total	3,726	4,964

Source: from the analyses of the 2001 and 2003 HWS

The shift in hospitalization for the richer quintiles from provincial/regional and private hospitals to community hospitals in 2003 could explain the decrease in the hospitalization rate of the well-off. More strict criteria for hospitalization in community hospitals and the better health status of the rich might be the factors influencing the decrease in hospitalization for the richer groups. In addition, differences in geographical distribution of public and private health facilities and household ability to pay for private health services are likely to play a vital role in the differences in hospitalization between the richer and poorer quintiles.

5.5 Conclusions

An important goal of the UC policy in Thailand is to ensure an equal opportunity to access essential health services for those who are not beneficiaries of CSMBS and SSS through the tax-funded health insurance scheme, the UC scheme. After two-years of implementation of the UC policy, several indicators such as the decrease in the proportion of the uninsured from approximately 29% in 2001 to 5% in 2003, and the increase in utilization of ambulatory services and hospitalization of those in the poorer quintiles, reflect crucial achievements of the UC policy in Thailand in improving equitable access to and utilization of health care. These achievements of the policy's objectives and the pro-poor nature of ambulatory service use and hospitalization, especially in public health facilities, appear to be related to three strategies:

- the expansion of public health insurance to nearly universal coverage, especially benefiting those who were in the lower quintiles and previously uninsured;

- the removal of financial barriers to health services which led to a significant increase in ambulatory care use and hospitalization, especially by those in the less well-off quintiles; and,

- the promotion of primary care use and first level hospital use which is easy to access and utilize by the poor in rural areas.

Ambulatory service use and hospitalization in government health facilities prior to and after UC was pro-poor, and its pro-poor nature had improved in 2003. Primary and secondary care public health facilities were more likely to serve those in poorer quintiles than the well-off because of their distribution in rural areas and the design of the UC policy. In contrast, health service provision of the private sector was pro-rich and served those in the better-off quintiles.

CHAPTER SIX

BENEFIT INCIDENCE ANALYSIS
PRIOR TO AND AFTER UNIVERSAL COVERAGE

The aim of this chapter is to describe the distribution of public health spending for different socio-economic groups of Thais prior to and after implementation of the universal coverage policy. Since the objectives of the UC policy are to improve the efficiency and equity of the Thai health care system, three health financing strategies were employed as crucial tools for health financing reform. First, provider payment methods for public health facilities were changed from historical allocations to closed-ended payments, a capitation contracting model for ambulatory services and diagnostic related groups (DRG) case payment within a global budget for hospitalization. Second, the use of primary care was promoted by contracting a district based health care network to provide health services for UC beneficiaries in a catchment area. Third, financial barriers to health services were removed by introducing a nominal fee or co-payment of 30 Baht per ambulatory visit or hospitalization. From 2001-2006, the poor and disadvantaged, including the disabled, the elderly, and children less than 12 years old, were exempt from the co-payment, but the co-payment was abolished by the new military-appointed government in October 2006. With these health financing strategies, evidence indicates a major shift of government health resources to primary care and health facilities in rural areas (Jongudomsuk 2002a; Tangcharoensathien, Wibulpolprasert et al. 2003; Srithamrongsawat and Torwattanakitkul 2004).

There has been some discussion as to who benefits from the universal coverage policy after the introduction of new health financing strategies (Na Ranong and Na Ranong 2002; Siamwala 2003) since former governments provided government subsidized health insurance for the poor and disadvantaged. In addition, even though priority was intended to be given to establishing more government health resources in the UC scheme, there has been no clear evidence as to who benefits from the government's universal coverage policy and who gains more public health resources, when compared with the situation

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before the introduction of health financing reform. With this knowledge gap, there is a need to investigate changes in the distribution of public spending on health, as well as any benefits gained by different socio-economic groups of Thais and those residing in different geographical areas. A comparison of the benefit incidence of public health subsidies prior to and after universal coverage should reflect the effectiveness of the UC policy on improving equity in the Thai health care system.

6.1 Specific aims

The aims of this chapter are to:

a) describe changes in the distribution of public health spending on different socio-economic groups of Thais and in different geographical areas prior to and after the implementation of the UC policy;

b) estimate public subsidies for health service provision of public and private health care providers prior to and after universal coverage;

c) demonstrate differences in unit subsidies for health service use at different types of health facilities and for different health insurance schemes; and,

d) describe whether the distribution of public spending on health changes when an asset index is used to categorize the socio-economic status of individuals, rather than income per capita.

6.2 Methods and data sources

6.2.1 Study design of Benefit Incidence Analysis (BIA)

This research was a secondary data analysis of cross-sectional household surveys on health service use of individuals, using the 2001 and 2003 HWS, along with public subsidies for health services provided by public and private health care providers in 2001 (prior to UC) and 2003 (after UC). Benefit incidence analysis (BIA) (Castro-Leal, Dayton et al. 2000; Demery 2000) was employed as the main approach for assessing the

amount and share of public health resources gained by different socio-economic groups of Thais.

To analyze the distribution of public subsidies for health, the four main steps of BIA were employed. In the **first step,** individuals are ranked by an appropriate socio-economic parameter. This research used equivalent, household income per capita[1], given the availability of monthly income of individuals in the 2001 and 2003 HWS. In addition, the availability of a set of questions on household assets in the 2003 HWS questionnaire provided an opportunity to compare the results when using household income per capita and the asset index to categorize individuals into different quintiles in 2003. In the **second step,** individuals and the amount of health service use are linked. Ambulatory visits and hospital admissions at public health facilities and government-subsidized private providers were used as the units of measurement due to the availability of data on health service use in the HWS and costs of health service provision in terms of unit costs per ambulatory visit and hospital admission. The **third step** involves the multiplication of unit subsidies for health service provision and the amount of health service use. The standard approach was employed by using the average unit cost of health service provision minus user fees paid to the government for that service. This produced the net public subsidy for health service use of individuals. To improve the accuracy of benefit incidence analysis, the unit subsidies and health service use were categorized into different levels of health facilities and health insurance schemes, given to variations in the quality and costs of health service provision in Thailand (Mongkolchart 2001; Limwattananon, Limwattananon et al. 2003). In the fourth and **final step,** the distribution of net public subsidies for health across different socio-economic groups is analyzed. This research used two approaches to describe the distribution of public health resources: the absolute value and the share of net public subsidies for health going to each income quintile. The analysis of the distribution of public health subsidies, using income per capita and an asset index to categorize the socio-economic status of individuals, was also conducted for 2003.

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[1] Equivalent household income per capita refers to total household income divided by household size and adjusted using an OECD-modified equivalence scale.

The benefit incidence of public spending on health is summarized by the following formula:

$$X_j = \sum_{i=1}^{n} H_{ij} \frac{S_i}{H_i} = \sum_{i=1}^{n} \frac{H_{ij}}{H_i} S_i$$

Where,

X_j = the value of the total public subsidies for health imputed to group j

H_{ij} = the number of health visits of group j to health facilities at level i

H_i = the total number of health visits at level i across all socio-economic groups

S_i = the net public spending on health at level i

i = the health facilities classified into different levels such as health centres, community hospitals, provincial and regional hospitals, university hospitals, private clinics, and private hospitals.

6.2.2 Individual use of health services prior to and after universal coverage

Secondary data from the 2001 and 2003 HWS were the two main data sources for the estimate of health service use in terms of ambulatory visits and hospital admissions of individuals prior to and after universal coverage. As presented in Chapter 5, apart from general characteristics of respondents, the 2001 and 2003 HWS questionnaires contain questions on ambulatory service use and hospitalization. Other vital information obtained includes individual out-of-pocket payments for health service use, and monthly income in cash and kind for all household members, along with household assets in the 2003 HWS. Although there were some differences between these two nationally representative household surveys (see Chapter 5), health service use in terms of ambulatory service and hospitalization by income quintile in 2001 and 2003 were able to be comparatively analyzed, as described in detail in the previous chapter. In the analysis of benefit incidence, the health service use by beneficiaries of different health insurance

schemes prior to and after UC had to be examined separately, given differences in the quality and costs of the health services they received within each scheme.

6.2.3 Socio-economic parameters of individuals in the 2001 and 2003 HWS

As shown in Chapter 5, income per capita adjusted using the OECD-modified equivalence scale was the primary socio-economic parameter utilized in grouping individuals into different income quintiles in 2001 and 2003. The availability of data on housing characteristics and household assets in the 2003 HWS made it possible to compute an asset index, and use it as an alternative socio-economic parameter for the analysis of benefit incidence in 2003.

To compute the asset index, secondary data from the 2003 HWS, including 28 variables on household assets and housing construction were used. Variables that are not dichotomous, such as types of housing construction material, were made dichotomous. Principal component analysis (PCA) was employed to calculate the asset index (Morris, Carletto et al. 2000; Filmer and Pritchett 2001). Weights of all asset variables in the first principal component were used to compute a factor score for each asset.

Derived from the PCA, scoring factors of the first principal component (the efficient component) were used in constructing the asset index of each household. This means a new factor which had a linear correlation with the original variables was developed. A weight was assigned to each variable (asset) in order to maximize the variation of the new variable, subject to the number of constraints.

All household members in each sampled household were assigned the same asset index score, and household members were assigned to asset quintiles. The details of the methods and results are provided in Annex 3.

6.2.4 Unit subsidies for public health care providers by health insurance scheme in 2001 and 2003

Secondary data from the monthly input and output report of public health facilities were used to estimate unit subsidies for government health services. The MOPH requests every public health facility to send a report which includes budgetary and non-budgetary revenue, expenditure, and outputs in terms of the number of ambulatory visits and hospital admissions, and admission days. A conversion factor relating financial resources used for an ambulatory visit and a hospital admission was employed in order to combine ambulatory visits and hospital admissions into an equivalent output. For example, the average ratio of unit cost between a hospital admission and an ambulatory visit at a regional or a provincial hospital in 2003 was approximately 1:19, and that of a community hospital was 1:15 (Patcharanarumol, Vasavid et al. 2004). Based on these conversion factors, total expenditure of health facilities divided by total equivalent outputs could provide the unit cost of an ambulatory visit, and the unit cost of a hospital admission could be calculated by multiplying the unit cost of an ambulatory visit with these same conversion factors. In 2001 and 2003, the unit costs of health service provision by level of government health facility were calculated using the secondary data from more than 100 health centres, 280 community hospitals in 2001 (and 679 hospitals in 2003 because of improved reporting), 92 provincial/regional hospitals, and 7 university hospitals (in 2003 only). In addition, unit costs of government health services by region were used to compute the regional distribution of public subsidies in 2001 and 2003.

In Thailand, many studies on health service provision financed by different health insurance schemes indicate differences in the quality and costs of health service provision at public and private health facilities (Tangcharoensathien, Supachutikul et al. 1999; Mongkolchart 2001; Tangcharoensathien, Srithamrongsawat et al. 2002; Limwattanonon, Limwattanonon et al. 2003). The fee-for-service payment method employed by the CSMBS has been shown to result in a greater quantity and higher costs of health service provision, and possibly unnecessary care (Sriratanaban 2002). In contrast, the capitation payment method employed by the SSS and the LIC tends to result in fewer medical

services, reasonable prescribing, and lower health care costs (Tangcharoensathien, Supachutikul et al. 1999).

With these disparities in the costs of health service provision among different health insurance schemes, there is a need to estimate the unit costs of health service provision for beneficiaries of different health insurance schemes. In this chapter, secondary data of the annual report on expenditure and outputs of the CSMBS were used to estimate unit subsidies for CSMBS beneficiaries. In addition, secondary data from the monthly input and output report of public health facilities were employed to calculate public subsidies for beneficiaries of the SSS and UC schemes because these two schemes employ similar close-ended provider payment methods, a contracting capitation model for out-patient and in-patient services for SSS beneficiaries, and a capitation model for ambulatory services of UC beneficiaries with DRG and a global budget for hospitalization. Such close-ended provider payment methods are less likely to create incentives for health care providers to provide a greater quantity and higher costs for health services.

It is worth noting that there is a lack of secondary data on the input and output of other public health facilities outside the MOPH (e.g. military and specialized tertiary-care hospitals, and health facilities under the Bangkok Metropolitan Administrative (BMA)). Only a few specialized hospitals have studied their unit costs. Furthermore, health care in Bangkok, the capital of the country, is not mainly provided by public health facilities of the MOPH. Bangkok relies greatly on the private sector, specialized public tertiary-care hospitals, and university hospitals, whose secondary data are not easy to access. Limitations in access to these secondary data were addressed by replacing missing figures with the unit costs of tertiary-care and university hospitals obtained from a literature review and unpublished studies.

6.2.5 Unit subsidies for private health service provision in 2001 and 2003

To calculate public spending on health for SSS and CSMBS beneficiaries, data on public health subsidies allocated to private health care providers were needed. This is because

nearly a half of the main contractors for the SSS are private hospitals (Social Security Office of Thailand 2006). Moreover, CSMBS beneficiaries are allowed to utilize private health services in an emergency (Sriratanaban 2002). This research used the amount of SSS resources per capita allocated to all health facilities in 2001 and 2003 to calculate the average unit subsidies gained by SSS beneficiaries at private providers. Likewise, the annual reports in 2001 and 2003 on the expenses and outputs of the CSMBS for private providers were used to estimate unit subsidies gained by CSMBS beneficiaries when they utilized private health services.

6.2.6 Out-of-pocket payments for health care use in 2001 and 2003

Data on individual out-of-pocket payments for health services are necessary to estimate net public subsidies on health, which refer to public health resources gained by an individual minus out-of-pocket payments for health care when he or she utilizes that health service. This research employed data on out-of-pocket payments of individuals from the 2001 and 2003 HWS to deduct from the unit subsidies of health service provision. Two elements of the public subsidies for health were employed for this research: 1) unit costs of health services derived from recurrent spending without capital investment minus any user fees paid by individuals; and, 2) unit subsidies of public health resources allocated to private providers minus individual out-of-pocket payments. Pharmaceutical costs are also included in the unit costs of government health services and unit subsidies. If the user fees exceeded the unit cost (or subsidy) allocated to either public or private providers, the net gain of public subsidies for health was adjusted to zero. For instance, if the unit cost of an ambulatory service at a community hospital was 400 Baht per visit and the user fee paid was 30 Baht, then the net government resource gained by the user would be 370 Baht. In contrast, if the user fee was as high as 500 Baht, then the public subsidy for health in this case would be adjusted to zero. However, it is worth noting that the absence of a question on individual out-of-pocket payment for the last ambulatory visit in the 2001 HWS poses a limitation in the analysis of the net public subsidy for ambulatory care in 2001. This meant that user fees for ambulatory care could not be subtracted from the public subsidy in 2001.

6.2.7 The estimate of benefit incidence prior to and after UC and the concentration index for health equity

After the mean unit subsidy by level of health facility and health insurance scheme was calculated, total public subsidies per year were estimated by multiplying the number of ambulatory visits and hospital admissions in one year by the net unit subsidies. Then the public health resources gained by each income quintile, both as a ratio and absolute value, were computed by accumulating the net public subsidies of individuals in each income or asset category.

Finally, the concentration index was employed as a measure to quantify and assess changes in benefit incidence in 2001 and 2003.

6.3 Results

To demonstrate the distribution of public subsidies for health prior to and after universal coverage, several components of the benefit incidence, namely health service use (both ambulatory visits and hospitalization), unit subsidies for different types of health service use and different health insurance schemes in public and private health care providers, the net public subsidies for health by income quintile, and the concentration indexes, are all presented. Furthermore, the regional distribution of benefit incidence in 2001 and 2003, and the comparison of benefit incidence between using income per capita and the asset index as the socio-economic parameter, are also explored.

6.3.1 Individual use of health services in 2001 and 2003

Individual use of health services by income quintile in 2001 and 2003 were presented in Chapter 5. Ambulatory service use and hospitalization at government health facilities both prior to and after universal coverage were pro-poor. Primary and secondary care facilities were more likely to serve those in the poorer income quintiles than the better-

off. In contrast, health service provision of the private sector and university hospitals was pro-rich and mainly served those in the richer categories. After two years of implementation of the UC policy, there was a significant increase in health service use, both ambulatory visits and hospitalization, of the poorer income quintiles compared to the better-off.

Table 6.1 presents differences in ambulatory service use and hospital admissions by health insurance scheme in 2001 and 2003. UC beneficiaries in 2003, or the rest of the population in 2001, had the highest utilization rate of ambulatory services in both years. The hospitalization rate for private health insurance was highest in 2001, and that of CSMBS beneficiaries was highest in 2003. After implementation of the UC policy, ambulatory service use of all health insurance schemes increased with the highest rate of increase amongst CSMBS beneficiaries. In 2003, the hospitalization rate of all health insurance schemes, except the UC scheme, decreased compared to that of 2001.

Table 6.1: Mean ambulatory service use and hospital admission (per capita per year) and percent changes by health insurance scheme in 2001 and 2003

Health insurance scheme	Ambulatory service use (visit per capita per year)			Hospitalization (admission per capita per year)		
	2001	2003	% change	2001	2003	% change
CSMBS	3.770	4.903	30.1	0.104	0.102	- 1.9
SSS	2.438	2.985	22.4	0.065	0.064	- 1.5
The rest (2001) or the UC scheme (2003)	4.101	4.926	20.1	0.076	0.083	9.2
Private health insurance	2.989	3.529	18.1	0.153	0.099	- 35.3
Total	**3.939**	**4.715**	**19.7**	**0.075**	**0.083**	**10.7**

6.3.2 Unit subsidies for public and private health service provision in 2001 and 2003

Using the secondary data of monthly financial and output reports of public health facilities and the conversion factor of an ambulatory visit and a hospital admission, the mean unit costs of an ambulatory visit and hospitalization by type of health facility in 2001 were calculated and are presented in Table 6.2. The unit cost of health service use

for UC beneficiaries in 2003 and the rest of the population in 2001 were applied to SSS beneficiaries in both years because of the similarity in provider payment methods between the SSS and the UC schemes.

For CSMBS beneficiaries, total expenditure for ambulatory services in 2001 was 8,123 million Baht, and expenses for hospitalization in public and private providers were 9,775 and 1,283 million Baht, respectively (Comptroller General's Department of Thailand 2004). Analysis of the 2001 HWS indicates that total ambulatory visits of CSMBS beneficiaries at government health facilities was approximately 11.27 million visits, with hospitalization in public and private hospitals of around 479,592 and 78,073 admissions, respectively. With these secondary data, the average unit costs of ambulatory service use and hospitalization of CSMBS beneficiaries at public and private health facilities were computed. Analytical weights for the unit costs by type of health facility were adopted from the UC scheme (Tangcharoensathien, Teerawattananon et al. 2001), where the ratio of unit subsidies for ambulatory services between health centres, community hospitals, and provincial/regional hospitals was 1 : 4.2 : 6.1, and for hospitalization between community and provincial/regional hospitals was 1 : 1.86.

Unit subsidies for the private health services of SSS beneficiaries were estimated by dividing the annual expenditure of SSS for private providers by the outputs of ambulatory care use and hospitalization. The number of SSS beneficiaries registered with private providers in 2001 was 3.46 million (Social Security Office of Thailand 2002), with an average ambulatory service use of private facilities at 2.60 visits per capita per year, and a hospitalization rate of 0.050 admissions per capita per year. Based on the amount of financial resources allocated to health care providers (1,100 Baht per capita) adjusted by the proportion of 65:35 between OP and IP costs [2], the mean unit subsidy of the SSS for ambulatory service use at a private hospital was 277 Baht, and the mean unit subsidy for hospitalization at private hospital was 7,601 Baht (Table 6.2).

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[2] This proportion was taken from the estimate of capitation payments for the UC scheme in 2001.

Table 6.2: Mean unit costs for ambulatory service use and hospitalization by type of health facility and health insurance scheme in 2001

Type of health facility	Mean unit cost of ambulatory service use (Baht)			Mean unit cost of hospitalization (Baht)		
	CSMBS	SSS	The rest of the population	CSMBS	SSS	The rest of the population
Health centre	149	62	62	--	--	--
Community hospital	628	262	262	11,939	3,669	3,669
Provincial and regional hospital	906	378	378	22,166	6,812	6,812
Private hospital	--	277	--	16,433	7,601	--

Using a similar approach and sources of data, average unit subsidies for an ambulatory visit and a hospital admission by type of health facility and health insurance scheme for 2003 were estimated, and results are shown in Table 6.3. It should be noted that, unit costs of health service use at university and other specialized public hospitals were obtained from the literature review and existing figures.

Table 6.3: Mean unit costs of ambulatory and in-patient services by health insurance scheme and type of health facility in 2003

Health facilities	Mean unit cost of ambulatory service (Baht)			Mean unit cost of hospital admission (Baht)		
	UC scheme	CSMBS	SSS	UC scheme	CSMBS	SSS
Health centre	61	97	61	--	--	--
Community hospital	310	491	310	4,960	10,078	4,960
Provincial and regional hospital	525	832	525	9,974	20,266	9,974
University hospitals	772	1,224	772	13,889	28,221	13,889
Other public hospitals	772	1,224	772	13,889	28,221	13,889
Private hospital	--	--	238	--	20,266	9,686

6.3.3 Public subsidies for ambulatory service use and hospitalization in 2001 and 2003

On the basis of the mean unit subsidy for net out-of-pocket payments and the volume of ambulatory care, Table 6.4 shows, by income quintile, the mean per capita public

subsidy, percent changes between 2001 and 2003, and share of net public subsidies for ambulatory service use in 2001 and 2003. The consumer price indexes were used to deflate the value of public subsidies in 2003 to 2001 values. On average, the per capita public subsidy for ambulatory service use in 2003 increased by approximately 44% from that in 2001. The first quintile had the highest increase in per capita public subsidies, while the third quintile had the lowest. In addition, the poorest quintile gained the highest share of net public subsidies for ambulatory care in both years, while the fifth and third quintiles obtained the lowest share in 2001 and 2003, respectively. The share of public subsidies for ambulatory care gained by the first quintile in 2003 had increased compared to 2001, while the share of the third and fourth quintiles decreased. The concentration curves of the public subsidy for ambulatory services in 2001 and 2003 lay above the 45-degree line of equality, indicating that the public subsidies for ambulatory services prior to and after implementation of the UC policy were both pro-poor. An increase in the negative value of the concentration index from -0.062 in 2001 to -0.130 in 2003 indicates a more pro-poor distribution of public subsidies for ambulatory services after the UC policy was implemented.

Table 6.4: Per capita, share and amount of public subsidies for ambulatory service use in 2001 and 2003

Income quintile	Per capita public subsidy (Baht)			Public subsidy for ambulatory service use (million Baht)	
	2001	2003 (in 2001 prices)	% change	2001	2003 (in 2001 prices)
1	584	1,011	73%	8,955.84	15,081.39
2	479	721	51%	6,365.05	9,550.00
3	467	520	12%	5,338.71	6,109.64
4	451	591	31%	5,222.95	7,108.16
5	460	631	37%	5,170.24	7,545.16
Total	**494**	**711**	**44%**	**31,052.79**	**45,394.34**

Note: - The concentration index of public subsidies for ambulatory service use was -0.062 in 2001 and -0.130 in 2003.
- The consumer price index (CPI) in Thailand in 2002 and 2003 was 0.7 and 1.8, respectively.

The analysis of net public subsidies for hospitalization in 2001 and 2003 shows a similar picture to the public subsidies for ambulatory care. Though the first quintile gained the highest per capita public subsidy in both years, the second quintile had the highest increase in the subsidy per capita for hospitalization (Table 6.5). In contrast, the public

subsidy per capita obtained by the fifth quintile decreased by approximately 12%. In 2001, the third quintile had the lowest share of public subsidies for hospitalization, but after UC the fifth quintile had the lowest. After two years of implementation, the share of public subsidies for hospitalization of the first and the second income quintiles had increased, while the share for the fourth and fifth quintiles had decreased. Also, an increase in the negative value of the concentration index from -0.023 in 2001 to -0.155 in 2003 indicates the more pro-poor nature of public subsidies for hospitalization.

Table 6.5: Per capita, share and amount of public subsidies for hospitalization in 2001 and 2003

Income quintile	Per capita public subsidy (Baht)			Public subsidy for hospitalization (million Baht)	
	2001	2003 (in 2001 prices)	% change	2001	2003 (in 2001 prices)
1	492	681	38%	7,538.42	10,159.05
2	414	638	54%	5,500.58	8,440.27
3	399	491	23%	4,560.37	5,761.40
4	430	512	19%	4,972.09	6,151.32
5	455	399	-12%	5,108.70	4,771.23
Total	**440**	**552**	**25%**	**27,680.16**	**35,283.27**

Note: The concentration index of the public subsidies for hospitalization was -0.023 in 2001 and -0.115 in 2003

Total and per capita public subsidies for both ambulatory service use and hospitalization prior to and after UC, and changes in the public subsidy by income quintile, are summarized in Table 6.6. In 2001 prices, the public subsidy for all health services increased from approximately 58,733 million Baht in 2001 to 80,678 million Baht in 2003, an increase of 37%. Similar to the results of benefit incidence for ambulatory service use, the first quintile had the highest increase in the public subsidy per capita, followed by the second quintile; while the fifth quintile had the lowest increase. Further analysis reveals that a rise in ambulatory service use and hospitalization at primary and secondary care levels triggered the increase in the public subsidy for the poorer quintiles.

Table 6.6: Total and per capita public subsidies for ambulatory service and hospitalization in 2001 and 2003 by income quintile

Income quintile	Per capita public subsidy (Baht)			Total public subsidy for all health services (million Baht)	
	2001	2003 (in 2001 prices)	% change	2001	2003 (in 2001 prices)
1	1,076	1,692	57%	16,494.26	25,240.44
2	892	1,358	52%	11,865.63	17,990.27
3	865	1,011	17%	9,899.08	11,871.04
4	881	1,103	25%	10,195.04	13,259.48
5	915	1,031	13%	10,278.94	12,316.39
Total	**934**	**1,263**	**35%**	**58,732.95**	**80,677.61**

An analysis of the share of public subsidies for all health services in 2001 and 2003 also shows the increasing share for public subsidies in the first and second quintiles (Figure 6.1). In contrast, the share for the subsidies in other income quintiles decreased after the UC policy was implemented. The first quintile had the highest share of the public subsidies in both years, while the third quintile had the lowest.

Figure 6.1: Share of public subsidies for all health services by income quintile in 2001 and 2003
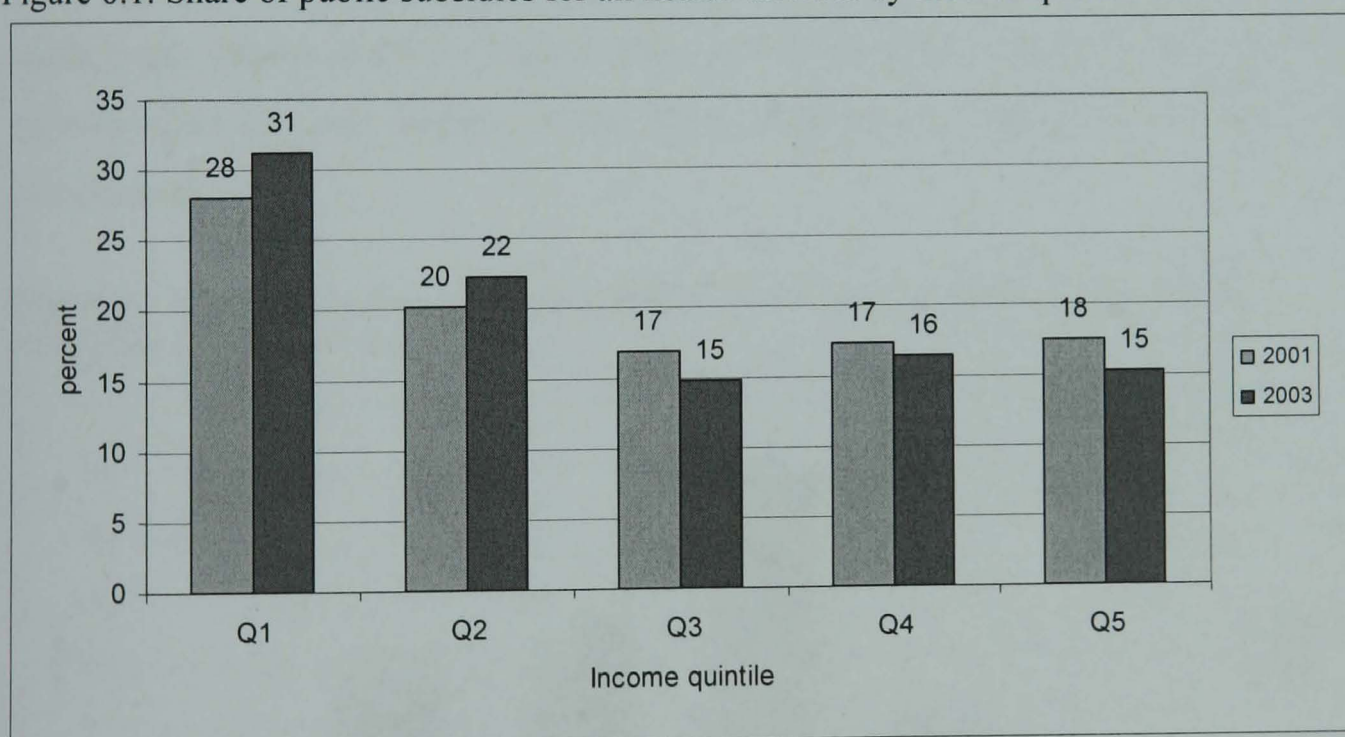
6.3.4 Geographical distribution of public subsidies prior to and after UC

This sub-section explores the distribution of net public subsidies across different geographical areas in Thailand. According to the government administrative structure

and cultural diversity, Thailand has been generally classified into five regions, namely North, Northeast, East, Central, and South. Given the regional variation in the distribution of health care infrastructure and health workforce, as well as economic developments, this sub-section employs this classification to assess changes in the geographical distribution of net public health subsidies prior to and after universal coverage. Given its distinctive health service infrastructure and economic development, Bangkok is categorized as another region in this analysis.

The share of net public subsidies on health differed from region to region, and per capita public subsidies by region changed significantly after the UC policy was implemented. The Northeastern region, which has the largest land area and highest number of poor, gained the largest share of net public health subsidies in both years. The Eastern region, the smallest area, had the lowest share. In 2003, Bangkok and the North were two regions where the share of public subsidies increased, while the other regions had a decrease (Figure 6.2). When public subsidies per capita were analyzed, it was found that the South gained the highest subsidy per capita in 2001, while the North had the highest subsidy per capita in 2003 (Figure 6.3). In addition, the increase in per capita public subsidy after UC was highest in the North, followed by Bangkok and the Northeast, respectively.

Figure 6.2: Geographical distribution of public subsidies for ambulatory services and hospitalization in 2001 and 2003

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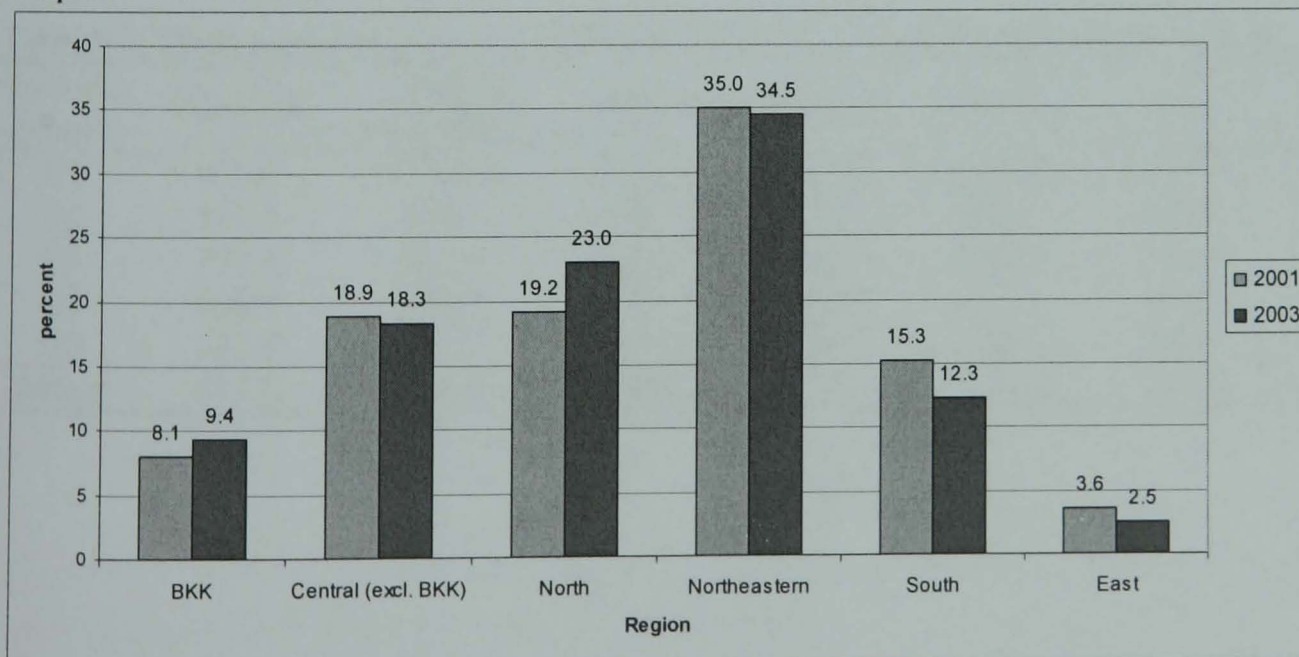
Figure 6.3: Per capita public subsidy by region in 2001 and 2003 (in 2001 prices)
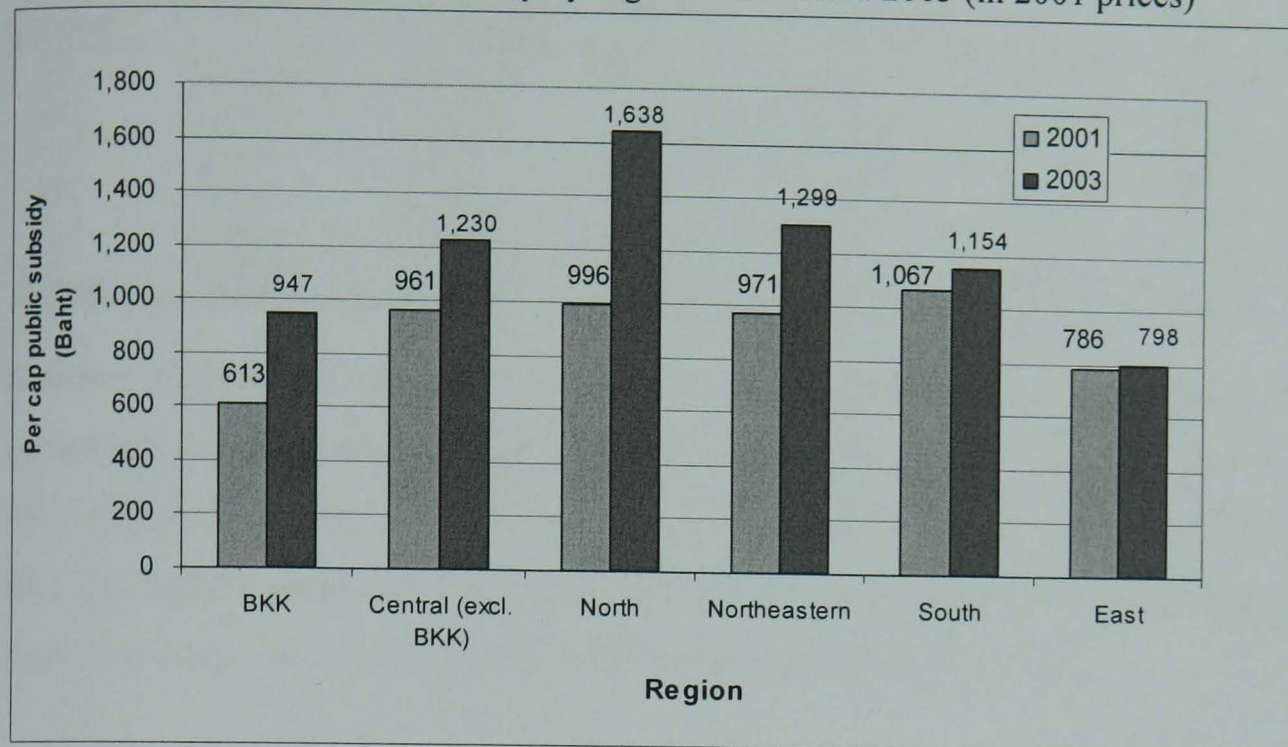
With a focus on the impact of the UC policy on the poorest (first) quintile, a further analysis of per capita public subsidy by income quintile and region in 2001 and 2003 was conducted. It was found that in 2001 the first quintile in the Central region had the highest public subsidy per capita, while their counterpart in Bangkok obtained the lowest (Table 6.7). After two years of UC implementation, the first quintile in Bangkok obtained the highest public subsidy per capita, while the poorest quintile in the Eastern region gained the lowest subsidy per capita (Table 6.8).

Table 6.7: Mean public subsidy per capita (Baht) by income quintile and region in 2001

Income quintile	Bangkok	Central (excl. BKK)	North	Northeast	South	East	Overall
Q1	930.1	1,720.4	1,145.6	957.8	1,433.0	1,410.4	1,076.1
Q2	551.4	859.4	894.1	892.2	993.1	665.8	892.1
Q3	773.4	927.0	839.8	822.1	912.5	810.2	865.3
Q4	696.9	842.9	1,001.5	1,066.0	957.4	629.3	881.2
Q5	527.4	939.7	1,299.4	1,475.2	1,402.7	820.7	915.2
Mean	**613.2**	**960.6**	**995.6**	**970.7**	**1,066.6**	**786.2**	**934.2**

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Table 6.8: Mean public subsidy per capita (Baht) by income quintile and region in 2003

Income quintile	Bangkok	Central (excl. BKK)	North	Northeast	South	East	Overall
Q1	2,230.4	2,210.6	2,167.1	1,476.7	1,710.9	1,340.0	1,734.4
Q2	1,144.2	1,440.6	1,517.6	1,394.9	1,226.3	1,286.0	1,392.0
Q3	861.9	1,151.9	1,325.7	923.9	893.1	804.3	1,036.5
Q4	665.7	1,162.3	1,522.1	1,431.8	1,087.4	667.4	1,130.3
Q5	1,029.8	901.8	1,540.4	1,134.7	1,233.9	540.3	1,056.4
Mean	**947.1**	**1,229.8**	**1,638.3**	**1,299.4**	**1,154.0**	**797.9**	**1,262.9**

Another analysis reveals that per capita public subsidies in all regions were pro-poor, except for the Northeastern region in 2001. Bangkok had the highest negative value for the concentration index, or the greatest pro-poor nature in 2001, while the Eastern region had the highest index in 2003 (Figure 6.4). In addition, the Eastern region had the highest increase in the pro-poor nature of public subsidy per capita.

Figure 6.4: Concentration index of public subsidies per capita by geographical area for 2001 and 2003

	Bangkok	Central (excl. BKK)	North	Northeast	South	East	Overall
2001	-0.0768	-0.0743	-0.0117	0.0343	-0.0133	-0.0687	-0.044
2003	-0.0807	-0.1513	-0.0898	-0.0635	-0.0616	-0.1834	-0.1233
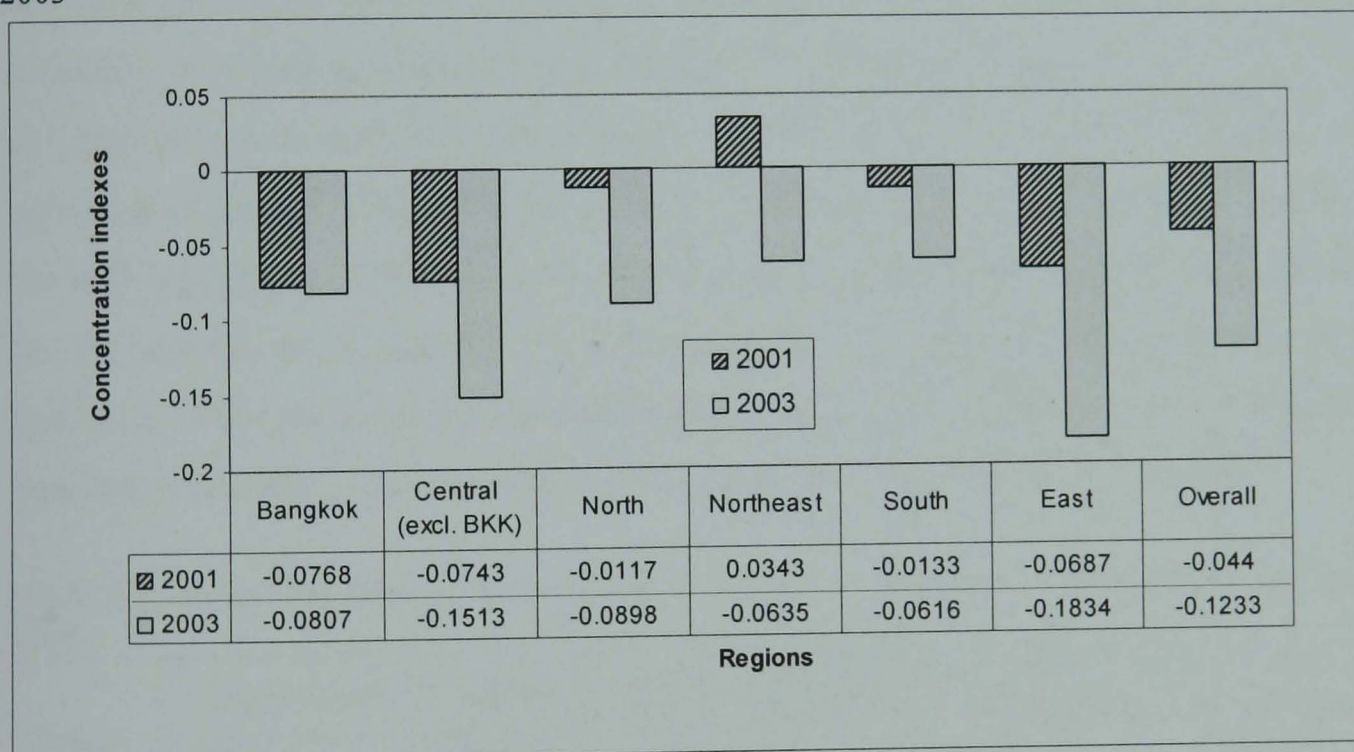
Regions

6.3.5 Effect of using regional unit subsidies on BIA

Inequality in the distribution of government health resources is usually a major factor contributing to disparities in benefit incidence by area and socio-economic group. An analysis of benefit incidence, using average unit subsidies for calculating benefit

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incidence, may mask inequality if government health resources are unevenly distributed. Demery (2000) supported the use of regional data to reflect variations in public subsidies. Moreover, evidence from South Africa showed that the choice of aggregated or disaggregated unit subsidies made a significant difference to BIA (Castro-Leal 1996). This sub-section, therefore, analyzes and compares the difference in benefit incidence in 2003 according to whether the analysis used average national unit subsidies or regional data.

In general, the costs of public health services vary throughout the country because of differences in infrastructure, human resources, and types of health service provision. The analysis of benefit incidence in this sub-section employs unit subsidies by region for health centres, community hospitals, and provincial/regional hospitals, which were derived from secondary data of the input and output monthly reports from public health facilities under the MOPH. Figures of unit subsidies for health services at university hospitals, other public hospitals, private clinics, and private hospitals were collected from existing literature and previous studies. For CSMBS, the different weights of unit subsidies of the UC scheme by health care level and region were applied to differentiate the unit subsidies of CSMBS at the national level. Details of different unit subsidies for the UC scheme and CSMBS by health care level and region are presented in Tables 6.9 and 6.10. The unit subsidies for SSS and UC scheme beneficiaries were assumed to be equivalent because these two schemes have similar provider payment methods.

Table 6.9: Mean unit subsidy for ambulatory service use by type of health facility and region in 2003

Region	Health centre		Community hosp		Provincial and regional hosp		Other public and university hosp		Priv clinics	Priv hosp
	UC & SSS	CSMBS	UC & SSS	CSMBS	UC & SSS	CSMBS	UC & SSS	CSMBS	SSS	SSS
North	64	102	326	516	515	816	757	1,201	120	515
Northeast	53	84	269	426	452	716	665	1,054	99	452
East	75	120	382	605	565	895	831	1,317	140	565
Central & BKK	67	107	343	543	559	886	822	1,303	126	559
South	62	99	315	499	551	873	810	1,285	116	551
Total	**61**	**97**	**310**	**491**	**525**	**832**	**772**	**1,224**	**114**	**525**

Table 6.10: Mean unit subsidy for hospitalization by type of health facility and region in 2003

Region	Community hosp		Provincial and regional hosp		Other public and university hosp		Private hospital	
	UC & SSS	CSMBS	UC & SSS	CSMBS	UC & SSS	CSMBS	SSS	CSMBS
North	5,216	10,598	9,787	19,886	13,629	27,692	9,787	19,886
Northeast	4,307	8,751	8,593	17,460	11,966	24,314	8,593	17,460
East	6,118	12,431	10,739	21,820	14,954	30,386	10,739	21,820
Central & BKK	5,489	11,153	10,616	21,570	14,783	30,038	10,616	21,570
South	5,040	10,241	10,476	21,286	14,588	29,641	10,476	21,286
Total	**4,960**	**10,078**	**9,974**	**20,266**	**13,889**	**28,221**	**9,974**	**20,266**

Table 6.11 shows the differences in the amount and share of net public subsidies gained by different income quintiles when comparing aggregated and regional unit subsidies. The use of regional unit subsidies did lead to a difference in the share of net public subsidies in some income quintiles, especially the fifth quintile. However, this would not have affected the ultimate conclusion on the change in the distribution of public subsidies between 2001 and 2003.

Table 6.11: Amount and share of public subsidies by income quintile in 2003 using aggregated and regional unit subsidies

Quintile	Public subsidies for ambulatory service and hospitalization			
	Using aggregated unit subsidy (million Baht)	Percent	Using regional unit subsidy (million Baht)	Percent
Q1	25,861.99	31	23,235.18	28
Q2	17,986.05	21	16,433.83	20
Q3	14,178.19	17	13,550.16	16
Q4	12,733.05	15	13,118.22	16
Q5	13,849.07	16	16,367.32	20
Total	82,704.72	100	82,704.72	100

6.3.6 Impact of using an asset index as a socio-economic parameter on BIA

This sub-section aims to explore differences in benefit incidence in 2003 based on whether or not income per capita or an asset index is used to group individuals into different quintiles. As stated earlier, the 2003 HWS questionnaire contains data on individual monthly income, housing characteristics, and a set of questions on household assets, all of which provide an opportunity to construct an asset index to categorize

individuals and households into different economic groups. Results of the factor scores and the mean of the top ten asset variables are presented in Table 6.12.

Table 6.12: Factor score and mean value of the top ten asset variables by asset quintile using the 2003 HWS

Asset variables	Factor score	Overall mean	Mean value of each asset quintile				
			Q1	Q2	Q3	Q4	Q5
Washing Machine	0.2745	0.47	0.03	0.14	0.42	0.80	0.95
Telephone	0.2615	0.33	0.01	0.06	0.20	0.51	0.89
Video Recorder	0.2443	0.62	0.15	0.40	0.69	0.87	0.96
Mobile Phone	0.2417	0.56	0.12	0.32	0.62	0.81	0.94
Refrigerator	0.2404	0.86	0.41	0.91	0.98	1.00	1.00
Electric Pot Boiler	0.2385	0.68	0.21	0.53	0.78	0.91	0.98
Air Conditioner	0.2365	0.14	0.00	0.02	0.11	0.63	0.61
Bed	0.2337	0.63	0.19	0.44	0.68	0.88	0.97
Water Boiler	0.2298	0.14	0.00	0.00	0.01	0.08	0.59
Electric Iron	0.2264	0.87	0.47	0.92	0.98	0.99	1.00

Note: The correlation between individual quintiles classified by the asset index and income per capita was 0.52, after analytical weights were applied.

Individuals in the 2003 HWS were categorized into different quintiles using the asset index, and health service use and public subsidies gained by different asset quintiles were calculated. Table 6.13 shows details of the total and share of public subsidies on health services by income and asset quintiles in 2003.

From Table 6.13, the distribution of public subsidies for all health services is quite similar. The first quintile obtained the highest share of net public subsidies, followed by the second quintile. However, the third quintile had the lowest share of net public subsidies when the income quintile was used, while the fifth quintile obtained the lowest share when the asset index was employed. The share of public subsidies differed most for the third quintile. The concentration index of the public subsidy for all health services by asset quintile was less pro-poor than that of using income quintile.

Table 6.13: Amount and share of public subsidies for ambulatory services and hospitalization by income and asset quintiles in 2003

Quintile	Net public subsidies for ambulatory and in-patient services in 2003			
	By income quintile (million Baht)	Percent	By asset quintile (million Baht)	Percent
Q1	25,874.63	31	24,569.18	30
Q2	18,442.29	22	16,985.33	20
Q3	12,169.31	15	16,547.60	20
Q4	13,592.64	17	12,924.99	16
Q5	12,625.85	15	11,677.63	14
Total	82,704.72	100	82,704.72	100
Concentration index	**-0.123**		**-0.039**	

In conclusion, these findings support the possibility for using the asset index as an alternative tool for classifying individual's socio-economic status in the analysis of benefit incidence, since results did not differ greatly.

6.4 Discussion and interpretation of research findings

This section presents a summary of research findings, data and methodological limitations in the analyses of benefit incidence prior to and after UC, general discussion on research findings, and conclusions of the impact of the UC policy on changes in benefit incidence.

6.4.1 Summary of research findings

In this chapter, the results from the analyses of benefit incidence showed an increase in the pro-poor nature of net public health subsidies by income quintile and geographical area after two years of UC implementation. Regarding ambulatory service use, the first quintile obtained the highest share of net public subsidies in both years, and also attained the highest increase in public subsidies per capita. The fifth and third quintiles had the lowest shares in 2001 and 2003, respectively. Regarding hospitalization, per capita public subsidy increased in all income quintiles, except the fifth category, and the second quintile had the highest increase, followed by the first quintile. The share of total public subsidies in 2003 showed a more pro-poor nature of the Thai health care system because of the significant increase in per capita public subsidies for the first and second quintiles compared to 2001. Though per capita public subsidies for other quintiles also increased, the share of these quintiles decreased after two years of UC implementation. Regarding geographical distribution, per capita public subsidy significantly increased in the North and the Northeast where the poor primarily reside. The first quintile in the Bangkok region obtained the highest public subsidy per capita in 2003, while that of the Eastern region had the lowest. The sensitivity analyses of choice of socio-economic group indicator (income per capita or an asset index), and use of national aggregated or regional unit subsidies, showed similar conclusions on the share of public subsidies by different quintiles.

6.4.2 Methodological and data limitations

As stated in Chapter 5, lack of a rigorous socio-economic parameter in the 2001 and 2003 HWS led to limitations in the analyses of health care use and benefit incidence prior to and after UC. The income brackets used in the 2001 HWS questionnaire and a shortage of other socio-economic parameters resulted in the use of the mid-point of the brackets to estimate household and individual monthly income in 2001. Total household income was derived by combining the income earned by every household member, and individuals were placed in different quintiles according to the amount of household income shared out to each household member by the modified-OECD equivalence approach. Using this approach, there would inevitably be some errors in categorizing individuals into different income quintiles in 2001. Also, the open-ended question on individual monthly income in cash and kind in the 2003 HWS could not adequately address the drawback of lacking a robust socio-economic parameter to group individuals into different income quintiles. These data limitations, therefore, led to some degree of uncertainty in the analyses of changes in benefit incidence prior to and after UC.

Another problem on the estimate of benefit incidence is the absence of the frequency of ambulatory service use in the 2001 HWS. Though the number of individuals utilizing ambulatory services more than once in two weeks prior to the interview tended to be low, this data limitation inevitably led to underreporting of ambulatory service use, and therefore fewer public subsidies gained by different income quintiles in 2001. In addition, an analysis of the 2003 HWS in Chapter 5 shows that individuals in poorer quintiles had a higher frequency of illness and ambulatory service use than richer categories. So, the absence of the frequency of ambulatory service use in the 2001 HWS is likely to have resulted in a less pro-poor nature of public subsidies for ambulatory care prior to UC than it tended to be.

The absence of a question on user charges paid for the last ambulatory service use in the 2001 HWS reduced the accuracy of the estimate on net public subsidies for ambulatory services prior to UC. It is likely that lack of out-of-pocket payment data would impact

the findings of benefit incidence in two different ways. On the one hand, if the amount of user fees per capita paid by those in the poorer quintiles to public health facilities was higher than that of the richer groups, then net public subsidies for ambulatory services in 2001 would be less pro-poor than presented. On the other hand, if the poor paid fewer user fees for ambulatory services than the rich, then the pro-poor nature of public subsidies for health would be greater than the findings. Analysis of the 2000 SES indicates that the average household health expenditure for ambulatory services of poorer households was less than that of richer groups. The average household health expenditure for ambulatory care from the 2000 SES ranged from 46 Baht per capita per month in the poorest decile to 571 Baht in the richest (Vasavid, Tisayatikom et al. 2005). Although the exact amount of user fees paid at government health facilities in the 2001 HWS was not quantifiable, the evidence from the 2000 SES suggests that if user fees had been deducted from public subsidies in BIA, net public subsidies for ambulatory services would have been even more pro-poor.

As stated previously in Chapter 5, another problem the 2001 HWS encountered was the limitation in choices of ambulatory service use and hospitalization in the 2001 HWS questionnaire which also led to some degree of inaccuracy in the analysis of benefit incidence. For example, the absence of a choice for university hospitals in the 2001 HWS questionnaire meant that health seeking behaviour at university hospitals had to be grouped with provincial or other public hospitals. The difference in unit subsidy between provincial or other public hospitals and university hospitals unavoidably led to uncertainty in the estimate of benefit incidence in 2001.

Another major impact on the analysis of benefit incidence is the accuracy in unit costs of health services provided by government health facilities and private providers receiving public subsidies from the government. As shown in sub-section 6.3.2 and 6.3.4, existing studies on unit costs of health services in public health facilities were very limited, and the analysis of benefit incidence in this chapter had to use many assumptions and estimations to compute unit costs of health services provided by public providers outside the MOPH and private health care providers. The main problem was the inability to

access secondary data on financial input and output of other public health facilities outside the MOPH (e.g. military and university hospitals) and private health facilities, while access to such data for public health facilities under the MOPH was not problematic. In addition, the estimate of unit costs of health services among different health insurance schemes in the analysis greatly relied on limited secondary data and many assumptions. These, therefore, led to limitations and uncertainty in the analysis of benefit incidence gained by beneficiaries of different health insurance schemes.

6.4.3 General discussion

From the research findings, the pro-poor nature of public subsidies on health in 2001 and 2003 can be explained by different patterns of health services used by richer and poorer quintiles. The analysis of health service use in the 2001 and 2003 HWS shows that the higher use rate by the poorer quintiles at health centres and community hospitals was a significant factor contributing to the pro-poor nature of public subsidies on health both prior to and after UC. Since the majority of the poor in Thailand reside in the rural areas, particularly in the North-eastern region, health centres and community hospitals are government health facilities that the poor can have a better access to health care and benefit from government health resources. Prior to UC, the poor could obtain public subsidies on health through targeting public health insurance schemes, namely the LIC and the VHC schemes, and after UC they gained public subsidies through the UC scheme which contracts the district-based health care network to provide health services for its beneficiaries. The considerable increase in per capita public subsidies of the first and second income quintiles in 2003 compared to other income categories (Table 6.6) reflects the success of the UC policy in providing more equitable distribution of public subsidies on health. It is noteworthy that though the pattern of ambulatory service use and hospitalization between the rich and the poor at provincial and regional hospitals tended to be more pro-poor after UC, health service use at these higher levels of health care slightly contributed to the pro-poor distribution of public subsidies due to a lower use rate per capita, compared to that of health centres and community hospitals.

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The different geographical distribution of public health facilities is another reason why those in the poorer quintiles utilized ambulatory services at health centres and community hospitals more frequently than the rich. In general, health centres and community hospitals serve as the main government health facilities providing primary and secondary health care at the sub-district and district levels where the poor primarily reside. In contrast, the rich can better access and utilize ambulatory services and hospitalization at provincial and regional hospitals, private clinics, and private hospitals, which are mostly located in urban areas. So the increase in public subsidies and the allocation of public resources to health centres and community hospitals where the poor had already derived significant benefits could increase public subsidies obtained by the poor and the disadvantaged. The strategy to promote the use of primary care through contracting PCU as gatekeepers also supported the re-allocation of government health resources to the poor in rural areas.

Changes in geographical distribution of public subsidies for all health services (ambulatory visits and hospitalization) between 2001 and 2003 show a considerable increase in per capita public subsidy of those in the North and Bangkok. An increase in health service use of people in these two regions tended to be the main factor resulting in the significant changes in per capita public subsidy in 2003 because the number of population in each region and unit subsidy for health service provision between 2001 and 2003 were quite similar (Table 6.2 and 6.3). Better access to government health services of the poor and those who were previously uninsured in Bangkok (Vasavid, Tangcharoensathien et al. 2004), and the high prevalence rate of HIV/AIDS in Bangkok and the Northern region of Thailand (WHO Regional Office for South-East Asia 2007), which requires more health service use of people in this region, tended to be main factors contributing to the significant increase in per capita public subsidy in 2003. It is noteworthy that findings from the geographical distribution of public spending on health in 2003, especially public subsidies for Bangkok, are likely to be under-estimated because of the absence of unit subsidy data for specialized health facilities and university hospitals in Bangkok.

From Table 6.7 and 6.8, a considerable increase in per capita public subsidy of the first income quintile in 2003 confirms the success of the UC policy in improving the distribution of public subsidies on health to the poor in all regions of the country. Although the Northeastern region gained the highest share of public subsidies on health in 2001, higher income quintiles obtained a larger share of such public subsidies and this resulted in a positive value of the concentration index in this region. However, after implementation of the UC policy, poorer quintiles in the Northeastern region gained a larger share of public subsidies which resulted in a negative value of the concentration index and a more pro-poor nature of the public subsidy distribution in 2003 (Figure 6.4). It should be noted that the UC policy helped improve the distribution of public subsidies in all regions to be more equitable in 2003, particularly in the Eastern and the Central regions.

In this analysis, there was no change in the conclusion of the distribution of public health subsidies by income quintile when the aggregate and regional unit subsidies were used for the estimate of benefit incidence. The first quintile consistently gained the highest share of net public health subsidies, followed by the second quintile; the distribution of public subsidies was still pro-poor. Moreover, using the asset index to categorize individuals into different quintiles did not provide a significant change in share of government health resources among different welfare categories.

The analysis of benefit incidence shows that not only the poor benefited from public health subsidies prior to and after UC, but those in richer quintiles also gained public subsidies, but to a smaller extent. Given that public health resources are scarce, many policy analysts and policy makers in developing countries prefer using a targeted approach to maximize the use of public health resources to achieve policy objectives of poverty reduction and improving equity. However, evidence shows that the targeted approach also faces the problem of resource leakage, while narrow targeting often incurs high hidden costs (Van de Walle 1998). In contrast, a universal approach generally results in equal opportunities and access to similar services, but often has high costs from waste and leakage of health resources. Therefore, the debate over whether a health sector

should employ targeted or universal coverage has been widely discussed (Health Financing Task Force 2007). However, results from the analysis of benefit incidence prior to and after UC show that the UC policy was more pro-poor than the previous situation even though the universal approach was used. Health financing arrangements of universal coverage in terms of using the PCU as the main contractor for providing health services, a comprehensive and generous benefit package, and the nationwide distribution of government health facilities, are likely to be the major factors contributing to the pro-poor nature of the UC policy in Thailand.

6.4.4 Conclusions

This chapter has shown that net public health subsidies for the Thai health care system were pro-poor prior to and after UC, and the pro-poor nature of the public subsidies was greater in 2003. The first quintile gained the highest share and highest per capita public subsidy in 2001 and 2003, while the third quintile had the lowest in both years. The increase in the negative values of the concentration indexes and geographical distribution support the research findings of the more pro-poor distribution of public subsidies after the UC policy was implemented. The continuous development of pro-poor strategies for health sector reform, the nationwide distribution of government health facilities to district and sub-district levels, and the design of health financing arrangements under the UC scheme, were all crucial factors contributing to the more pro-poor nature of public subsidies. Limitations in the secondary data of health service use in the HWS surveys and unit costs of health services led to a cautious interpretation of the BIA results.

CHAPTER SEVEN

EQUITY IN HEALTHCARE FINANCE AND FINANCIAL RISK PROTECTION PRIOR TO AND AFTER UNIVERSAL COVERAGE

7.1 Introduction

Health care finance in Thailand was greatly affected by the introduction of the new health financing strategies under the UC policy (Limwattananon, Tangcharoensathien et al. 2005; Tisayatikom, Patcharanarumol et al. 2007; International Health Policy Program 2007b). As stated in previous chapters, the financing strategies comprised: 1) changing provider payment from historical allocations to close-ended payments; 2) promoting the use of primary care by contracting a PCU to serve as the main contractor and gatekeeper; and, 3) removing financial barriers to health services through greatly increased general tax funding and introducing a nominal co-payment of 30 Baht per ambulatory visit or hospital admission. With these financing strategies, the main source for financing healthcare in Thailand has gradually shifted from individual out-of-pocket payments to public finance because the UC scheme covers more than 75% of the population and this scheme is mainly financed by general tax revenue (Tisayatikom, Patcharanarumol et al. 2007). Though beneficiaries of the UC scheme had to initially bear costs of co-payment, the nominal fee of 30 baht per health care visit was abolished by the military-appointed government in November 2006 due to its inability to prevent moral hazard, compared to supply-side interventions (Treerutkuarkul 2006).

Apart from the impact on health financing arrangements, evidence indicates that the UC policy also affected household spending on health. For example, a study on the impact of the UC policy on Thai households shows a decrease in household spending on health, especially in poorer deciles (Vasavid, Tisayatikom et al. 2004). An analysis of equity in health care finance demonstrates a reduction in the incidence of catastrophic health expenditure after the UC policy was implemented (Limwattananon, Tangcharoensathien et al. 2005). In addition, analyses of health service use in Chapter 5 and benefit incidence

in Chapter 6 indicate that individuals in poorer income quintiles could better access health services and benefited more from net public subsidies on health. Though the Thai health care system achieved universal coverage in 2002 and household spending on health tended to decrease, some Thai households still faced catastrophic health spending from medical care costs (Limwattananon, Tangcharoensathien et al. 2005; Limwattananon, Tangcharoensathien et al. 2007).

Given that the objectives of the UC policy are to ensure equitable access to health services and protect households from expensive medical care costs, an assessment of equity in overall health care finance prior to and after UC, along with the magnitude of households facing catastrophic health expenditure by income quintile, would reflect the effectiveness of the UC policy in health financing reform and financial risk protection.

7.2 Specific aims

The aims of this chapter are to:

a) explore equity in all types of household spending on health of different income quintiles prior to and after UC;

b) analyze the magnitude of households facing catastrophic health expenditure by income quintile prior to and after UC; and,

c) describe the impact of the UC policy on changes in equity of health care finance of the Thai health care system, household spending on health, and financial risk protection for households from medical care costs.

7.3 Methods

This was a secondary data analysis of the Socio-economic Survey (SES), a nationally representative and cross-sectional household survey on income, expenditure, and household socio-economic status. The SES is a biennial household survey comprising data on monthly income and expenditure, health expenditure, household debt and assets, ownership of durable and semi-durable goods, housing characteristics, and other

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household living conditions. To assess changes in equity in household spending on health, per capita expenditure of all types of household health payments by income quintile prior to and after UC was analyzed. Given that the UC policy was implemented in 2001, the 2000 SES was appropriate to use as the data source for an analysis of household spending on health and equity in health care finance prior to UC, and the 2002 SES was appropriate for an analysis of the situation after UC. Regarding household ability to pay, this study employed household income per capita adjusted using the modified OECD-equivalence scale as a means test to categorize households into different income quintiles.

In general, analysis of equity in health care finance comprises two stages of computation (O'Donnell, Doorslaer et al. 2008). The first is to compute the progressivity of each type of health care financing source. The second is to establish the overall progressivity of the system by weighting the progressivity of the separate health financing sources. Analysis of equity in each household health payment type can be assessed through the concentration index and the concentration curve. This should be assessed against the household ability to pay (either household per capita income or expenditure), which is usually presented as the Lorenz curve.

The Lorenz curve of household income or other measures of household ability to pay serves as a graphical representation of the cumulative distribution of household wealth. The Lorenz curve graphs on the x-axis using the cumulative percentage of households ranked by living standards, starting from the poorest, and on the y-axis the cumulative percentage of household income or expenditure corresponding to each cumulative percentage of the distribution of the living standard variable. In this analysis, the sampled households were ranked on the x-axis by household income per capita adjusted by a modified-OECD equivalence scale, and on the y-axis by cumulative household income.

The progressivity of health care finance was assessed graphically through a comparison of the concentration curve of health payments, with the Lorenz curve of household

income representing household ability to pay. Both curves were plotted against the cumulative proportion of the sampled households ranked by household income per capita. Typically, the Lorenz and health payment concentration curves are proportional if they coincide. The concentration curve lies outside the Lorenz curve if the health payment is progressive, and vice versa for a regressive health payment.

The Kakwani index, another indicator for measuring the progressivity of health care payments, is defined as twice the area between the concentration curve of health payment and the Lorenz curve. The index can be calculated as, $\pi_K = C - G$, where C is the health payment's concentration index and G is the Gini coefficient of household income or expenditure. The value of the Kakwani index (π_K) ranges from -2 to 1. A negative Kakwani index value indicates the regressive nature of health care payments, and the concentration curve lies inside the Lorenz curve. In contrast, a positive value indicates the progressive nature of health care payments, and its concentration curve lies outside the Lorenz curve.

In this chapter, catastrophic health expenditure is defined as a situation where household out-of-pocket payments for health are higher than 10% of household income. This threshold payment has been widely used because it is accepted that households having healthcare payments above this level would have to cut food consumption, go into debt, and become impoverished (Prescott 1999; Ranson 2002). Though there is another indicator of catastrophic health expenditure using 'household capacity to pay', where household payments for basic consumption needs such as food are firstly deducted from household income or total expenditure (World Health Organization 2000), this approach is problematic for analyzing the progressivity of health care finance (O'Donnell, van Doorslaer et al. 2008).

It should be noted that at the time the research was planned, there were no available studies on financing incidence prior to and after universal coverage in Thailand. Since then, however, the author was involved in several studies on the impact of the UC policy on equity in health care finance and the Thai health care system led by Dr. Viroj

Tangcharoensathien, Dr. Supon Limwattananon, and other researchers (Limwattananon, Tangcharoensathien, Prakongsai 2005; Limwattananon, Tangcharoensathien, Prakongsai 2007). This chapter, in part, replicates those analyses, but with some differences compared with already published work, namely:

- analyzing various types of household payments for health (i.e. direct and indirect tax payments, out-of-pocket payments, social health insurance contributions, private insurance premiums), while the other studies merely focused on household out-of-pocket payments;

- using a modified-OECD equivalence scale to adjust household size in producing per capita household income; other studies used the total number of household members; and,

- using monthly household income per capita adjusted with the modified OECD-equivalence scale as the socio-economic parameter and the indicator of household ability to pay; Limwattananon et al (2005) used household consumption expenditure per capita as the socio-economic parameter.

7.3.1 Types of household health care payments and data sources

Typically, an assessment of equity in health care finance requires examination of all sources of health care funding and should include household payments that are not exclusively for health care. As shown in Chapter 3, the Thai health care system is financed by a mixture of health care financing sources, namely general tax, social health insurance contributions, out-of-pocket payments, and private health insurance premiums. Therefore, to assess the impact of the UC policy on equity in health care finance, the analysis of household health payments for different income quintiles should include:

- direct taxes;

- indirect taxes;

- household out-of-pocket payments for health;

- social health insurance contributions; and,

- private health insurance premiums.

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The SES contained data on household income and health-related expenditure that could be used for the analysis of equity in health care finance and household spending on health by income quintile. Regarding household income, data on the variety of cash income (e.g. basic salary, bonuses, over-time earnings, profits from business, interest received from bank accounts, etc.) earned by all household members during the last month and last year were collected. In addition, in-kind income from agricultural products of households located in rural areas, self-employed businesses, and household produced commodities, was assessed as household earnings. Regarding health related expenditures, information about out-of-pocket payments for healthcare and social health insurance contributions in the previous month, and household payments for direct taxes and private health insurance premiums in the previous year, were recorded. Data on household consumption expenditure for various kinds of goods and services during the month prior to the interview were also available for the estimate of household indirect tax payments. Moreover, data on changes in household assets and liabilities, ownership of durable and semi-durable goods, housing characteristics, and household living conditions were also collected. The number of sampled households in the 2000 and 2002 SES were 24,747 and 17,489 households, respectively.

Information about direct tax payments is located in Category 900, Record 06 of the SES and comprises household payments for personal income taxes, and other direct taxes such as house and land tax during the previous year. Before 2004, those who with annual incomes of less than 80,000 Baht were exempt from paying income tax; this income tax exemption ceiling was later raised to 100,000 Baht in 2004. In Thailand, the personal income tax rate is progressive, ranging from 0% to 37% (Table 7.1). In this analysis, expenditure for personal income tax by all household members and other direct tax payments such as house and land taxes, were combined and calculated to determine the household direct tax payments.

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Table 7.1: Personal income tax rates in Thailand

Taxable income (Baht)	Tax rate (%)
0 – 80,000 (before 2004)	Exempt
0 – 100,000 (2004 onwards)	Exempt
100,001 – 500,000	10
500,001 – 1,000,000	20
1,000,001 – 4,000,000	30
4,000,001 and over	37

Source: The Revenue Department, Ministry of Finance, Thailand

Value Added Tax (VAT), or taxes imposed on the value added of each stage of production and distribution of goods and services in Thailand, comprised the majority of indirect tax. VAT was first introduced in Thailand in 1992, and traders with gross incomes of 300,000 Baht in any single month or more than 1.8 million Baht per year are required to register for VAT. The VAT tax rate has been fixed at 7% since its introduction. Goods and services exempt from VAT include:

- unprocessed agricultural products and related goods such as fertilizers, animal feeds, pesticides;

- newspapers, magazines, and textbooks;

- healthcare services provided by government and private hospitals as well as clinics;

- educational services provided by government and private schools and other recognized educational institutions;

- medical and auditing services, litigation services and other similar professional services;

- rent of immovable property;

- cultural services such as amateur sports, libraries, museums and zoos;

- services related to employment of labour, research and technical services and services of public entertainers; and,

- other services such as religious and charitable services, services of government agencies and local authorities.

With this list of VAT exemptions, data on household consumption expenditure in the SES were classified into two groups: VAT-exempt and VAT-taxable goods and services. The former (e.g. expenditures for education and textbooks, renting properties, transportation and cultural services, household expenditures on health, and payments for private health insurance premiums) was deducted from total household consumption expenditure. Then, household indirect tax payments were estimated at 7% of the rest of household consumption expenditure which was presumed to be VAT-taxable goods and services.

Regarding household out-of-pocket payments for health care, the SES contained data on household payments for health care during the previous month in three categories: self-medication for medical supplies; expenditure for out-patient services; and expenditure for in-patient care. Information about different levels of health care (e.g. health centre, community or provincial hospital, or private hospital) and types of health facility (public or private facility) was also obtained for utilization of out-patient and in-patient health services. As stated earlier, household expenditure for health care is exempt from tax payments. Therefore, in this analysis household expenditure in these three categories was combined to determine household out-of-pocket payments for healthcare during the previous month.

Information about private health insurance premiums was available in Group 930, Record 06 of the SES. This was recorded as expenditure for life insurance premiums of private insurance companies, and cremation fees (which are widely organized by many communities in the rural areas of Thailand). Household expenditure for these two items was identified as expenditure for private health insurance premiums.

Information about social health insurance contributions in the SES was available as Code 4 in Group 920 of Record 06. SSS beneficiaries who earned more than 1,650 Baht per month had to pay monthly contributions at a rate of 5% of their basic salary to the Social Security Fund, while SSS beneficiaries who earned less than that benchmark were exempt from SHI contributions. The Fund collected the social insurance contributions

from three parties: employers, employees, and the government. Contributions from SSS beneficiaries are capped at 15,000 Baht per month or 180,000 Baht per year.

Finally, all types of household payments for health were computed by income quintile both prior to and after UC, using the 2000 and 2002 SES.

7.3.2 Measuring progressivity by type of household payments for health

As stated earlier, the concentration index and concentration curve are widely used for quantifying the degree of income-related health inequality, and in this chapter, they were employed as measures to assess the progressivity of each type of household health payments. Similar to the Lorenz curve, in this analysis the concentration curve of each type of household health payment graphs on the x-axis the cumulative percentage of households ranked by income per capita, and on the y-axis the cumulative percentage of the distribution of household health payments per capita. The concentration index is defined as twice the area between the concentration curve and the line of equality (the 45-degree line running from the bottom-left corner to the top-right).

To analyze equity in health care finance, the concentration curve of household spending on each type of household health payment and the Lorenz curve of household income were analyzed and compared in order to demonstrate the redistributive impact of household healthcare payments. The Kakwani index, which shows a difference between the Gini coefficient of household income and the concentration index of household payment for health, was calculated. Changes in the concentration and Kakwani indexes for each type, as well as overall household health payments prior to and after UC, were also calculated. In addition, changes in the incidence of households facing catastrophic health expenditure by income quintile were investigated.

7.3.3 Measuring catastrophic health expenditure and impoverishment

In this analysis, household out-of-pocket payments for health in excess of 10% of household income were used as an indicator for identifying households facing catastrophic health expenditure. The share of households facing catastrophic health expenditure by income quintile prior to and after UC, in 2000 and 2002, was analyzed. In addition, the distribution of household health expenditure as a percentage of household income in 2000 and 2002 was estimated.

7.4 Results

In this section, results from the secondary data analyses of the 2000 and 2002 SES are presented in eight sub-sections including: 1) monthly household income; 2) direct tax payments; 3) indirect tax payments; 4) out-of-pocket payments for health; 5) social health insurance contributions; 6) private health insurance premiums; 7) the progressivity of overall health care finance; and, 8) households facing catastrophic health payments. Analyses of these eight sub-sections are presented by income quintile and compared using the situation prior to and after UC in 2000 and 2002, respectively. The Lorenz curves of household income in 2000 and 2002 are presented in sub-section 1, and the concentration curves of household health payments in both years are presented in sub-sections 2-6.

7.4.1 Monthly household income

Analyses of monthly household income from the 2000 and 2002 SES show a large gap between the first and the fifth quintiles and an increase in nominal household income in all income quintiles in 2002. The ratio of household income between the first and the fifth quintile was approximately 1:11 in both years (Table 7.2). However, the first quintile had the highest rate of increase in household income from 2000 to 2002, while the fourth quintile had the lowest.

Table 7.2: Mean monthly household income and percent changes by income quintile in 2000 and 2002

| Income quintiles | Mean monthly household income (Baht per month) | | % change |
	2000	2002	
1	3,284.93	3,534.53	7.6
2	5,900.70	6,267.41	6.2
3	9,198.33	9,517.50	3.5
4	14,426.42	14,777.99	2.4
5	36,432.94	38,590.78	5.9
Overall	11,987.63	13,414.99	11.9

The Lorenz curves and Gini coefficient of monthly household income indicate that household income in Thailand was regressive in 2000 and 2002. The Lorenz curves lay below the 45-degree line of equality and the Gini coefficient showed a considerable positive value in both years (Figure 7.1). However, a very small decrease in the value of the Gini coefficient of household income meant that household income in 2002 was slightly less inequitable than that in 2000.

Figure 7.1: Lorenz curve and the Gini coefficient of household income in 2000 and 2002

Gini coefficient = 0.4980   Gini coefficient = 0.4892
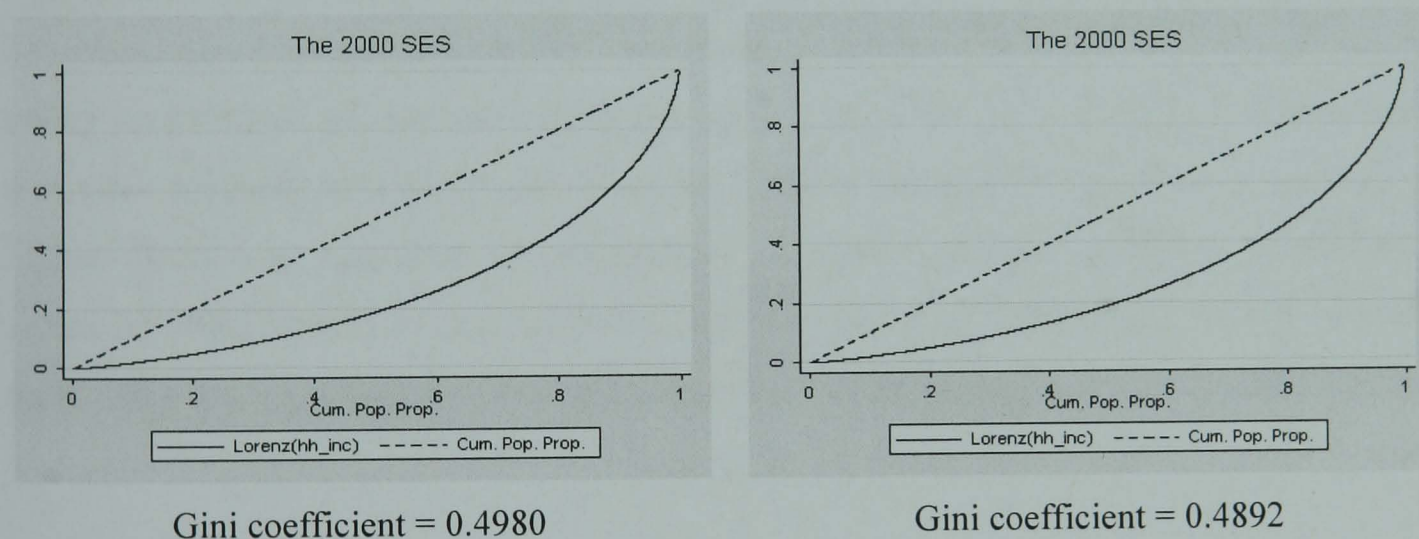
7.4.2 Direct tax payments

Analyses of household direct tax payments using the 2000 and 2002 SES show that Thai households paid a small amount of direct taxes to the government. In both years, the first quintile had the least payment for direct taxes, while the fifth quintile had the highest (Table 7.3). Households in all income quintiles, except the fifth quintile, spent on average less than 1% of their household income on direct tax payments. In 2002, the

second quintile had the highest rate of increase in direct tax payments compared to 2000, followed by the fifth quintile. Other quintiles had a decrease in direct tax payments in 2002.

Table 7.3: Mean direct tax payment and percent changes by income quintile in 2000 and 2002

Income quintiles	Mean direct tax payment (Baht)			As % of monthly household income	
	2000	2002	% change	2000	2002
1	0.40	0.21	-48	0.01	0.01
2	1.04	1.49	43	0.02	0.02
3	5.22	2.44	-53	0.06	0.03
4	29.02	21.88	-25	0.20	0.15
5	382.53	412.07	8	1.05	1.07
Overall	66.18	76.18	15	0.55	0.57

The concentration curves of direct tax payments lay outside the Lorenz curves in both years which means that household direct tax payment in Thailand was progressive in both 2000 and 2002. This is confirmed by positive values of the Kakwani index in both years (Figure 7.2). The higher positive value of the Kakwani index in 2002 indicates that household direct tax payment in 2002 was more progressive than that in 2000. Given the policy on personal income tax exemption for the poor, the more progressive household direct tax payment was likely caused by an increase in monthly income and subsequent higher direct tax payments of households in higher income quintiles. In addition, increased effectiveness of tax collection from the Revenue Department may be another factor affecting increased direct tax payments for the fifth quintile.

Figure 7.2: Lorenz and direct tax payment concentration curves, including the concentration index and Kakwani index in 2000 and 2002

The 2000 SES
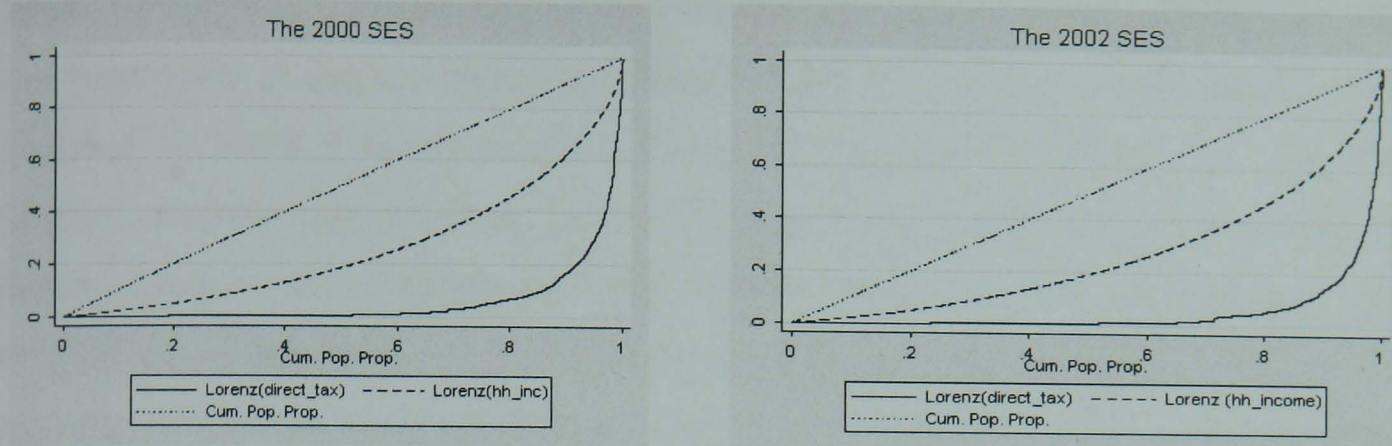
Concentration index = 0.8893

Kakwani index = 0.3913

The 2002 SES

Concentration index = 0.9051

Kakwani index = 0.4159

7.4.3 Indirect tax payments

Analyses of VAT-taxable household consumption expenditures in the 2000 and 2002 SES show a similar picture of household payments for indirect tax by income quintile for both years. Though the first quintile paid the least amount of indirect tax, households in this quintile on average had the highest percentage share of indirect tax payments when compared to household income for both years (Table 7.4). In contrast, the fifth quintile had the lowest percentage share of indirect tax payments to household income. In 2002, the fifth quintile had the highest rate of increase in household indirect tax payments, approximately 10%, while other quintiles had a minimal change of between 0-3%. The higher ability to pay and greater consumption of goods and services of the fifth quintile are likely to be the main reasons for the increase in indirect tax payments in 2002.

Table 7.4: Mean indirect tax payments and percent changes, and as a percentage of household income by income quintile in 2000 and 2002

Income quintiles	Mean indirect tax payment (Baht)			As % of household income	
	2000	2002	% change	2000	2002
1	84.83	84.68	-0.2	2.58	2.40
2	121.94	123.08	0.9	2.07	1.96
3	178.65	179.29	0.4	1.94	1.88
4	257.85	265.84	3.1	1.79	1.80
5	583.06	641.96	10.1	1.60	1.66
Overall	216.96	241.06	11.1	1.81	1.80

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In both 2000 and 2002, the indirect tax payment concentration curves lay inside the Lorenz curves, which means household payments for indirect taxes in 2000 and 2002 were regressive. A slightly higher concentration index of indirect tax payments in 2002 compared to 2000 indicates a more progressive nature of indirect tax payments. However, a nearly zero Kakwani index value indicates that the concentration curve for household indirect tax payments coincided with the Lorenz curve. A comparison of 2000 and 2002 shows that differences in the Kakwani and concentration indexes of indirect tax payments are similar to the difference in the Gini coefficient for the same two years. This means there was a minimal change in the progressivity of household indirect tax payments between these two years. The difference in the Gini coefficient between 2000 and 2002 partially led to the difference in the Kakwani indexes of indirect tax payments.

Figure 7.3: Lorenz curve and indirect tax payment concentration curve, including the concentration index and Kakwani index in 2000 and 2002

Concentration index = 0.4016   Concentration index = 0.4201

Kakwani index = -0.0964   Kakwani index = -0.0691
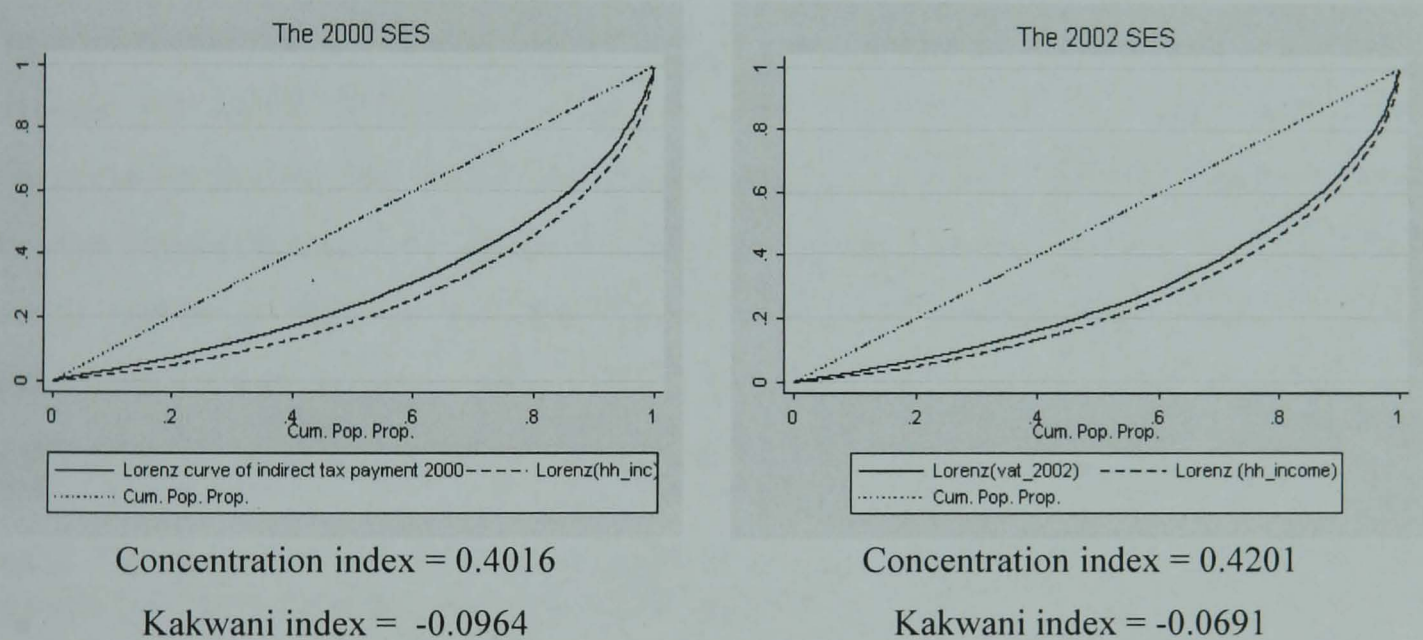
7.4.4 Household out-of-pocket payments for healthcare

Results from the analyses of the 2000 and 2002 SES show a decrease in household out-of-pocket payments for health in all income quintiles, except the fifth category. The first quintile had the highest decrease in out-of-pocket payments, followed by the third and second quintiles, respectively (Table 7.5). The gap in out-of-pocket payments as a percentage of household income between the first and fifth quintiles decreased from

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2.03% (3.82 - 1.79%) in 2000 to 0.94% (2.74 - 1.80%) in 2002. However, the first quintile still had the highest percentage share of out-of-pocket payments in household income, which meant that household out-of-pocket payments for health were regressive in both years.

Table 7.5: Mean household out-of-pocket payment and percent change by income quintile in 2000 and 2002

Income quintiles	Mean out-of-pocket payment (Baht)			As % of household income	
	2000	2002	% change	2000	2002
1	125.35	96.67	-23	3.82	2.74
2	158.45	147.79	-7	2.69	2.36
3	227.99	196.24	-14	2.48	2.06
4	301.10	292.23	-3	2.09	1.98
5	653.43	692.91	6	1.79	1.80
Overall	263.30	266.08	1	2.20	1.98

The concentration and Kakwani indexes show a less regressive household out-of-pocket payment for health after the UC policy was implemented. In both years, the concentration curves lay inside the Lorenz curves, and the Kakwani indexes have negative values (Figure 7.4). However, the gap between the concentration index and the Lorenz curves in 2002 is less than that in 2000, and the Kakwani index in 2002 demonstrates a less negative value, which means household out-of-pocket payments for health after UC were less regressive, compared to 2000.

Figure 7.4: Lorenz curve and out-of-pocket payment concentration curve, including the concentration index and Kakwani index in 2000 and 2002

Concentration index = 0.3478

Kakwani index = -0.1502

Concentration index = 0.4137

Kakwani index = -0.0755

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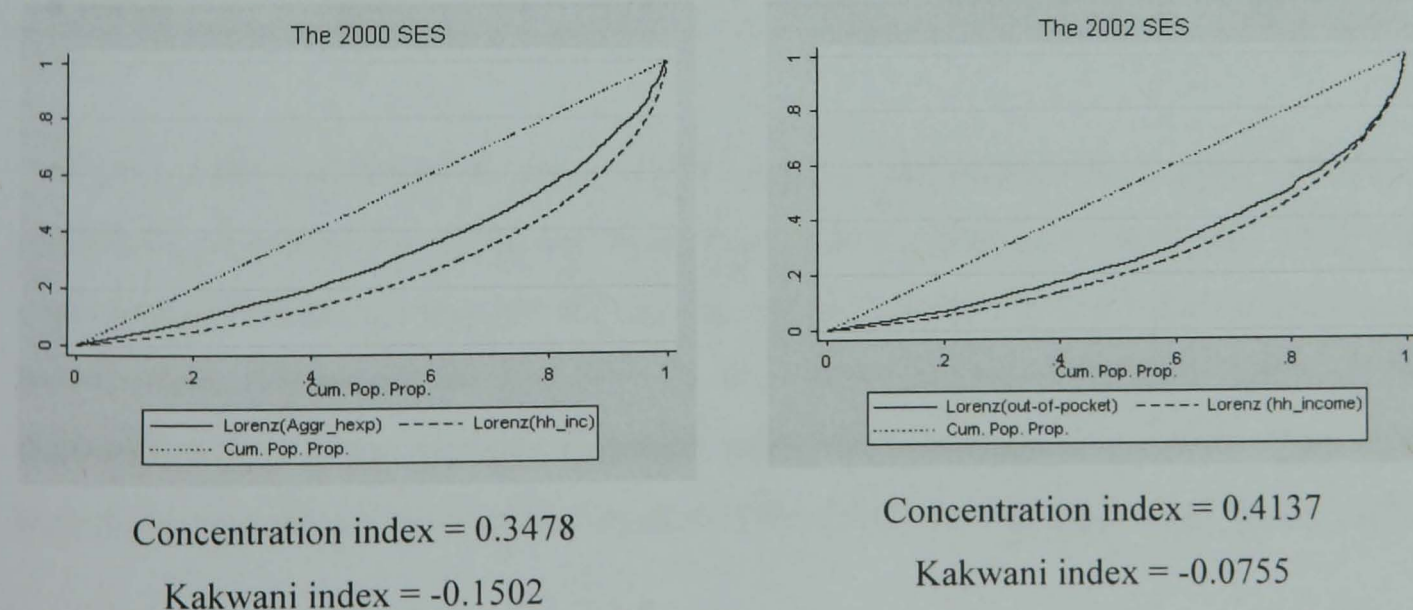
7.4.5 Social health insurance contributions

Analyses of social health insurance contributions in the 2000 and 2002 SES show that the fifth quintile paid the highest amount of social health insurance contributions, while the first quintile paid the least (Table 7.6). Household payments for social health insurance contributions in 2002 increased in all income quintiles, compared to 2000, with the second quintile having the highest rate of increase, followed by the first quintile. These patterns can be explained by the extension of the social health insurance scheme which covered enterprises with employees more than 10 workers in 1994, to more than five in 2001, and finally to more than one worker in 2002 (Tangcharoensathien, Prakongsai et al. 2005). Most low-earning workers were employed in small enterprises. However, the contribution as a percentage of household income was less than 1% in all income quintiles in both years because the share of SSS beneficiaries was approximately 9% of the total population and most of them were in higher income quintiles (Chapter 5).

Table 7.6: Mean social health insurance contribution and percent change by income quintile in 2000 and 2002

Income quintiles	Mean social health insurance contribution (Baht)			As % of household income	
	2000	2002	% change	2000	2002
1	1.24	1.93	56	0.04	0.05
2	7.44	12.07	62	0.13	0.19
3	28.82	34.70	20	0.31	0.36
4	69.06	82.79	20	0.48	0.56
5	162.95	174.30	7	0.45	0.45
Overall	44.27	55.28	25	0.37	0.41

Analysis of the concentration curves and Kakwani indexes show a progressive nature of household payments for social health insurance contributions in 2000 and 2002. The concentration curves lay outside the Lorenz curves in both years, with positive Kakwani index values. However, the gap between the concentration and Lorenz curves in 2002 decreased with a lower positive Kakwani index value, compared to 2000. This means household payment of social health insurance contributions was less progressive in 2002.

Figure 7.5: Lorenz curve and social health insurance concentration curve, including the concentration index and Kakwani index in 2000 and 2002

The 2000 SES

Concentration index = 0.6630

Kakwani index = 0.1650

The 2002 SES

Concentration index = 0.6013

Kakwani index = 0.1121
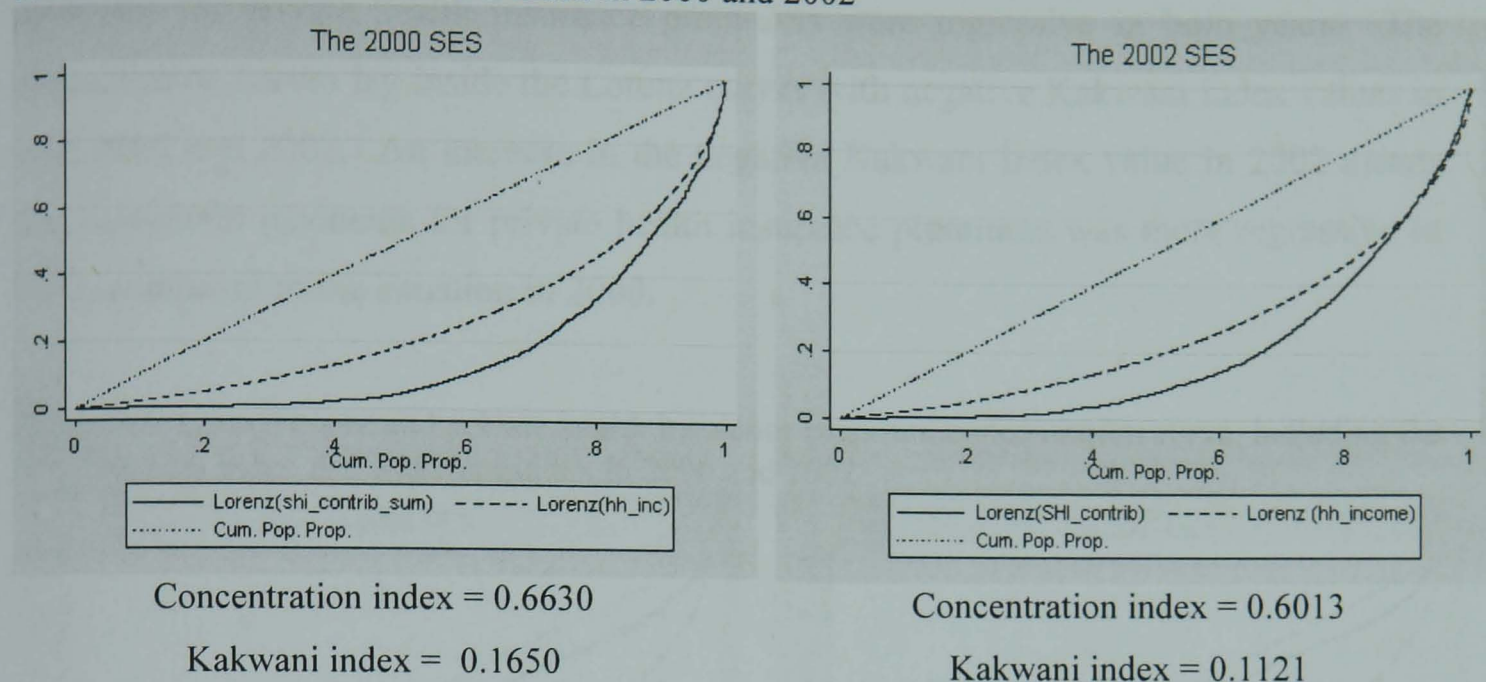
7.4.6 Private health insurance premiums

Results from the analyses of the 2000 and 2002 SES show that mean household payment for private health insurance premiums did not vary greatly between the two years of analysis. In both years, expenditure for private health insurance premiums as a percentage of household income was highest in the first income quintile, while that in the fifth quintile was lowest (Table 7.7). In 2002, the third quintile had the highest increase in household payments for private health insurance premiums, followed by the first and second quintiles. In contrast, household payments for private health insurance premiums in the fourth and fifth quintiles decreased in 2002.

Table 7.7: Mean household payment for private health insurance premiums and percent change by income quintile in 2000 and 2002

Income quintiles	Mean household payment for private health insurance premiums (Baht)			As % of household income	
	2000	2002	% change	2000	2002
1	74.86	81.71	9	2.3	2.3
2	91.70	95.57	4	1.6	1.5
3	83.19	92.96	12	0.9	1.0
4	88.27	80.14	-9	0.6	0.5
5	160.35	145.67	-9	0.4	0.4
Overall	95.75	97.48	2	0.8	0.7

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The concentration curves and Kakwani indexes in 2000 and 2002 confirm that household payments for private health insurance premiums were regressive in both years. The concentration curves lay inside the Lorenz curves with negative Kakwani index values in both 2000 and 2002. An increase in the negative Kakwani index value in 2002 means that household payments for private health insurance premiums was more regressive in 2002, compared to the situation in 2000.

Figure 7.6: Lorenz curve and private health insurance premium concentration curve, including the concentration index and Kakwani index in 2000 and 2002

Concentration index = 0.1357   Concentration index = 0.0986

Kakwani index = -0.3623   Kakwani index = -0.3906
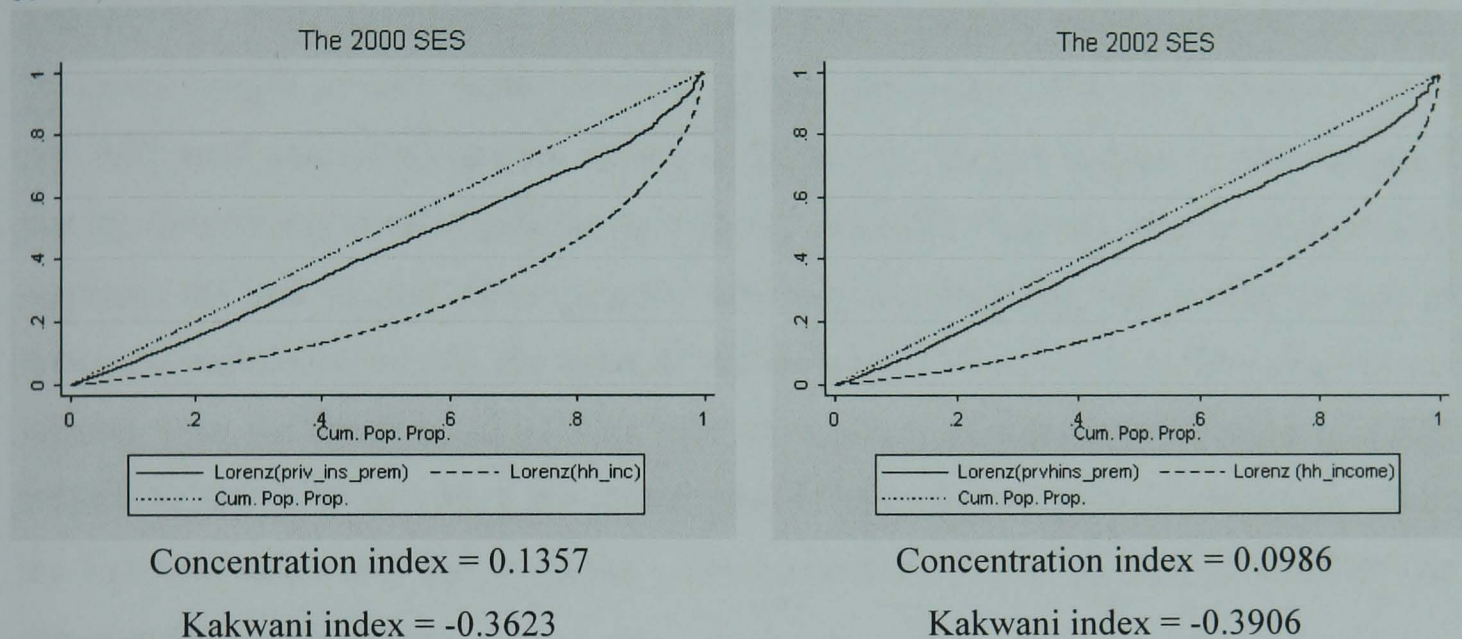
7.4.7 Equity in overall health care finance prior to and after UC

The progressivity of overall health financing can be measured by a weighted average of the Kakwani indexes for the sources of health care finance, where weights are equal to the proportion of total payments accounted for by each financing source (O'Donnell, van Doorslaer et al. 2008). Thus, equity in overall health care finance depends on the progressivity of the different sources of finance and on the proportion of revenue collected from each type of these health financing sources.

An analysis of the Thai National Health Accounts (NHA) in 2001 showed that general government revenues from tax and non-tax sources accounted for 55.5% of overall health care finance, followed by household out-of-pocket payments of 33.7% for total health

expenditure (International Health Policy Program 2007a). The share of social health insurance contributions and private health insurance premiums was 5.3% and 5.6%, respectively. Data on the national income of Thailand analyzed by the National Accounts Office of the National Economic and Social Development Board (NESDB) showed that indirect tax comprised 61% of the general government revenues in 2001, which is equivalent to 31% of total health care finance (National Accounts Office 2006). The share of corporate taxes, personal income tax, and income from property and entrepreneurship, in general government revenues was 18%, 11.6%, and 6.5%, respectively. With these figures of health care finance and general government revenues, the macro-weight of each health financing source and overall Kakwani indexes in 2000 and 2002 were calculated and are shown in Table 7.8. In this analysis, it was assumed that the distribution of other general government revenues without Kakwani indexes (e.g. corporate tax and income from property and entrepreneurship) was similar to that of direct and indirect taxes. So, the adjusted macro-weight of indirect tax, for example, was inflated from its actual value of 0.310 for all health care finance to a value of 0.502 (=[31.0/34.3]*0.555) to reflect the distribution of other government revenues for which the Kakwani index was not available. The same process was applied to calculate the macro-weight of direct tax.

Results from the analysis of the equity of overall health care finance show that the negative Kakwani index value for overall health care finance decreased from -0.0898 in 2000 to -0.0540 in 2002, which means that health care finance in Thailand was less regressive after the UC policy was implemented.

Table 7.8: Share and Kakwani index by source of overall health care financing in 2000 and 2002

Health financing source	Share of health care finance *	Kakwani index of health payment		Macro-weights
	2001	2000	2002	
General government revenues	55.5			
• Direct tax	3.3	0.3913	0.4159	0.053
• Indirect tax	31.0	-0.0964	-0.0691	0.502
• Corporate tax	9.2			
• Income from property and entrepreneurship	5.9			
• Others	6.1			
SHI contributions	5.3	0.1650	0.1121	0.053
Private health insurance premiums	5.6	-0.3623	-0.3906	0.056
Household OOP	33.7	-0.1502	-0.0755	0.337
Total	100.0			1.000
Kakwani index for overall health finance		**-0.0898**	**-0.0540**	

Source: * General government revenue in Thailand 1999-2006 (National Accounts Office 2006) and National Health Accounts in Thailand 1994-2001 (International Health Policy Program 2007a)

7.4.8 Households facing catastrophic health expenditure in 2000 & 2002

Table 7.9 presents the share of households having different levels of out-of-pocket payments for health compared with household income in 2000 and 2002. With catastrophic health expenditure defined as out-of-pocket payment for health over 10% of household income, it was found that households in Thailand facing catastrophic health expenditure decreased from 6.11% in 2000 to 4.65% in 2002. Moreover, the number of households with a high percentage of out-of-pocket payments for health tended to decrease in 2002.

Table 7.9: Share of households of different levels of out-of-pocket payments for health in 2000 and 2002

Out-of-pocket payments as % of household income	Share of households having different levels of out-of-pocket payments for health	
	2000	2002
0-5%	86.16	89.31
6-10%	7.73	6.04
11-25%	4.49	3.28
26-50%	1.16	1.05
> 50%	0.46	0.32

Analysis of households with out-of-pocket payments over 10% of household income by income quintile show that the share of households facing catastrophic costs of illness decreased in all income quintiles, except the fourth category (Table 7.10). The first quintile had the highest share of households facing catastrophic health expenditure in both years, while the fourth and fifth quintiles had the lowest share in 2000 and 2002, respectively. On average, the share of households facing catastrophic spending on health decreased by approximately 24% from 2000 to 2002. The first quintile had the highest rate of decrease in the proportion of households facing catastrophic health expenditure, followed by the fifth and the second quintiles.

Table 7.10: Share of households facing catastrophic health expenditure by income quintile in 2000 and 2002

Income quintiles	Percentage of households having out-of-pocket payments for health over 10% of household income		% change
	2000	2002	
1	9.97	5.61	-44%
2	5.41	5.02	-7%
3	4.82	4.81	0%
4	3.79	3.98	5%
5	4.26	3.41	-20%
Overall	6.11	4.65	-24%

7.5 Discussion

This section presents a summary of research findings, data and methodological limitations in the analyses of equity in health care finance prior to and after UC, and a general discussion about the research findings, especially focusing on the impact of new

health financing arrangements under the UC policy overall, as well as for each source of health care finance.

7.5.1 Summary of research findings

In this chapter, the results from the analyses of equity in health care finance prior to and after universal coverage showed a progressivity in terms of changes in the Kakwani index for each health financing source. After implementation of the UC policy, household direct tax payment was more progressive, as shown by the increase in the positive value of the Kakwani index, and household spending on health and indirect tax was less regressive. In contrast, the negative value for Kakwani index of private health insurance premiums increased in 2002, which means household payment for private health insurance was more regressive after UC implementation. Though household payment for social health insurance contributions was progressive in 2000, the positive Kakwani index value decreased after the UC policy was implemented. The analysis of equity in overall health care finance showed that health care finance in Thailand was less regressive in 2002. The incidence of households facing catastrophic health expenditure decreased from 6.11% in 2000 to 4.65% in 2002. The first quintile had the highest rate of decrease in households with out-of-pocket payments over 10% of household income.

7.5.2 Methodological and data limitations

The accuracy and completeness of the SES data on household income and expenditure are vital for assessing equity in health care finance since the SES was the main data source for the analysis. During the past couple years, the appropriateness of the SES questionnaire was questioned by researchers and policy makers in Thailand because of the large number of questions on household income and expenditure, which may undermine the accuracy of the household survey. For household income, the questionnaire contained more than 20 pages of questions with approximately 100 questions on income of all household members during the previous month and previous

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year. Information for both cash and in-kind income for all household members was gathered in the SES. Regarding household expenditure, there were around 30 pages of the SES questionnaire with more than 200 questions on household expenditure in the previous month for all household members. It is estimated that it took approximately two to three hours to interview each sampled household, depending on the number of household members. Therefore, interviewers and interviewees were likely to be exhausted by the process, which could affect the intention to provide accurate information about household income and expenditure which may have decreased, especially in the last parts of the interview. Over the past couple of years, this issue has been discussed between the data producer, the National Statistical Office of Thailand (NSO), and data users, namely the MOPH, Mahidol University, and the Thailand Development Research Institute (TDRI) (Boonperm 2004).

Another concern regarding the SES data was the process of the actual interview which allowed proxy respondents to answer questions about income and expenditure of other household members. Though the survey aimed to interview the household head of the sampled households, it was likely that the household head would not be well informed about goods or services purchased by other household members during the previous month. Therefore, data on individuals' income and expenditure for sampled households in the SES are likely to have some degree of error. In addition, as stated elsewhere (ORC Macro 2006; Xu, Ravndal et al. 2007), using a recall period of one month prior to the interview is likely to have created some degree of recall bias in consumption and expenditure data.

An issue around whether household income or expenditure should be used as a socio-economic parameter should be mentioned as this is a common issue in analysis of equity in health. This analysis differed from the analyses of equity in health care use and benefit incidence in earlier chapters because this analysis employed the SES, while earlier analyses used the HWS as the main data source. In the SES, data on household income and expenditure were available and could be used as the socio-economic parameter, or the indicator of household ability to pay. This analysis decided to use household income

for two reasons: 1) to avoid duplication of the analysis of changes in health care finance prior to and after UC in existing literature; and, 2) because the magnitude of household expenditure could be affected by household coping strategies such as being in debt, taking loans, or reducing spending on flexible items of household consumption. However, reluctance to disclose actual cash income of interviewees is a major concern when using household income as the socio-economic parameter.

In this analysis, difficulties in the estimation of VAT-taxable household consumption expenditure were experienced. As stated earlier, some goods and services in Thailand are exempt from VAT. In addition, luxury goods (e.g. perfume, private cars, imported liquor, and other imported products), petrol, and products harmful to one's health (e.g. tobacco and alcohol) have a different tax rate. Given that the SES questionnaire collected data on household consumption expenditure categorized by type of goods or services, it was problematic to classify goods and services purchased by households into different groups with different tax rates. In this analysis, goods and services purchased by household members were classified into only two groups, VAT-taxable and VAT-exempt. A single tax rate of 7% was applied to the former group to estimate the VAT paid by each sampled household. This was assumed to be the household expenditure for indirect tax payments. From this approach, it is likely that VAT paid by richer households was underestimated. Another minor issue of VAT was that the government allowed small traders earning less than 300,000 baht a month or less than 1.8 million baht a year to be exempt from VAT. The SES questionnaire did not collect data on where household members purchased goods or services. With these limitations, therefore, household indirect tax payment for VAT is likely to have been under-estimated, especially in richer categories.

Another concern is about the accuracy of data on household expenditure for social health insurance contributions which was collected in Group 920, Record 06 of the SES questionnaire. Typically, household expenditure for social health insurance contributions and other occupational expenses were collected in this data category. Though expenditure for social health insurance contributions comprised the majority of household

expenditure data in this category, it also contained other types of household occupational expenses. Therefore, it was likely that household expenditure for social health insurance contributions in the SES were over-estimated.

Given that some types of general government revenues such as corporate taxes, and revenues from property and entrepreneurship of the government, did not lend themselves to computing the Kakwani index, the decision to inflate the distribution of direct and indirect taxes which did have Kakwani indexes created some degree of error and uncertainty in assessing equity in overall health care finance. However, this approach has been widely used in the literature (Wagstaff, van Doorslaer et al. 1999; Limwattananon, Tangcharoensathien et al. 2005; O'Donnell, Doorslaer et al. 2005) and other alternative approaches have provided little difference in conclusions on progressivity of overall health care finance (O'Donnell, van Doorslaer et al. 2008).

The last drawback of this analysis is the use of 2001 data on share of health care finance and the composition of general government revenues to estimate the macro-weights of each financing source and the Kakwani index of overall health care finance in 2000 and 2002. The results from the analysis would be closer to the actual situation if data on National Health Accounts (NHA) and general government revenues in 2000 and 2002 could have been used for the estimate of equity in health care finance in each year. However, the unavailability of 2002 NHA data led to the decision to use 2001 data which fell in between the two years of analyses.

7.5.3 General discussion

The analysis of equity in health care finance in 2000 and 2002 indicates that the overall health care finance of the Thai health care system was less regressive after the UC policy was implemented. The analysis of changes in the Kakwani index of each health financing source indicate more progressive direct tax payments and less regressive household out-of-pocket payments for health, as well as the changes in indirect tax

payments in 2002, were all primary factors involved in improving equity in overall health care finance after UC implementation. Though household payment for private health insurance premiums was more regressive and payment for social health insurance contributions was less progressive in 2002, these two household payments were not major financing sources of the Thai health care system. From these findings, it can be concluded that improving the progressivity of the major health financing sources, especially out-of-pocket payments for health, can greatly impact equity in overall health care finance of the country.

Results from the analysis of equity in health care finance in 2000 and 2002 showed a similar pattern in the progressivity of each health financing source found in other countries in Asia (e.g. Sri Lanka, the Philippines, and Bangladesh) (O'Donnell, Doorslaer et al. 2005). For example, direct tax payments and social health insurance contributions in Thailand were progressive, while indirect tax payments, out-of-pocket payments for health and private health insurance premiums were regressive. The progressive tax rate of personal income tax and the income tax exemption policy for the poor by the Thai government resulted in the progressive nature of direct tax payments. The distribution of SSS beneficiaries, which were typically concentrated in higher income quintiles (see the analysis in Chapter 5), also led to the situation where social health insurance contributions were primarily paid by households in higher socio-economic groups. Thus, the Kakwani index of social health insurance contributions was progressive, both prior to and after UC implementation. Regarding indirect tax and out-of-pocket payments, which are generally regressive in many countries, this analysis also showed the regressive nature of these health care financing sources in Thailand. The same VAT tax rate paid by households of different income quintiles also led to the regressive nature of indirect tax.

Analysis results indicate that the new health care financing arrangements of the UC policy improved the progressivity in overall health care finance in Thailand through two strategies: 1) reducing household out-of-pocket payments for health which was the major regressive health care financing source; and, 2) increasing the share of direct tax payment, which was a progressive financing source, in overall health care finance.

Though general government revenues came from both progressive (direct tax) and regressive (indirect tax) financing sources, the Kakwani index of the indirect tax payment did not significantly change between the two years of analysis. Therefore, the increase in the progressivity of household direct tax payments in 2002 affected the increase in the progressivity of the general government revenues and overall health care finance after UC implementation. Most importantly, the decrease in regressivity of household out-of-pocket payments, which shared approximately one-third of overall health care finance in 2001, was a significant cause of the higher progressivity of overall health care finance.

The reduction in the share of households facing catastrophic health expenditure in 2002, especially the significant decrease of such households in the first quintile, reflected the effectiveness of the UC policy in protecting households from medical care costs. Though the number of households facing catastrophic health expenditure in Thailand have tended to decrease over the past decade due to several targeted health insurance policies (e.g. the LIC and the VHC), the further reduction in households having high health expenditure in 2002 was likely to be due to the impact of the UC policy on reducing household out-of-pocket payments on health. Although the UC policy employed a universal strategy, the design of the system which promoted the use of primary care at the district and sub-district levels and the comprehensive benefit package of the UC scheme appears to have greatly reduced the financial burden of health care costs on the poor. It should be noted that the fifth quintile also benefited from the financial risk protection of the UC policy. The share of households facing catastrophic health expenditure in the fifth quintile was down from 4.26% in 2000 to 3.41% in 2002. Apart from better access to health services and greater benefit from public subsidies on health, the poor also benefited more from the financial risk protection of the UC policy; the highest decrease in the share of households facing catastrophic health expenditure was in the poorest quintile.

7.6 Conclusions

The analysis of equity in health care finance in 2000 and 2002 indicates that overall health care finance of the Thai health care system was less regressive after the UC policy was implemented. The negative Kakwani index value of overall health care finance reduced from -0.0506 in 2000 to -0.0347 in 2002. In addition, the share of households facing catastrophic health expenditure decreased from 6.11% in 2000 to 4.65% in 2002, with the highest decrease in the first quintile. The analysis of equity in health care finance showed that the reduction in household out-of-pocket payments, which made up one-third of overall health care finance, was the main factor contributing to the more equitable health care finance after UC implementation, and that there was indeed improved financial risk protection under the UC policy. The increase in progressivity of household expenditure for direct tax payment and less regressive indirect tax payment were two other factors improving equity in overall health care finance. Though household payment for social health insurance was less progressive and payment for private health insurance premiums was more regressive after UC, these two financing sources were minor financing sources in the Thai health care system.

Two crucial factors affecting the picture of equity in health care finance are: 1) the progressivity of each health financing source; and, 2) the share of each financing source in overall health care finance. The Thai government can further improve equity in overall health care finance by increasing the share of progressive health financing sources (such as direct tax payments and SHI contributions in this analysis), and decrease the share of health financing sources which are more regressive (e.g. household out-of-pocket payments and private health insurance contributions).

SECTION 3: CASE STUDIES AND QUALITATIVE APPROACHES

CHAPTER EIGHT
THE ECONOMIC IMPACT OF THE UC BENEFIT PACKAGE
ON THAI HOUSEHOLDS OF DIFFERENT SOCIO-ECONOMIC STATUS

8.1 Introduction

The aim of this chapter is to explore the economic impact of the high costs of expensive health services, which were not included in the UC benefit package, on Thai households of different socio-economic status. In general, costs for expensive health services excluded from the benefit package of a public health insurance scheme can lead to financial barriers to such health services and a financial burden borne by households (Kutzin 1998). Poor households are likely to have more difficulties in access to health care than richer families, and some of them face the possibility of financial catastrophe if health care payments are much greater than their ability to pay (Ranson 2002; Xu, Evans et al. 2003; Russell 2005; Limwattananon, Tangcharoensathien et al. 2007). In contrast, patients tend to have better access to and utilization of expensive health services if such services are included in the benefit package and financial barriers are removed. With the importance of the benefit package, the types of health services that should be included in the package of a public health insurance scheme, and whether the package should be an essential or a catastrophic package, have been widely discussed among social scientists and health reformists (Nitayarumphong 1998; Kutzin 2001; Mills 2007).

The UC scheme launched by the Thai government in 2001 provides a very comprehensive benefit package with an exclusion list of only a few expensive health services. During the inception phase, two expensive health services, renal replacement therapy (RRT) for end-stage renal disease (ESRD) patients and second-line antiretroviral drugs (ARV) for HIV patients were excluded from the UC benefit package due to their high costs, not being cost-effective for public investment, and long-term financial burden on the government health budget (Jongudoumsuk 2002; NHSO 2002; Teerawattananon 2005). The decision not to include these expensive health services in the UC benefit package led to a public debate over the appropriateness of the UC benefit package and

the policy objectives of financial risk protection (Tangcharoensathien, Kasemsup et al. 2005). The government decision meant that access to RRT and ARV mainly depended on household ability to pay and type of health insurance coverage. In the light of this public debate, there is a lack of evidence on the impact of the government's decision on Thai households, especially those in poorer families.

Due to this knowledge gap, objectives of this chapter are to explore the impact of costs of expensive health services excluded from the UC benefit package in three areas: 1) access to and utilization of expensive health services; 2) financial burden of health care payments borne by households; and, 3) coping strategies for costs of illness among households of different socio-economic status. Hence, the specific aims of this chapter are to:

a) describe differences in access to and utilization of RRT between richer and poorer patients;

b) appraise the financial burden of health care payments for RRT and its impact on Thai households of different socio-economic status;

c) explore coping strategies for the financial burden adopted by poorer and richer households; and,

d) assess the impact of the limited benefit package of the UC scheme on households of different socio-economic status.

Apart from using RRT as a tracer, this research employed another expensive health care technology, open heart surgery, as another tracer in order to elaborate the impact of the UC benefit package on Thai households. This is because open heart surgery is also an expensive health service which requires a huge amount of financial resources and specialized care from medical specialists, along with sophisticated medical equipment in a tertiary care hospital, as does RRT. Most importantly, open heart surgery has been included in the UC benefit package since the start of the UC policy in 2001, while RRT has not. Hence, the opportunity to compare the three areas of investigation stated above between two expensive health services, one included and one not included, in the UC benefit package. It is expected that research findings will elaborate and generate a deeper

understanding of different coping strategies for costs of illness adopted by poorer and richer households, and the financial burden of households for those health services included and not included in the UC benefit package. Furthermore, the investigation of access to and utilization of these two expensive health services and their economic impact on richer and poorer households can reflect the effectiveness of the UC policy in providing financial risk protection and equitable access to essential health care.

It should be noted that open heart surgery was formerly included in the benefit package of the LIC and the VHC scheme, and has been included in the UC benefit package since the start of the policy on universal coverage in 2001. Despite the coverage of the LIC and the VHC, public health facilities favoured providing such operation to the rich and CSMBS beneficiaries due to inadequate reimbursement from these two health insurance schemes. In addition, during the inception phase of the UC policy, the UC scheme allowed tertiary care hospitals to be directly reimbursed for cardiac operation from primary and secondary care hospitals, which was likely to result in a reluctance to transfer heart disease patients from primary and secondary care to tertiary care hospitals (Pannarunothai 2001). To prevent such consequences from health financing arrangements, NHSO set up a centrally-managed fund for providing appropriate compensation to health care providers, particularly tertiary care hospitals. Upper limit of reimbursement for open heart surgery from this centrally-managed fund was 100,000 Baht per patient (NHSO 2003).

The chapter contains six main sections. Apart from the introduction in section 8.1, section 8.2 details the methodology, selection criteria of those needing RRT and open heart surgery, namely end-stage renal disease (ESRD) and heart disease patients, and investigating tools. Section 8.3 describes the context of health service provision at the study site, Nakorn Ratchasima province, and general characteristics of selected cases of ESRD and heart disease patients. Section 8.4 demonstrates research findings of ESRD patients divided into three areas: 1) access to and utilization of RRT between poorer and richer ESRD patients; 2) financial burden for costs of RRT among households of different socio-economic status; and, 3) coping strategies between richer and poorer

ESRD patients. Section 8.5 details research findings of heart disease patients in the same three areas. Finally, section 8.6 summarizes limitations of the research, discussion and interpretation of research findings, and a comparison between RRT and open heart surgery.

8.2 Methodology

To explore the complex issue of access to and utilization of health services and the economic impact of a limited benefit package on households of different socio-economic status, a case study approach was chosen for this investigation. This is because the case study approach can explore a social event in a real-life context of selected households in an explanatory and exploratory manner which a quantitative approach can not (Yin 1994; Russell 2005). It also allows the attempt to measure multiple variables by using a variety of research methods. Moreover, this research approach can deepen the understanding of complex realities of household processes, and other contexts that are difficult to measure with a quantitative inquiry (Coast 1999; Keen and Packwood 1999; Russell 2005).

Figure 8.1 presents a framework to explore differences in access to and utilization of two expensive health services, those included and those not included in the UC benefit package, and the financial impact on Thai households of different socio-economic status. Financial and geographical barriers to RRT and open heart surgery were two variables that the research aimed to explore. This is because costs of both health services were high, and these health services could only be provided by a tertiary care hospital. Differences in ability to pay for costs of health care among households of different socio-economic status lead to the decision to explore financial burden and the economic impact on poorer and richer patients. As RRT and open heart surgery were provided by health facilities primarily located in municipal areas, patients residing in rural and urban areas of the study site were symmetrically selected in order to explore the influence of geographical barriers on access to and utilization of these two expensive health services.

To select poorer and richer households, this study employed three main sources of information for assessing patients' characteristics and socio-economic status. The first source of information was about residential areas and possible socio-economic status of all registered ESRD and heart disease patients, which were collected from public and private providers in the studied province. The second source was the assessment of household socio-economic status, financial problems related to health care costs, housing characteristics, and household assets, which were collected and observed by the researchers and research assistants during an introductory household visit. The introductory visit was arranged for every target household aiming to collect information about household socio-economic status and patients' willingness to participate in the study. The final source was a consensus on socio-economic status of each targeted household among the researcher and the research assistants, in order to classify targeted households to richer, middle, or poorer groups. Selected households were then contacted after the decision was made. The patients and their household members then signed a written informed consent form indicating they understood the objectives of the study and were willing to participate.

Figure 8.1: The framework for exploring differences in access to and utilization of expensive health services and the financial impact on poorer and richer households

1. Different financial barriers (included in the UC benefit package or not)	Expensive health services not included in the UC benefit package (Renal replacement therapy - RRT)				Expensive health services included in the UC benefit package (Open heart surgery)			
			Having financial barriers to health services				No financial barrier to health services	
2. Different geographical barriers (residing in rural or urban areas)		Having geographical barriers (residing in rural areas)		No geographical barriers (residing in the municipality area)		Having geographical barriers (residing in rural areas)		No geographical barriers (residing in the municipality areas)
3. The impact on households of different socio-economic status	Richer ESRD patients	Poorer ESRD patients	Richer ESRD patients	Poorer ESRD patients	Richer heart disease patients	Poorer heart disease patients	Richer heart disease patients	Poorer heart disease patients

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Selection criteria for ESRD and heart disease patients included the following:

- willingness of patients and their household members to participate in the research;
- residing in the studied province;
- seeking health care from health facilities in the studied province; and,
- heart disease patients having a cardiac operation not longer than three months prior to the household visit in order to avoid recall biases about health service use and financial consequences from health care payments.

Exclusion criteria for ESRD and heart disease patients were:

- patients or their household members not willing to participate in the study;
- residing or seeking health care from health facilities outside the studied province;
- patients who died in the first month of the household visit; and,
- being beneficiaries of the SSS or the CSMBS.

To achieve the study's objectives, twenty ESRD patients and thirteen heart disease patients of different socio-economic status and geographical areas were selected. Details of the participant selection process for ESRD and heart disease patients are presented below. It is worth noting that the research intended to confirm participation from ESRD and heart disease patients of different socio-economic status and different residential areas. However, poor participation from richer patients and those residing in municipality areas led to a bias of household selection which favored poorer households in rural areas.

The study was conducted in Nakorn Ratchasima (Korat) province, the largest province in Northeastern Thailand, for two reasons. First, poorer households were the target of the study, and this province contained the highest number of households below the poverty line in 2000 (NESDB 2002). Second, the public health service system in this province comprised comprehensive health care ranging from primary care at a health centre to tertiary care at regional hospital, namely Maharat Hospital. So, the capacity to provide RRT and open heart surgery at the regional hospital allowed the researcher to follow up

the situation of financial barriers and access to these two expensive health services, and the economic impact on the selected households.

8.2.1 Selection of ESRD households

Health care providers in both public and private facilities provided useful information to help identify poorer ESRD patients. Common manifestations of poorer patients observed by health care providers were: a) frequently failing to keep an appointment for the use of RRT; b) often complaining about financial problems with either nurses or other ESRD patients; and, c) occasionally being in debt for the RRT costs. Since ESRD patients using haemodialysis had to receive the treatment twice or thrice a week, health care providers (e.g. nurses and nephrologists) who met with patients regularly were often the most informed about patients' financial problems and could estimate economic status for each ESRD patient.

After approximately 50 introductory visits to targeted ESRD patients were carried out, ESRD patients covered by the UC scheme were classified as poorer, richer, and middle (unclassified) cases by using a consensus among the researcher and the research assistants drawing on informal interviews during the introductory visit, direct observation of the researcher and research assistants, and details about patients' socio-economic status from other data sources such as information from health care providers. A patient in a household owning a lot of assets, earning regular or substantial income, or having a profitable business, was classified as a richer ESRD case. In contrast, a patient who lived in a family with irregular income, dependent on agricultural products, or having fewer assets and savings, was grouped as a poorer patient. Willingness to participate in the study of the patients and household members was the most important selection criteria for ESRD patients. In addition, the researcher attempted to symmetrically select poorer and richer households residing in municipal and non-municipal areas as the selected cases.

With these selection criteria, eligible ESRD patients and their family members were selected and informed in greater detail about objectives of the research, frequency of the

visits, and scope of the in-depth interviews. Finally, twenty ESRD patients equally distributed to urban and rural areas with different socio-economic status were chosen, and consented to participate in the investigation.

8.2.2 Selection of heart disease households

A similar selection process to that of the ESRD patients was applied to identify heart disease patients in richer and poorer households. The researcher collected secondary data for heart disease patients who had received a cardiac operation at the regional hospital three months prior to commencement of the household visits. The period of three months was chosen in order to avoid recall biases about utilization of health services, medical care costs, and financial consequences for the patients. Then, around 30 patients covered by the UC scheme were contacted and asked permission for the introductory visits. The number of heart disease patients receiving introductory visits was less than ESRD patients because the average number of patients being operated at the regional hospital was around 10 cases per month.

Similar methods to classify household economic status were applied to the heart disease patients, as had been previously used to identify ESRD patients. Information about households' socio-economic status attained by direct observation and informal interviews during the introductory visits was mainly used for categorizing selected households into different economic groups (richer, poorer, and middle income households). The selection process for heart disease patients differed from that of ESRD patients in that health care providers could not assess economic status of heart disease patients, since the cardiac operation has been included in the UC benefit package. So, public providers did not have to recognize a household's ability to pay, and only a few heart disease patients choose to seek care from private providers with out-of-pocket payments. As a result, the researcher and research assistants used the assessment of household socio-economic status from two data sources (direct observation and informal interviews) to categorize heart disease patients into different economic groups. After the consensus was made, thirteen heart disease patients in richer and poorer households were selected and contacted for

willingness to participate in the study. Similar to the ESRD patients, there was an intention to include the heart disease patients residing in urban and rural areas symmetrically. However, this failed because some richer patients sought cardiac operations at private or university hospitals in Bangkok, and some refused to participate in the investigation. Therefore, the majority of the selected heart disease patients were in poorer households residing in rural areas of Nakorn Ratchasima province.

After both ESRD and heart disease patients were selected, a formal invitation letter containing a summary of the study's objectives, research protocol, and the informed consent forms for the patient, care givers, and household head, were sent to every selected household. Two heart disease patients changed their mind and decided not to participate in the investigation; they were then substituted with other eligible patients.

8.2.3 Data collection and investigating tools

A range of qualitative methods was used for collecting data from the selected households. According to the study's objectives, social and economic aspects of poorer and richer patients, as well as the household context, were investigated. Several qualitative approaches including semi-structured and in-depth interviews, direct observation, and illness narratives, were employed and integrated into four investigating tools developed for the inquiry.

A longitudinal approach was employed for three months. This aimed to collect household information about changes in financial burden from medical care costs, access to expensive health services, and coping strategies for illness costs. Compared with a cross-sectional approach, the longitudinal household study was more appropriate for the investigation because it could provide valuable time-referenced information about costs of illness, and household members' behaviors and relationships, all of which significantly influenced changes in household livelihood and coping strategies for health care costs (Phillips, MacLeod et al. 2000; Russell 2001). In addition, changes in other contexts

related to household livelihood and financial consequences of medical care costs were also observed with the longitudinal approach.

Four investigating tools addressing the objectives of the study were employed during the fieldwork process which ran from January to March 2005 (see details of the investigating tools in Annex 4). The first tool (T1) was used to identify all family members and their relationships in selected households. This was intended to illustrate interdependence and interpersonal relationships between patients and other household members, specifically as they related to care-giving, perception of illness, and decision making about resource use for health care. Furthermore, information obtained from T1 was useful in more deeply understanding health care seeking behavior and household coping strategies for costs of illnesses. The second tool (T2) was the "life line and life history" which aimed to understand a patient's life history and key events happening in the selected households. Data collected from T2 provided background information to further understand household contexts, and patients' and household members' perceptions of extraordinary or unpleasant events, such as an accident or illness affecting a household member. The next tool (T3) was "illness narratives" which aimed to portray an overall picture of how the patients and their household members responded to illness, the consequences of direct medical care costs, and the inability to access health care. Information from T3 also illustrated details of the patients' and household members' interactions with the health service system and their coping strategies for health care costs. The last tool (T4) aimed to explore the proportion of household health expenditure with total household income and expenditure. T4 was designed to help understand the financial burden of health expenditure and the economic consequences of these expenditures on household livelihood and other activities. Prior to the actual household investigation, pilot interviews were conducted with ESRD and heart disease patients who were not selected for official case studies to test the process.

Table 8.1 presents the frequency of use of each investigating tool and the time frame of the longitudinal study. The selected households were visited every two weeks and various aspects of household information were collected by using different investigating

tools. The two-week revisits aimed to avoid recall biases on health seeking behavior, household health expenditure, and health service use. The interval of two weeks prior to the interview has been widely applied by various international household surveys on household income and expenditure such as the Living Standards Measurement Study (LSMS) (Grosh 1995), or health seeking behavior of households in the Demographic and Health Surveys (USAID 2003).

Table 8.1: Frequency and time frame for using four investigating tools with the ESRD and heart disease households

Investigating tools	Wk 0	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12
T1	✓		✓										
T2					✓								
T3							✓		✓		✓		✓
T4												✓	✓

Note:

T1 = tool for exploring household members and their relationships

T2 = tool for exploring patient's life history and drawing a life-line

T3 = tool for in-depth interviews to obtain illness narratives

T4 = tool for collecting data on household income and expenditure

When and how often each investigating tool was used in the household inquiry depended on the extent of data collected and sensitivity of the issues investigated. For the first tool, details of interpersonal relationships between patients and other household members were collected from the first and second visits in order to develop a trusting relationship between the investigators (the researcher and the research assistants), and the entire household. It was found that information about relationships between the patients and other household members did not emerge during the first visit; this often did not emerge until subsequent conversations. The second tool which attempted to explore the life history and draw 'a life-line' of the patients was subsequently applied after trust in the investigators was gradually developed. Details of household contexts and responses of household members towards either a pleasant or an unpleasant event was expected to be achieved by the third visit. After that, a wide range of information about illness, health seeking behavior, and health service use of the selected households was explored by using the "illness narrative" approach of the third tool. Four household visits were

allocated for this sort of exploration due to its importance and the magnitude of such information about each household. However, the investigative process for heart disease patients required fewer visits for the illness narratives because medical services for heart disease patients did not require long-term medical care. Most information about illness narratives for heart disease patients was collected within one or two visits. The last tool (T4) was applied in the final two household visits because it contained sensitive information on household economic status and financial consequences from medical care costs. The participating households suffering from costs of illness or inability to access health services would likely be uncomfortable revealing such private information before developing a trusted relationship with the investigators. So, it was expected that the continuous development of a mutually trusting relationship between the investigators and the selected households would facilitate a deep exploration of this issue.

It is noteworthy that some selected ESRD patients died during the household investigation. If a selected patient died during the first month of the household visit, a new case with the same socio-economic status and residential area was selected. However, if the selected patients died after the first month of household visit, the researcher and the research assistants decided to continue visiting these households for a period of time in order to share the household's grief. Financial and moral support was also provided to household members in need. Moreover, information about feeling and perception of the patient's death, and future arrangements for household members, was also collected.

8.2.4 Roles of the researcher and the research assistants

Regarding a wide range of activities that had to be carried out at the same time during fieldwork, the researcher and two research assistants had different roles in the longitudinal household inquiry. The researcher was primarily responsible for coordinating the Provincial Health Officers and communicating with the hospital administrators at both public and private health facilities in order to get permission to conduct the research. All of the introductory visits for both ESRD and heart disease

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patients were conducted by the researcher and the two research assistants in order to get overall information about household economic status and make a decision on household selection. At the first visit to every household, the researcher participated in the introductory process and tried to develop a good relationship between the research team and the patients, as well as with other household members. After concluding the first round of household visits, all of the selected households were divided into three groups and each household was then assigned one person to do the rest of the visits for the parallel three-month investigation.

All household data collected by the research assistants were later transferred to the researcher. Data was collected by tape recording household interviews, jotting field notes, producing two-week reports, and attending debriefing meetings every two weeks. Both research assistants had a Bachelor Degree in Social Science and Rural Development, along with some experience in social science research. Before commencement of the household investigations, the research assistants were trained in several techniques for qualitative approaches such as direct observation, in-depth interviews, and illness narratives; The four investigating tools were pre-tested by them. The researcher also supported the research assistants in solving any unexpected problems during the household visits and helped answer questions raised by patients of household members that the assistants were unable to answer.

8.2.5 Data analysis

Data from the transcribed interviews, field notes, fieldwork diaries, and two-week reports produced by both the researcher and research assistants were analyzed using manual coding techniques. "Thematic content analysis" was employed to analyze the content of the data and then categorize common themes for households in both poorer and richer households. Key elements related to the three areas of the case study's objectives as they related to poorer and richer households for both ESRD and heart disease patients were explored and grouped. Different salient issues between richer and poorer patients, and between ESRD and heart disease patients, were also categorized. To maintain principles

of confidentiality, patients' and interviewees names and other identifying information which are presented in this thesis and elsewhere have been changed to protect the privacy of participants.

8.2.6 Ethical considerations

After the selected patients and their household members agreed to participate in the study, an information sheet and written informed consent form were given to all selected patients and their household members to officially obtain their consent. Participation in the study was strictly voluntary and no incentives were offered. Research findings and results would be anonymous and confidential. Respondents were allowed to skip any question or stop the interviews at any point and for any reason. Before taking a photograph or recording a tape cassette during an interview, respondents were first asked if they consented. Before using patient photographs for publication or presentation in research or for academic purposes, patients provided their consent and signed a patient's consent form for photography (Appendix 5).

The research assistants were trained to judge and appropriately deal with a critical or difficult situation (e.g. the death or suffering of ESRD patients). In addition, guidelines to deal with such situations were developed by the researcher. Researchers were also trained in techniques for answering difficult questions and how to react to other household members. Fundamental knowledge about ESRD, heart disease, choice of medical treatment, illness complications, and health service provision in Nakorn Ratchasima province were studied and prepared by both the researcher and research assistants. The research assistants were encouraged to listen and express their sympathy to households in serious need.

The research proposal and the investigating tools were approved by the Ethical Review Committee for Research in Human Subjects of the Ministry of Public Health (MOPH), Thailand, and the Ethical Committee of the London School of Hygiene and Tropical Medicine (LSHTM).

8.3 RRT and open heart surgery context in Korat province

This section provides information about the RRT service and open heart surgery context in Nakorn Ratchasima (Korat) province, along with general characteristics of selected ESRD and heart disease patients in the research. The distribution of ESRD patients, different user charges for haemodialysis between public and private health facilities, and the estimated costs of RRT borne by ESRD patients using different health insurance programs are all presented in greater detail.

8.3.1 General characteristics of RRT service in Korat province during 2004-2005

Like in other provinces in Thailand, access to RRT in Korat province was inequitable among beneficiaries of different health insurance schemes. CSMBS beneficiaries could access and utilize all types of RRT including peritoneal dialysis (PD), haemodialysis (HD), and kidney transplantation, without any co-payments in government health facilities, while SSS beneficiaries received a subsidy of 1,500 Baht for HD, for not more than two sessions a week. ESRD patients who were beneficiaries of the UC scheme had to pay all user fees for RRT by themselves.

In Korat, haemodialysis machines and health personnel in public facilities were very limited and far less than the actual demand for RRT. There were two government health facilities providing RRT for ESRD patients, the Maharat Hospital and the Military Hospital. Both government health facilities gave priority to civil servant beneficiaries, and therefore most HD machines were occupied by CSMBS beneficiaries (Figure 8.2). With the shortage of public services, five private haemodialysis centres were established by private providers in the province and staffed by nephrologists who work in public hospitals. Nearly all ESRD patients of the SSS and UC scheme had to receive RRT services provided by these private providers, and only the UC beneficiaries had to pay user fees for HD, as these fees were not subsidized by the UC scheme.

Figure 8.2: An ESRD patient receiving heamodialysis at Maharat Hospital
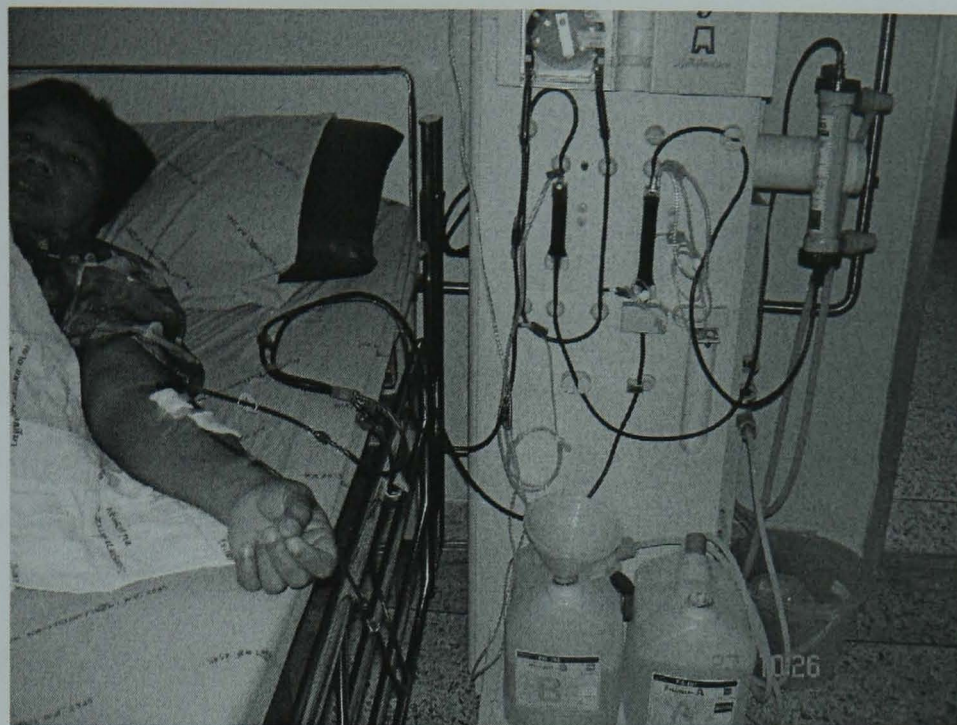
Nephrologists and health care providers in Korat preferred HD to PD for three reasons. First, user charges for HD were higher than PD, and the government allowed public health facilities to charge up to 3000 Baht per session for HD during 2004-2005. All HD machines in government health facilities were occupied by civil servant ESRD patients because public hospitals were reimbursed for their health services. Second, ESRD patients using PD must be well-educated and capable of facilitating self-care and self management since PD requires the exchange of peritoneal fluid from patient's peritoneal cavity four to six times a day using a safe and clean technique. Lastly, ESRD patients with PD had a higher risk of mortality and morbidity than HD. If patients are not well-trained, there is a high risk that PD will cause peritoneal infection. This is another reason why most nephrologists do not support PD, compared to HD. However, it is argued that the quality of life (QOL) of ESRD patients using PD is higher than those using HD because they do not have to visit HD centres twice or thrice a week, and costs of medical care and transportation are less than HD (Kusoom and Lapjaroenwong 2004; Teerawattananon 2005).

8.3.2 Share of ESRD patients by type of health facility in Korat province

A census of ESRD patients conducted by the research team during July and August 2004 showed the unequal distribution of ESRD patients between public and private health facilities in Nakorn Ratchasima province. From the facility-based secondary data, the total number of ESRD patients residing in Nakorn Ratchasima province were 233 cases, which was equivalent to a prevalence rate of 91 per million. More than two-thirds (72%) of the patients residing in the province received haemodialysis from private providers; while less than one-third (28%) utilized this health service at public facilities (Table 8.2). The regional hospital, Maharat Hospital, cared for just 10% of the ESRD patients residing in Nakorn Ratchasima province, while the three private providers provided more HD services for the remaining patients.

Table 8.2: Number and percent distribution of ESRD patients among public and private HD centres in Korat province

Health facilities	ESRD patients residing in Korat		ESRD patients residing outside Korat		Total ESRD patients	
	No.	%	No.	%	No.	%
Public facilities	**66**	*28*	**7**	*18*	**73**	*27*
Maharat hospital	23	*10*	2	*5*	25	*9*
Military hospital	43	*18*	5	*13*	48	*18*
Private facilities	**167**	*72*	**31**	*82*	**198**	*73*
Ratchasima-Thonburi	82	*35*	11	*29*	93	*34*
Saint Mary's	39	*17*	10	*26*	49	*18*
Korat Memorial	32	*14*	6	*16*	38	*14*
Por Path	8	*3*	3	*8*	11	*4*
Chalerm-Chai	6	*3*	1	*3*	7	*3*
Total	**233**	*100*	**38**	*100*	**271**	*100*

Source: A census on public and private haemodialysis services in Korat during July-August 2004

8.3.3 User charges for haemodialysis in public and private health facilities

The user charge for haemodialysis at the two government health facilities, Maharat Hospital and Military Hospital, was higher than that of private providers. A charge of 3,000 Baht per HD session at the regional and military hospitals was fully reimbursed for ESRD patients because all patients accessing HD in these two public hospitals were CSMBS beneficiaries.

User charges for HD at private providers depended on types of ownership and the decision of the nephrologists. In Korat province, two types of private facilities providing haemodialysis were observed: 1) a private facility invested in or owned by nephrologists who were working at the government hospitals; and, 2) an HD unit owned by a private hospital that paid nephrologists per case-visit. The former tended to have more flexibility to adjust user charges for RRT than the latter. Most nephrologists at public hospitals were invited to visit their ESRD patients, who were unable to access haemodialysis machines in public facilities, at private hospitals and were paid at a rate of 300-500 Baht per case per visit. The user fee for HD at private providers (including doctor fees) was on average 2,000 Baht per session. However, a private facility owned by a nephrologist who worked at Maharat Hospital allowed ESRD patients who were SSS beneficiaries to pay a rate of 1,700-1,800 Baht because the Social Security Office gave a subsidy for SSS beneficiaries of not more than 1,500 Baht per a HD session. SSS patients had to pay the doctor fee of 200-300 Baht per visit on their own. An exemption for the doctor fee for some poor SSS beneficiaries was also observed.

8.3.4 Estimated costs of RRT borne by ESRD patients of different health insurance schemes

Secondary data collected at public and private health facilities and information from introductory visits to selected households revealed differences in health expenditure for RRT borne by households of different health insurance schemes. ESRD patients who were CSMBS beneficiaries could be reimbursed for nearly all RRT costs paid at government health facilities, except travelling costs (Table 8.3). In contrast, SSS beneficiaries obtained financial assistance of 1,500 Baht per HD session or 3,000 Baht per week from the Social Security Office (SSO); they had to bear other costs which were excluded from the SSS benefit package. ESRD patients covered by the UC scheme were the worst-off group. They had to directly pay nearly all costs for RRT, except laboratory investigation and oral medication which were included in the UC benefit package.

Table 8.3: Estimated costs for haemodialysis per week among beneficiaries of different health insurance schemes in Korat in 2005

Health expenditure for RRT on a weekly basis	Mean health expenditure (Baht) per week and ability to be reimbursed from the government					
	CSMBS	reimbursable	SSS	reimbursable	UC scheme and uninsured	reimbursable
1. Haemodialysis services (twice a week)	6,000	✔	3,000	✔	4,000	X
2. Doctor fees	--	--	400 – 600	X		
3. Erythropoietin injection	3,000	✔	3,000	X	3,000	X
4. Transport	100 - 400	X	100 – 400	X	100 – 500	X
5. Laboratory investigation	300 - 500	✔	200 - 300	Included in SSS capitation payment	200 - 300	Covered by the UC scheme
6. Oral medication	500 – 1,000	✔	300 - 500	Included in SSS capitation payment	300 – 500	Covered by the UC scheme

Sources: From several interviews with health care providers and ESRD households during the introductory visits

8.3.5 Open heart surgery in Nakorn Ratchasima province

In Korat, characteristics of health service provision for open heart surgery and its user charges considerably differed from those of RRT for ESRD patients. In 2005, Maharat Hospital was the only health facility in this province providing open heart surgery, with a range of user charges from 150,000 to 300,000 Baht per case. There was no private hospital providing such an operation in the province. Since the implementation of the UC policy, the waiting list for open-heart surgery at Maharat Hospital has been fully booked by patients who are beneficiaries of the UC scheme and SSS, with an average wait time of three to four months before the operation (a head nurse in the Maharat operating room, personal communication). An interview with a surgeon at Maharat Hospital indicated that those who could afford a cardiac operation at a private or university hospital sought such an expensive health service in larger Bangkok hospitals. Therefore, cardiac operations at Maharat Hospital primarily served heart disease patients from the SSS and UC schemes.

8.3.6 Characteristics of selected ESRD and heart disease patients

Twenty ESRD patients, along with their household members, agreed to participate in the investigation. Twelve out of 20 (60%) were male and the remaining eight were female (Table 8.4). Among the ten ESRD patients residing in municipal areas, half of them were in richer households, while three were in poorer families. The majority of the richer ESRD patients lived in municipal areas, while most poorer patients resided in the rural areas. ESRD patients' age ranged between 23 and 84 years with an average of 53.5 years. Before the end of the three-month investigation, three patients in the rural area and one in the municipal area had died. Patients no. 8 & 10 died in the second month, and patients no. 9 & 19 passed away during the last month of investigation.

Table 8.4: Characteristics of ESRD patients

No.	Sex	Age	Residence	HH economic status **	Occupation
1	M	62	Rural	Richer	Owning a lot of land and crops
2	F	84	Rural	Richer	Unemployed
3	M	26	Rural	Middle	Unemployed
4	F	45	Rural	Middle	Unemployed
5	M	23	Rural	Poorer	Collecting and selling recycled materials
6	F	42	Rural	Poorer	Unemployed
7	F	48	Rural	Poorer	Unemployed
8 *	M	40	Rural	Poorer	Unemployed
9 *	F	61	Rural	Poorer	Unemployed
10 *	M	71	Rural	Poorer	Farmer
11	M	56	Urban	Richer	Wood carving business
12	M	61	Urban	Richer	Owning an apartment to rent
13	M	62	Urban	Richer	Having six trucks for goods transportation
14	M	65	Urban	Richer	Owning a lot of land and houses
15	F	42	Urban	Richer	Selling motorcycle accessories
16	M	63	Urban	Middle	Unemployed
17	M	46	Urban	Middle	Selling the swings and other metal accessories
18	M	33	Urban	Poorer	Selling raw chicken
19 *	F	59	Urban	Poorer	Unemployed
20	F	70	Urban	Poorer	Unemployed

Note * died during fieldwork
      ** as judged by the researcher and the research assistants

The number and characteristics of selected heart disease patients differed from those of ESRD patients. The majority of the heart disease patients were in poorer households residing in rural areas. Nine out of 13 were female. Only three patients lived in an urban

area and all were poorer. There was no richer patient in the municipal area and only one richer patient in the countryside who agreed to participate in the study. The heart disease patients were aged between 26 and 72 years with an average of 48.3 years (Table 8.5).

Table 8.5: Characteristics of heart disease patients

No.	Sex	Age	residence	HH economic status *	Occupation (after the operation)	Previous occupation
1	F	26	Rural	Poorer	Unemployed	Farming worker
2	M	41	Rural	Poorer	Driving motorcycle taxi	Singer / farmer
3	M	41	Rural	Poorer	Farmer	Farmer
4	F	47	Rural	Poorer	Unemployed	Farmer
5	F	52	Rural	Poorer	Farmer	Farmer
6	M	72	Rural	Poorer	Farmer	Contracted construction projects
7	F	50+	Rural	Poorer	Farming and planting	Farmer and factory worker
8	F	48	Rural	Middle	Unemployed	Selling goods in a retail shop
9	F	61	Rural	Middle	Unemployed	Farmer
10	F	56	Rural	Richer	Unemployed	Farmer and own a retail shop
11	F	28	Urban	Poorer	Selling vegetables	A house keeper in a computer office
12	M	52	Urban	Poorer	Driving a motorcycle for transporting goods	Worker / goods transportation
13	F	55	Urban	Poorer	Unemployed	Selling food along the street

Note * as judged by the researcher and the research assistants

8.4 Findings from the ESRD patients

This section provides research findings comparing the poorer and richer ESRD patients in three different areas: 1) access to RRT; 2) cost burden of RRT and its financial impact on households; and, 3) household coping strategies for health care costs.

8.4.1 Access to RRT between richer and poorer ESRD patients

Regularity and adequacy of achieving haemodialysis and injected medication (erythropoietin) can be used as an indicator for assessing the implications of the non-inclusion of RRT in the UC benefit package on equity in access to RRT between poorer and richer households. This is because ESRD patients generally need on average two sessions of haemodialysis a week in order to effectively remove waste products from their bodies. Moreover, they also require erythropoietin injections to stimulate red blood cell formulation, which is a major deficiency among ESRD patients.

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Table 8.6 presents disparities in access to haemodialysis and erythropoietin injection between the richer and poorer ESRD patients in rural and urban areas. On average, richer ESRD patients received hemodialysis twice a week, except patient no. 1 who had a better health status and good kidney function with a need for haemodialysis only once a week. In contrast, poorer patients received hemodialysis on average once a week, except patients no. 5, 18, and 20. This is because these poorer ESRD patients still received financial support from their relatives for access to RRT. Almost no poorer ESRD patients received expensive erythropoietin injections, except case study no. 18 who received financial support from his relatives. There appeared to be no financial barrier to erythropoietin injection in richer and middle class ESRD patients. Despite being richer, patient no. 2 did not receive injected medication due to his good health status, thus there was no need for erythropoietin injection.

Table 8.6: Average number of haemodialysis received per week and access to erythropoietin injection among ESRD patients of different socio-economic status and residential areas

No.	sex	Age	Residence	Household economic status	Average no. of haemodialysis per week	No. of months receiving dialysis	Access to erythropoietin injection
1	F	84	Rural	Richer	1	10	✓
2	M	62	Rural	Richer	2	36+	✗
3	M	26	Rural	Middle	2-3	40+	✓
4	F	45	Rural	Middle	2	72+	✓
5	M	23	Rural	Poorer	2	24+	✗
6	F	42	Rural	Poorer	1	4	✗
7	F	48	Rural	Poorer	1	20	✗
8 *	M	40	Rural	Poorer	0.75	35	✗
9 *	F	61	Rural	Poorer	1	30+	✗
10 *	M	71	Rural	Poorer	1	15	✗
11	M	56	Urban	Richer	2	40+	✓
12	M	61	Urban	Richer	2	24+	✓
13	M	62	Urban	Richer	2	24	✓
14	M	65	Urban	Richer	2	12	✓
15	F	42	Urban	Richer	2	40	✗
16	M	63	Urban	Middle	2	10	✗
17	M	46	Urban	Middle	2	14	✓
18	M	33	Urban	Poorer	2	24+	✓
19 *	F	59	Urban	Poorer	1	24	✗
20	F	70	Urban	Poorer	2	68+	✗

Note   * died during the investigation.

Differences in accessing adequate haemodialysis and erythropoietin injection between richer and poorer ESRD patients in rural and urban areas are shown in Figure 8.3. Adequacy in treatment was judged by the number of haemodialysis and erythropoietin needed per week for each ESRD patient. This was suggested by nephrologists who looked after each ESRD patient. The selected households were categorized into six groups: richer; middle; and poorer households in urban area, and those three groups in rural areas, according to their socio-economic status and residential area. This assessment revealed that 56% and 88% of poorer patients in the rural and municipality areas, respectively, received adequate access haemodialysis. None of the poorer patients in rural areas received erythropoietin injection and only 25% of poorer patients in urban areas did. In contrast, all ESRD patients in the richer and middle households accessed an adequate number of haemodialysis and erythropoietin injection.

Figure 8.3: Percentage of ESRD patients accessing adequate haemodialysis and erythropoietin injection by socio-economic group and residential area
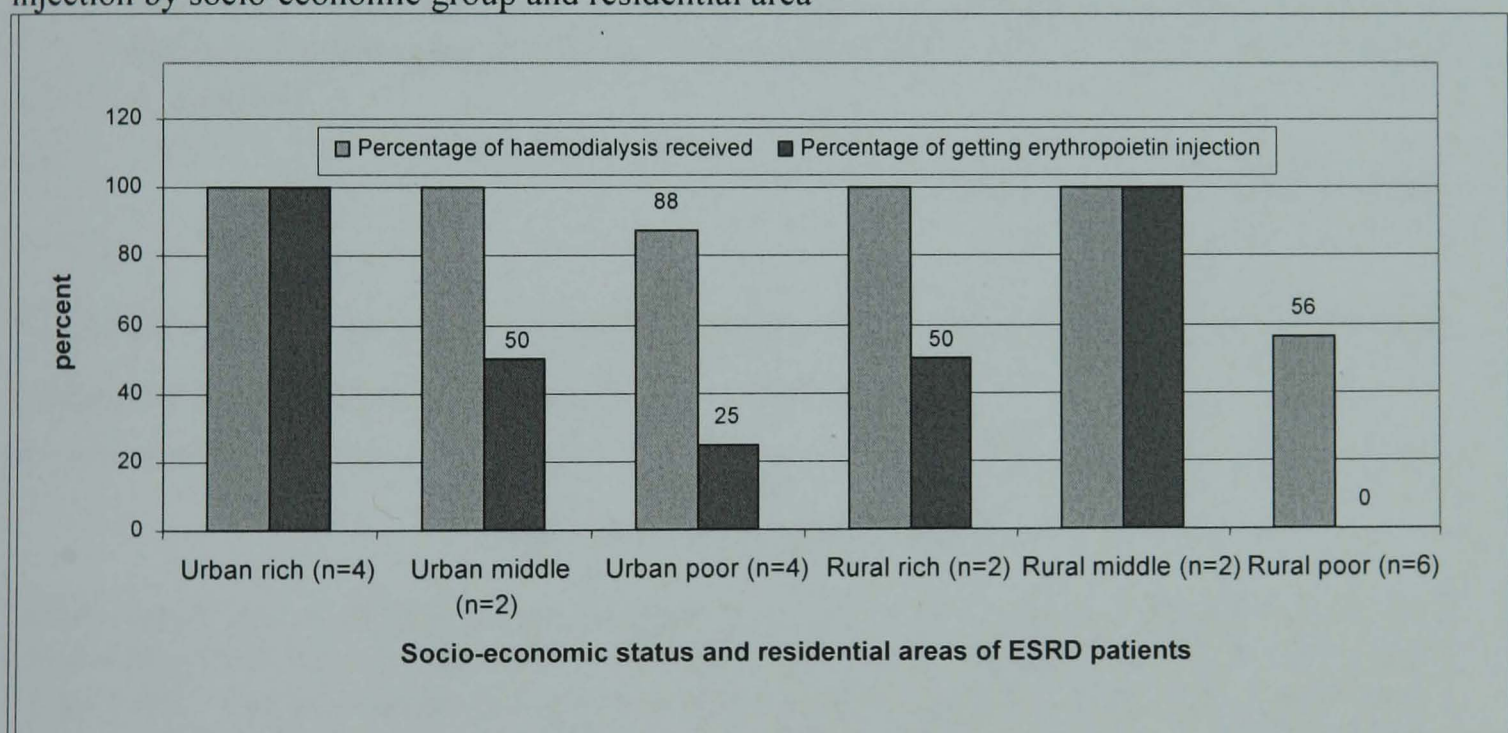
Inequitable access to haemodialysis between richer and poorer ESRD patients due to financial barriers was also supported by comments from a poorer patient.

"Now I have received the dialysis just one time, and rarely two times a week. The money that I can get together is not enough, so I don't want to continue with the treatment. If I don't have money, I am not going to continue. "

(No.10, a poorer ESRD patient)

A richer patient and his/her caregiver also supported the situation of inequitable access to RRT caused by financial barriers.

"I saw a lot of poorer patients who came from rural areas. At the beginning, they could afford to pay for the treatments because they sold their land and cattle. But since they sold everything and their money was running out, I have not seen them coming back to get treatments from the hospital. "

(Caregivers for No. 12, a richer ESRD patient)

"This disease is intolerable because it costs a lot of money. If you are rich, you can live longer than others. On the contrary, if you are poor, your life will end when your money runs out. I can afford costs of haemodialysis because I have a business transporting goods and commodities from Nakorn Ratchasima province to Bangkok. "

(No. 13, a richer ESRD patient)

It is noteworthy that some poorer ESRD patients died because they could not afford user charges for haemodialysis and other expenses (Box 8.1).

Box 8.1
Infrequent access to haemodialysis

Chan was a poorer ESRD patient residing in a rural area of Korat province, around 80 kilometres from the city. He died in February 2005 after suffering from ESRD for nearly three years. Due to his irregular income and poor economic status, he struggled to find money to pay for user charges for haemodialysis. He received haemodialysis just once a week, and sometimes less than once a week, depending on availability of money. He never had any chance to receive erythropoietin injection.

Before his death, he developed several complications caused by infrequent access to haemodialysis. These included: 1) fluid overload shown by his puffy eyelids and legs and swelling abdomen; 2) frequent fatigue and exhaustion; and, 3) uncomfortable breathing. In the days before he passed away, his health condition became worse, and his sister had to pay more than 700 baht to rent a private car to go to Maharat Hospital. Then, they did not have enough money left to pay the user charges for haemodialysis. Finally, he died at Maharat Hospital after being hospitalized for a few days.

In terms of access to erythropoietin injection, only one-fourth of the poorer patients in the municipality area achieved this medical treatment, while none of the poor in the rural areas could attain this expensive medication (Figure 8.3). In contrast, 83% of all richer ESRD patients could afford and did receive this treatment. Only one-sixth of the richer patients did not attain injected medication, and this was because of the good condition of their health.

> *"After retiring from the government in 2003, I moved to a private hospital to get haemodialysis because its cost was cheaper than Maharat Hospital's and I can not reimburse the expenses from the government anymore. At present, my health condition is quite good, and now I have no need for injected medication."*

(No. 2, a richer ESRD patient)

Apart from the financial barriers, differentials in access to erythropoietin injection can be explained by the priority to health care given by patients and the availability of an alternative to the expensive injected medication. Poorer patients appeared to give higher priority to the treatment of haemodialysis than erythropoietin injection because the former was life-saving. Hence, they generally allocated their financial resources for haemodialysis as the first priority. Furthermore, blood transfusion was an alternative to erythropoietin injection, and was usually provided free of charge for poorer ESRD patients at government health facilities.

> *"Now, my three sons have to earn to pay for the expenses of my illness. Each of my two older sons has to give me 800 baht a week, and the youngest son gives only 500 baht. This is only enough for haemodialysis once a week and transportation costs. I can not afford the injected drug because it is costly. So, the doctor usually gives me a blood transfusion as a substitute to improve my blood concentration."*

(No. 9, a poorer ESRD patient)

Poorer ESRD patients experienced adverse consequences from blood transfusions, but they had no choice because of their limited financial resources. In addition, they sometimes decided to reduce the frequency of haemodialysis to once a week if the health condition of patients improved. This differed from richer ESRD patients who could afford the costs of both haemodialysis and erythropoietin injection.

"After being diagnosed with ESRD, my mother received haemodialysis twice a week without erythropoietin injection. When her symptoms improved after receiving haemodialysis twice a week for several months, then we decided to reduce the frequency of haemodialysis from twice to once a week because of our limited financial resources. However, we would temporarily resume the frequency of haemodialysis to twice a week if her symptoms became worse... My mother has to receive a blood transfusion because we can not afford the injected medication. Although she usually develops itchy skin and a rash after the blood transfusion, we have no choice."

(The eldest daughter of No. 19, a poorer ESRD patient)

"I could not receive a blood transfusion because after taking blood, my body often developed a rash and my skin was all itchy. So, I decided to pay for the injected medication in order to treat my anaemic symptoms. The cost of haemodialysis is 2,000 baht per session, and injected medication costs 1,600 baht per visit. So, I have to pay approximately 7,200 baht per week or around 30,000 baht per month including other related costs such as transportation and food."

(No. 18, a richer ESRD patient)

Apart from financial barriers, poorer ESRD patients in rural areas had to overcome transportation costs and geographical barriers to haemodialysis services available at the regional hospital (Figure 8.4).

"We have to travel approximately 74 kilometres from our home to the hospital to receive haemodialysis once or twice a week, depending on availability of money. The trip takes around one hour when we take public transportation. During a long holiday or 'Songkran' Festival, public buses are always overcrowded. This is definitely uncomfortable and unsuitable for the poor condition of my father, but we have to bear it. I often accompany my father because sometimes his condition is not good and he often feels motion sickness or faint on the bus. Costs of public transportation are 200 baht per round trip for two people. If my father's

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condition is rather bad, we will have to rent a private vehicle in the village to take him to the hospital and it costs 600 baht for a round trip."

(Daughter of No. 10, a poorer ESRD patient)

Figure 8.4: An example of a local road from the village of a poorer ESRD patient to the main road

In contrast, richer ESRD patients could generally afford the transportation costs and sometimes they could rent a house in the city to attain regular haemodialysis.

"During the first year after being diagnosed with ESRD in 2004, I had to receive haemodialysis twice a week. The distance between my home and the hospital is approximately 90 kilometres, so my daughters and other relatives decided to rent a house in the city which cost around 1,600 baht per month for me. So, I did not have to travel back and forth from my home to the hospital every week. However, I felt very lonely even though one of my siblings always took care of me. When my symptoms were getting better, I decided to go back home after the frequency of haemodialysis was reduced to only once a week. At present, I spend 800 baht for renting a private car from my house to the hospital."

(No. 2, a richer ESRD patient)

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Four poorer ESRD patients who died during the investigation reveal a correlation between infrequent access to RRT and the death of ESRD patients. Information about illness and suffering from their household members indicates that the major cause of the deaths of poorer ESRD patients was infrequent access to haemodialysis and erythropoietin injection (Box 2).

Box 8.2:
An example of the death of a poorer ESRD patient

Mr. Horn, a poorer ESRD patient who lived in the northern area of Korat province approximately 74 kilometres from the city, was diagnosed with ESRD in 2003. Since being diagnosed, he had trouble finding money to pay for the user fees of haemodialysis and other related costs. He died in late February 2005 due to his inability to find sufficient financial resources for the essential medical services.

About one month prior to his death, he had to move to receive haemodialysis at a private hospital in Korat, Saint Mary's Hospital. This was because there was a queue for the dialysis machine at the private hospital where he formerly registered, and he was unable to make an appointment due to lack of financial resources. At the new hospital, he still could not receive regular haemodialysis due to his irregular income and inadequate financial support. He faced difficulties in finding an available haemodialysis machine again after he missed an appointment at the new hospital. The frequency of achieving haemodialysis at the new hospital varied from 7 to 10 days for a session. Then, his symptoms considerably worsened and he had to be hospitalized at Maharat Hospital with an emergency condition caused by prolonged, infrequent haemodialysis.

At Maharat Hospital, the patient and his relatives still could not pay the user charges for haemodialysis. So, the doctor tried to flush the patient's kidneys by way of his abdomen instead, but failed. Finally, his wife and daughters were instructed by the doctor to take him back home because his overall condition was very poor and he was in his final days.

Mr. Horn went back home and was in pain for a couple of days before his death. He suffered for one year and three months with ESRD from the time he started receiving haemodialysis until his death. He had to spend all of his savings, sell much of his assets such as rice, land, and cattle, and borrowed money from his relatives and money lenders in the village to access the medical treatment. By the end, he had sold everything and his money was running low. When his six daughters could not further provide financial support, he could no longer survive.

In summary, access to haemodialysis and erythropoietin injection for ESRD patients covered by the UC scheme greatly relied on household ability to pay and degree of financial barriers (user charges). Due to limited household financial resources, patients in poorer households suffered from infrequent access to expensive health services much more than those in better-off households. Geographical barriers also played a significant role in preventing poorer ESRD patients in rural areas from accessing RRT. The availability of alternative treatments such as blood transfusion in place of the erythropoietin injection could help reduce the impact of inequitable access to expensive health care between richer and poorer households, even though the less expensive option comes with side effects.

8.4.2 Cost burden of RRT and its economic impact on ESRD households

Share of RRT health expenditure to household income and to total expenditure were used as indicators to measure the cost burden of RRT among poorer and richer ESRD patients. This approach aimed to reflect concerns about opportunity costs of household spending on health care and potential consequences of this health expenditure for ability to meet other basic needs of household members.

Table 8.7 presents the share of health, food, and other household expenditure to total monthly income of ESRD patients where completed data were available. Catastrophic health expenditure is defined as the situation where household health expenditure is above 10% of income (Prescott 1999; Ranson 2002). All ESRD patients shown in Table 8.7, except patient no.11, faced catastrophic health care costs. Poorer ESRD households had a proportion of health expenditure ranging from 25% to 68% of their monthly household income. Middle income and richer households also faced high health expenditure, but it was a lower proportion of household earnings. It should be noted that richer patient no. 1 had a high proportion of health expenditure because he was a retired government officer. Although he had a low average monthly income, he had a lot of household assets and a large amount of savings in his bank accounts.

Table 8.7: The proportion of health and other household expenditure to total monthly income of ESRD patients of different socioeconomic status and residential areas

No.	Sex	HH econ. status	Average monthly income * (Baht)	Average household expenditure (Baht)			Household expenditure as % of total monthly income		
				Health expenditure	Food expenditure	Other hh expenditure	Health expenditure	Food expenditure	Other expenditure
1	M	RR	17,000	8,750	3,150	3,525	51	19	21
4	F	RM	30,000	22,240	3,000	4,130	74	10	14
5	M	RP	27,000	18,400	3,000	14,400	68	11	53
6	F	RP	25,730	9,600	1,600	19,840	37	6	77
7	F	RP	20,000	8,000	3,500	4,970	40	17	25
9	F	RP	36,150	9,000	3,000	11,340	25	8	31
11	M	UR	300,000	25,850	21,000	132,950	8	7	44
15	F	UR	94,700	16,560	4,500	128,555	17	5	136
16	M	UM	50,000	20,000	10,000	13,200	40	20	26
17	M	UM	145,000	24,240	2,530	3,975	17	2	3
19	F	UP	23,000	10,000	5,000	4,000	43	22	27
20	F	UP	45,200	16,000	4,500	11,875	35	10	26

Note: RR = rural richer, RM = rural middle, RP = rural poorer, UR = urban richer, UM = urban middle, UP = urban poorer
* Average monthly income was calculated over the three months of investigation.

In Table 8.8, a comparison between household spending on health and total household expenditure presents a similar picture to household income, showing all ESRD patients suffered from catastrophic health expenditure caused by RRT. All poorer and middle income ESRD households had health expenditure above 25% of their total household expenditure, and a half of the richer households faced a cost burden for RRT above that level. Given the fluctuation of household income from agricultural products and the irregular earnings of households in rural areas, health expenditure for RRT and other household expenditure in some months of poorer households might be higher than monthly household income.

Table 8.8: Share of health and other household expenditure to total monthly expenditure of ESRD patients of different socioeconomic status and residential area

No.	Sex	HH econ. status	Average monthly expenditure (Baht)*	Average household expenditure (Baht)			Household expenditure as % of total monthly expenditure		
				Health expenditure	Food expenditure	Other hh expenditure	Health expenditure	Food expenditure	Other expenditure
1	M	RR	15,425	8,750	3,150	3,525	57	20	23
4	F	RM	29,370	22,240	3,000	4,130	76	10	14
5	M	RP	35,800	18,400	3,000	14,400	51	8	40
6	F	RP	31,040	9,600	1,600	19,840	31	5	64
7	F	RP	16,470	8,000	3,500	4,970	49	21	30
9	F	RP	23,340	9,000	3,000	11,340	39	13	49
11	M	UR	179,800	25,850	21,000	132,950	14	12	74
14	M	UR	42,000	30,000	5,000	7,000	71	12	17
15	F	UR	149,615	16,560	4,500	128,555	11	3	86
16	M	UM	43,200	20,000	10,000	13,200	46	23	31
17	M	UM	30,745	24,240	2,530	3,975	79	8	13
19	F	UP	19,000	10,000	5,000	4,000	52	26	21
20	F	UP	32,375	16,000	4,500	11,875	49	14	37

Note: RR = rural richer, RM = rural middle, RP = rural poorer, UR = urban richer, UM = urban middle, UP = urban poorer
* Average monthly expenditure was calculated over the three months of investigation.

The high financial burden of RRT, especially for poorer households, is exemplified by Box 8.3.

Box 8.3:
Cost burden for RRT in poorer households

Mrs. Nam was diagnosed with ESRD in August 2004. She was selected as a poorer ESRD patient because of her low and irregular household income. Before becoming sick with ESRD, Nam could work in the fields with her husband and brother. However, her husband and other household members (i.e. her nephew and niece who lived in the house) had to work harder and bear the cost burden for Nam's illness when she was sick and could not work.

Nam's husband earned approximately 120 baht a day. He occasionally had additional income from a temporary contracting job in the neighbour's field or selling seasonal agricultural products. Nam's daughter had just graduated from a vocational school and still could not find a job, and her son aged 12 years was too young to earn any money.

Regarding cost burden for illness, Nam had to pay approximately 2,400 baht per week for one session of haemodialysis (2,000 baht), petrol cost for her nephew's car (300 baht), and oral medication (100-150 baht). Although she tried to minimize the cost burden for RRT by reducing the frequency of haemodialysis to once a week, the illness costs of 9,600 baht per month accounted for 95% of her actual household income in January 2005. She had to deal with the household deficit by borrowing money from her relatives and withdrew household savings to pay for costs of RRT and other household expenditure. In February 2005, her husband earned 3,500 baht from selling maize. So the share of health expenditure to household income decreased to 23%. Furthermore, Nam spent part of the earnings in February to pay loans and other household expenditure. During the household visit, Nam revealed that the amount of her household debt was 85,000 Baht with an annual interest rate of 11.5 %.

Although all ESRD patients had to face a high level of health expenditure for the costs of RRT, richer ESRD patients tended to have less financial burden for RRT than those in the middle income and poorer groups because of their higher earnings. In richer households where data were available, health expenditure as a percentage of household income ranged from 9% to 51%, while that of the middle group was between 17% to 74%, and the poorer group ranged from 25% to 68% (Figure 8.5). Based on these findings, it can be concluded that the cost burden for RRT was greater for middle and poorer income groups than richer households.

Figure 8.5: Share of health expenditure to household income by ESRD patient of different socio-economic status
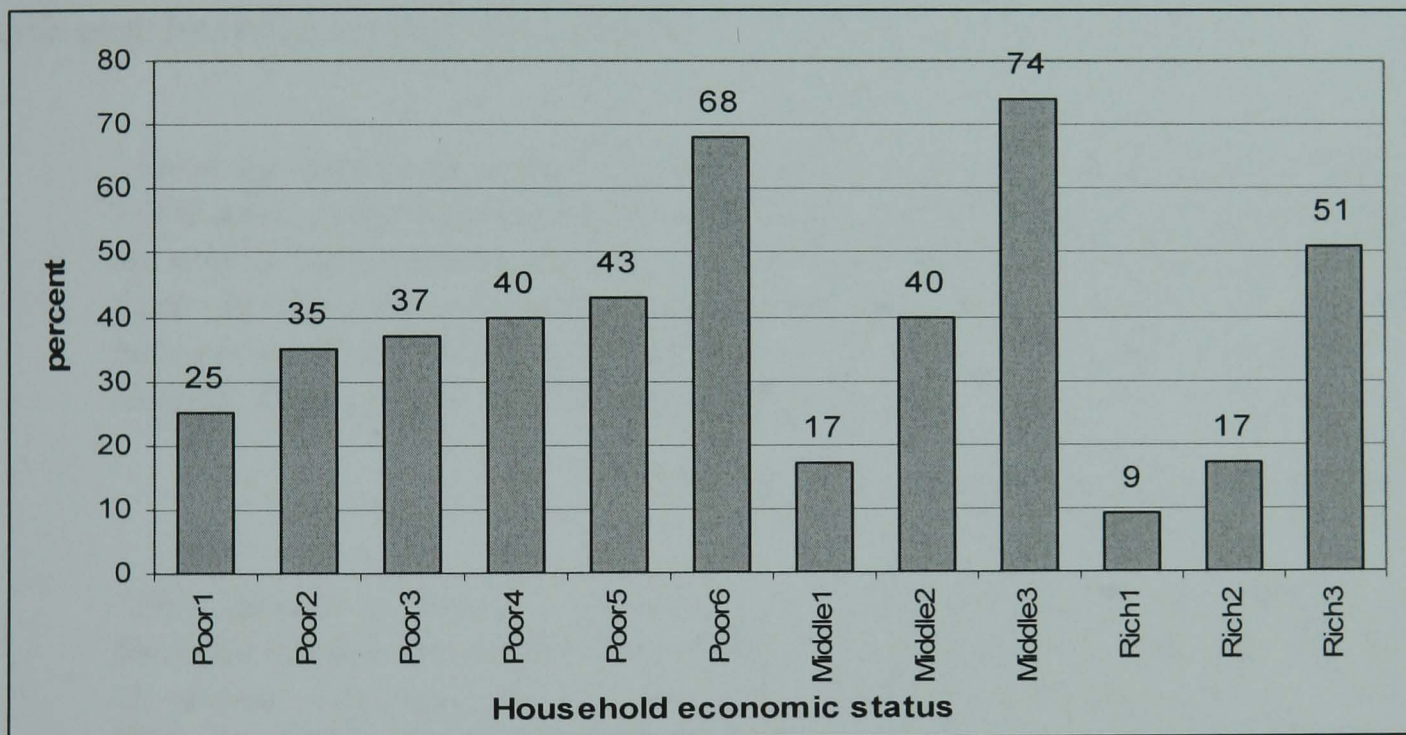
The implications of the cost burden of RRT on ESRD households differed between households of different socio-economic status. In poorer households, the cost burden for RRT tended to force many households into impoverishment due to their low and irregular household income. As shown in Box 8.3, health expenditure for RRT of a poorer patient was as high as 90% of household income. The long-term, high cost nature of RRT often force poorer households to sell assets, fall into debt and become impoverished.

"For cover the expenses for haemodialysis and transportation costs, I firstly used my savings to pay for these expenses. After my savings was depleted, I began to sell some gold necklaces (weight around 1.96 troy ounce), and approximately 1.6 acres of land; the sale of these items brought in 80,000 baht. In addition, I sold some property near my home which brought in an addition of 100,000 baht, all of which I spent for haemodialysis and other costs for accessing the medical treatment."

(No. 9, a poorer ESRD patient)

The cost burden for RRT did not only generate a financial impact on ESRD patients, but it also created an economic burden for household members and other relatives who had to provide financial support for the patient (Figure 8.6). Apart from costs for haemodialysis and injected medication, other access costs such as transportation, food expenditure, and time spent by caregivers were also needed.

"From my work I can make 5,000 baht a month. My house rental is more than 1,000 baht. I also have to pay for my children's school costs, water and utilities, my vehicle loan payment, and I'm the head of the household so I need to provide food. So where does the money come from for my mother? I need to give her 800 baht per week, sometimes 1,000. So where do I get all this money? I have no savings; I have to give everything to my mother."

(The eldest son of No. 9, a poorer ESRD patient)

"This disease is serious. Everybody in our family must help and share this financial burden. Normally, if my mother is well, then I will have some money in my wallet. But since she has been sick, I don't have any money in my wallet. With this disease, if you don't have any money then you die because this disease is also a "rich person's disease." And "rich person's disease" makes us all poor (because we have to spend all we have on treatment)."

(The younger son of No. 9, a poorer ESRD patient)

"The costs in our household are increased at times and lower at other times because I am not regularly employed. I have to spend much of my time to take my father to the hospital and to see the doctor."

(The daughter of No. 10, a poorer ESRD patient)

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Figure 8.6: A poorer ESRD patient receiving financial support from his wife and mother

In contrast, health expenditure for RRT in richer ESRD patients had less financial consequences for household living standards (Boxes 8.4 – 8.5).

Box 8.4:
Economic impact of costs for RRT on a richer household

Trisit, aged 62 years, was a richer ESRD patient who had various kinds of business with his family members. He owned six big trucks which were used for transporting commodities between Korat and Bangkok. Moreover, his wife and daughters also had a home-based business of making dry Thai desserts from rice powder. From his transporting business, he could earn more than 40,000 baht a month. The amount of earnings from the home-business was not disclosed, but they were partly used for household consumption and other household expenditure.

Trisit was diagnosed with ESRD in 2002. For five years previously, he was sick with diabetes, gouty arthritis, and high blood pressure. After he ESRD developed, he always received haemodialysis twice a week with erythropoietin injection and oral medication at a private hospital. The average cost for RRT was approximately 32,000 baht a month. He could afford haemodialysis and other medical care for his illness by using the profits of his transportation business. His wife and other family members did not have to bear costs of his illness because he earned sufficient amount of money from his own business.

Box 8.5:
Cost burden for RRT in a richer household

Adisak, aged 56 years, was a rich ESRD patient who had a wood carving business in Korat province. He owned a big woodcarving factory which could earn more than 300,000 baht a month. He was diagnosed with diabetes in 1978 when he was only 29 years old. Then, he developed ESRD as a consequence of diabetes in 2001.

Before being diagnosed with ESRD, he had a cost burden for medical care of his diabetes of approximately 1,000 baht a month. After becoming sick with ESRD, he had to pay for costs of haemodialysis, injected medication, and other medical services in the amount of approximately 30,000 baht per month. He used the earnings from his business to pay for these medical costs. The cost burden for RRT accounted for 9% of his monthly income. He could afford this and there was no impact on living standards for his family.

Adisak had two sons and two daughters. All of them are married and had their own businesses. However, they did not give Adisak financial support for costs of haemodialysis because their earnings were just sufficient for the living costs of their own families.

Evidence from illness narratives of most ESRD patients also reveals that, apart from the financial burden for haemodialysis and other accessing costs, most ESRD patients had to bear sporadic costs for emergency medical care at the time of diagnosis and acute complications which frequently occur with ESRD patients. The richer ESRD patients generally had sufficient resources to cope with such sporadic and high costs of illness, while poorer households usually struggled to deal with the additional financial burden.

"I had symptoms of nausea and vomiting with swollen legs, and could not take any food before being diagnosed with ESRD in early 2004. After being hospitalized at the private hospital (Ratchasima-Thonburi Hospital) for almost one month, I had to pay costs for hospitalization and dialysis of nearly 200,000 baht. Fortunately, my daughter, who married a French businessman, can give me financial support for such expenses. She also regularly sends an amount of money from France to pay for costs of haemodialysis and other household expenditure every month."

(No. 2, a richer ESRD patient)

Emotional stress and depression from inability to find financial resources for costs of medical care was observed among poorer ESRD households. Stress occurred in both ESRD patients and other household members.

"I am so sorry to inconvenience my children so much. I am so sorry that my children's finances are all gone. I am so troubled, especially when I think of my daughter in Bangkok and my family here. All of my children are helping and giving all that they can. But there is no one in the family who can help a lot."

(No. 10, a poorer ESRD patient)

"Sometimes I feel so stressed because we have to find money to pay for the household expenses and my father's treatment. I wonder why life no longer has happiness."

(The daughter of No. 10, a poorer ESRD patient)

"Before when she was well I wasn't that tired. I would go home, rest, and feel relaxed. Wherever I went, whatever I did, I felt good. Now every day I am distressed because my mother is not well. And in every family, it is the head of the household who has to come up with the money. Aye... This is what it means to help. Aye..."

(A son of No. 9, a poorer ESRD patient)

"Things that make me feel bad in life are this illness and anything related to it. Why must it be like this? Previously, everything was good. But now the money that my children earn which used to bring them happiness now is a source of sadness. Now they must use their money, not for themselves, but for me. The money that my children get, they cannot use for themselves and I am very sorry for that."

(No. 9, a poorer ESRD patient)

8.4.3 Coping strategies for costs of RRT between poorer and richer households

Poorer ESRD patients employed many coping strategies to deal with the implications of the high cost burden for RRT, while richer patients rarely used such strategies because of their greater financial resources and less implications (Box 8.6).

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│                              Box 8.6:                                     │
│            Coping strategies for costs of RRT in a richer household       │
│                                                                           │
│  Chalong was a retired government employee who was diagnosed with ESRD    │
│  in 2002. The socio-economic status of Chalong's family was wealthy. He   │
│  owned a lot of land in many provinces, with a number of cars and houses. │
│  When he had to pay for costs of haemodialysis by himself, he decided to  │
│  sell 12 acres of land which brought in over 2 million baht. He kept this │
│  amount of money to pay for medical care costs and other household        │
│  expenditure. Furthermore, he also had a retail shop business with his    │
│  wife, which earned approximately 15,000 baht a month. He usually used    │
│  recurrent household income to pay for dialysis and other medical care.   │
│  If the revenue was not sufficient, he would use his savings from selling │
│  land.                                                                    │
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Details of coping strategies for costs of RRT in poorer households are as follows.

Reducing the frequency of haemodialysis and denial of erythropoietin injection

The most common strategy employed by poorer ESRD patients was a reduction in the frequency of haemodialysis and a denial of erythropoietin injection. Reducing haemodialysis from twice to once or less than once a week reduced the cost burden for RRT from approximately 16,000 to 8,000 baht per month. Furthermore, a denial of erythropoietin injection saved household financial resources for about 10,000 – 12,000 baht per month. Although this strategy employed by poorer ESRD patients effectively reduced household health expenditure, patients had to suffer the health consequences of infrequent access to haemodialysis. In contrast, richer households seldom used this type of coping strategies.

Borrowing or taking loans

Poorer ESRD households often employed a coping strategy of borrowing or taking loans to cope with costs of RRT. All poorer patients had some extent of household debts associated with costs of RRT, while one-fourth of the middle income and one-seventh of the richer groups struggled with such household debts (see Table 8.9). The magnitude of debts among poorer households ranged from 20,000 to 800,000 Baht, and three cases had a ratio of debts to household monthly income of more than 10:1. Fewer richer and middle income households faced household debts and their debts were smaller.

Table 8.9: Household debt compared to monthly income by ESRD patient with different economic status and residence

No	Sex	Age	Household economic status	No. of months receiving dialysis	Amount of debt related to costs for RRT (Baht)	Ratio of debt to monthly household income	The purposes of debt
1	F	84	RR	10	None	0	
2	M	62	RR	36+	None	0	
3	M	26	RM	40+	300,000	5:1	His mother took a loan from the school's union as a preparation for his kidney transplantation
4	F	45	RM	72+	None	0	
5	M	23	RP	24+	300,000	11:1	Loans for his new pick-up car used for his business
6	F	42	RP	4	85,000	3:1	For agricultural investment and costs of illness
7	F	48	RP	20	500,000	25:1	Debt from mortgaging her car and house for costs of haemodialysis and other household expenditure
8	M	40	RP	35	100,000	NA	For patient's illness costs
9	F	61	RP	30+	70,000	2:1	For patient's illness costs
10	M	71	RP	15	230,000	NA	Debt of his two daughters used for his illness costs
11	M	56	UR	40+	None	0	
12	M	61	UR	24+	None	0	
13	M	62	UR	24	None	0	
14	M	65	UR	12	None	0	
15	F	42	UR	40	1,000,000	11:1	Debt for two machines used for the family's business
16	M	63	UM	10	None	0	
17	M	46	UM	14	None	0	
18	M	33	UP	24+	50,000	NA	For patient's illness costs
19	F	59	UP	24	800,000	35:1	Debt of the patient's daughter for housing reconstruction and patient's costs of illness
20	F	70	UP	68+	20,000	0.44:1	For patient's illness costs

Diversifying financial resources from relatives

To diversify household financial resources to cope with costs for RRT was commonplace in many poorer ESRD patients. Some patients' relatives had to work for longer hours or find extra work during out-of-office hours. The quotations below and details in Box 8.7 demonstrate this type of coping strategy adopted by poorer and middle income households.

"So I have to get the money. I look for special work, but it's not easy. It's difficult to find work in the evenings and late night hours. But I have to make adjustments for my mother. If I don't, then where will my mother get what she needs? So I have to find it here or there—anywhere I can."

(The younger son of No. 9, a poorer ESRD patient)

Box 8.7
Diversifying financial resources from relatives in a poorer household

Thip's younger sister was the main person who provided financial support for Thip's haemodialysis costs. In 1999, Thip's sister had to quit a job as a government officer in Bangkok to go home an take charge of Thip's sweet soya milk business because of her illness. At her home in Sea Keaw district, she could earn approximately 700-800 baht (£10-11) a night from selling sweet soya milk. This income was sufficient for Thip's health expenditure and other household consumption.

Thip's sister had to prepare the ingredients of the soya milk every afternoon. When the soya milk was finished, she sold it from 10 p.m. in the evening until 9 a.m. the following morning. Due to Thip's financial requirements, her younger sister had to work seven days a week, and she could not go anywhere for five or six years. She also informed us sadly that she could not get married because she was in charge for her sister's illness and her father was too old to work. This was her responsibility.

Using savings and selling assets

Some poorer households withdrew money from their savings, as early coping strategies before other strategies were adopted (i.e. selling assets). In the meantime, other strategies such as reducing other household expenditure, or taking loans were also employed.

"Before this, I had about 40,000 – 50,000 baht, but it is all gone. I planned to keep it for food and housing when I was old. I sold my cattle; I sold rice; I sold anything I had. My dialysis cost me everything."

(No. 10, a poorer ESRD patient)

"So now I have to live day to day. But before I had gold necklaces, I had everything. Now it is all gone. Aye... (rising laughter) Gone... It's all going away."

(The eldest son of No. 9, a poorer ESRD patient)

"Apart from my younger sister's financial support, I usually receive some amount of money from my younger brother. Sometimes, revenue earned by my younger sister is insufficient, so I have to withdraw some amount of savings to pay for costs of haemodialysis and other household expenditure. During the past two months, I withdrew 6,000 baht from my bank account because our regular income was not enough for total household expenditure."

(No, 4, a middle class ESRD patient)

Reducing household expenditure

Reducing flexible items of household expenditure was another common coping strategy among poorer ESRD households. Cutting household expenditure for food and education for children was experienced by a few poorer ESRD patients.

"Others in our household helped in bringing food to eat, which helped to decrease the household budget. Furthermore, we eat conservatively, eating primarily vegetables and spicy sauce. But my youngest daughter needs to eat fairly well as she is still quite young and developing."

(A daughter of No. 10, a poorer ESRD patient)

"My wife and I decided to move our children from a private secondary school to a new public secondary school. This is because we want to reduce our household expenditure and costs since the public secondary schools are cheaper than those in private settings. Although, we are both concerned over the quality of the public school, in this situation we have to reserve some money for costs of haemodialysis and other health care costs."

(No. 17, a poorer ESRD patient)

8.5 Findings from heart disease patients

This section provides research findings from poorer and richer heart disease patients in the three different areas: 1) access to open heart surgery; 2) cost burden for cardiac operations and its financial impact on households; and, 3) household coping strategies.

8.5.1 Access to open heart surgery between richer and poorer households

Interview data of heart disease patients revealed that poorer households did not face direct payments for costs of open heart surgery. Both poorer and richer heart disease patients paid only a nominal fee of 30 Baht for operation costs and other medical services during their hospitalization (Boxes 8.8 & 8.9). As shown in the following quotation, most heart disease patients were satisfied with the new policy on universal coverage and they felt very happy because after the operation they could work again and live as a healthy person (Figure 8.7).

> "If I didn't have the UC card, the doctor said he probably wouldn't be able to operate because I didn't have any money. The cost of the operation was approximately 100,000 baht and the UC card was very good and could help a lot. If I didn't have this card, he probably couldn't accept to do my operation."

(No. 11, a poorer heart disease patient)

<u>Box 8.8:</u>
<u>Access to a cardiac operation of a poorer heart disease patient</u>

Aung was a 55-year-old heart disease patient residing in a poor urban area of Korat. She became ill from a leakage of her heart valves in 2000. When she was first diagnosed, she did not have any type of health insurance card. So, she spent around 300-500 baht for a hospital visit when she received her medication at Maharat Hospital. After achieving the Low Income card from the government a year later, she did not have to pay for oral medication. The Low Income card was changed to the UC card in 2002.

In 2004, her heart disease symptoms were getting worse. She was frequently fainting and so fatigued that she could not go anywhere. After fainting on the street in September 2004, the doctor indicated that she could not postpone the operation any longer, and it would now be possible for her to have the operation. This was because Maharat Hospital could provide the cardiac operation and the expenses would be covered by the UC scheme. So, she received the open heart surgery at the end of 2004, and paid only 30 Baht for the operation and other medical expenses.

During the household visits in January 2005, her health condition was very well and she could breathe easily. She did not have any trouble with walking and could go out anytime without weariness. She felt very happy because the UC scheme helped her to access the operation, and then she could live longer with her young grandson.

<u>Case study box 8.9:</u>
<u>Access to a cardiac operation of a richer heart disease patient</u>

Dokmai, aged 56 years, was a richer heart disease patient who received open heart surgery at Maharat Hospital at the end of 2004. She was first diagnosed with coronary artery obstruction and a leakage of heart valves early in the 1980s. Then, she had her first cardiac operation at the Rama Thibodi hospital, Bangkok in 1983 because at that time there was no open heart surgery at Maharat Hospital. After the operation, her health condition was quite good for twenty years. Later, she started developing some symptoms of heart disease such as fatigue, difficulty breathing, weariness, and inability to walk or sleep. When these symptoms were getting worse, she went to Maharat Hospital to receive physical examination and further investigation. Because of deterioration of the artificial valve and the function of her heart, she had to receive a second heart surgery in 2004 using benefits of the UC scheme. She paid only 30 baht for the operation and other hospital services at Maharat Hospital. After the second operation, she could work and do normal activities without weariness. She was quite satisfied with the quality of the operation and other services provided by medical staff at Maharat Hospital.

The economic status of Dokmai's family was quite wealthy. Her family had plenty of land and could earn more than 120,000 baht per year from planting rice. She also had a retail shop, which generated approximately 9,000 baht per month in revenue. She gave an opinion that if she could not use the UC scheme card for the operation, it was not a problem for her to afford costs of the operation in a bigger public or a private hospital in Bangkok.

Figure 8.7: A poorer heart disease patient who could work in the fields after receiving a cardiac operation

Although financial barriers to open heart surgery were removed, heart disease patients residing in rural areas faced a barrier to health services caused by the referral process between community hospitals and the regional hospital. In practice, a patient who registered as a beneficiary of the UC scheme with a community hospital had to get a referral document from the community hospital before receiving health services at the tertiary care hospital. Box 8.10 and the following quotation reveal barriers to open heart surgery caused by delay in the referral process. Concerns over the expenses that the community hospitals had to pay to reimburse the regional hospital seemed to be a crucial factor influencing reluctance of medical doctors to refer the heart disease patients from community hospitals to the tertiary care level.

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│                            Box 8.10:                                      │
│        Referral barriers to cardiac surgery of a poorer heart disease     │
│                              patient                                      │
│                                                                           │
│  Jorm, a poor farmer from Chakarat district, became ill with heart        │
│  disease in 2003. She first took oral medication at a private clinic of   │
│  a medical doctor who was working at the community hospital. After being  │
│  treated with oral medication and sometimes injected drugs for six        │
│  months, her symptoms were getting worse. Then, she decided to go to the  │
│  regional hospital for further investigation and treatment. The medical   │
│  doctor at the community hospital was not willing to refer her to Maharat │
│  Hospital. He tried to persuade her to get further medical treatment at   │
│  his private clinic and the community hospital. She had to travel back    │
│  and forth for several times before achieving the referral document from  │
│  the community hospital. The medical doctors and the hospital staff       │
│  seemed to be unwilling to give her the referral document.                │
│                                                                           │
│  The medical doctor at Maharat Hospital found that two blood vessels of   │
│  Jorm's heart were almost totally obstructed. After a thorough            │
│  examination and waiting in the queue for surgery, she received her open  │
│  heart surgery at the end of 2004, and paid only 30 Baht for costs of the │
│  operation and other hospital services.                                   │
│                                                                           │
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Another example of a poorer heart disease patient facing referral barriers to open heart surgery from the community hospital that she registered as the UC beneficiary is shown as follows.

> *"Since I was diagnosed with heart disease in 2001, I took medication from the district hospital every month for three years. The medical doctor at the district hospital only gave me oral medication and he sometimes asked me about the symptoms and examined my blood pressure or my heart beat. The oral medication that he gave was always the same. When I asked him for a referral document to Maharat Hospital because I was not getting better, he asked me the reason why I wanted to go to the regional hospital. He did not have any plan to refer me to the regional hospital, even though my symptoms were getting worse. Finally, I got the document after visiting the community hospital for several times. The doctor at Maharat Hospital told me that I must have a cardiac operation quickly because there was severe leakage of my heart valves"*

(No. 7, a poorer heart disease patient)

Interviews about utilization of open heart surgery and perception of health services among the heart disease patients revealed a common concern over the quality of cardiac operations provided to the UC beneficiaries. Before receiving the operation, both richer

and poorer patients expressed their concerns about the quality and the expected outcome of open heart surgery at Maharat Hospital.

> *"Some villagers argued that the quality of government health services provided by the UC scheme is not good, and I might be at risk from the consequences of the operation if I use its benefit. Although I was quite worried about this warning, I had no choice. My symptoms were getting worse and I could not work or do anything. It was impossible for me to find 150,000 Baht to cover the costs of operation at a bigger public or private hospital in Bangkok. So, I decided to receive the operation at Maharat Hospital and the outcome of the operation was very good. I paid only 30 Baht for the costs of operation, medication, and other hospital services."*

(No. 5, a poorer heart disease patient)

> *"My daughters and sons did not want me to get the operation because they experienced a neighborhood patient who had a bad experience after a back operation at Maharat Hospital. At first, they suggested I avoid the operation, but I wanted to get better. I was so tired and could do nothing when I was sick with heart disease. I told them that I wanted to get better because I wanted to take care of my grandsons and would like to work again as a healthy person."*

(No. 9, middle income heart disease patient)

In Nakorn Ratchasima province, the relatively short experience of the cardiac operative team at Maharat Hospital, which was established in 2002, posed a public concern over the quality of the cardiac operations. Furthermore, there was a widespread perception that the quality of health services provided by government health facilities under the UC scheme was poor due to inadequate financial support of the government (Kittikanya 2004). As a result, some richer heart disease patients sought the operation at a private or university hospital in Bangkok. In contrast, poorer heart disease patients had no choice and had to obtain the operation provided by cardiac surgeons at Mahatrat Hospital. To some extent, concerns about the quality of health services among the poorer patients affected their decision to access and utilize essential health services, despite having health needs.

8.5.2 Cost burden for open heart surgery on poorer and richer households

Table 8.10 presents share of health expenditure to average household income of heart disease patients where data were available during the three month period of investigation. Health expenditure of the heart disease households was quite low, compared to their household income. Most households did not have any health expenditure during the three-month period of household visits. The highest proportion of health expenditure was only 5 % which was found in heart disease patient number 1.

Table 8.10: Share of health and other expenditure to household monthly income by heart disease patient of different socioeconomic status and residential area

No.	sex	HH econ. status	Average monthly household income* (Baht)	Average household expenditure (Baht)			Household expenditure as % of total monthly income		
				Health expenditure	Food expenditure	Other hh expenditure	Health expenditure	Food expenditure	Other expenditure
1	F	RP	7,100	330	2,770	2,317	5	39	33
2	M	RP	5,300	150	3,475	1,645	3	66	31
3	M	RP	9,925	0	1,750	2,456	0	18	25
4	F	RP	8,000	275	1,000	6,714	3	13	84
6	M	RP	45,358	0	3,000	7,426	0	7	16
8	F	RM	7,250	0	3,600	3,710	0	50	51
10	F	RR	455,000	0	11,000	358,080	0	2	79
11	F	UP	12,350	70	2,850	6,577	1	23	53
12	M	UP	8,100	0	3,300	5,410	0	41	67

Note: RR = rural richer, RM = rural middle, RP = rural poorer, UP = urban poorer
* Only heart disease households where data are available

As demonstrated by Boxes 8.8 & 8.9, there was no significant direct medical care cost of open heart surgery for either richer or poorer households. However, some poorer patients experienced financial burden for transportation costs and food for villagers and neighbours who visited the patient at the regional hospital.

> "Although I had to pay only 30 baht for costs of my cardiac operation and other medical services at Maharat Hospital, I still had to borrow 15,000 baht with an annual interest rate of 5%. This money was spent on food and transportation costs for villagers and those who visited me when I was admitted to Maharat Hospital."

(No. 5, a poorer heart disease patient)

8.5.3 Household coping strategies for costs of open heart surgery

From the research findings, heart disease patients of the UC scheme did not experience significant payments for health care costs of open heart surgery due to the well functioning financial risk protection of the UC scheme. Although a few poorer households had a financial burden for transportation costs and food expenditure of their relatives during hospital admissions, they could manage this financial burden by using their savings or taking loans.

8.6 Discussion

8.6.1 Summary of research findings

The research findings show that access to haemodialysis and erythropoietin injection of ESRD patients covered by the UC scheme greatly depended on household's ability to pay and degree of the financial barriers (user charges). ESRD patients in poorer households suffered from infrequent access to RRT much more than those in better-off households because of their limited household financial resources. Infrequent access to haemodialysis and inability to obtain essential and expensive medication (erythropoietin) was a major cause of patients' death. In addition, geographical barriers played a significant role in preventing poorer ESRD patients in rural areas from accessing RRT. Although all ESRD patients faced a high level of health expenditure caused by RRT, poorer patients tended to suffer from the financial burden of RRT much more than their richer counterparts, and a high proportion of them faced financial catastrophe from health care costs. Poorer patients adopted various financial strategies to cope with high health care expenditure, which impacted not only ESRD patients, but also household members and patients' relatives who had to provide financial support for the costs of RRT.

The research findings from heart disease patients showed that neither poorer nor richer patients under the UC scheme experienced significant payments for health care costs of open heart surgery due to the well functioning financial risk protection of the UC scheme. Although a few poorer households had a financial burden for transportation costs and food expenditure for their relatives, they could manage this financial burden by using their savings or taking out loans without a great financial impact on household living standards. Most heart disease patients were happy with the universal coverage policy because it allowed them to access and utilize expensive health services.

8.6.2 Methodological limitations

Difficulties in conducting the qualitative study on poorer and richer ESRD and heart disease patients were different. Poorer ESRD patients were difficult to find because most of them die in a short period of time if they can not afford the costs of RRT or can not bear the long-term financial burden. In contrast, poor co-operation of richer ESRD patients led to difficulties in encouraging them to participate in the study. In this research, richer heart disease patients were rarely found because most of them did not choose to have their cardiac operations at Maharat Hospital. Richer patients had more choice in determining their medical care than poorer patients, and they preferred to seek the operation from a university or big hospital in Bangkok. Hence, using secondary data of patients receiving cardiac operations at Maharat Hospital provided a limitation to reach patients in richer households. Similar to ESRD households, most heart disease patients in better-off households also refused to participate in the investigation because they did not want to waste their time contributing to the study.

How to achieve accurate data on household income and expenditure was another limitation in the assessment of the cost burden for RRT and its financial impact on richer and poorer households. In this study, richer households were reluctant to reveal their actual income and household assets, while poorer households were distressed to disclose their household income and expenditure due to their suffering and grief from illness

costs. With this limitation, findings of the financial burden for costs of RRT on ESRD households of different socio-economic status should be interpreted with care.

The interpretation of the cost burden for RRT as a percentage of household income faced two limitations on poorer ESRD households. First, poorer ESRD patients generally tried to minimize their household spending on health care by reducing the frequency of accessing haemodialysis and declining to obtain expensive injected medication (erythropoietin injection). As a result, the proportion of health expenditure to household income in poorer ESRD patients was lower than it would otherwise be. Second, there was seasonal variation of monthly household income, especially households in rural areas. In some poorer households, earnings from agricultural products were high in one month and low in another month. Moreover, some poorer households smoothed out their income deficit by using coping strategies such as taking loans, selling assets, or withdrawing from their savings. With these variations of household income and financial coping strategies, a comparison of household health expenditure and average household income across different time periods should be interpreted with caution.

In addition, difficulties in classifying ESRD patients into different socio-economic groups pose a concern over the interpretation of the cost burden for RRT between richer and poorer households. A problem was created by the mismatch between using the amount of household monthly income and consensus among the investigators to classify households into different socio-economic groups. Although the investigators tried to assess household economic status by using multiple data sources (i.e. information from health care providers, informal interview during the introductory visits, and direct observation of household assets), information about household monthly cash income revealed a poor to moderate correlation with the assessment on household economic status made by the researchers, especially in richer and middle income households. The money-metric approach (household income or expenditure) also resulted in a problem of assessing poorer household socio-economic status because their monthly income varied according to the agricultural season, and other financial sources such as temporary employment, taking loans, and selling assets. Different means testing approaches could

lead to different groups of household socio-economic categories. Using different tools to classify household socio-economic status could result in different pictures and findings of cost burden for RRT between richer and poorer households.

8.6.3 General discussion

These case studies on ESRD and heart disease patients show the economic impact of the limited benefit package of the UC scheme on poorer and richer households in three different ways. First, the inclusion of open-heart surgery in the benefit package of the UC scheme provided largely equitable access to this expensive health service for poorer heart disease patients, which some patients previously could not access. The absence of financial barriers to open heart surgery promoted a greater possibility of poorer patients accessing this expensive health service when needed. In contrast, the exclusion of RRT from the UC benefit package resulted in considerable financial barriers in accessing RRT, and a substantial, negative financial impact on poorer ESRD patients and their household members. Infrequent access to haemodialysis and inability to receive injected medication (erythropoietin) due to limited financial resources appeared to be a major cause of the death of four poorer ESRD patients in this study. It is likely that the decision not to include an essential but expensive health service in the benefit package of a public health insurance scheme can affect poorer households, in terms of infrequent access to health services and considerable financial barriers, much more than their richer counterparts.

Second, the financial barriers to an expensive health service not included in the UC benefit package indirectly led to the situation that richer patients and CSMBS beneficiaries could benefit more from government health services than poorer patients. The investigation of ESRD patients indicated that CSMBS beneficiaries were the majority of ESRD patients who benefited from RRT services in public facilities, whereas poorer patients covered by the UC scheme had to seek health care from private providers. In contrast, when an expensive health service such as a cardiac operation was included in the benefit package, a greater proportion of poorer heart disease patients could access the operation. The waiting list for cardiac operation was significantly occupied by UC and

the SSS beneficiaries, while many richer heart disease patients opted to seek care from a university or large private hospital in Bangkok. These findings indicate that the benefit package of the public health insurance scheme is a factor affecting access to government health resources of poorer patients. Also, as shown in the case study of RRT and open heart surgery, a difference in the inclusion in the UC benefit package resulted in differences in ability to access and utilize these two expensive health services of poorer households as clearly shown in the case of RRT. In addition, changes in the design of provider payment methods and reimbursement pre- and post-UC for open heart surgery influenced the supply-side responses of public health care providers and access to health care of poorer heart disease patients.

Third, financial burden of RRT forced poorer households to face financial catastrophe and poverty due to the high and ongoing costs for RRT. The low and irregular income of poorer households and a lack of a social safety net resulted in a greater catastrophic impact on the poorer households than the richer families. Poorer patients adopted some financial strategies to reduce household expenditure such as reduction in the frequency of haemodialysis, food expenditure, and transportation costs, but these strategies greatly affected their quality of life. In contrast, richer households experienced less financial burden from RRT due to their higher income and the availability of a safety net for medical care costs. It is also evident that the economic burden of RRT did not only impact on ESRD patients, but also created a financial impact on household members and other relatives who had to provide financial support for the ESRD patients. In some poorer patients, health care costs for RRT posed a catastrophic impact on other families whose members were in charge of providing financial support for ESRD patients.

Geographical barriers to expensive health services provided by tertiary care hospitals posed a greater problem of inequitable access to health services of poorer patients, especially those in rural areas. Apart from difficulties in travelling from a rural or remote area to seek health care in the city, poorer ESRD patients had to bear higher expenditure for transportation and other related costs for accessing health services.

The referral process from community hospitals to the regional hospital appeared to be the major barrier to cardiac operations experienced by some poorer heart disease patients. Although financial barriers to open heart surgery are reduced by the inclusion of cardiac operations in the benefit package of the UC scheme, some heart disease patients faced difficulty in getting referred from the district facilities to the regional hospital. Concerns over the expenses that the community hospitals had to pay to reimburse the regional hospital seemed to be a crucial factor influencing reluctance in referring the heart disease patients to the tertiary care level.

From the research findings of the referral barriers to open heart surgery, adequate government health resources to finance health facilities and appropriate health financing arrangements are necessary for the government to protect households against expensive medical care costs and improve equitable access to health services. The system design which allows tertiary care hospitals to be directly reimbursed for health care expenses from primary and secondary care facilities can lead to a reluctance to transfer patients to obtain appropriate medical treatment at the higher level of care. It should be noted that not only the inclusion of health services in the UC benefit package, but appropriate financing arrangements, the availability of qualified health service systems with skilful human resources, and fair reimbursement of healthcare providers, are also needed for protecting households and individuals for health care costs.

Many coping strategies for costs of RRT adopted by poorer households are similar to those reported in the literature. The strategy for reducing the frequency of medical treatments or denial of health services such as erythropoietin injection was also experienced in some previous studies about the cost burden for illness in developing countries (Kabir, Rahman et al. 2000; Russell 2004; McIntyre and Mooney 2007). Other strategies such as taking loans, diversifying household resources from other relatives, selling household assets, and reduction in other household expenditure are also illustrated in other studies (McIntyre and Mooney 2007).

Using RRT as a tracer to assess the impact of excluding an expensive health service from the benefit package of public health insurance shows a greater economic impact of such a policy decision on poorer households and the disadvantaged. Financial barriers to health services and inequitable access to health care can lead to a higher incidence of mortality and morbidity in poorer households. In addition, greater financial consequences not only impact patients, but also their relatives and other household members. Poorer households tended to have lower capacity of using different household strategies to cope with costs of illness. With these research findings, if the government has a policy objective on protecting households and individuals from catastrophic health payments, the policy decision to exclude expensive health services from the UC benefit package using economic evaluation perspective requires further consideration.

8.7 Conclusions

This chapter aimed to describe the economic impact of costs for expensive health services included and not included in the UC benefit package on Thai households of different socio-economic status. Three areas of the impact explored were: 1) access to and utilization of expensive health services; 2) financial burden for health care payments; and, 3) coping strategies for costs of illness between poorer and richer households. Two expensive health services, renal replacement therapy (RRT) for end-stage renal disease patients (ESRD) and open-heart surgery for heart disease patients, were used as tracers for this investigation because the former has not been included in the UC benefit package since the instigation of the UC policy, while the latter was included. Poorer and richer patients in both urban and rural areas of Nakorn Ratchasima province were selected as the unit of analysis in order to assess the different economic impact of these two expensive health services on households of different socio-economic status. Four investigating tools addressing the objectives of the research were employed through a longitudinal household approach which lasted for three months.

Results revealed that the decision not to include RRT in the UC benefit package posed considerable financial barriers and a substantial economic impact on poorer ESRD

patients. Infrequent access to haemodialysis and inability to obtain essential and expensive injected medication (erythropoietin) due to limited household resources was likely to be a major cause of the death of poorer ESRD patients. In contrast, the inclusion of open-heart surgery in the UC benefit package significantly facilitated access to cardiac operations for poorer heart disease patients. Financial barriers to RRT prevented poor ESRD patients from accessing government health services, and RRT services in public and private facilities primarily served CSMBS beneficiaries and richer ESRD patients, respectively. The financial burden for RRT meant all poor patients faced financial catastrophe and possibly impoverishment because of its high costs and the low income of poor families. Various financial strategies to cope with high costs of RRT include reduction in the following areas: frequency of haemodialysis, food consumption, and using private transportation, as well as taking loans with a high interest rate, all of which were generally adopted by poorer ESRD patients. The financial burden for costs of RRT did not only impact on ESRD patients, but also created an economic impact on household members and patients' relatives who had to provide financial support for the costs of RRT.

Apart from financial barriers to RRT, geographical barriers were also an important factor in that they prevent poor ESRD patients in rural areas from accessing expensive health services which are solely available in the city. Also, the referral system of the UC policy hindered access to cardiac surgery, even though this expensive health service has been included in the UC benefit package.

Limitations of this study were: 1) difficulties in identifying poorer and richer ESRD and heart disease patients; 2) difficulties in achieving accurate information on household income and expenditure for assessing financial burden for medical care costs; 3) behavioural responses of poorer households for health care costs which changed the patterns of household spending and the degree of financial burden for expensive health services; and, 4) the mismatch of household living standards between data obtained by interviews on monthly income/expenditure and the judgement of the researchers.

Research findings from this chapter raise a question on the appropriateness of the UC benefit package and whether a non-cost-effective medical intervention like RRT should be included into the benefit package of universal public health insurance, given the two objectives of universal coverage which are: 1) to guarantee universal access to essential health services when needed; and, 2) to protect households against expensive medical care costs. Issues of the benefit package will be discussed in greater detail in the next chapter.

SECTION 4: DISCUSSION, CONCLUSIONS, AND POLICY RECOMMENDATIONS

CHAPTER NINE

DISCUSSION:

METHODOLOGICAL STRENGTHS AND WEAKNESSES

AND DISCUSSION OF RESULTS

This chapter discusses methodological strengths and weaknesses of the study including use of a before-after approach, secondary data analyses of nationally representative household surveys, analysis of benefit incidence, and the case studies of two expensive health services, for assessing the impact of the UC policy. Drawing on the empirical findings and literature review, the research findings are then summarized and discussed.

9.1 Methodological strengths and weaknesses

9.1.1 Strengths and weaknesses of the before-after study using multi-method approaches

As stated in chapter 4, this study employed a research design using a before-after study because of the nationwide implementation of the UC policy in Thailand, which prevented the use of a rigorous approach of an experimental study comparing a control and an experimental group. Though experimental studies, especially the randomized controlled trial (RCT), have been identified as strong research designs for investigating cause and effect in health-related research, these research designs are not always practical or ethically acceptable to conduct in real life settings (Bowling 2002), particularly in a situation like the nationwide implementation of the UC policy. Some social scientists also suggest that experimental studies may be inappropriate for social science and health policy research because sometimes the research not only aims to predict the effect of a variable (e.g. gender, age, or diagnosis), but rather, aims to describe social phenomena or explore individual or organizational behaviour affected by a health policy or an intervention (Green and Browne 2005). Therefore, a range of other research approaches including before-after study, after only study, and time series studies, have been widely used as alternatives to experimental studies. Though conclusions from these alternative

approaches tend to be more tentative than experimental studies, these methods have much to offer if carefully used and interpreted.

This study analyzed nationally representative household surveys, the SES and the HWS, using a multi-method approach in order to address weaknesses of the before-after study design. As two major drawbacks of using the before-after approach without a randomised control group are sample selection biases and the inability to distinguish effects from extraneous factors (Bowling 2002), secondary data analyses of the nationally representative household surveys of the SES and the HWS can be utilized to address the issue of sample selection bias. Given that the unit of analysis is a country or an entire health care system, using the before-after approach with these two nationwide household surveys allows for the exploration of any changes at the national level with implementation of the UC policy. Though the absence of the control group in the before-after study results in limitations in excluding the effect of extraneous factors, this study attempted to overcome this shortcoming by using multi-method approaches (Teddlie and Tashakkori 2003; Green 2005) which include both quantitative and qualitative investigations to describe and explore in greater detail the impact of the UC policy on equity of the Thai health care system.

In social science research, multi-method approaches have been increasingly used to explore social phenomena because such approaches provide a better understanding of the complex web of factors affecting health and health service use (Green 2005). There appear to be three areas in which these approaches are superior to single approach designs: 1) being able to answer research questions that the other methodologies cannot; 2) providing better and stronger inferences; and 3) providing the opportunity for presenting a greater diversity of divergent views (Teddlie and Tashakkori 2003). With these advantages, the multi-method approach is relevant to this study because implementation of the UC policy greatly impacted on the Thai health care system in various dimensions, especially health financing arrangements and financial barriers to health services. In addition, to address the drawback of the before-after study on excluding confounding factors affecting equity of the Thai health care system, multi-

method approaches enable researchers to answer both confirmatory and explanatory questions, and explain the relationship between the studied variables. In this thesis, qualitative and quantitative investigations were employed in tandem to help validate the impact of the UC policy on equity of the Thai health care system, and to offset the weaknesses of each research approach.

9.1.2 Assessing the impact of the UC policy on the entire health care system, not on the UC scheme

As described in Chapter 3, the universal coverage arrangement of the Thai health care system comprises three main public health insurance schemes : the CSMBS; the SSS; and the UC scheme, since the UC policy was implemented in 2001. These three schemes have different sources of health care finance, provider payment methods, characteristics of health insurance beneficiaries, and benefit packages. The UC policy involved a major shift of beneficiaries of previously government subsidized health insurance schemes, the LIC and the VHC schemes, to the UC scheme two years later. In addition, it was anticipated (and borne out by the results) that a certain proportion of the uninsured and private health insurance beneficiaries in 2001 might have shifted their health insurance coverage to the UC scheme by 2003. It was therefore thought to be problematic to analyze changes in health care use and benefit incidence only for the UC scheme population. In addition, the UC policy introduced health financing arrangements which greatly affected the workload and provider responses of both public and private health care providers, and all three schemes within the UC policy entail public subsidies. Therefore, it was thought appropriate to assess the impact of the UC policy on health equity with respect to the entire health system, not just the UC scheme.

9.1.3 Secondary data analyses of nationally representative household surveys

Assessing the impact of the UC policy on the Thai health care system through secondary data analyses of the SES and the HWS aimed to improve previous small scale assessment, and to avoid sample selection bias in assessing the impact of the UC policy

on equity. The SES contains data on different types of household health payments and household living standards, and the HWS comprises information on health seeking behaviour, health service use, and health insurance coverage, plus limited data on household living standards. The existence and regularity of these two nationally representative household surveys, especially during the period prior to and after implementation of the UC policy in 2001, provides an opportunity to use their data to assess the impact of the UC policy on socio-economic health inequalities. Moreover, analysis was facilitated by continuous improvements, such as a shift from using income brackets in the 2001 HWS to an open-ended question of household cash and kind income in the 2003 HWS, and improved choices of health facilities in the questions on health care use of the HWS questionnaire.

Basically, data required for health equity analysis comprise two main elements: 1) health-related behaviour and outcomes; and 2) household living standards or socio-economic status. From the Thai experience, the availability of data in the SES on household income and consumption expenditure including direct tax payments, out-of-pocket payments for health care, social health insurance contributions, and private health insurance premiums, provides a possibility to analyze different types of household payments for health compared to income. Also, data on household income and expenditure can be used as socio-economic stratifiers to group households into different economic quintiles. This household survey in Thailand is similar to the Living Standards Measurement Study (LSMS) established by the World Bank which is widely implemented in many developing countries (Grosh and Glewwe 2000). In Thailand, information about health seeking behaviour, health care use, and health insurance coverage at the national level was usually obtained from the HWS. A health section in the SES was only available in the 2002 SES due to an objective to assess the impact of the economic crisis on health.

The SES is vital and pertinent to be the main data source for assessing equity in household health payments and the impact of a health policy on equity in health care finance because of the availability of the two elements for assessing equity in health care

finance, household health payments and living standards. However, this thesis indicates that the analysis of equity in health care finance prior to and after UC was problematic in computing household indirect tax payments from the SES data because some goods and services in Thailand are VAT exempt, and data on household expenditure in the SES are not collected in accordance with VAT-taxable or VAT-exempt items. An approximation for computing VAT payments had to be used and this approach, therefore, makes an estimate of household indirect tax payment from the SES data complicated and prone to errors.

Lack of a rigorous welfare indicator is a challenge in using secondary data from the HWS to assess socio-economic inequalities in health service use. Though a single question on household cash and kind income was included in the HWS questionnaire beginning in 2003, the accuracy of this socio-economic parameter is questionable. Some attempts to improve the survey data appear not to have been successful – for example recent attempts of the NSO to add more questions on household income in the HWS, and to merge the 2006 and 2007 HWS into the SES, appear to have jeopardized the quality of health information previously obtained from the HWS (Limwattananon S, personal communication). Given the difficulties of adding more questions on household living standards into the HWS, analysis in this thesis of benefit incidence in 2003 shows the possibility of using the asset index as an alternative socio-economic parameter to assess equity in health care use and benefit incidence from the HWS or other household surveys, which lack an appropriate socio-economic parameter. This has also been demonstrated in the international literature (Morris, Carletto et al. 2000; Filmer and Pritchett 2001).

Another attempt of the NSO to improve the quality and value of national household surveys in Thailand was to initiate a pilot of panel household surveys for the SES. From 2005 to 2007, a number of sampled households in the SES were sub-sampled for the panel household study (Boonperm 2004). Though a great strength of panel data is to enable household specific factors to be identified and taken into account of factors that are lost in the analysis of repeated cross sections, problems of being a costly household survey and difficulties in maintaining study samples or sample attrition have been

reported (Norris, Richter et al. 2007). As the panel household survey in Thailand was first piloted in 2005, there was no panel household data for assessing the impact of the UC policy at the time this study commenced. In addition, it can also be argued that the before-after study using nationally representative household surveys, the SES and the HWS, can represent the whole population of Thais prior to and after implementation of the UC policy if the unit of analysis is a country or the whole health care system, as is the case here.

As stated in chapter 6, differences in details between the 2001 and 2003 HWS, for example, the absence of the frequency of ambulatory service use and user charges paid for the last ambulatory service use in the 2001 HWS, posed difficulties in comparing the analysis of benefit incidence between 2001 and 2003. Moreover, differences in choices of ambulatory service use and hospitalization between the 2001 and 2003 HWS questionnaires resulted in a difficulty in analysing changes in health care use prior to and after UC. Experiences from this study indicate that researchers and policy analysts should be aware in using secondary data from different years of household surveys that there might be some changes in details of the questionnaires. The continuous improvements of the SES and the HWS questionnaires due to the close relationship between the data producer (the NSO of Thailand) and the data users (e.g. the MOPH, universities) in Thailand greatly affected changes in the household survey questionnaires in the later years, and therefore, will limit an attempt to conduct comparative analyses of household surveys in different years.

9.1.4 Assessing the distribution of public subsidies for health by using benefit incidence analysis (BIA)

In this study, the distribution of public subsidies on health was assessed by using an analysis of benefit incidence. Two factors influencing the benefit incidence of public spending on health are: 1) government spending allocations and 2) household health seeking behaviour. These two determinants are combined to generate the distribution of public subsidies on health and to answer the question of who benefits from public

spending. However, it is argued that benefit incidence cannot be adequately explained if there are any changes in the fundamental determinants of these two components (Demery 2000). With this limitation, BIA has been criticized as being helpful in identifying a cross-sectional situation, but not being particularly useful in providing a solution or explanation on why public subsidies on health among different socio-economic groups might differ. However, analysis of benefit incidence in this thesis was done in great detail starting from the component of health service use by income quintile and the component of unit subsidy by health insurance scheme and region. Findings from the research, therefore, show that changes in the distribution of public subsidies on health after UC were mainly caused by changes in health service use and seeking behaviour of those in different quintiles, particularly poorer income quintiles with greater use of health services at primary and secondary care levels, rather than changes in the unit subsidies for public or private health services. The analysis also indicates that public subsidies on health in the Thai health care system were pro-poor prior to UC and the pro-poor nature was greater after UC due to a significant increase in per capita public subsidy gained by the first and second quintiles, compared to 2001.

Another major limitation of BIA is the use of average unit costs or subsidies as valuation tools. It has been suggested that using average costs of health services to analyze benefit incidence ignore differences in values across households and individuals (Demery 2000). In addition, using mean unit cost as a proxy for value of health services faces a problem of inefficiency of the public sector which was clearly shown in regional and provincial hospitals in Thailand prior to and during the implementation of the UC policy (Puenpatom and Rosenman 2008). Also, using aggregate or mean unit costs at the national level may mask inequality in the distribution of public subsidies on health (Demery 2000; Mahal, Singh et al. 2000). In this thesis, however, analysis of benefit incidence in 2003 using national and regional unit costs revealed similar conclusions on the share of public subsidies on health obtained by different income quintiles. This differs from findings in the literature because there was not a big difference in unit costs of health services provided by health care providers at the same healthcare level among different regions in Thailand. This can be explained by the ability of public hospitals in

Thailand to partially improve technical efficiency and their improved capacity to use limited resources after the economic crisis in 1997 (Valdmanis, Kumaranayake et al. 2004), and the success of the UC policy in equitably allocating public resources to health care providers in different regions.

Another concern in the analysis of benefit incidence as it related to this thesis is the accuracy in unit costs of health services provided by government health facilities and private providers receiving public subsidies from the government. As a result of limited information available on unit costs of health service provision from public health facilities inside and outside the MOPH and private health care providers, the analysis of benefit incidence in this thesis relied on some assumptions of unit cost computation, particularly for tertiary care health facilities and private providers, and has some degree of uncertainty.

9.1.5 Using the case study approach at household level to assess the UC policy

Lessons from conducting a case study approach using two expensive health services, RRT for ESRD patients and open heart surgery for heart disease patients, as tracers to assess the impact of the UC policy, can be summarized into three areas. First, the case study approach is relevant for investigating households with ESRD patients because the dynamics and complexity of access to health care, financial barriers to health services, and the financial burden of health care costs borne by household members, require a qualitative approach with the flexibility to collect data from patients and household members in different household contexts. Second, though the advantage of using these two particular expensive health services is that one was included in the UC benefit package and the other was not, their characteristics are different, making them difficult to compare. ESRD is a chronic condition of poor kidney function which requires the long-term medical care of RRT such as haemodialysis or peritoneal dialysis or kidney transplantation, while open heart surgery is a one-off medical service which tends to require less time and less long-term financial resources. Therefore, financial and geographical barriers to RRT access tended to be greater than those for cardiac operations

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because ESRD patients had to receive haemodialysis twice or thrice a week from health facilities located in the municipality until they died or had a kidney transplantation, while heart disease patients faced geographical and financial barriers only when they received the cardiac operation and medical follow up. Any comparison of access to RRT and open heart surgery as expensive health services included or excluded from the UC benefit package needs to be aware of such differences. Third, though this study intended to describe differences in access to expensive health services and financial burdens borne by richer and poorer households, the classification of selected households into different socio-economic groups was problematic. As stated in Chapter 8, researchers encountered a mismatch between using reported household monthly income and the researcher's own assessment. Using a money-metric measure such as household income to assess household economic status was problematic because the monthly income of poor households varied according to the agricultural season and other financial sources such as temporary employment, taking loans, or selling assets. In addition, some ESRD patients were retired government officers who earned a small pension but had a large amount of available assets such as land, cars, and money in their bank accounts. Therefore, using only the money-metric measure in terms of monthly household income may be misleading in judging patients' socio-economic status in household research.

In the household qualitative investigation, difficulties were faced in identifying richer and poorer ESRD patients as well as richer heart disease patients. For poorer ESRD patients, most of them died within a short period of time as a result of their lack of access to RRT. This is because they could not afford the costs of RRT or could not bear the long-term financial burden for RRT. In contrast, the poor cooperation of richer ESRD patients led to difficulties in encouraging them to participate in the study. In this thesis, richer heart disease patients were rarely found because most of them did not choose to have the cardiac operation at the local Maharat hospital, as they preferred to seek the operation from a university hospital or other large hospitals in Bangkok. Hence, using secondary data of patients receiving cardiac operations at the Maharat hospital was limited in that there were very few richer patients who had received their operations there. Similar to ESRD households, most heart disease patients in better-off households also refused to

participate in the investigation because they felt unhappy to reveal their income and did not want to waste their time contributing to the study.

A common concern about a case study is whether findings from the study based on selected households are relevant beyond the sample and context of research itself, or whether the finding can be generalized ('generalization'). There are three levels of generalization: 1) theoretical generalization; 2) inferential generalization; and 3) representational generalization (Lewis and Ritchie 2003). Theoretical generalization aims to draw theoretical propositions and principles from the findings of a study for a more general application, while inferential generalization determines whether the findings from a particular study can be generalized or inferred to other settings or contexts beyond the sample. Representational generalization aims to answer whether what is found in a research sample can be generalized to or held to be equally true of the parent population from which the sample is drawn. Given the validity and reliability of the case study approach used in this thesis, findings about the case study of ESRD and heart disease patients in Nakorn Ratchasima province can be generalized in the sense of representational generalization to other ESRD and heart disease patients in other provinces in Thailand because the UC policy has been implemented nationwide since 2001 and all provinces in Thailand employ the same UC benefit package. In terms of inferential generalization, the issue of financial barriers to RRT and household coping strategies for costs of expensive health services, especially RRT, can be generalized on the basis of inferential generalization because findings of household coping strategies are similar to those from other studies in the international literature (Kabir, Rahman et al. 2000; McIntyre and Thiede 2003; Russell 2004). Though the UC benefit package is currently quite comprehensive, some expensive health services such as second-line drugs for HIV/AIDS patients, medical services for chronic mental illness patients, and most organ transplantation, are still excluded from the UC benefit package (NHSO 2007a). Knowledge about the impact of excluding RRT from the UC benefit package on poorer and richer households can be used by policy makers in making decisions on including other expensive health services in the benefit package in the future.

9.2 Discussion on the research findings

In this section the research findings are summarized and discussed starting with a summary of impacts the UC policy had on changes in health insurance coverage, equity in health care use, and the distribution of public subsidies for health. This is followed by a discussion on changes in equity in health care finance and the economic impact on poorer and richer households of excluding RRT from the UC benefit package.

9.2.1 Changes in health insurance coverage

In chapter 5, an analysis of health insurance coverage showed that poorer income quintiles in Thailand mainly relied on publicly subsidized health insurance schemes both prior to and after UC. In 2001, approximately 75% of the first quintile were covered by the two public health insurance schemes, the LIC and the VHC, and in 2003 more than 90% of them were covered by the UC scheme. These findings indicate the success of the Thai government prior to UC in using a piecemeal approach to provide public health insurance for the poor, and using the universal approach to achieve further progress in coverage in 2003. Evidence from the MOPH prior to UC indicates the limitations of the piecemeal approach in achieving universal coverage because approximately 20% of Thais were still uninsured in 2000 (Wibulpolprasert 2005). In addition, a study in 2000 showed that only 17% of poor households obtained the Low Income Card (LIC) and only 35% of the Low Income Card holders were genuinely poor (Kongsawat, Rodsawaeng et al. 2000). The piecemeal approach also led to some negative consequences in terms of inefficiency, duplication, and fragmentation of the public health insurance system in Thailand (Tangcharoensathien, Srithamrongsawat et al. 2002).

Analysis on the shift of health insurance scheme membership from 2001 to 2003 indicates the roles of the UC scheme in providing health insurance for the poor and the uninsured. The analysis of the 2003 HWS showed that more than 97% of beneficiaries of the VHC and the LIC, the two main health insurance schemes for the poor and vulnerable groups in 2001, transferred to the UC scheme, and more than a half of the uninsured in

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2001 were UC beneficiaries in 2003. In addition, approximately 27% of those having private health insurance in 2001 shifted to be UC beneficiaries in 2003. Only 2-3% of the CSMBS and the SSS beneficiaries in 2001 had transferred to be UC beneficiaries two years later because their benefit packages were likely to be better than that of the UC scheme. This detailed analysis confirms the important role of public health insurance schemes in providing health insurance coverage for the poor and disadvantaged. It also confirms the value of the national level analysis as opposed to a scheme-specific analysis, in assessing the impact of the UC policy on the Thai health care system.

The Thai experience of using the two steps of targeted and universal approaches to achieve universal coverage might be useful for other developing countries with fragmented public health insurance schemes which are seeking to move towards universal coverage. Though this strategy differs from policy recommendations of the Health Financing Task Force, which suggest developing countries should employ a targeted approach as the main strategy to reform health care finance and improve financial risk protection (Savedoff 2007), this suggestion seems to be irrelevant in the Thai context because Thailand has progressed beyond that stage. As stated in the literature review, Thailand employed the strategy of using the targeted approach for almost three decades before achieving universal coverage in 2001. The Thai government first introduced the targeted approach for the Low Income Scheme in 1975, followed by a gradual extension of health insurance coverage to the non-poor through the VHC in 1983, and to the formal sector private employees through SHI in 1990. Many studies suggest that the introduction of the capitation contracting model of the SHI provided experience in using a close-ended payment method of capitation to pay health care providers with acceptable quality of health care (Itivaleekul 2002; Tangcharoensathien, Prakongsai et al. 2005), while cost escalation of the CSMBS using a fee-for-service reimbursement discouraged this as a payment method for the UC scheme (Tangcharoensathien, Prakongsai et al. 2007). The introduction of the VHC scheme also contributed to achieving universal coverage in terms of strengthening the administrative capacity of provincial health officers and improving financial management of public health care providers (Srithamrongsawat 2002).

Many key factors have been identified helping to explain the success in the implementation of the UC policy in Thailand (Tangcharoensathien and Jongudoumsuk 2004; Tangcharoensathien 2006). Apart from the strong political commitment of the government, rapid economic growth from the mid 1980s to 1997 (before the economic crisis) and a large scale investment in public health service infrastructure in the previous two decades fuelled the capacity of the Thai government to gradually expand health insurance coverage to several targeted groups, and ultimately achieve universal coverage in 2001 (Tangcharoensathien, Prakongsai et al. 2007). In addition, the strong administrative capacity of the Thai health care system (Russell, Bennett et al. 1999) and the low per capita resource requirement for the UC scheme (International Labour Office 2005) provided the possibility and financial feasibility for a middle income country like Thailand to implement a policy on universal coverage.

On the issue of real life implementation, achieving 100% coverage is not easy even though the Thai government had a strong commitment to provide universal coverage and equitable access to health care. Approximately 5% were still uninsured after implementation of the UC policy due to a lack of people's awareness, the absence of registration, or incorrect registration and identification. In addition, people having private health insurance or ability to pay for health care costs were unwilling to join the public health insurance scheme. In such a situation, governments have a vital role in providing a specific strategy to expand health insurance coverage for those uninsured who are poor and disadvantaged. Barriers to public health insurance such as people's ignorance and unawareness, and problems of registration or identification, should be addressed.

9.2.2 Changes in health service use and access to health care

Analyses of health service use in 2001 and 2003 indicate that overall health care use in Thailand was pro-poor prior to and after UC, and its pro-poor nature was greater in 2003. A significant increase in ambulatory service use by the first and second quintiles, especially at primary and secondary health care facilities, appears to be a significant

factor contributing to the further progress in more equitable health care use after UC. In addition, analysis of hospitalization prior to and after UC shows a similar picture in ambulatory service use. In 2003, there was a considerable increase in hospitalization at community hospitals by all income quintiles, but a reduction in hospital admissions at provincial and regional hospitals, as well as private hospitals. The removal of financial barriers to health services and the promotion of primary care use as a gate-keeper and the main contractor of the UC scheme appear likely to be the main factors contributing to a shift in health care use from tertiary care to primary and secondary care levels. In addition, requirements of the UC scheme for UC beneficiaries to register with a PCU and the nationwide distribution of primary and secondary care to the sub-district and district levels are likely to have encouraged the increase in health care use at health centres and district hospitals by UC beneficiaries the majority of whom were in the first and second income quintiles. This, therefore, facilitated improvements of equity in access to and utilization of health services, especially for the poor, because most health centres and district hospitals are located in the rural and remote areas where the less well-off reside. It should be noted that during the first two years of the UC policy implementation, there was no significant investment in new public health facilities in either urban or rural areas of Thailand (Wibulpolprasert 2005). Therefore, improvements in access to and utilization of health services after universal coverage were not influenced by an increase in the number of health facilities, but were more likely to be affected by the UC policy itself.

Though financial barriers to health services were greatly reduced after the UC policy was implemented, evidence from the household qualitative study in Korat shows some degree of geographical barriers to health care, especially for poor patients in rural areas, and a delay in referrals. Limited geographical distribution of some specialized and expensive health services, and inappropriate provider payment methods in which financial risks for expensive medical care costs were transferred to primary and secondary health care facilities during the inception phase of the UC policy, appeared to be the main factors contributing to such barriers.

9.2.3 Changes in the distribution of public subsidies for health

Results from the analyses of benefit incidence in 2001 and 2003 indicate that the distribution of public subsidies on health for the Thai health care system was pro-poor both prior to and after UC, and the pro-poor nature was greater in 2003. The greater pro-poor nature of benefit incidence in 2003 was mainly produced by an absolute increase in health service use by lower income quintiles, and a shift from tertiary care to primary and secondary health care levels. These findings differ from those found in other developing countries where public subsidies on health have been found to be pro-rich (Selowsky 1979; Castro-Leal, Dayton et al. 2000; Mahal, Singh et al. 2000; Pearson 2002). The pro-poor nature of public health subsidies prior to UC can be explained by the continuous development of pro-poor strategies in health sector reform of the Thai health care system, along with the implementation of targeted public health insurance schemes. A long-term investment in the nationwide infrastructure of government health facilities and the availability of a qualified health workforce (e.g. medical doctors, dentists, pharmacists, nurses, etc.) at the district and sub-district levels through community hospitals and health centres, allow the poor to have relatively good access to government health services and benefit more from public health subsidies.

The research findings on more equitable distribution of public health subsidies after UC are consistent with suggestions made by Pearson (2002) about the strategies for improving the distribution of public resources to the poor and disadvantaged. An increase in funding allocations to health services that the poor can both access and derive significant benefit from is the strategy that the UC policy in Thailand employed for improving equity in the distribution of public subsidies on health. Since the majority of the poor in Thailand live in the rural areas, the promotion of primary care use by contracting the district-based health care network and PCU to provide health services for UC beneficiaries in their catchment area helps the poor to access and benefit from government health services and public subsidies provided by the UC policy.

As stated in Chapter 3, the Thai experiences in using a piecemeal approach to extend public health insurance for a targeted group of the population showed both successes and limitations in achieving the policy objectives of universal coverage. In 2000, prior to UC, though the Thai health care system comprised many targeted health insurance schemes for various groups of the population, approximately 20% of Thais were uninsured. The Thai health care system was, therefore, characterized by fragmentation, duplication, and lack of health insurance coverage. Evidence also shows a failure of targeting public subsidies to the poor through the mismatch between the LIC beneficiaries and those who were below the poverty line (Kongsawat, Rodsawaeng et al. 2000; Pannarunothai 2002), and inequitable access to health services among beneficiaries of different health insurance schemes or those of different socio-economic groups (The Foundation for Thai Consumers 1999; Makinen, Waters et al. 2000). However, given the continuous increase in the share of the population covered by public health insurance schemes (e.g. the LIC, the VHC, the SSS, and the CSMBS) prior to UC, the overall success of the piecemeal approach in expanding health insurance coverage to the population should be recognized. In addition, evidence on the pro-poor nature of the Thai health care system prior to UC, and a decrease in inequity in household spending on health, shows the successes of the targeted approach during the transitional period.

Although Thailand is now viewed as having universal coverage, it should be recognized that this is made up of three public health insurance schemes: the CSMBS; the SSS; and the UC scheme. There has been an attempt to harmonize the benefit packages and provider payment methods among these three schemes in order to reduce inefficiency and inequity in the quality of health service provision (Jongudomsuk 2006). However, different historical development and solidarity perspectives as well as different sources of health care finance, particularly given the contributory scheme of the SSS, led to difficulties in harmonizing two existing public health insurance schemes, the CSMBS and the SSS, with the UC scheme. Differences therefore persist in the quantity and quality of services provided to the different scheme populations, as well as in the public subsidies to each scheme. The intention is to achieve greater harmonisation of benefit package,

public subsidies, and provider payment methods among the three public health insurance schemes over time (Health Care Reform Project 2005).

Historical experience from Thailand in expanding health insurance coverage using a targeted approach to universal coverage is consistent with the model of 'transition to universal coverage' proposed by WHO (Figure 9.1). In low- and middle-income countries, it is presumed that health insurance systems will require a number of years to achieve universal coverage. In addition, countries moving towards universal coverage need a transition from a targeted approach to universal coverage. Choices of health financing arrangements of a country depend on health system development, the proportion of the formal and informal sectors, and administrative capacity of the country.

Figure 9.1: The transition to universal coverage for developing countries
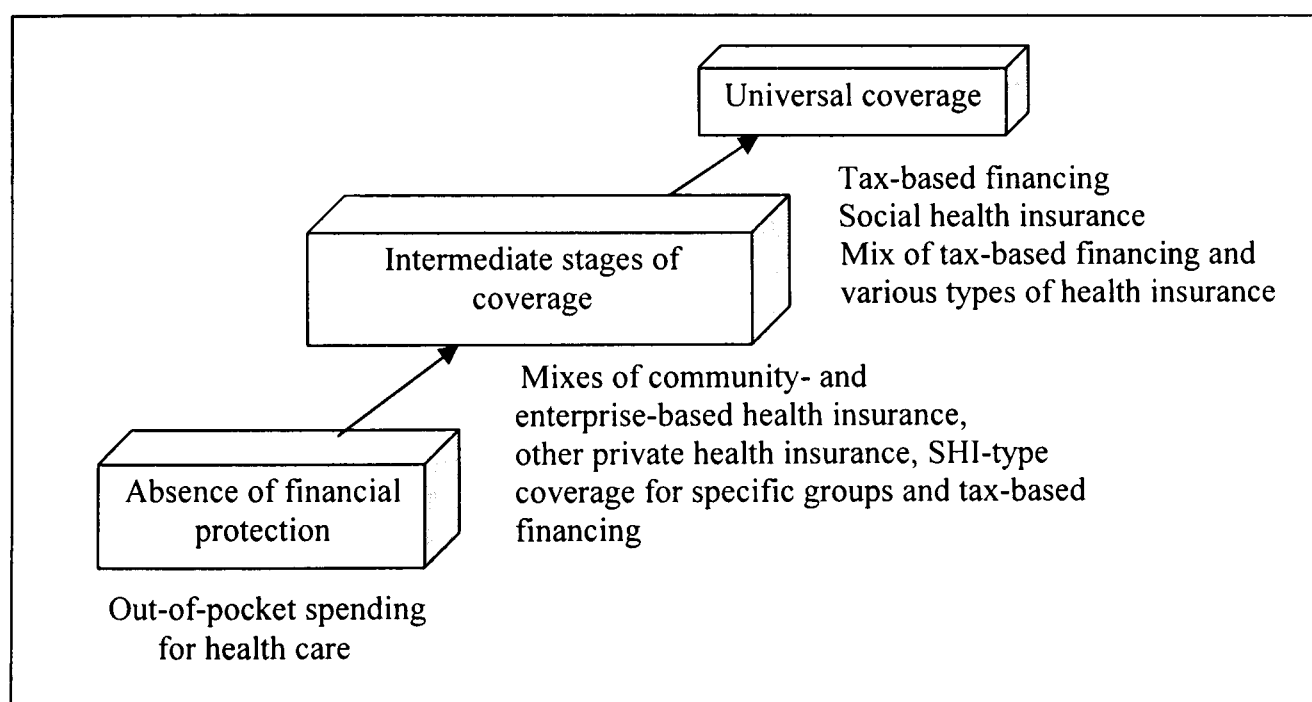
Source: (World Health Organization 2005)

The Thai experience of using the two steps of targeted and universal approaches to achieve universal coverage may be useful for other developing countries which have fragmented public health insurance schemes and seek to move towards universal coverage. Strong political support coupled with the active participation of academic and civic groups were significant factors contributing to the success in the implementation of the UC scheme (Tangcharoensathien, Prakongsai et al. 2007). However, for other low-

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and middle-income countries, the decision on which strategy between a targeted or a universal approach is pertinent to a particular country depends on the country's strategy for its health care system, the availability of resources, the character of health problems, and political and institutional feasibility.

From Thai experience, the analysis of benefit incidence shows that not only the poor benefited from public subsidies on health prior to and after UC, but those in richer quintiles also gained a public subsidy, but to a smaller extent. Given that public health resources are scarce, many policy analysts and policy makers in developing countries prefer using a targeted approach to maximize the use of public health resources for achieving policy objectives of poverty reduction and improving equity. However, evidence shows that the targeted approach also faces the problem of resource leakage, and narrow targeting, often with high hidden costs of targeting (Van de Walle 1998). In contrast, a universal approach generally results in equal opportunities and access to similar services, but often has high costs from subsidising the non-poor. Therefore, whether a health sector should employ targeting or universal coverage has been widely discussed (Health Financing Task Force 2007). Experience from Thailand has shown that the UC policy was more pro-poor than the previous arrangements, even though the universal approach was used.

Findings from the BIA show that rich and middle-income groups of Thais benefited from public health subsidies under the UC policy, which reflects their trust in the quality of health services provided by public health care providers. In addition, utilization of health services by the rich and middle-income groups indicates a sense of belonging and ownership of the UC scheme which should foster the principle of solidarity in the public health insurance system. In the Thai experience, apart from financial sustainability, the UC policy also needs the principle of solidarity as well as political and social support from the society.

9.2.4 Changes in equity in health care finance

The analysis of equity in health care finance in 2000 and 2002 indicates that the overall health care finance of the Thai health care system was less regressive after the UC policy was implemented. This is evident by a decrease in the negative value of the Kakwani index of overall health care finance in 2002, compared to 2000, and a decrease in the share of households facing catastrophic health expenditure from 6.11% in 2000 to 4.65% in 2002. The reduction in household out-of-pocket payments, which made up one-third of overall health care finance, appears to be the main factor contributing to the less regressive health financing arrangements after UC, and improvements in financial risk protection. The increase in the progressivity of household expenditure for direct tax payment and less regressive indirect tax payment were two other factors improving equity in overall health care finance. Although household payment for social health insurance was less progressive and payment for private health insurance premiums was more regressive after UC, these two financing sources were minor financing sources in the Thai health care system.

From analysis of equity in health care finance prior to and after UC, two crucial factors affecting equity in health care finance comprise: 1) the progressivity of each health financing source; and 2) the share of each financing source in overall health care finance. Findings from the thesis indicate that the policy to abolish user fees for health services and the decision to finance the UC scheme using general tax revenues have shifted the major source of health care finance from out-of-pocket payments at points of health service provision to general taxation. The design of the UC scheme has increased the share of progressive health financing sources (direct tax payment), and decreased the share of regressive health financing sources (e.g. household out-of-pocket payments and private health insurance premiums), in overall health care finance.

The significant impact of the UC policy on the Thai health care financing system is evident from the series of National Health Accounts Study, data shown in Figure 9.2. Data from the 2002-2005 NHA were added to Figure 3.3 in Chapter 3 to show changes in

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the share of different health financing sources. The share of health financing from the central government increased significantly from approximately 33% in 2001 to approximately 43% of total health expenditure in 2002 and 2003. Since the UC scheme is financed by general taxation, an increase in the share of progressive health financing sources (i.e. direct tax and SHI contributions) have improved the overall progressivity of health care finance.

Figure 9.2: Share of different health financing sources in total health expenditure during 1994-2005
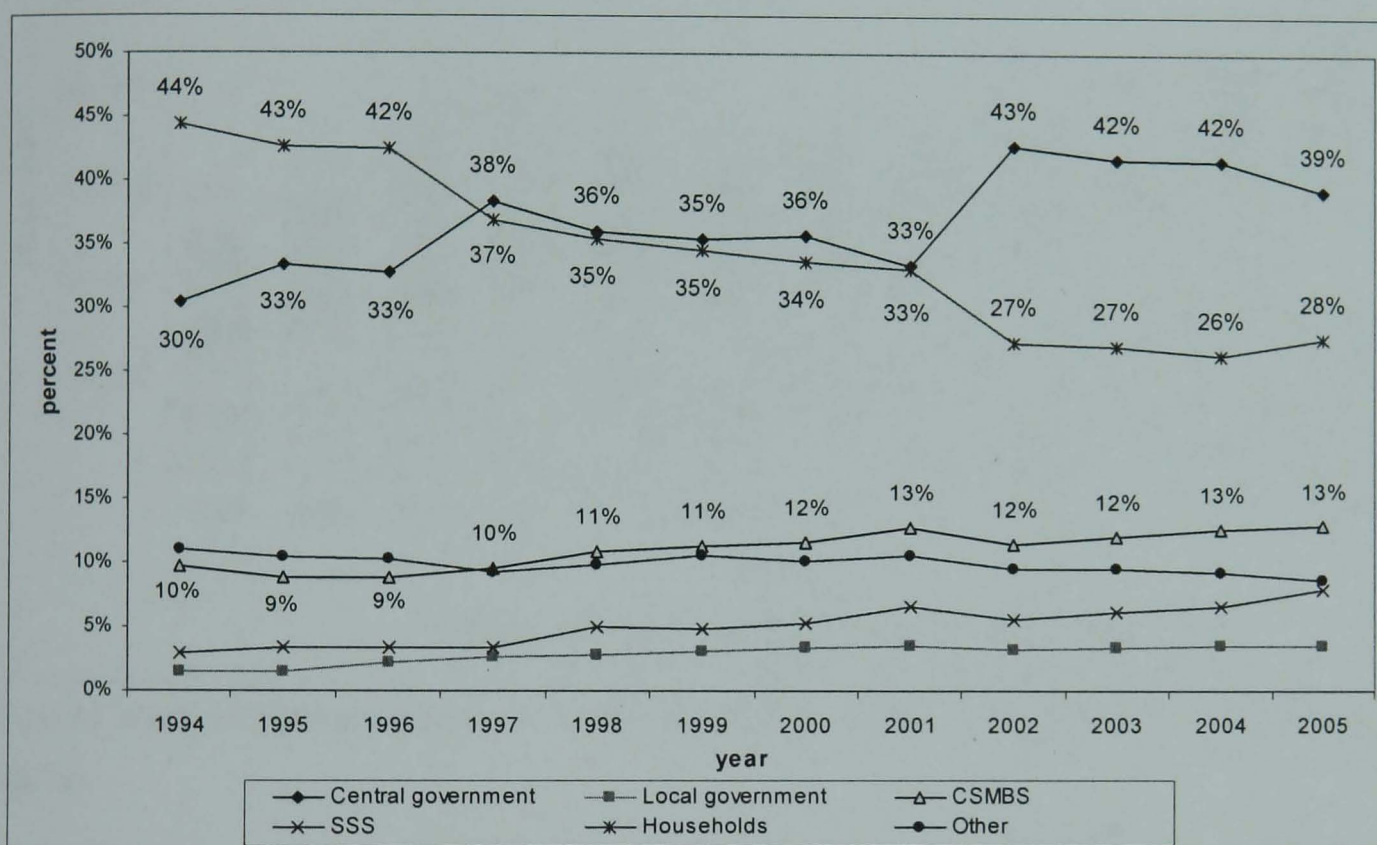
As a result of the increase in the share of central government health spending, the share of public financing sources in total health expenditure increased significantly from 56% in 2001 to 64% in 2004 and 2005 (Figure 9.3). The implementation of the UC policy appears to be the main factor contributing to the significant increases in share of public financing sources to total health expenditure. The percent share of other public financing sources (e.g. the CSMBS, the SSS, and the local government) slightly increased after the UC policy was implemented in 2001 (Figure 9.2), and did not contribute to the significant increase in the share of public financing sources. Prior to and after UC, the share of the

CSMBS ranged from 11% to 13% and that of the SSS ranged from 5% to 8%. There was no significant increase in the number of beneficiaries and public subsidy per capita of these two public health insurance schemes during the period of prior to and after UC.

Figure 9.3: Share of public and private health care finance of the Thai health care system during 1994-2005
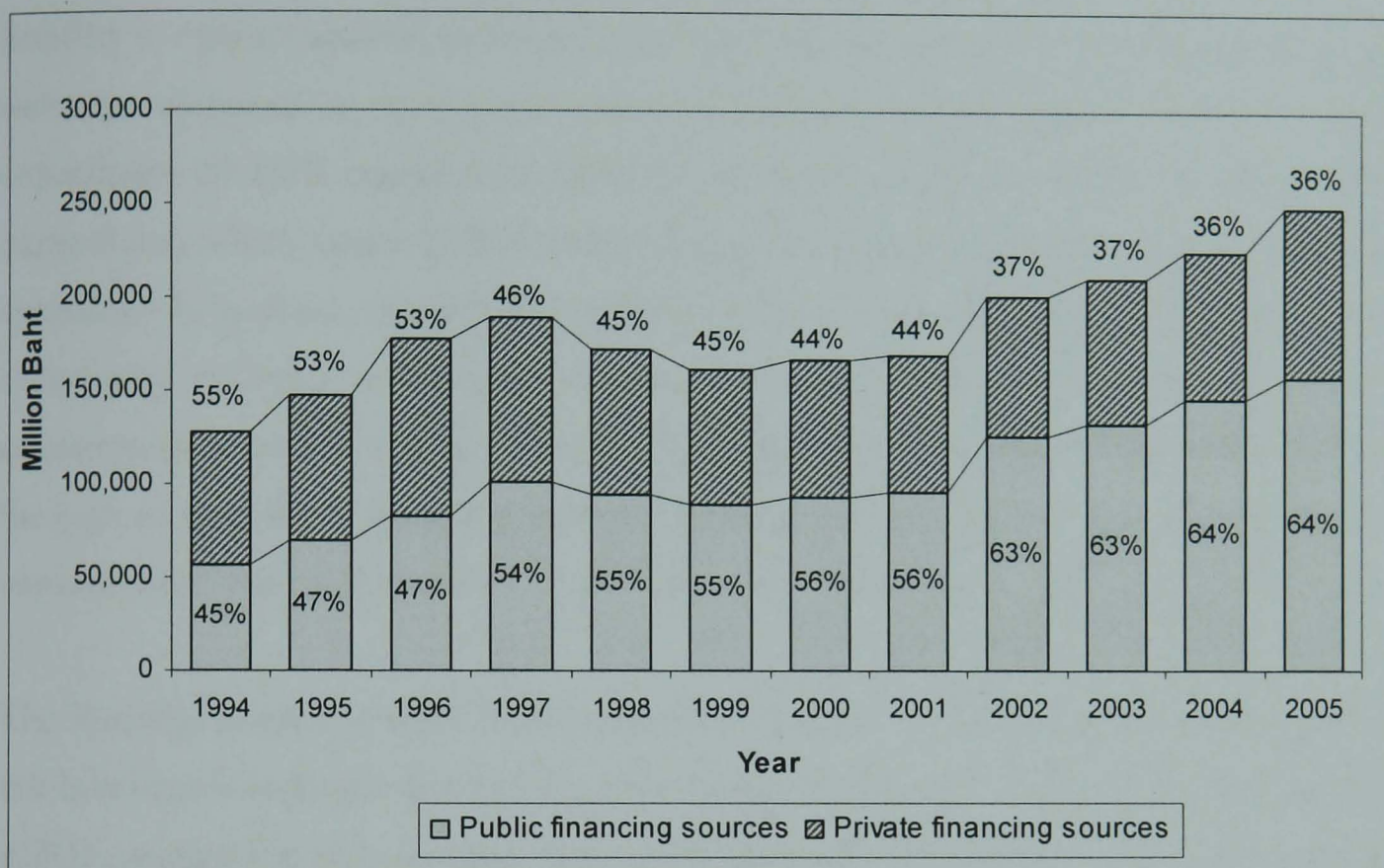
Sources: National Health Accounts in Thailand 1994-2005 (International Health Policy Program 2007a).

As stated in Chapter 3, the UC scheme employs close-ended provider payment methods: capitation payment for ambulatory care and DRG case payment within a global budget for hospitalization. Such close-ended payment methods have resulted in financial sustainability, and some degree of cost containment for the UC scheme. Experience on the health financing arrangements of the UC policy in Thailand can be useful for other developing countries where administrative and technical capacity as well as public health resources are quite limited.

9.2.5 Benefit package design and the impact on Thai households

Research findings from the case studies show that the decision to exclude RRT from the UC benefit package generated considerable financial barriers to access for RRT, and a substantial economic impact on poorer ESRD patients. Infrequent access to RRT and inability to obtain essential and expensive injectable medication due to limited household resources appeared to be a major cause of death for poorer ESRD patients. Health expenditure for RRT captured 25-68% of household income and 31-52 % of household expenditure, which meant ESRD patients in poorer households faced catastrophic health spending. In contrast, richer ESRD patients could access and utilize RRT regularly and effectively, resulting in a higher survival rate and quality of life than their poorer counterparts. Various coping strategies were used by poorer ESRD patients to manage the high costs of RRT, including reducing the frequency of haemodialysis, reducing food consumption, using only public transportation, and taking loans with a high interest rate.

The financial burden of RRT forced poorer households to face financial catastrophe and fall into impoverishment due to its long-term and high costs. This not only impacted on ESRD patients but also on other household members and relatives who had to provide financial support for patients. As found in studies of other diseases (Sauerborn, Adams, et al. 1996; Kabir, Rahman, et al. 2000; Russell 2005), the low and irregular income of poorer households and lack of a financial safety net resulted in a greater catastrophic impact on poorer households than on richer families.

Overall, RRT household cost burdens were considerably higher than those for other diseases reported in similar studies and are likely to have greater economic impact at the household level, particularly for poorer patients and households. The exclusion of RRT from the UC benefit package on cost effectiveness grounds has, therefore, both compromised the access of ESRD patients to life saving treatment and put poorer ESRD patients at considerable financial risk. In these ways it has, for this group of patients, compromised the UC policy goals of promoting equitable access and ensuring risk protection against medical care costs. Given that richer ESRD patients covered under

other public insurance schemes continue to get subsidised RRT treatment, there also remains significant inequity between health insurance schemes.

These findings from two case studies of expensive health services contribute to debates about the benefit package design and the criteria to use in selecting interventions for their inclusion. There are no easy answers to the questions of which interventions to include and exclude, or on what basis decisions should be made. On the one hand, Thai evidence shows that RRT is not only cost ineffective relative to other interventions and has no public health externalities (Teerawattananon 2005), but also that its inclusion in the UC benefit package would have considerable long-term budgetary implications for the government (Kasemsup, Prakongsai et al. 2005). On the other hand, evidence from the household investigation shows that the exclusion of RRT from the UC benefit package has catastrophic consequences for poorer ESRD patients and their households, both in economic terms and in terms of morbidity and mortality as well as compromising the UC goal of equitable access. It is clear that a middle income country like Thailand cannot afford to include all expensive health services into the UC benefit package. However, considering the objectives of the UC policy, these findings suggest that the Thai government should at least re-consider its decision not to support RRT. In the light of the global epidemic of diabetes and an aging society which will inevitably increase the number of ESRD patients, the issue of inequity in access to RRT and how to achieve equity in access to RRT, especially for ESRD patients in low- and middle-income countries, has been raised and is of increasing concern to social scientists and policy analysts (White, Chadban et al. 2008). Education and prevention of end-stage renal disease, and the development of good public policy, are suggested to be key objectives for improving equitable access to RRT in developing countries.

9.2.6 Health information system for monitoring and evaluation

From the Thai experience, it is clear that the availability of well-functioning large-scale databases of national household surveys provides a solid platform for monitoring and evaluating the impact of the UC policy on equity of the Thai health care system. The

existence of nationally representative household surveys on household health payments and health seeking behaviour prior to and after implementation of the UC policy provides an opportunity to assess the impact of the UC policy on several dimensions of the Thai health care system by using a before-after investigation. The continuous development and strengths of the National Statistical Office of Thailand help contribute useful information to analyze and monitor changes in health equity affected by the UC policy at the national and household levels. A genuine partnership and a regular dialogue between the national data producer and data users such as the Ministry of Health and researchers in research institutes and universities should be further developed and fostered. A good relationship between the NSO of Thailand and the MOPH is an example for other developing countries to implement as a means of developing and strengthening their health information systems to monitor and assess the equity of the health care system.

9.3 Conclusions

From the research findings of this study, the UC policy in Thailand has improved equity in health care use and health care finance, and the distribution of public subsidies, through using the following three health care financing strategies: 1) the expansion of public health insurance to nearly universal coverage; 2) the removal of financial barriers to health services; and 3) the promotion of primary care use which is preferentially accessed and utilized by the poor in rural areas. Also, the UC policy has improved financial risk protection for Thai households through its comprehensive benefit package and the nearly universal coverage of health insurance, even though some expensive health services such as RRT for ESRD patients were excluded from the UC benefit package. Using the close-ended provider payment methods provides some degree of financial sustainability and cost containment of the UC scheme. The Thai experience in achieving universal coverage can be an example for other developing countries moving towards universal coverage. A proper mix of health financing arrangements, a comprehensive benefit package which ensures depth and breadth of health insurance, an effective provider payment method, and a health information system for monitoring and

evaluation, are all lessons that the Thailand case study provides for other developing countries and international knowledge.

CHAPTER TEN

CONCLUSIONS,
POLICY IMPLICATIONS, AND RESEARCH PRIORITIES

The aim of this thesis was to assess the impact of the UC policy on equity of the Thai health care system by using a before-after approach to investigate any changes at national and household levels. The thesis comprises four main objectives which are: 1) to analyze changes in health care use and the distribution of public subsidies gained by different income quintiles of Thais prior to and after UC; 2) to explore changes in the progressivity of health care finance and financial burden for health payments borne by households of different socio-economic status; 3) to describe the economic impact of the UC benefit package on poorer and richer households; and 4) to provide lessons and policy recommendations on introducing the UC policy and health financing reform for other developing countries.

In this chapter, the research findings are all brought together in order to discuss the implications for policy at the national and international levels, and to make recommendations for further research.

10.1 Conclusions of findings

The implementation of the UC policy in 2001 greatly impacted health insurance coverage and equity in health care use of the Thai health care system. The UC policy did expand health insurance coverage to nearly all Thais, and led to a significant increase in ambulatory service use of the first and second income quintiles, especially at primary and secondary health care facilities. The analysis of hospitalization showed a similar picture to ambulatory service use: hospitalization in community hospitals increased significantly in all quintiles, while hospitalization in provincial and regional hospitals, and private hospitals decreased after the UC policy was implemented. The concentration indexes showed a more pro-poor nature of ambulatory service use at health centres and

community hospitals, compared to provincial and regional hospitals, while a decrease in the concentration index of hospitalization in community hospitals in 2003 was caused by a rise in hospital admissions of richer quintiles. The findings indicate that these achievements and the more pro-poor nature of health service use appeared to be related to three strategies of the UC policy: 1) the expansion of public health insurance to nearly universal coverage, especially benefiting those in the lower income quintiles and previously uninsured; 2) the removal of financial barriers to health services; and 3) the promotion of primary care use and first level hospital use which is easy to access and utilize by the poor in rural areas.

On the distribution of public subsidies, results from the analyses of benefit incidence showed an increase in the pro-poor nature of public subsidies on health by income quintile and geographical area in 2003 due to a significant increase in per capita public subsidies for the first and second quintiles compared to 2001. Though per capita public subsidies for other quintiles also increased, the share of these quintiles had decreased after two years of UC implementation. Regarding geographical distribution, per capita public subsidy significantly increased in the North and the Northeast regions where the poor primarily reside. The first quintile in Bangkok obtained the highest public subsidy per capita in 2003, while that of the Eastern region had the lowest. The sensitivity analyses of choice of socio-economic group indicator (income per capita or an asset index), and use of national aggregated or regional unit subsidies, showed similar conclusions on the share of public subsidies by different quintiles. The continuous development of pro-poor strategies for health sector reform, the nationwide distribution of government health facilities to district and sub-district levels, and the design of health financing arrangements under the UC scheme, appear to be all crucial factors contributing to the more pro-poor nature of public subsidies for health.

The analysis of equity in health care finance in 2000 and 2002 indicates that the overall health care finance of the Thai health care system was less regressive after the UC policy was implemented. The negative Kakwani index value of overall health care finance reduced from -0.0506 in 2000 to -0.0347 in 2002. In addition, the share of households

facing catastrophic health expenditure decreased from 6.11% in 2000 to 4.65% in 2002, with the highest decrease in the first quintile. The analysis indicates that the reduction in household out-of-pocket payments was the main cause, and that there was indeed improved financial risk protection under the UC policy. The increase in progressivity of household expenditure for direct tax payment and less regressive indirect tax payment were two other factors improving equity in overall health care finance.

On assessment at the household level, results from the case studies of two expensive health services revealed that the decision of the Thai government to exclude RRT from the UC benefit package posed considerable financial barriers to RRT and a substantial economic impact on poor ESRD patients. In contrast, the inclusion of open-heart surgery in the UC benefit package significantly facilitated access to cardiac operations for poor heart disease patients. Financial barriers to RRT prevented poor ESRD patients from accessing government health services, and RRT services in public and private facilities primarily served CSMBS beneficiaries and richer ESRD patients, respectively. Geographical barriers were also an important factor in that they prevented poor ESRD patients in rural areas from accessing expensive health services which are solely available in the city. Also, the referral system of the UC policy hindered access to cardiac surgery, even though this expensive health service has been included in the UC benefit package. Research findings from the case studies raise a question on the appropriateness of the UC benefit package and whether a non-cost-effective, but expensive medical intervention like RRT should be included into the benefit package of universal public health insurance.

10.2 Policy implications and lessons learnt for other countries

10.2.1 Health care financing arrangements for achieving universal coverage

As stated in the literature review chapter, achieving universal coverage in low- and middle-income countries is a desirable goal of policy makers and international organizations because a large segment of the population in these countries rely heavily on out-of-pocket payments instead of risk-sharing arrangements. In general, the poor and

the disadvantaged in developing countries lack health insurance coverage and have to face direct out-of-pocket payments for health care costs which often lead to impoverishment and catastrophic health expenditure. To protect poor households in developing countries from catastrophic health payments, the governments have an important role in introducing a health financing arrangement to reduce the proportion of people relying on out-of-pocket payments and provide more financial risk protection for the population. The policy of universal coverage either via tax-based health insurance or SHI has been suggested to be a means and end by academic institutes and international development organizations.

The essence of financing arrangements for universal coverage is to ensure protection against the financial costs of ill-health for everyone. In the context of low- and middle-income countries, financing universal coverage means a substantial reduction in household out-of-pocket payments for health care with a significant increase in the share of health financing funded by general tax or social health insurance contributions. In Thailand, the research findings from this study show the vital roles of the health financing strategies of the Thai UC policy in reducing household out-of-pocket payments in lower income quintiles and in decreasing the percentage of households facing catastrophic health expenditure. The key financing strategies were the introduction of a tax-financed health insurance scheme and removal of user fees at point of health service provision. Since low income households in Thailand and other developing countries usually spend more on health relative to household income, a decrease in household out-of-pocket payments in lower income quintiles significantly reduces the number of households facing catastrophic health expenditure, as shown in the research findings of Chapter 7. In addition, the shift of health financing from a regressive source, for example, household out-of-pocket payments, to a progressive source such as general tax, improves equity in overall health care finance. The findings from this study which show less regressive overall health care finance after the implementation of the tax-financed UC scheme support the policy recommendation of shifting health financing arrangements from out-of-pocket payments to pre-payment systems (World Health Organization 2005;

Mills 2007) and are consistent with evidence from other countries such as the United Kingdom, Sweden, and Malaysia (Wagstaff, van Doorslaer et al. 1999; Savedoff 2004).

Social health insurance is another progressive health financing source that can be used for expanding health insurance coverage and improving the overall equity of health care finance. A recent study indicates that worldwide, 27 countries have achieved universal coverage via SHI (Carrin and James 2005). Achieving universal coverage through SHI took 127 years to achieve in Germany, 118 in Belgium, 79 in Austria, 72 in Luxembourg, 48 in Costa Rica, 36 in Japan, and 26 in the Republic of Korea. Carrin and James (2005) also show that it took 40 years in Austria (from 1890 to 1930) for population coverage to grow from 7 to 60 percent, and then another 35 years to reach 96 percent of the population. Hsaio concludes that a country's level of economic development and its economic structure influence how many people can be covered and how rapidly SHI can expand toward universal coverage (Hsaio 2007). In low- and middle-income countries, many factors including a low per capita income, a small formal sector, a high prevalence of poverty, and a high dependency ratio, are challenges to initiate and scale up SHI in these countries.

In the Thai context where formal sector employment is quite small, achieving universal coverage through SHI appears to be difficult and not feasible. This circumstance is similar to many low- and middle-income countries where the possibility to expand health insurance coverage through compulsory contributions beyond formal sector employees tends to be low (Ensor 1999; Mills 2007). Though SHI in Thailand has been established since 1990, the expansion of health insurance coverage through SHI has been very slow and the scheme covered only 10% of Thais both prior to and after universal coverage. Substantial costs with regard to difficulties in collecting health insurance contributions from those in the informal sector, and concerns about the financial sustainability of the SSS Fund, tended to be the major concerns of the SSO in not expanding social health insurance to cover people in the informal sector or even spouses and dependants of SSS beneficiaries, even though the latter was suggested by ILO and several academic institutes (Tangcharoensathien, Prakongsai et al. 2005; Social Security Office of Thailand

2006). With these limitations coupled with strong political support in 2001, the Thai government decided to achieve universal coverage through employing a mix of health financing sources, namely social health insurance contributions from the formal sector and general taxation for the rest of the population. This strategy of using a proper mix of financing sources was feasible and practical to achieve universal coverage in the Thai context, and could avoid conflict from a merger of existing health insurance schemes with the new UC scheme. Developing countries having a similar context in terms of a small formal sector and different targeted health insurance schemes with a variety of health financing sources, can learn and adapt the Thai experience to their own when they have strong political support and a window of opportunity for health sector reform.

Although shortcomings in achieving universal coverage in developing countries include a number of factors (Nitayarumphong 1998; Mills 2007), findings from this study indicate that a crucial success factor in achieving universal coverage in Thailand is the nationwide availability of health care facilities and a qualified health workforce in rural and remote areas. Without these, universal coverage would only be rhetoric. Therefore, long term public investment in health service infrastructure and human resources for health are important requirements for countries moving towards universal coverage.

Another interesting experience in Thailand is the willingness of the rich and middle-income groups to participate in the UC policy, and not to opt out. The benefit incidence analysis shows that people in richer quintiles increased health service use at public health facilities and had a certain share of public health subsidies both prior to and after implementation of the UC policy. This therefore led to political support for the UC policy from the richer quintiles and encourage the principle of solidarity of public health insurance. Participation of the richer quintiles also forces health care providers to ensure and improve the quality of health care because they are well-educated and have voice, compared to the poor. A strategy to make equitable access to health care a matter of basic human rights, not a social assistance policy for the poor, obtained political support from people of all socio-economic groups (Siamwalla 2002). This can be seen as equitable when funding for health care is derived from general taxes paid by everyone,

and in turn everyone can access and benefit from health services when he or she is in need. The Thai experience in using such strategies would be useful for countries moving from targeted health insurance schemes to universal coverage and who need political support from the rich and middle-income groups.

10.2.2 Universal coverage benefit package

Typically, public health insurance provides financial risk protection against medical care costs through a list of health services included in its benefit package, which also indicates types of health services funded by either direct out-of-pocket payments or public subsidies. Also, the benefit package is a key factor in making UC financially feasible. In practice, no country is able to provide universal coverage of all health services that technically are available, and therefore a criteria for rationing is inevitably needed.

There are two conflicting principles of the benefit package, an essential or a catastrophic package, which are used for judging health services to be included in the benefit package. With these two principles, countries often have difficulty in choosing between health services which are highly cost-effective but perhaps relatively cheap to buy (an essential package), and those which may be less or not cost-effective but very expensive to purchase for those who are in need (a catastrophic package). In the case of universal coverage in Thailand, RRT for ESRD patients was an example of expensive health services excluded from the UC benefit package because it was not cost-effective and its inclusion in the UC benefit package would have considerable long-term budgetary implications for the government. However, it was clear that poor households with ESRD patients were impoverished by the costs of RRT. From these research findings, it can be concluded that it is inappropriate to justify which health services should be included in the UC benefit package on only cost-effectiveness grounds. The decision on whether the benefit package should be an essential or a catastrophic package needs careful consideration by policy makers and stakeholders in the light of both the availability of public resources and the economic consequences for vulnerable groups in society.

Although the inclusion of health services in the UC benefit package can remove financial barriers to such health services, achieving equity in access to and utilization of health care cannot solely rely on the extent of the benefit package. Other barriers such as geographical barriers to health services have to be addressed by policy makers. The Thai experience from the household qualitative study indicates that even though poor heart disease patients had improved access to cardiac operations due to the inclusion of such operations into the UC benefit package, they still encountered geographical barriers because such medical interventions were not available in secondary health care facilities, and were provided by tertiary health care facilities mostly located in the city, or by a large health facility in Bangkok. In addition, geographical barriers are substantial for patients residing in rural areas who have to regularly receive health services in a tertiary care hospital, like ESRD patients. Strategies to address geographical barriers to health services such as a provision of financial assistance for transportation to poor heart disease patients residing in rural areas, or substitution of haemodialysis (HD) by peritoneal dialysis (PD) for well-educated ESRD patients, will improve equity in access to and utilization of health care.

However, provider payment is another important influence on access to expensive treatments. Evidence from the Thai qualitative household study shows that although open heart surgery was included in the UC benefit package, poor heart disease patients residing in rural areas experienced a delay in referral due to inappropriate health financing arrangements. Paying health care providers by transferring financial risk to primary and secondary health care facilities may affect health provider decisions to refer patients to the higher level of health care. Also, experiences from cardiac operations within the VHC prior to UC demonstrate that inadequate health financing led to inequitable access to such operations favouring the CSMBS beneficiaries and those who could pay by using out-of-pocket payments, while VHC beneficiaries had to join a long waiting list for cardiac operations. Hence, to ensure equitable access to health care, policy makers should not only include appropriate health services in the benefit package, but also ensure adequate health financing and appropriate provider payment methods.

Another interesting experience from health financing arrangements of the Thai UC is a centrally-managed fund for expensive health services which employed a point system for 'pricing' each procedure with a ceiling for reimbursement and a global budget (NHSO 2007b). This financing arrangement at the national level was intended to share financial risk for expensive health services provided by tertiary or specialized care hospitals. The arrangement could address the problem of community hospital's disincentive to refer patients to tertiary care hospitals by using this centrally-managed fund to pay compensation for the cardiac operations and other expensive health services. However, the amount of reimbursement per point was quite low due to a considerable increase in the volume of procedures provided. As a result, tertiary care providers in some big cities, especially university hospitals, made a loss on these services and had a disincentive to provide them (Srithamrongsawat 2007).

10.2.3 Health financing arrangements for achieving equity in health care finance

Evidence from the literature review indicates that countries or territories where general tax funding makes up a higher share (e.g. Sri Lanka, Thailand, Hong Kong SAR) appear to have a more progressive pattern of health financing than those dependent on mandatory social health insurance financing (O'Donnell, Doorslaer et al. 2005). The pattern of a less progressive financing system in countries relying on mandatory health insurance is often the result of a cap on social health insurance contributions and substantial co-payments required from SHI beneficiaries such as in the Republic of Korea. Based on current knowledge and existing evidence, international organizations encourage countries to move from regressive health financing sources (e.g. out-of-pocket payments or private health insurance premiums) to a pre-payment health care system which is financed by progressive health financing sources namely general tax revenues, SHI, and community-based health insurance (Savedoff 2004; World Health Organization 2005; Wagstaff 2006).

Experience from this study indicates that the decision to use general tax revenue to finance the UC scheme and to remove user fees led to less regressive health care finance

of the Thai health care system. Although an alternative to improve equity in health care finance was to use SHI to expand health insurance coverage, this route to achieve universal coverage was hampered by difficulties in collecting SHI contributions from the large informal sector of the Thai population and reluctance of the SSO to expand social health insurance coverage.

10.2.4 Value of BIA and analysis of equity in health care finance

Since objectives of the UC policy are: 1) to ensure equitable access to health services, regardless of individual income or social circumstance; and 2) to protect households from expensive medical care costs, analyses of equity in health care finance or financial incidence analysis (FIA), equity in health care use, and household health payments focusing on catastrophic health expenditure, are pertinent to reflect the achievements and objectives of the UC policy. In addition, analysis of benefit incidence provides further evidence on the distribution of public subsidies gained by different socio-economic groups.

This thesis has demonstrated that BIA and FIA provide powerful information to policy makers about the impact of the UC policy on equity of the Thai health care system. The FIA indicates who pays for health care and the progressivity of household health payments, while BIA provides another dimension of information about who benefits from public subsidies on health. However, both approaches demand good information from national household surveys and unit costs of health service provision at different types of health facilities. In many countries, the development and improvement of national household surveys on health seeking behaviour and household health payments as well as data on unit costs of health service provision in public and private health facilities are needed.

Considering changes in the benefit incidence of public health spending, it is apparent that BIA can trace the problem of inequitable distribution of public subsidies, but does not provide itself the explanation. This must be found in an understanding of the allocation

of government health resources and changes in health seeking behaviour. In short, benefit incidence is very effective in crystallizing the nature of the problem, but not the solution.

However, it is argued that there have been cases where the problem of weak targeting to the poor clearly lay in inappropriate allocation of the government health budget. For example, the BIA of Vietnam showed that the well targeted subsidy went to the poorest individuals in commune health centres only (Demery 2000). Also, findings from this thesis shows that the analysis of benefit incidence in greater detail can explain causes of inequitable distribution of public subsidies. For example, an increase in the share of public subsidies of the lower income quintiles in 2003 was caused by a significant increase in health care use at health centres and community hospitals.

10.2.5 Information systems for monitoring the impact of a UC policy on equity

The Thai experience emphasizes the importance of appropriate health information systems to monitor and assess changes in access to health care and household health payments. In this study, the use of two nationally representative household surveys, the HWS and the SES, biennially conducted by the NSO, provided an opportunity to employ secondary data of national household surveys to assess changes in health seeking behaviour and household health payments after the UC policy was implemented. Health seeking behaviour in the HWS and household health payments in the SES as well as socio-economic stratifiers were key variables for assessing changes in health care use and health payments among different socio-economic groups.

From Thai experience, an advantage of using secondary data analysis of the nationally representative household surveys is that they provide good sources of reliable data at the national and household levels which can be used for assessing changes in health seeking behaviour and household health payments related to implementation of the UC policy. However, experience from Thailand shows changes in surveys across years hampered comparative analysis of health seeking behaviour prior to and after UC. So, a

questionnaire designer of national household surveys needs to ensure basic comparability across years.

Countries in Asia have different types of household surveys on health service use, and household income and expenditure, which can be useful for the analysis of benefit and financial incidence and changes in equity. Examples include the LSMS in Nepal, the Household Income and Expenditure Survey in Bangladesh and Hong Kong, or the Consumer Finance Survey in Sri Lanka (O'Donnell, Doorslaer et al. 2005). To formulate the UC policy and strengthen health policy assessment, countries need to develop and maintain their national health information systems. In addition, experience from Thailand indicates that a good relationship between data producers (e.g. NSO) and data users (e.g. MOPH, NESDB, and other research institutes) fosters continuous improvement of health-related questions in the nationally representative household surveys which are useful for policy monitoring and evaluation (Tangcharoensathien, Limwattananon et al. 2007).

The Thai experience in the analysis of equity in health care finance shows limitations in using secondary data from national household surveys. In general, household survey data in many countries are unlikely to provide complete information on household health payments, particularly income tax payments and social insurance contributions (O'Donnell, van Doorslaer et al. 2008d). In addition, household payments through sales taxes are almost certainly unavailable. To address this problem, it is suggested to employ various approximation strategies to estimate household health payments if such data in the national household surveys are unavailable. This study used an approximation to estimate household indirect tax payments, while data on household payments for direct taxes, social insurance contributions, private health insurance premiums, and out-of-pocket payments for health, were available in the SES. This thesis indicates that improved household survey questionnaires on health-related payments would be useful for improving the accuracy and utility of the financial incidence analysis and to assess the impact of a major health policy change on equity in health care finance.

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Three vital components of household survey data required for BIA are often problematic and deserve particular consideration. First, data on health care use of individuals and some measures of household living standards must be available in the household survey. This thesis found that changes in choices of health service use in different years of the HWS questionnaires and the absence of frequency of ambulatory care use in the 2001 HWS posed difficulties in the comparative analysis of health service use between 2001 and 2003. In addition a single question on household income and income brackets used in the 2001 HWS did not provide a strong economic parameter for the analysis of benefit incidence. Second, health service use between public and private care must be clearly distinguished, so public subsidies through public and private health care can be separately calculated. In this thesis, it is fortunate that data on public and private health service use in the HWS were clearly separated. Finally, data on user charges or out-of-pocket payments for health care use must be available to compute net public health subsidies gained by different socio-economic groups. Analysis of benefit incidence in this thesis shows that the absence of information on user charges for ambulatory care paid by individuals and households in 2001 resulted in difficulties in comparing changes in benefit incidence between 2001 and 2003. From Thai experience, countries needing to assess the impact of a health policy change using BIA should take care in the design of the health seeking behaviour questionnaire, particularly in relation to these vital components. Any changes in national household surveys should be taken into account when conducting a comparative analysis across different years. Continuous improvement of national household surveys on health seeking behaviour and health service use through close dialogue between data users and data producers will improve the accuracy and value of the benefit incidence analysis.

Household living standards in the national household survey on health seeking behaviour and health service use are often limited or sometimes unavailable in many countries. However, increasing the number of questions on household living standards may jeopardize the quality of information on health seeking behaviour. Using an asset index as an alternative tool for classifying individuals into different economic groups seems to

be feasible for countries where data on household income or expenditure are difficult to collect.

Unit cost data for health services are vital for the analysis of benefit incidence, but these data are quite limited or unavailable, particular for the private sector. Countries needing to employ BIA to assess the impact of a health policy have to develop a strategy to establish unit cost data of health service provision at least at the national level. Data at the regional level would be useful for further analysis of regional benefit incidence in a context where allocation of health resources is very inequitable. This thesis estimated unit costs of health service provision by using a conversion factor between unit cost of a hospital admission and an ambulatory service. However, such an approach contains uncertainty and errors, and countries should employ this approach only as a temporary measure while better unit cost data are being developed.

10.2.6 Methodological lessons from Thai studies

The objective of this subsection is to draw experiences and lessons on methodological approaches from this thesis to an international audience and other countries which intend to employ similar approaches to those of this study to assess the impact of a major health policy change on their health care systems.

- **Using multi-method approaches to assess health policy interventions**

Since health behaviour is complex and is influenced by many factors, social scientists and public health researchers have increasingly employed a range of methodological strategies to address the complexity of factors influencing health and health care use. It is widely accepted that using different research designs and data collection methods, along with drawing on the perspectives of different disciplines, or a multi-method approach, can add to existing understanding of the relationships between factors influencing health and health seeking behaviour (Green 2005).

In this study, using secondary data analyses of financial and benefit incidence allowed for the general assessment of the positive impact of the UC policy on equity of the Thai health care system. However, using a qualitative approach at the household level as a multi-method approach provided a different perspective on the impact of the UC policy on richer and poorer households. Countries wishing to assess a major policy change may consider to employ such a multi-method approach to obtain a richer picture of the impact of the policy on the health care system.

- **Using an asset index as an alternative socio-economic indicator**

In developing countries, data on socio-economic status of households and individuals are scarce, and this leads to difficulties in assessing and monitoring changes in health equity. In addition, using a money metric measure, either household income or expenditure, as a tool to categorize socio-economic status of individuals in these countries has faced the problem of unreliable household income and expenditure data, the possibility of recall biases, and unavailability of consumer price indexes to compute household consumption expenditure. Given these limitations, this study employed an asset index as an alternative socio-economic parameter to assess the impact of UC policy on equity in the distribution of public subsidies in 2003. It was found that asset indexes can be used as an alternative tool to categorize household economic status. The merits of the asset index, in terms of its ease of collection and greater validity than household income or expenditure data, provide an opportunity for countries with difficulty in collecting household income and expenditure data to use asset indexes as an alternative tool to classify households into different economic groups.

- **Improving unit cost data of public and private health facilities for BIA**

Experiences from the analysis of benefit incidence indicate that data on unit costs of health service provision at public and private health facilities are vital for the accuracy of BIA. In general, health facilities in developing countries lack data on unit costs of health

service provision, and this problem has to be addressed if the BIA approach is to be used as a tool to assess the distribution of public subsidies.

In this study, it was found that using aggregate or regional unit costs to analyze benefit incidence provided similar conclusions on the share of public subsidies on health obtained by different quintiles. This is because there was no significant difference in unit cost of health service provision among health facilities in different regions in Thailand. However, in countries where inequality in the distribution of public health subsidies is substantial, using regional unit costs to analyze benefit incidence is likely to be worthwhile (Demery 2000; Mahal, Singh et al. 2000).

10.3 Policy implications and lessons for Thailand

10.3.1 Maintaining and fostering achievements of the UC policy in improving health equity

With the policy objectives of achieving health equity and financial constraints given a limited government health budget and public demand for health, policy makers need to ensure adequate finance of the overall UC scheme, and strategically allocate sufficient resources to the district health system (DHS), namely health centre and community hospital. In the Thai context, the DHS is a crucial strategic hub to provide comprehensive health services and foster achievements of the UC policy in improving equity in health care use and the distribution of public subsidies because the DHS is preferentially accessed and utilized by the poor in rural areas.

To maintain the achievements of more equitable health care finance and financial risk protection, the Thai government should continue to finance the UC scheme with general tax revenue and improve efficiency of the Thai health care system through the use of public health interventions to promote disease prevention and health promotion activities.

SHI coverage should be expanded to include spouses and dependants of the SSS beneficiaries, in line with the government's intention.

10.3.2 Improving referral system to achieve equity in access to health care

Appropriate financing arrangements which can avoid negative incentives to delay the referral process from community hospitals, and sufficient reimbursement for specialized medical interventions provided by tertiary hospitals, are likely to be a solution for the UC scheme in sustaining the policy objectives of equitable access to health care and minimizing negative consequences in accessing expensive health services given limited resources. The centrally managed Fund for expensive health services is intended to partly address such negative consequences, but its reimbursement rates need to be adequate.

10.3.3 Reconsidering the UC benefit package

Using only a cost-effectiveness approach to identify medical interventions to be included in the benefit package seems to be inappropriate for the situation of achieving universal coverage. Ethical dimensions and the objective of the UC policy to protect households from catastrophic health payments should be taken into account.

Research findings from RRT suggest that at a minimum, the Thai government should re-consider its decision not to support RRT, in the light of the UC goals. If the government insists to exclude RRT from the UC benefit package, means of providing targeted financial support to those most severely affected by illnesses outside the package are needed. In addition, other policy interventions should be simultaneously implemented including primary and secondary prevention of ESRD, an efficient provision and nationwide distribution of RRT services, an establishment of central purchasing and negotiation system for erythropoietin injection, a mandatory report from the Thai Registry of RRT, and incentives for providing more cost-effective health care for ESRD e.g. peritoneal dialysis and kidney transplantation. .

10.3.4 Improving data for monitoring health equity and the UC policy

From the experience of this study, it is suggested that a continuous dialogue between data producer (NSO) and data users in the MOPH and other research institutes both inside and outside the university in Thailand should be further developed and fostered. Adjustments of the SES and the HWS questionnaires should be made in order to improve the utility of these two nationally representative household surveys and serve the objectives of monitoring and assessing any government policies on Thai households.

To achieve better and more accurate analysis of benefit incidence, improvements in accuracy of unit costs of health service provision among public and private health care providers are needed. Apart from using unit cost data to analyze benefit incidence, the estimate of budget requirements per capita of UC beneficiaries also requires better unit cost data of all levels of health care facilities. A large number of unit cost data of health facilities would minimize uncertainly in unit costs. In addition, a regional benefit incidence could be done if regional unit costs of health service provision are available and the sample of health facilities is adequate.

10.3.5 Clarifying health equity ideologies among Thai policy makers

It is unclear which philosophy of health equity has been used by Thai policy makers for guiding health policy related to health equity in the country. There is neither a clear policy statement, nor consensus on the ideology of health equity. Given lack of a consensus on health equity perspectives, there is a need to discuss and clarify which philosophy or ideology of health equity is appropriate for the Thai health care system and widely accepted by Thai policy makers and Thai society. This would be useful for underpinning the direction of health equity related policies of the country.

10.4 Recommendations for research priorities

10.4.1 Equity in health outcomes and health status

Findings from the analyses of equity in health care use and the distribution of public health subsidies raise a question as to whether the UC policy has improved equity in health outcomes and health status for those in different economic groups. Health care and public subsidies on health are crucial factors contributing to the health status of the population, but there are other factors also influencing overall population health. If the ultimate goal of a health policy is to improve health status and maximize the health of the population, an assessment of the impact of the UC policy on health outcomes and health status of the population would be useful.

10.4.2 Improving health equity according to health needs

Though this study shows that the UC policy improved equity in health service use and the distribution of public health subsidies, it was not assessed whether or not improvements of such health equity were relevant to the health needs of the population. In addition, it is not known whether an increase in health service use by poorer income quintiles was pertinent to the health needs of those groups in the population. Household survey data used in this study are limited for an analysis of health needs and other dimensions. Improved design of national household surveys could address the gap in knowledge of health needs of the population. This information could then be used to explore further the impact of the UC policy.

10.4.3 Equity in quality of health care

The impact of the UC policy on equity in quality of health services received is another area which requires further investigation. The close-ended payment method may lead to poor or low quality of health service provision if the regulation and monitoring system is weak. It is worth investigating whether or not the UC policy with a specific health

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financing arrangement impacts equity in quality of health services provided by health care providers.

10.4.4 Financial risk protection

There are two relevant approaches to measure financial protection in health: catastrophic and impoverishing expenditures (Wagstaff 2008). In this study, the impact of the UC policy on catastrophic health expenditure was explored, but in a quite limited way. There are different approaches and definitions on catastrophic health expenditure that would benefit from further assessment. In addition, using the impoverishing expenditure approach may provide different findings from the former approach.

10.4.5 Using panel household data to assess the UC policy

Another interesting area for further investigation is to assess the impact of the UC policy at the household level using panel household data. Such an approach will differ from this study because sampled households in the panel household surveys will be the same, while sampled households in the cross-sectional household surveys were different, but nationally representative. An advantage of using panel household data is that it could provide for an assessment of the dynamics of household well-being and changes in household health seeking behaviour due to health shocks or other health related factors. This sort of study will provide a deeper understanding of the impact of health policy interventions on households with different socio-economic status and contexts. However, problems of cost and sample attrition are to be expected.

10.4.6 Assessing the impact of UC policy on other dimensions of equity

Finally, equity in health can be assessed using different dimensions such as by gender, race, educational level, and other socio-economic parameters. It is worth investigating whether or not the UC policy helps reduce inequity among different socially disadvantaged groups.

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10.5 Final conclusions

This thesis started by describing the importance of the UC policy in ensuring universal access to health care of the population and protecting households from medical care costs. Though low- and middle-income countries have high demand for financial risk protection because the majority of their population rely heavily on out-of-pocket payments, these countries face several key constraints in achieving universal coverage. Thailand, a lower middle income country, achieved universal coverage in 2001 by introducing a tax-funded UC scheme to approximately 47 million people who were not beneficiaries of the Civil Servant Medical Benefit Scheme (CSMBS) or the Social Security Scheme (SSS). The implementation of the UC policy resulted in a significant change in health care financing arrangements and financial barriers to health services. This research explored the impact of the UC policy in terms of equity in health care finance, changes in health care use, distribution of public subsidies on health, and household financial protection in health.

The UC policy did expand health care coverage to include nearly all Thais and increased the pro-poor nature of the Thai health care system, as well as the distribution of public health-related subsidies. Ambulatory service use and hospitalization of poorer quintiles significantly increased after the UC policy was implemented. The poorest quintiles gained the highest amount and proportion of public subsidies both prior to and after implementation of the UC policy. There was a reduction in the regressivity of overall health care finance, a greater decrease in household expenditure for health care among poorer quintiles, and a decrease in catastrophic expenditure.

Achievements of the UC policy in Thailand were most likely caused by three financing strategies: 1) the expansion of public health insurance to nearly universal coverage; 2) the removal of financial barriers to health services; and 3) the promotion of primary care use which is preferentially accessed and utilized by the poor in rural areas. Other

contributing factors appeared to be well-developed infra-structure of health services and the availability of a qualified health workforce in rural and remote areas.

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Annex 1 - Advantage and disadvantage of different household socio-economic indicators

In general, methods for measuring household socio-economic status can be categorized into two major groups, money-metric measures and alternative approaches. The first category is traditionally used by economists because it is easy to measure in a monetary definition and is widely well understood by the public. Its concept relies on the assumption that a person's material standard of living largely determines their well-being. Thus, the poor are defined as those who engage in a material standard of living as measured by income and expenditure below a certain level – the poverty line (Falkingham and Namzie 2001). However, practical problems associated with accuracy in quantifying income or expenditure, especially in developing countries have arisen and led to a search for non-monetary proxies of household welfare. The second category or alternative approach is non-monetary measures, which aim to assess household welfare in a comprehensive and broader concept. This category comprises various approaches such as household asset indexes, the occupational status score (OSS), the Household Prestige (HHP) score, and the capital socio-economic status (CAPSES). Each non-monetary method has different strengths and limitations due to its objectives and pattern of data used. Therefore, policy analysts should realize the limitations of each measure and use appropriate methods which are relevant to their objectives and existing data.

Money-metric measures

Economists traditionally prefer to use an indicator in money terms – income or consumption expenditures – to assess household poverty and living status. Although the best indicator of welfare is the actual consumption of an individual on food and other goods as well as consumption of services such as health and education, individual or household welfare is difficult to quantify. In practice, income and consumption expenditure data are therefore commonly used to proxy the level of consumption utilized. A decision to use income or consumption expenditure is dependent on the conception of well-being employed. If the standard of living concept is employed for measuring an

individual's well-being, consumption expenditures will be focused on. On the other hand, if the right to a minimum level of resources is the concept used, income is favoured (Atkinson 1989).

However, economists generally prefer expenditure to income. This is because income tends to vary over a course of a year, especially in developing countries where income highly depends on seasonal agriculture. Moreover, a large proportion of household income in developing countries is shared by the informal sector and self employment both inside and outside agriculture. This makes the accuracy of income problematic. Furthermore, people tend to smooth out their fluctuation of income via expenditure. For example, if a person receives a bonus, they do not necessarily spend the whole bonus, but save part of it. Similarly, if income falls in a particular year, a person may use savings to compensate for the transient short fall. Thus, consumption expenditure seems to be a better proxy for individual or household well-being than income.

Some arguments arise about the drawback of using monetary measures, both income and consumption expenditure, in developing countries. Using a monetary indicator does not take into account how that money is earned and how much time is spent for working (Piachuad 1987).

Asset index

Since 1998, an alternative method for estimating household socio-economic status called an asset index has been introduced (Filmer and Pritchett 1998). This method uses household assets such as durable and semi-durable goods to describe household welfare instead of using household income or consumption expenditure. Its concept relies on evidence that the money metric measure is too narrow for defining household welfare. Other reasons are that asset indexes are less data intensive and subject to smaller measurement error. Moreover, an asset-based measure is most likely to be consistent with the financial means and technical capabilities of government statistical offices. Filmer and Pritchett constructed an asset index from the National Family Health Survey

(NFHS) in Indian states by using principal component analysis (PCA). They found that the asset index was robust, produced internally coherent results and provided a close correspondence with State Domestic Product (SDP) and poverty rate data (Filmer and Pritchett 1998). Sahn and Stifel used factor analysis (FA) to construct weights for each asset instead of PCA, for the reason that FA forces all of the components to explain the correlation structure between the assets accurately and completely. In FA, all of the common factors are not forced to explain the entire covariance matrix. Moreover, they preferred using the asset-based indicator to income or consumption-based indicators in accordance with three advantages. Firstly, household assets are fewer and easier to measure than income and consumption expenditure. Secondly, the accuracy and validity of asset data are better than that of income or consumption expenditure data. Finally, the asset data are less likely to contain reporting bias and are valid to be assessed by interviewers through a checklist upon inspection (Sahn and Stifel 2001).

However, one criticism levied against the use of asset indexes is that the components of the index are taken from a generic list of commodities, despite the fact that those better off usually have better quality or technologically advanced equipment than those less well off (Moser 1998). For example, the better off may have a colour television rather than black & white or be able to receive satellite and digital transmissions rather than a normal broadcast. Moreover, the asset indexes are generally poor proxies for current income or consumption expenditures, even though they may be a good proxy for long term or permanent income. Above all, it is necessary to be aware that the asset indexes provide a relative analysis of welfare but say nothing about levels of absolute poverty. Therefore, they can be used to monitor changes in poverty or household ownership over time, but are not able to translate changes into a reduction in money terms or material poverty.

Other non-monetary indicators of household welfare

Other non-monetary approaches for identifying socio-economic status (SES) of households have been developed and debated for a long time. However, SES

measurement research lacks attention whilst the demand for this research related to health is increasing. Oakes and Rossi stated in their paper that this suggested that everybody has put the cart before the horse (Oakes and Rossi 2003). Interesting household SES indicators are, for example, the occupational status score (OSS), the Household Prestige (HHP) score, and the capital SES (CAPSES).

The first index was proposed by Nam and Powers in 1965 (Nam and Powers 1965). This method used an occupational status score or OSS, which was calculated by using a combination of median education and median income level of all US census occupations. The scoring process was done by using average midpoints of the two cumulative intervals divided by the total number of persons in all occupations. About ten years later, Green (1970) developed a composite measure for stratifying health behaviour based on income, education and occupation. These weights were derived from a state-wide sample of 1,592 California families. He claimed that his scale was occasionally used for measuring SES in applied health behavioural research. This measure was criticized that because the weights were estimated by a regression equation predicting health behaviour, it could not use for measuring SES outside applied health behavioural research (Green 1970).

The second index is a method for assessing household status called a household prestige or HHP score. Rossi and colleagues demonstrated this method in 1974 (Rossi, Sampson et al. 1974). This index used a rating of household social standing comprising husband's occupation and education, along with wife's occupation to infer the relative influence of the social characteristics of families. The measure assigned status scores to households based on occupation, educational level, and ethnicity of spouse. Unfortunately, this method has not received widespread attention.

The last index named capital SES or CAPSES was proposed by Oakes and Rossi in 2003 (Oakes and Rossi 2003). This measure comprises three principal domains: material; human; and social capital. The first domain or material capital means material endowments under an individual's control. It is more than just earning, income, or tangible assets. Material endowments of all sorts such as trust fund, stocks, and an

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expensive house, need to be measured since they are controlled resources potentially used for acquiring good housing, health care or education. The second domain or human capital refers to the education, skills, abilities and knowledge which are mutable through investment of time and labour. Finally, the last domain or social capital describes resources that are a function of the social system. A pilot study of CAPSES showed a level of consistency in social structure and measures thereof such as SEI, OSS and HHP.

British researchers have also developed and debated SES measures. Two scales are available the Cambridge Scale (CS) (Prandy 1990) and the National Statistics Socio-economic Classification (NS-SEC) (Rose and Pevalin 2001). The first method relies on data from survey respondents who are asked to name the occupation of four friends. Then, the occupational rankings of the respondents and friends are analyzed with multidimensional scaling techniques which yield a continuous ordinal CS score for each respondent which is the CS ranking. The second relies on employment theory and groups persons into typically eight nominal classes or strata. However, this effort of British researchers focuses on occupational relationship, not status ranking.

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Curative and rehabilitative care	Health promotion and disease prevention services
1. General examination, curative and rehabilitative services 1.1 Medical examination, diagnosis, treatment and rehabilitation until the treatment ends, including alternative medical care as recognized by the Medical Registration Committee. 1.2 Childbirth delivery services, totaling for no more than 2 deliveries. 1.3 Meals and room charges for ⬧ inpatients in common rooms. 1.4 Dental services: extraction, filling, scaling, plastic-based denture, milk-tooth nerve-cavity treatment, and placement of artificial palate in children with harelip and cleft palate. 1.5 Medicines and medical supplies according to the national essential drug list. 1.6 Referrals for further treatment among health facilities. 2. High-cost medical services, including artificial organs and prostheses (both inside and outside the body), as per the payment criteria set by the National Health Security Board (NHSB). 3. Care for accident and emergency illnesses: any accident or emergency case can go for medical care at any health facility (participating in the scheme) located nearest to the scene; the medical expenses incurred within the first 72 hrs can be reimbursed from the central health insurance fund*; after that the contracted unit of care shall cover the costs as per the established criteria.	1. Having and using personal health record-books in providing health care for individuals. 2. Examination and pre-natal care for pregnant women for health promotion purpose. 3. Services related to child health, child development and nutrition, including immunizations according to the national immunization program. 4. Annual physical check-up for the general public and high-risk groups (according to the Medical Council guidelines for medical checkups of 2000, as recommended by Royal Medical Colleges). 5. Antiretroviral medication for the prevention of mother-to-child transmission of HIV, as per the guidelines set by the National Health Security Board (NHSB). 6. Family planning services. 7. Home visits and home health care. 8. Provision of knowledge about health care for patients at the individual and family levels. 9. Counseling and support for people's participation in health promotion. 10. Oral health promotion and disease prevention: 10.1 Oral health examination; 10.2 Advice on dental health; 10.3 Fluoride treatment among population groups at risk of dental caries such as children, elders, and patients taking radiation in the head and throat areas; 10.4 Sealant application of dental pits for children under 15 years of age.

* abolished in FY 2004

Source: (NHSO 2007b)

Annex 3 - Constructing the asset index from the SES data and analytical results from the 1998-2002 SES

Methods

Principal component analysis (PCA) is a statistical technique closely related to factor analysis, which can determine a weight as a factor score for each asset variable. It seeks a linear combination of variables such that the maximum variance is extracted from the variables. Then it removes this variance and seeks a second linear combination which explains the maximum proportion of the remaining variance, and so on. This is called the Principal Axis Method and results in orthogonal (uncorrelated) factors. PCA often provides a good approximation to common factor analysis. The first principal component is the linear index of variables with the largest amount of information common to all of the variables. We can write a result of the asset index derived from PCA for each household asset with the following formula:

$$A j = f1*(a\,j1-a1) / (s1)+...+ f\,n*(ajn - an)/ (sn)$$

$$Aj = \sum_{i=1}^{n} f_i(a_{ji} - a_i) / S_i$$

Where

Aj	is	the asset index for each household (j =1,.......,n)
f_i	is	the scoring factor for each household asset (i =1,......,n)
a_{ji}	is	the ith asset of jth household (i ,j =1,......,n)
a_i	is	the mean of ith asset of household (i =1,......,n)
s_i	is	the standard deviation of ith asset of household (i =1,......,n)
Z	is	the standardized variables of each household

Derived from PCA, scoring factors of the first principal component (the efficient component) are used for constructing the asset index of each household. This means a new factor which has a linear correlation with original variables is developed. A weight

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is assigned to each variable (asset) in order to maximize variation of the new variable, subject to number of constraints.

The mean value of the index is zero by construction. Since all asset variables are dichotomous and take only a value of zero or one, then the weight is easy to be interpreted. A move from 0 to 1 changes the index by f_i/s_i.

Using the asset index computed by this formula, each household is assigned into quintiles. The first quintile is the poorest, while the fifth quintile is the richest. Given the population in Thailand below the national poverty line in 2002 was 9.8 % (United Nations 2002), therefore households in the first decile of the 2002 SES can be assumed as those having living standards below the poverty line. A comparison between poor households in the first decile classified by the asset index and the national poverty line can show correlation and consistency between the asset index and money-metric measures.

To explore the associations between the asset index and household income and expenditure, the Pearson Correlation was employed in order to analyze a correlation between using the asset index and household income/expenditure to classify households as different quintiles.

Data sources

The 1998, 2000, and 2002 SES were used as the main data sources for computing the asset index. Data of housing characteristics, ownership of household assets, and water supply system in *"Record Five"* of SES were exploited. Household income and expenditure per capita available in *"Record One"* of the SES were also used for classifying households to different household quintiles compared to using the asset index.

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A range of 28 to 30 variables of household assets in the three years of the SES data sets could be categorized into three groups: housing characteristics; types of household sanitation and water supply; and ownership of durable and semi-durable assets.

Most variables were dichotomous having a value of either zero or one. Variables that were not dichotomous such as material types of housing construction were changed into a dichotomous character, namely permanent or non-permanent materials of housing construction. Then, the entire variables can be used to construct the asset index.

Results

1. Details of the asset indexes during 1998 to 2002

After the asset index was calculated by using PCA, we classified sample households of the 1998, 2000 and 2002 SES into quintiles, from the poorest to the richest. Mean value of the index was zero by construction and the mean in each quintile was distinctly different from each other. For instance, the differences between the first quintile and the third quintile were 3.08, 3.18 and 3.13 in 1998, 2000 and 2002 respectively, while the differences between the third and the fifth quintile were 3.54, 3.55 and 3.75, correspondingly (Table 1).

Table 1: Mean and standard deviation of the asset index in each quintile in 1998, 2000, and 2002 SES

Year	No. of variables	Mean factor 1	SD Factor 1	Mean factor score by quintile				
				Q1	Q2	Q3	Q4	Q5
1998	28	0.000	2.364	-3.20	-1.20	-0.12	1.11	3.42
2000	29	0.000	2.399	-3.29	-1.19	-0.11	1.16	3.44
2002	30	0.000	2.448	-3.29	-1.28	-0.16	1.13	3.59

As the entire asset variables were modified in a dichotomous (zero or one) manner, a move from zero to one changes the asset index by the factor score of each asset divided by its standard deviation or f_I / s_I. The asset index is defined as the sum of the factor

score of each asset. For example, in the 2002 SES, a household that owns an air-conditioner has an asset index higher by 0.748 than another household without it, and owning a refrigerator raises a household's asset index by 0.618 relative to a household having no refrigerator (Table 2).

Table 2: Mean, standard deviation, and factor scores of selected asset variables in the 2002 SES

Variable	Mean	Std. Dev.	Min	Max	factor score	F/SD
Washing machine	0.366459	0.481851	0	1	0.27512	0.570965
Telephone	0.312940	0.463703	0	1	0.26761	0.577115
Video	0.401795	0.490275	0	1	0.25368	0.517424
Refrigerator	0.805421	0.395888	0	1	0.24477	0.618281
Electrical cooking pot	0.568071	0.495359	0	1	0.23928	0.483044
Mobile phone	0.296415	0.456689	0	1	0.23411	0.512624
Bed	0.526045	0.499336	0	1	0.23367	0.467962
Air conditioner	0.109212	0.311913	0	1	0.23329	0.747932
Iron	0.800789	0.399418	0	1	0.23155	0.579718
Water boiler	0.107954	0.310331	0	1	0.22561	0.726999

In the first principal component of PCA, factor scores of the household assets among the 1998, 2000, and 2002 SES were quite similar. Ownership of a washing machine was the variable that had the highest factor scores in the three years of SES data sets explored. Having a telephone, a refrigerator, and a video recorder were three other variables that had high factor scores in these three-year data sets. In the 2002 SES, owning an electrical cooking pot and a mobile phone played an important role in the first principal component, while this was not observed in the 1998 and 2000 SES (Table 3). It is noteworthy that some asset variables, such as having a sofa in the living room, were not asked about in the 2002 SES, and an additional item such as having a mobile phone was added instead. This leads to differences in the top-ten factor scores of the asset variables among the three data sets.

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Table 3: Top-ten factor scores of asset variables in the first principal component among the 1998, 2000, and 2002 SES

1998		2000		2002	
Assets	Factor scores	assets	Factor scores	Assets	Factor scores
Washing machine	0.27774	Washing machine	0.28077	Washing machine	0.27512
Refrigerator	0.27748	Telephone	0.28015	Telephone	0.26761
Telephone	0.27648	Refrigerator	0.26458	Video recorder	0.25368
Video recorder	0.26828	Video recorder	0.26366	Refrigerator	0.24477
Sofa in living room	0.2639	Sofa in living room	0.25941	Electrical cooking pot	0.23928
Bed	0.25531	Bed	0.25161	Mobile phone	0.23411
Electrical iron	0.24967	Electrical iron	0.24207	Bed	0.23367
Gas cooking stove	0.23541	Gas cooking stove	0.23170	Air conditioner	0.23329
Air conditioner	0.22715	Water boiler	0.21869	Electrical iron	0.23155
Water boiler	0.20723	Television	0.20520	Water boiler	0.22561

After categorizing the sample households into five quintiles by using the asset index, we found that the PCA grouped the asset index quite well. In other words, it can be used to measure household living standards because the index produces significant differences among different socio-economic groups, especially in the assets with high factor scores. Households in the fourth and the fifth quintiles usually have assets with high factor scores such as a washing machine, a telephone, a video recorder, and a mobile phone, while none or a small percentage of households in the first and second quintiles owned such assets. In contrast, a high percentage of households in all quintiles owned assets with low factor scores such as toilets, bicycles, and light bulbs. For example, in 2002, only 1% of households in the first quintile owned a washing machine, while 89 % of households in the fifth quintile did. Moreover, of households in the fifth quintile, 94 percent owned a telephone in 2000 and 86% in 2002, while only 1-2 % of households in the first quintile owned that communication device during those periods (Table 4).

Table 4: Mean availability of selected asset variables among different household quintiles classified by the asset index in the 1998-2002 SES

Assets	1998					2000					2002				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Washing machine	0.00	0.02	0.09	0.40	**0.83**	0.00	0.03	0.16	0.53	**0.90**	0.01	0.05	0.23	0.65	**0.89**
Telephone	0.02	0.03	0.10	0.38	**0.84**	0.02	0.06	0.17	0.54	**0.94**	0.01	0.04	0.17	0.49	**0.86**
Video recorder	0.00	0.02	0.10	0.34	**0.80**	0.01	0.05	0.15	0.43	**0.84**	0.02	0.13	0.34	0.64	**0.88**
Refrigerator	0.12	0.66	0.94	0.99	1.00	0.20	0.77	0.96	0.99	1.00	0.26	0.82	0.96	0.99	**1.00**
Electrical cooking pot	0.43	0.79	0.91	0.94	0.96	0.50	0.84	0.93	0.96	0.98	0.11	0.36	0.62	0.82	**0.94**
Mobile phone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	0.08	0.20	0.42	**0.75**
Sofa in a living room	0.02	0.05	0.18	0.52	0.83	0.02	0.07	0.25	0.55	**0.85**	NA	NA	NA	NA	NA
Bed	0.10	0.20	0.46	0.76	0.93	0.10	0.22	0.54	0.78	**0.94**	0.13	0.28	0.54	0.76	**0.93**
Toilet	0.95	1.00	1.00	1.00	1.00	0.97	0.99	1.00	1.00	1.00	0.97	1.00	1.00	1.00	1.00
Air conditioner	0.00	0.00	0.00	0.03	**0.43**	0.00	0.00	0.01	0.05	**0.49**	0.00	0.00	0.01	0.05	**0.49**
Bicycle	0.32	0.39	0.38	0.38	0.43	0.30	0.37	0.40	0.44	0.51	0.35	0.47	0.44	0.50	0.55
Light bulb	0.13	0.17	0.19	0.23	0.35	0.11	0.13	0.16	0.19	0.32	0.09	0.11	0.14	0.16	0.29
Average asset index	-3.23	-1.26	-0.18	1.07	3.43	-3.29	-1.19	-0.11	1.16	3.44	-3.29	-1.28	-0.16	1.13	3.59

2. Pearson correlation of households living standards classified by asset index, household income and expenditure

Table 5 presents the level of correlation between household quintiles determined by the asset index, and household income and expenditure. The correlation between household quintiles classified by the asset index and household expenditure is similar to that of household income in the three years of SES data sets analyzed.

Table 5: Pearson correlation between economic quintiles classified by the asset index , household income and expenditure in 1998-2002

Year	Pearson correlation coefficient between the asset index and money-metric measures	
	Income	Expenditure
1998	0.53	0.52
2000	0.53	0.52
2002	0.54	0.53

A comparison between households classified by the asset index and household income in 2002 reveals a greater correlation between households in the first and fifth quintiles than the middle socio-economic groups. Approximately 47 % of households in the first quintile classified by the asset index exactly matched those classified by household income, while 52 % of the households in the fifth asset quintile matched the richest income quintile. The lower matching was found in the second, the third and the fourth quintiles.

Likewise, a comparison between households classified by the asset index and household expenditure per capita reveals a similar finding. The percentage of sample households matched between the asset index and household expenditure per capita in the first and the fifth quintiles are higher than those found among the middle quintiles in the 2002 SES (Table 6).

Table 6: A comparison between sampled households classified by household expenditure, income per capita and the asset index in 2002

factor1	Income					Expenditure				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Q1	1322	913	602	420	241	1,405	840	585	412	258
%	47.2	28.3	16.2	11.1	6.1	40.1	24.0	16.7	11.8	7.4
Q2	838	942	859	546	316	841	1,039	807	534	321
%	29.9	29.2	23.1	14.5	8.0	23.7	29.3	22.8	15.1	9.1
Q3	440	802	974	779	500	384	746	965	839	583
%	15.7	24.8	26.2	20.7	12.6	10.9	21.2	27.4	23.9	16.6
Q4	173	472	915	1093	849	111	426	944	1,143	823
%	6.2	14.6	24.6	29.0	21.4	3.2	12.4	27.4	33.2	23.9
Q5	25	102	374	931	2061	10	78	407	1,018	1,970
%	0.9	3.2	10.0	24.7	52.0	0.47	2.34	9.12	25.02	63.1

3. Using the asset index and the money-metric measures to identify the poor

Due to concerns of the government over the poor and their vulnerability, a comparison between using the asset index and household income or total expenditure to identify households being above or below the poverty line is also explored. As the proportion of Thai households below the national poverty line in 2002 was 9.8%, therefore, households in the first decile classified by either income or expenditure in 2002 should be assumed as

those under the poverty line. Based on this assumption, a comparison of households in the first decile classified by the asset index and the money-metric measures can reflect the possibility of using the asset index to identify poor households.

Table 7 shows a comparison between using the asset index and household income/expenditure to identify households above or below the poverty line. It reveals that only 31% and 35% of the first household decile classified by household income and expenditure exactly matched those classified by the asset index. The correlation between using the asset index and household income / expenditure to classify households over or below the poverty line is only 0.23 and 0.28, respectively.

Table 7: A comparison of households above and below the poverty line classified by the asset index, household income and expenditure in the 2002 SES

Asset index	Households above and below the poverty line classified by HH income & expenditure in the 2002 SES (N = 17,489 HH)			
	Household income		Household expenditure	
	Non-poor	Poor	Non-poor	Poor
Non-poor	14,536 (92.4%)	1,204 (68.8%)	14,605 (92.8%)	1,135 (64.8%)
Poor	1,204 (7.6%)	545 (31.2%)	1,133 (7.2%)	616 (35.2%)
Total	15,740 (100%)	1,749 (100%)	15,738 (100%)	1,751 (100%)

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Investigating Tool One

Household members and their relationships

Purposes

1. To identify household members and their relatives in each household.
2. To clarify the dimensions of interpersonal relationships among household members and their relatives: interdependence, power/authority, money flows, family and kinship.
3. To develop trust and a good relationship between researcher / fieldworkers and household members of the selected households.

Preparation for visit

1. Make an initial visit to the household to:
   a. ask if they are willing to participate in the study;
   b. explain objectives of the study and what is involved;
   c. tell them that you will like to visit them every two weeks;
   d. ask when would be the most convenient time to come.
2. Look at household information from the record of preliminary visit before the actual visit.
3. Prepare other assisting devices such as a tape-recorder, field notes, etc.

Approach

1. This visit is for all selected households.
2. The patient and household head in each household should be appropriate key informants. If they cannot give you adequate details, you may ask for more information from other key adults within the household.
3. Making the respondent feel comfortable and at ease with you is important.
4. The aim of this visit is to draw a diagram of household members and a map of their relationships. In addition, trying to understand the relationships among household members and their relatives are essential for the interviewer.
5. Try to see and know each household member and patient's relatives that the key informant mentions (if he or she is available)
6. If the person is busy or pre-occupied with something else, please try to reschedule the interview. If he or she is not ready or not feeling like talking, the interview will not be very informative.
7. You also need to make sure there is some degree of privacy, especially if there may be conflict between household members, as it may be an emotional or sensitive interview.

8. Give a brief summary of the issues / themes that you would like to talk about in the interview at the start. Use the probes to encourage the respondent to talk. Once the flow of the interview has started, do not interrupt – steer the interview around the themes.
9. The probes are very important; one-sentence answers from respondents are not enough to provide the detail that we are looking for.
10. The interviews should also be taped.
11. Make additional notes on your note pad or other paper if you need to, and use the numbers to refer to those additional notes.

Writing up

1. From this interview, you will have:
   a. a tape of the interview;
   b. field jottings and other types of field notes;
2. A diagram of household members and a map of their relationships need to be written up. Use a formal symbol of a family tree that you were framed in during the pilot study.
3. Transcription of the interview.
4. Listen to the tape and add additional information to what you have already written up.

Visit

Greeting and general chat
Introduce yourself again in case there is any household member available and you see him or her for the first time.
Introduction for the interview
Consent questions
Ask the respondent to give permission for tape-recording

Questions

I would like to talk to you about your family members and relatives;
Perhaps we can draw a diagram of your family members and write the name of each member into the diagram. Let the respondent check whether the diagram we write is correct or not.

Can you tell me about details of your family members and relatives drawn in the diagram?
It is possible that the respondents will give you some information about the relationship between him or her with other household members during a conversation of family members and relatives. Please record and take note of such information because it will let you understand more about interpersonal relationships among patients, household members, and their relatives.

What are reactions or support that your family members provided if someone in the family need help or a support?

Who is/are your appreciated family member? Why?

Note: Do not ask about income or expenditure at this visit.
However, if patients and their household members tell you about their income or expenditure unintentionally, or they tell you about household health expenditure, please record and take note of such information for the next visit.

Examples of probes
Can you explain more?
What happened next?
What did you do?
Why?
Anything else

Key issues that we are interested in this visit
1. How many household members and relatives of the selected households? Where are they?
2. How are relationships among patients, household members, and their relatives?
3. Who has the authority to make a decision within the household?

Note: it is possible that more details of the relationships among patients, household members, and their relatives will emerge from next visits. Then, data of household member relationships gathered from the investigation tool one will have to be revised at every visit if there is any information changed or added.

Note: This tool was adapted from household investigating tools of the South African Costs and Coping study (SACOCO) and the Society and Health Institute, Thailand

Investigating Tool Two

Life history and life-line

Purposes
1. To understand patient's life history and key events in this household's history.
2. To identify how those key events have affected the household's livelihood, especially illness of a household member and how the household members coped with those events.
3. To provide a context and background information for other household data that we collect

Preparation for visit
1. Look at the household data from preliminary visit and the relationships among patients, household members, and their relatives.
2. Draw a life-line from existing data that you already have and take this with you to the interview.
3. Prepare assisting devices: a tape recorder, field notes, a camera, etc.

Approaches
1. This visit is for all selected households.
2. The patient in each household should be appropriate respondent. If the patient may not be the most suitable person, either due to poor health or lack of knowledge, a caregiver is probably the best person.
3. The aim is for the respondent to tell you a story of patient's life history, so make sure that the person is relaxed and willing to talk to you.
4. If the person is busy or pre-occupied with something else, please try to reschedule the interview. If he or she is not ready or not feeling like talking, the interview will not be very informative.
5. You also need to make sure that there is some degree of privacy, as it may be an emotional or sensitive interview, especially when the patient tells you about his or her illness. Please prepare yourself to respond such situation properly and be ready to provide appropriate advice.
6. Give a brief summary of the issues / themes that you would like to talk about in the interview at the start. Use the probes to encourage the respondent to talk. Once the flow of the interview has started, do not interrupt – steer the interview around the themes.
7. The probes are very important; one-sentence answers from respondents are not enough to provide the detail that we are looking for. So, use the probes below to clarify what the respondent wants to tell you.
8. The interviews should also be taped. However, if the person refuses, make notes instead.
9. If some photos are needed as additional information, please ask permission for taking a photograph from the respondent and their household members.

10. Make additional notes on your note pad or other paper if you need to, and use the numbers to refer to those additional notes.

Writing up
1. Type up the transcript of the tape into Thai
2. If possible, translate the transcript into English
3. Draw a life-line diagram of the patient.

Visit

Greeting and general chat
Introduce yourself again in case there is any household member available and you see him or her for the first time.
Introduction for the interview
Consent questions
Ask the respondent to give permission for tape-recording and taking a photo

Questions

I would like to talk to you about the story of your life;
Perhaps we can draw a line for the years / time passing, and we can write on the line what happened and when?

Can you tell me about the time when you moved into this house?

What have been the important events / changes in the family?

Can you tell me about the best time of your family?

Can you tell me about the worst times of your family life?

Do not ask about income and expenditure at this visit.
However, if the patient and their household members tell you some details about their income, expenditure, especially household health expenditure by chance, please record and take note of such information for the next visit.

Examples of probes
Can you explain more?

What happened next?
What did you do?
Why?
Anything else

Remember that the key issue that we are interested in this visit is "patient's life story".

1. What are the key events in the patient's life history? Some examples might be:
   a. Having a baby,
   b. someone coming back to live in the household,
   c. someone leaving and not coming back,
   d. getting work,
   e. losing a job,
   f. a death,
   g. ill-health,
   h. inheritance,
   i. etc.
2. What are the impact of those key events on patient's livelihood and other household members, especially illness of a household member?
3. We are also interested in:
   a. How the household is affected by illness?
   b. How they coped?

So, when these topics come up, it is necessary to probe.

Note: This tool was adapted from household investigating tools of the South African Costs and Coping study (SACOCO) and the Society and Health Institute, Thailand

Investigating Tool Three

Illness narratives

Purposes
1. To understand the overall picture of how the patient and the household members have responded to illness – their perception, how it affected their lives, and their ability to cope and shape their responses.
2. To set the scene of how the patient's health came to be at this current situation.
3. To learn details of the patient's and household's interaction with the health service system, and how it has shaped their health seeking behaviour, and coping strategies.

Preparation for visit
1. Go back and re-read patient's data in the household member profile, the life history interview, field notes, and look at the life-line.
2. Take those patient's data with you when you visit the household.
3. Prepare assisting devices: a tape recorder, a camera, field notes, etc.

Approaches
1. The patient is the most suitable person to give information of his or her illness. However, if the patient cannot talk due to poor health, a care giver in the household may be another choice for the interview.
2. You may need to ask the consent questions, if this is a new respondent.
3. The aim is for the respondent to tell you a story of patient's illness and his or her perception, so make sure that the person is relaxed and willing to talk to you.
4. If the person is busy or pre-occupied with something else, please try to reschedule the interview. If he or she is not ready or not feeling like talking, the interview will not be very informative.
5. You also need to make sure there is some degree of privacy, as it may be an emotional or sensitive interview. So, please prepare yourself to respond such situation properly and be ready to provide appropriate advice or sympathy.
6. Give a brief summary of the issues / themes that you would like to talk about in the interview at the start. Use the probes to encourage the respondent to talk. Once the flow of the interview has started, do not interrupt – steer the interview around the themes.
7. The probes are very important; one-sentence answers from respondents are not adequate to provide the details that we are looking for. So, use the probes below to clarify what the respondent want to tell you.
8. The interviews should also be taped. However, if the person refuses, make notes instead.

9. Photos of the patient, household members, housing conditions, and surroundings may be needed as additional information. So, please ask permission before taking such photos from the respondent and household members.
10. Make additional notes on your note pad or other paper if you need to, and use the numbers to refer to those additional notes.

Writing up
1. Type up the transcript of the tape into Thai
2. If possible, translate the transcript into English

Visit

Greeting and general chat
Introduction for the interview
Consent questions
Ask the respondent to give permission for tape-recording

Questions

Can you tell me about the story of your illness?

Can you tell me about the start of your illness and how does it progress?
What did you or others do? What happened next?
Has the illness or symptom changed? And how do you cope with such change?
How does illness change your life and others in the households?
Can you tell me about the magnitude of health expenditure regarding your illness as well as other related costs (such as transportation, lodging, etc.)?
Who pays for health expenditure regarding your illness?

Can you tell me about health care services that you have utilized since your illness started?
Details of health care services that you have received (where, when, and how)
What do you feel about the health care services that you have received?
- What do you like and what do you dislike?
- Do those health care services differ greatly from your expectation?
What are the reasons why you decide to use such health services?
Do you have any difficulties in or problems with access to and utilization of health services regarding to your illness?
In your opinion, what are barriers to health services that still persist under UC?

Examples of probes
Can you explain more?
What happened next?
What did you do?
Why?
Anything else

The key issues that we are interested in:
1. What happened in the story of the patient's illness?
2. How did it start? What was done and what happened next?
3. The magnitude of health expenditure and other related costs regarding the patient's illness
4. How has the illness and its expenditure affected the patient or other household members?
5. How has the illness and its expenditure affected the household's livelihood?
6. Types and places of health services that the patient has utilized and the reasons behind such decisions.
7. What is (are) patient's and /or household members' perception towards health care services that they have received? And what are their expectations for health services?
8. In patient's and household members' point of view, what are barriers to health services regarding patient's illness that still persist under UC?

Note: This tool was adapted from household investigating tools of the South African Costs and Coping study (SACOCO) and the Society and Health Institute, Thailand

Investigating Tool Four

Household Income and Expenditure

Purposes
1. To elicit household income and expenditure, especially health expenditure from the selected households.
2. To explore the proportion of household health expenditure to total household expenditure and income.
3. To understand the impact of health expenditure on other household activities and livelihood.
4. To classify socio-economic status of each selected household into either richer or poorer household.

Preparations
1. Go back to existing household data and re-read patient's data in the life history interviews and field notes, and the illness narratives. These data might contain information about household income and expenditure, especially health expenditure.
2. Fill the figures of household income and expenditure that you have already known from the previous interviews into the household income and expenditure tables.
3. Takes those patient's data with you when you visit the household.
4. Prepare assisting devices: a tape recorder, a camera, field notes, etc.

Approaches
1. Respondent: the patient may not be the most suitable person because he or she may not know about how the family is responding / coping with the household health expenditure and the impact.
2. Therefore, the first step is to find out, sensitively, who is the most suitable person. Some information from previous interviews will help.
3. You may need to ask the consent questions, if this is a new respondent.
4. If the person is busy or pre-occupied with something else, please try to reschedule the interview. If he or she is not ready or not feeling like talking, the interview will not be very informative.
5. As household income and expenditure data are sensitive and some household members may not be willing to reveal their actual income and expenditure, therefore, you have to assure the respondent that such information is for the study and it will be kept confidential.
6. Information of household income and expenditure, especially health expenditure may be collected from previous household interviews. You have to explore existing data and re-check with the respondent whether such information is correct or not.
7. The probes are very important. So, use the probes below to clarify what the respondents want and do not want to tell you.

8. The interviewer is responsible for filling the tables of household income and expenditure below. At the end, you have to check those figures with the respondent whether they are correct or not.
9. The interviews should also be taped. However, if the person refuses, make notes instead.
10. Make additional notes on your note pad or other paper if you need to, and use the numbers to refer to those additional notes.

Writing up
1. Type up the transcript of the tape into Thai
2. If possible, translate the transcript into English
3. Fill the tables of household income and expenditure below.

Visit

Greeting and general chat
Introduction for the interview
Consent questions
Ask the respondent to give permission for tape-recording

Questions

What is average household monthly income for the items that are still missing in the table?

What is average monthly expenditure of the items that are still missing in the table?

Were there large expenditure items during last month? What were the items and what was the reason for the expenditure?

Where does the money come from? Or what are the main sources of household income?

Overall, in your opinion, is current household monthly income adequate for household expenditure? Why?

Examples of probes
Can you explain more?
Can you give me more details?
Anything else

Why does this figure differ from the previous figure you gave?

Table of average household monthly income (filled by the interviewer)

Household income items	Average monthly income (Baht)			note
	Dec 04	Jan 05	Feb 05	
• From agriculture				
• From industry				
• From selling goods				
• From services				
• From employment				
• From their kin or children				
• From borrowing				
• Others				
Total				

Table of average household monthly expenditure (filled by the interviewer)

Household expenditure items	Average monthly expenditure (Baht)			note
	Dec 04	Jan 05	Feb 05	
• Health related expenditure				
- medical care costs				
- non-medical care costs				
• Food				
• Transport				
• Telephone / cellphone				
• Fuel				
• Electricity / water				
• Education / books				
• Shoes / clothes				
• Soap, toothpaste, bleach etc.				
• Beer, cigarettes				
• Housing / rent				
• Societies and funeral insurance				
• Money borrowed				
• Debt repayment				
• Savings				
• Social events				
• Others				
Total				

Note: This tool was adapted from household investigating tools of the South African Costs and Coping study (SACOCO) and the Society and Health Institute, Thailand

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PATIENT INFORMATION SHEET

Research title:
"The impact of the universal coverage policy on equity of the Thai health care system in Nakorn Ratchasima province, Thailand"

Principal investigator's name and address:
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Rationale and objectives of the research

After the nationwide implementation of a policy on universal coverage (UC) for access to health care in April 2001, the new tax-financed health insurance scheme – the UC scheme – was introduced by the new government. This scheme aims to guarantee universal access to essential health services for anyone who is not covered by two public health insurance schemes, the Civil Servant Medical Benefit Scheme (CSMBS) and the Social Security Scheme (SSS). Although the benefit package of the UC scheme includes comprehensive health services ranging from primary, secondary, tertiary, and emergency health services, as well as a range of expensive medical treatments, some expensive health services such as renal replacement therapy (RRT) for end-stage renal disease (ESRD) patients are excluded from the benefit package, and some treatments such as open heart surgery and coronary artery bypass graft (CABG) surgery are included in the benefit package with a cap of reimbursement at 100,000 Baht per annum. Due to considerable changes in the Thai health care system and the UC benefit package, this research aims to investigate the impact of the UC policy on equity in health care finance and health service use among different socio-economic groups of Thais prior to and after UC, and to explore roles of the UC policy in any changes observed. Benefit incidence and implications of the UC scheme's benefit package at the household level would be analyzed. Furthermore, an alternative index for classifying household socio-economic status instead of using household income and expenditure will be explored.

For a qualitative study involving households in Nakorn Ratchasima province, the investigation aims to describe household financial burden, access to, and utilization of, expensive medical treatments included in and excluded from the UC benefit package and the impact of the UC benefit package on households requiring expensive medical

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treatments. Twenty households having end-stage renal disease (ESRD) patients and sixteen households with patients requiring open heart surgery, of different socio-economic status and from different geographical areas in this province, will be selected. This inevitably requires a number of households with different socio-economic status and different geographical areas to participate in the research. The research team comprising the researcher and research assistants considers that you and your family members are relevant to this study and information as well as opinions provided by you and your family members will be useful for the UC policy. It is hoped that this research will provide more understanding on the effectiveness of the UC policy in protecting households from financial risk of expensive health services. Moreover, findings of the research will facilitate policy-makers to understand more the impact of the decision to exclude some expensive medical treatments from the UC benefit package. This may guide policy-makers to improve the effectiveness of the UC policy.

Conditions and results of participation
Household information regarding household member relationships, life story of patients, illness and health service use, and household income as well as expenditure, will be asked about by the research team. You and your relatives will be guaranteed that any questions related to the investigation will be unconditionally answered without any concealment. Participation in this research is voluntary and you have right to terminate or end participation in the research anytime without having to give a reason. Termination of involvement will not affect any treatments or benefits that you deserve in the future. In case you or your relatives feel uncomfortable with any questions regarding household member relationships, patient illness, household income or expenditure, you have rights to deny answering such questions. The research team will visit your family every two weeks at your most convenient time starting from January to April 2005.

Confidentiality
Interviews and conversations between you and the research team may be tape-recorded and photographed. However, permission will be asked before the tapes are recorded or the photographs are taken. The research team, especially the principal investigator will be responsible for keeping the data of you and your relatives to be confidential and the tapes will be erased after five years of the completion of the study. Information related to you and your relatives may be published and presented publicly for academic and policy formulation purposes, but your name, identities or addresses will not be associated with the publication and presentation. Your data will be shown to those who are responsible for the research, supervisors, or those who provide funding support for the study. Dr. Phusit Prakongsai, the principal investigator of this research, is responsible for the confidentiality of the materials and its use or disposal at the end of the study.

The proposal of this research was approved by the Ethics committee of London School of Hygiene & Tropical Medicine, UK as well as the Ethical Committee of the Ministry of Public Health, Thailand.

INFORMED CONSENT FORM

Research title:

"Financial burden and health service use among Thai households requiring expensive medical treatments included and excluded from the UC benefit package in Nakorn Ratchasima province, Thailand"

Principal investigator's name and address:

Dr. Phusit Prakongsai
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Ministry of Public Health
Tiwanon road
Nonthaburi province 11000
Tel. (662) 5902366 – 7
Fax. (662) 5902385
E-mail address: phusit@ihpp.thaigov.net

I have read the information sheet concerning this study [or have understood the verbal explanation] and I understand what will be required of me and what will happen to me if I take part in it

My questions concerning this study have been answered by Dr. Phusit Prakongsai, the principal investigator and his research assistants.

I understand that at any time I may withdraw from this study without giving a reason and without affecting my normal care and management.

I have considered and read this informed consent form thoroughly and understand it clearly. Then, my relatives and I agree to take part in this study and sign this form willingly.

Name and signature	Date
....Patient (...)	....
....Patient's relative (...)	....
....Witness (...)	....
....Researcher (...)	....
....The research assistant (...)	....

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Patient Consent Form for Photography

Patient name: .... Date: ....

I consent for photographs to be made of me, or my relatives, or my child (or person for whom I am legal guardian). I understand that information and these photographs may be used for purposes of a dissemination meeting or for publication in journals as I have designated below. By consenting to these photographs, I understand that I will not receive payment from any party or from the researcher. Refusal to consent to photographs will in no way affect the medical care or other benefits I will receive. If I have any questions or wish to withdraw my consent in the future I may contact:

> Dr. Phusit Prakongsai
> International Health Policy Program – Thailand
> Ministry of Public Health
> Tiwanon Road, Muang district
> Nonthaburi province, 11000
> E-mail address: phusit@ihpp.thaigov.net

By signing this form below, I confirm that this consent form has been explained to me in terms which I understand.

1. I consent for these photographs to be used in domestic and international publications, including journals and electronic publications. I understand that the image may be seen by members of the general public, in addition to health policy-makers, scientists, health care providers, and academic researchers that regularly use these publications in their work and professional education. Although these photographs will be used without identifying information such as my name, identities or my address, I understand that it is possible that someone may recognize me. I also agree for my image to be shown for research and teaching purposes.

    ....(Signature) ....(Witness)

2. I agree for my image to be shown for research and teaching purposes but **NOT FOR** publication:

    ....(Signature) ....(Witness)

For patients between ages 7 and 15 years, a signature below indicates that information in this consent form has been explained to me, and I assent to use of my images as outlined above:

....
(Signature of patient)   (Witness)

A guideline for dealing with households in critical or difficult situations

1. Research assistants will be encouraged and supported to be very sensitive to the emotional state of respondents and to provide appropriate advice to those who are found in need.
2. Research assistants will try to build trust and show their openness to patients and household members.
3. Efforts will be made to identify local / provincial supporting office and to connect patients and their household members to those officers.
4. If someone is found in need for urgent care, simple medicine such as antipyretics, analgesics, or antacid, will be deliberately provided by the researcher or the research assistants.
5. Although research assistants may have some basic knowledge about primary healthcare, but they are not health care providers. Therefore, if there are any questions or doubts on how to deal with a case with urgent care or a difficult situation, a consultation from the researcher will be provided to the research assistants anytime they need.
6. Health services system in Korat province as well as the nearest health care facilities will be informed to the research assistants before the actual studies commence. Therefore, the research assistants will be encouraged to provided effective advice to those who are found in need for health services.
7. Research assistants will be encouraged and supported to listen and express their sympathy to households in serious need. They must prepare themselves to judge and deal appropriately with a difficult situation.

Part 1 : Characteristic of household member					Part 2 : Education
Ask every household member				**Ask only persons aged 15 years and over**	**Ask persons aged 6 years and over**
No.	Name-surname	Relationship to head of household	Sex	age	Marital status	What is.......'s highest grade of education completed?
		code household's head..............1 husband/wife... 2 unmarried children..........3 married children..........4 spouse of married children..........5 grand children...6 parents, parents-in-law.............7 Other relatives...8 Non-relative, servants..........9	**code** Male....1 Female..2	(age of last birthday if age less than 1 year, record "00")	**code** Single............1 Married.........2 Widowed.......3 Divorced........4 Separated.......5 Ever-married but unknown status............6	*(specify grade, year complete, certificate, diploma)* *Specify "never attended" if never attended school.* *If graduated from vocational or Teacher Training schools or Universities, ask the names of the college or universities.*
F1	F2	F3	F4	F5	F6	F7

Part 3 : Employment, during 12 months before interview's date					
Ask persons aged 15 years and over					
Occupation		Industry	Work status	Income	
"During 12 months before interview's date What type of work did .... do?" if worked, record main task and duty of the work occupy the most hour, then go to F10 *If did not work record "did not work" and go to F9*	"Why did ....not work?" Record reasons i.e. - housewife - student - pensioner - jobless - etc. *Then go to F12*	"What kind of business or industry of the job?" *Record characteristic of job or kind of enterprise*	"What was ....'s work status?" code Employer..........1 Own account worker without employee..........2 Unpaid family worker..............3 Government employee...........4 Government enterprise employee...........5 Private employee...........6 Member of co-operative...........7 *(if record code 3, go to F 14)*	**Ask person who record code 1-2 and 4-7 in F11** "What is average monthly income?" *(Income means salary, wage, profit from business or agriculture, interest from money saving or property holding etc.)* Note: this information will be kept confidentially and will not affect tax payment.	
				Average monthly cash income	**Average monthly kind income and other benefits**
F8	F9	F10	F11	F12	F13

Part 4 : Health Insurance

"Before 2003, did.......... have any health welfare? If yes, where did....obtain from? "	"At present, does.........have any health welfare? If yes, where does...........obtain from?" *(record every health welfare scheme obtained)*	Ask only persons who record code 5,6 in F15/F16/F17		
		Ask ....to show his/her UC card, then record name and type of health care provider indicated in the card.	"Is..........satisfied with the health care provider indicated in the UC card?" *(ask everyone who has a UC card)*

Code
Did not have.............01
Government official/ state enterprise welfare/pensioner......02
Employee welfare...................03
Social security/ Worker Compensation Fund........................04
Health cards
  Voluntary hc..........05
  Community leaders/ health volunteer hc....06
  Low income card.....................07
  Children under 12....08
  Elderly card...........09
  Disability card........10
 	
UC card
  Do not pay fee.......11
  Pay fee 30 Baht......12
Private insurance.......13
Others (specify).........14
	Code
	Does not have welfare........1
	Government official/ state enterprise welfare/pensioner.............2
	Employee welfare...........3
	Social security/ Worker Compensation Fund........4
	UC card
	  Do not pay fee.............5
	  Pay fee 30 Baht...........6
	Private insurance.............7
	Others (specify)...............8
		Code
		Inconvenient to show the card..............0
		Private hospital.............1
		Private clinic...............2
		Government Institutes
		  - PCU.....................3
		  - Health center.............4
		  - Community hospital.....5
		  - Provincial / General hospital..................6
		  - University hospital......7
		  - Other government hospital.................8
		Others (specify)............9
			(Record in F19)
			Code
			Satisfied..................1
			Unsatisfied..............2
			Not sure..................3
			
			(Record in F20)
			If unsatisfied, the reason is...................
			Code
			Not have confidence in the quality.............1
			Inconvenience / far from home............2
			not accessible because of migration............3
			Others (specify).................4

F14	F15	F16	F17	F18	F19	F20

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Part 5 : Illness and Health Service Facility (Ask everybody)

A. Illness during 1 month before interview's date (Only ambulatory care)

"During 1 month before interview's date, did.......... get ill or not feeling well?"	Ask only person who record code 1 in F21	"If........ill or not feeling well, what was the kind of sickness or symptoms?"	" Did the illness keep........away from regular activities?"	" If yes, how long did.......... away from regular activities? "
Code - Ill or not feeling well..................1 *(continue to F22)* - Did not ill or feeling well........2 *(go to F35)*	"During 1 month before interview's date, how many times did .... get ill?"	 Record symptoms or last kind of sickness if delivery, record "delivery"	**Code** Yes................1 *(continue to F25)* No..................2 *(go to F26)*	 Record number of days absent from regular activities.
F21	F22	F23	F24	F25

"How much did............spend for his/her last ambulatory care?"
- If there were more than one types of treatment, record every type and its expenditure.
- If it was a free treatment, record "00"
- If the expenditure could be reimbursed, record "0"
- If the expenditure was partial paid, record the amount of money that was partial paid.
- If the expenditure was paid by relatives, record the amount of money paid by those as well.

Type of treatment		"For each treatment, did...........use the benefit from health welfare scheme?" *(If used, record the most significant health welfare scheme that was used)*
	Code	
- None...01		
- Used herb or traditional medicine..........................02		
- Traditional healer...03	**Code**	
- Buy self-medication..04	Does not have any welfare............1	
- Primary Care Unit..05	Government official/ state	
- Health centers...06	Enterprise welfare/pensioner..........2	
- Governmental hospital, community level.....................07	Employee welfare.....................3	
- Governmental hospital, provincial or regional level........08	Social security/ Worker	
- University hospital..09	Compensation Fund....................4	
- Other governmental hospitals...............................10	UC card	
- Private clinic...11	Do not pay fee........................5	
- Private hospitals..12	Pay fee 30 Baht.......................6	
- Others (specify)...13	Private insurance......................7	
	Others (specify).......................8	
	Have welfare but did not	
	want to use..........................9	

1st type of treatment			2nd type of treatment			3rd type of treatment		
Type of treatment	Health welfare	Expenditure (Baht)	Type of treatment	Health welfare	Expenditure (Baht)	Type of treatment	Health welfare	Expenditure (Baht)
F26	F27	F28	F29	F30	F31	F32	F33	F34

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"Has.............had any chronic disease?" If yes, during 1 month before the interview's date, did ...... obtain any health care services due to his/her chronic disease following doctor's appointment?

Note: The examples of chronic disease are heart disease, Hypertension, Diabetic Mellitus, Chronic lung disease, Epilepsy, chronic liver disease, chronic renal disease, asthma, osteoarthritis, cataract, HIV/AIDS etc.

"Has........ had any chronic disease?" **Code** Yes........1 *(continue)* No........2 *(go to Part 5B)*	Record the name of the chronic disease. If there are more than one chronic disease, record only two significant chronic diseases.	"During one month before the interview's date, did....obtain any health care services due to his/her chronic disease?" **Code** Yes.........1 *(continue)* No..........2 *(go to Part 5B)*	. "During 1 month before interview's date, how many times did .... get the health care services?"	"Which type of the health care provider did........ seek for his/her last service?" **Code** PCU...........1 Health center.........2 Community hospital.......3 Provincial / General hospital.......4 University hospital........5 Other government hospital.......6 Private clinic..........7 Private hospital.......8 Others (specify)......9	"For the last service, did........use the benefit from health welfare scheme?" **Code** Does not have any welfare.........1 Government official/ state Enterprise welfare/ pensioner.......2 Employee welfare...........3 Social security/ Worker Compensation Fund...........4 UC card, do not pay fee........5 UC card, have to pay fee 30 Baht............6 Private insurance.......7 Others (specify)........8 Have welfare but did not want to use..............9	"How much was the expenditure that can not be reimbursed?" *If did not have to pay, record "0"*	"Was.... ....satisfied with the health care service obtained last time?" **Code** -Satisfied...1 -Unsatisfied due to poor service...2 -Poor drug's quality.....3 -Have to pay for services...4 -Discrimination........5 -Poor doctor's competence ....6 -do not get better......7 -Others....8
F35	F36	F37	F38	F39	F40	F41	F42

"During 1 month before interview's date, did.......... get any health care services beyond the service in 5A?"	"Which type of the health care provider did........ seek for his/her last service?"	"For the last service, did........use the benefit from health welfare scheme?"	"How much was the expenditure that can not be reimbursed?" *If did not have to pay, record "0"*
Code No................................0 *(go to Part 5C)* *If Yes, record type of service:* Get a vaccination...............1 Antenatal care...................2 Family planning.................3 Post partum care................4 Health check up.................5 Other services following appointment.....................6 Dental health services..........7	**Code** Drug store..............1 PCU...................2 Health center..........3 Community hospital...4 Provincial / General hospital..................5 University hospital....6 Other government hospital.................7 Private clinic..........8 Private hospital.......9 Others (specify)......10	**Code** Does not have any welfare...............1 Government official/ state Enterprise welfare/ pensioner............2 Employee welfare...3 Social security/ Worker Compensation Fund..................4 UC card, do not pay fee...............5 UC card, have to pay fee 30 Baht..........6 Private insurance....7 Others (specify)......8 Have welfare but did not want to use......................9	
F43	F44	F45	F46

Part 5 : Illness and Health Service Facility (Ask everybody) (contd.)
C. Admission during 12 months before interview's date (Inpatient care)

| "During 12 months before interview's date, has.........ever been inpatients (including delivery)?"

Code
Yes............1
(continue)

No.............2
(go to Part 5D)	Record the number of admissions in hospitals during the past 12 months		If there was more than one admission during the past 12 months, record only the last admission. If got health care services from more than one hospital, record only the last hospital of admission.			
			Record the name of disease that caused the last admission. If it was delivery, record "Delivery"	Record the hospital's type of the last admission

Code
Community hospital...................1
Provincial / General hospital..............2
University hospital..............3
Other government hospital..............4
Private polyclinic...5
Private hospital......6
Others (specify)......7 | "Why did........... choose to admit in that hospital?"

Code
Was referred from prior hospital......1
Poverty............2
Convenience / hospital not far from home........3
Impress in prompt attention and service............4
Not expensive with services fee........5
Has specialized doctors............6
Has advanced medical instruments........7
Admission due to UC or Social Security Card Notification........8
Others (specify)...9 | "How long was the last admission for......?" |
	Govern ment hospital s	Private hospital s				
F47	F48	F49	F50	F51	F52	F53

If there was more than one admission during the past 12 months, record only the last admission. If got health care services from more than one hospital, record only the last hospital of admission.

"What was the traveling expenditure for the last admission?" *(If used private car, estimated the expenditure as traveling by a taxi)*	"How much was the expenditure that can not be reimbursed for the last admission?" *If did not have to pay, record "0"*	"For the last admission, did........use the benefit from health welfare scheme?" **Code** Does not have any welfare....................1 Government official/ state Enterprise welfare/ pensioner..................2 Employee welfare........3 Social security/ Worker Compensation Fund.....4 UC card, do not pay fee....................5 UC card, have to pay fee 30 Baht...............6 Private insurance.........7 Others (specify)...........8 Have welfare but did not want to use.......9 *(if do not record code 9, go to F58)*	"Why did......not want to use the existing benefit from his/her health welfare scheme?" *(record the reasons)*	"Was..........satisfied with the health care services obtained from the last admission?" **Code** Satisfied.....................1 Unsatisfied - due to poor services.............2 - Poor drug's quality..............3 - Have to pay for services.............4 - Discrimination.......5 - Poor doctor's competence...........6 - Do not get better.................7 - Others (specify)......8
F54	F55	F56	F57	F58

"During 12 months before interview's date, has..........ever been obtained dental health services?" **Code** Yes............1 *(continue)* No.............2 *(go to Part 6)*	Record the number of dental health services during the past 12 months	Record the hospital's type of the last dental health services **Code** Health center without a visit of dentist or dental health officer......1 Health center that has a visit of dentist or dental health officer.............2 Community hospital.......3 Provincial / General hospital....................4 University hospital......5 Other government hospital....................6 Private hospital...........7 Private dental clinic......8 Others (specify)...........9	"For the last dental health service, did.........use the benefit from health welfare scheme?" **Code** Does not have any welfare.................1 Government official/ state Enterprise welfare/ pensioner..............2 Employee welfare......3 Social security/ Worker Compensation Fund....................4 UC card, do not pay fee...................5 UC card, have to pay fee 30 Baht.............6 Private insurance.......7 Others (specify)..........8 Have welfare but did not want to use.....9 Have welfare but the service was not included in the minimal benefit package.......10	"How much was the expenditure that can not be reimbursed for the last dental health service?" *If did not have to pay, record "0"*
F59	F60	F61	F62	F63

Part 6:Housing Characteristics and assets

Record code for each question

1. Type of dwelling   Code
- Single house...........................1
- Row house............................2
- Townhouse or twin-house..........3
- Apartment / condominium
  or flat...............................4
- Rented room or rooms..............5
- Impoverished quarters..............6
- Others (specify)....................7

2. Construction material
- Cement or brick......................1
- Wood..................................2
- Wood and cement (or brick)........3
- Local material.......................4
- Re-used material....................5
- Others (specify)....................6

3. Tenure
- Owns dwelling and land.............1
- Owns dwelling on rented land......2
- Owns dwelling on public area......3
- Hire – purchased....................4
- Rented dwelling.....................5
- Rent paid by others.................6
- Receives rent free..................7

4. Number of rooms
- entire rooms (exclude toilet)
- sleeping rooms

5. Electricity in dwelling
- Yes..................................1
- No...................................0

6. Cooking fuel *(mostly used)*
- Charcoal.............................1
- Wood.................................2
- Kerosene.............................3
- Gas..................................4
- Electricity.........................5
- Others...............................6
- No cooking done.....................7

7. Toilet facilities *(mostly used)*
- Flush latrine........................1
- Molded latrine.......................2
- Burrowed cavity or
  canal / river or others............3
- No facilities nearby................4

8. Drinking water   Code
- Water-bottle.........................1
- Water supply-piped inside..........2
- Under ground water-piped inside....3
- Water supply-piped outside.........4
- Well.................................5
- River, stream, etc..................6
- Rain water..........................7
- Other................................8

9. Water supply for use
(record in same code as 8)

10. Assets owned by household
(If yes, record the number of each asset. If does not, record "0")
- Living room sofa..............
- Bed (wood or metal)..........
- Cooking stove-gas.............
- Cooking stove-electric........
- Microwave oven...............
- Electrical boiling pot.........
- Refrigerator...................
- Electrical iron................
- Electrical cooking pot........
- Electrical fan.................
- Radio..........................
- Television....................
- Video..........................
- Washing machine..........
- Air conditioner.............
- Water heater in bathroom......
- Bicycle.......................
- Personal computer...........
- Telephone (include PCT)....
- Mobile phone.................
- Fax machine..................
- Fluorescence lamps...........
- Light bulbs....................
- Compact fluorescence lamps.......

11. Transportation assets owned by household
(If yes, record the number of each asset, If does not have, record "0")
- Automobile......................
- Pick up (mini-truck, van)........
- Other mini-truck (local made).....
- Motor boat.......................
- Motorcycle.......................

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SOCIO-ECONOMIC SURVEY (SES) 2002

HOUSEHOLD EXPENDITURE SURVEY

Household identification

Household location

1. Region...............
2. Province.............
3. District...............
4. Sub-district...........
5. Block / village............... ◯ Municipality ◯ Non-municipality
6. Interviewing month..................
7. Street...........................
8. Household number..............
9. Name of household's head...........

Part 1: Household expenditure											
How much did household members spend on following items during last month?											
clothes and clothing			Mending, sewing, modifying, and ironing clothes			Footwear			Mending, cleaning, and renting footwear		
For men	For women	For boys and girls	For men	For women	For boys and girls	For men	For women	For boys and girls	For men	For women	For boys and girls
201	202	203	204	204	204	211	212	213	214	214	214

Part 1: Household expenditure (contd.)

How much did household members spend on following items during last month?

Rental taxes, construction, and housing restoration	Housing utilities and services	Health services and medical supplies			Personal supplies and services	transportation
		Medicine and medical equipments	Ambulatory care	Hospitalization		
	Electricity............01 Gas and cooking.....02 Gas for other purposes..............03 Charcoal.............04 Wood.................05 Kerosene.............06 Batteries.............07 Matches.............08 Candles..............09 Light bulbs, Fluorescence...........10 Lamps................11 Water rates...........12 Underground water...13 Other fuel and light...14					Buses...01 Taxis...02 Tricycles ....03 Motorcycles........04 Vans.....05 School buses....06 Boats....07 Trains...08 Others...09
301	302	401	402	402	411-412	501

Part 1: Household expenditure (contd.)

How much did household members spend on following items during last month and last year?

Income tax and other direct taxes	Insurance premium	Major equipment	Communication equipment	Contributions and other expenses	Food, beverages and tobacco
Income tax...01 House and Land tax......02 Fine...........03 Other taxes...04	Property insurance.....01 Life insurance......02 Cremation fees...........03 Auto insurance......04 Third party insurance......05 Other insurance......06	Beds........01 Chairs, tables.......02 Sofas.......03 Other furniture...04 Carpets.....05 Mattress, pillows.....06 Cook stove, gas.........07 Microwave ovens.......08 Electrical pots.........09			
900	930	313	530	910, 950	Record no.7

Document No. 92/2005

The Ethical Review Committee for Research in Human Subjects
Ministry of Public Health, Thailand

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Title of Project : Equity in health care financing and health service utilization before

and after universal health care coverage (UC) in Thailand   (Ref. No. 68/2547)

Principle Investigator : Dr. Phusit Prakongsai

Place of proposed study : International Health Policy Program, Thailand

Reviewed Document :

1. Protocol Thai version dated June 10, 2005

2. Protocol English version dated February 1, 2005

3. Thai translation of informed consent dated February 1, 2005

4. Patient information sheet and informed consent form Thai version November, 2004

5. Questionnaires Household members and their relationships, life history and life-line, illness narratives, field notes

from the fieldworkers, household Income and Expenditure version November, 2004

6. Curriculum vitae of investigators

We also confirm that we are an ethics committee constituted in agreement and in accordance with the

ICH-GCP.

The Ethical Review Committee for Research in Human Subjects Ministry of Public Health, Thailand had

reviewed both Thai and English protocol. In ethical concern, the committee has reviewed and approved for

implementation of the research study as above mention, therefore the Thai protocol will be mainly conduct.

.... Chairman

(Mr. Chatri Banchuin)

.... Secretary

(Mr. Pakorn Siriyong)

Date of meeting_____ May 19, 2004 _____

Date of Approval_____ September 2, 2005 _____Date of expire___ September 30, 2005 _____

The Ethical Review Committee for Research in Human Subjects
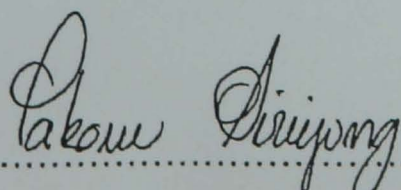Ministry of Public Health, Thailand
29 August 2001 - Present

Member Title and Name	Occupation (Position)	Qualification (If applicable)	Male/Female (M/F)	Tick
Chairman Mr. Seree Tuchinda	Director-General, Department of Medical Services	M.D.	M	-
Vice Chairman Mr. Vichai Chokevivat	Director-General, Department of development of Thai traditional and alternative medicine	M.D., M.P.H.	M	-
Member Mr. Luecha Wanaratana	Senior Public Health officer (Nutrition), Office of the Permanent Secretary	M.D.	M	-
Mr. Tanongsan Sutatam	Deputy director general, Department of Medical Services	M.D.	M	-
Mrs. Nanta Auamkul	Senior Medical Officer, Department of Health	M.D. M.Sc., MCH	F	✓
Mr. Supachai Rerkhngarm	Senior Expert in Preventive Medicine, Department of Communication Disease Control	M.D.	M	✓
Mr. Kasem Tantiphlachiva	Senior Psychiatrist Somdet Chaopraya Hospital, Department of Mental Health	M.D., B.Sc., FRCP sychT.	M	✓
Mrs. Mayura Kusump	Senior Principal Medical Scientist, Department of Medical Sciences	M.D.	F	✓
Ms. Yuppadee Javroongrit	Senior Pharmacist, The Food and Drug Administration	B.Sc.in.Pharm. M.S. , Ph.D.	F	✓
Mr. Pinit Kunlavanit	Secretary General, The Thai Medical Council	M.D., M.Sc.	M	✓
Director of Legal Affairs Division (Mr.Panya Baitong/ delegate)	Director of Legal Affairs Division, Office of the Permanent Secretary	Bachelor LL.b	F	✓

Member Title and Name	Occupation (Position)	Qualification (If applicable)	Male/Female (M/F)	Tick
Director of Medical Registration Division	Director of Medical Registration Division, Office of the Permanent Secretary	M.D.	M	-
Mrs. Oratai Rauyajin	Associate Professor, Faculty of Social Science and Humanities, Mahidol University	MA., M.P.H., Dr.PH	F	-
Secretary Mr. Pakorn Siriyong	Senior Medical Doctor Department of Medical Services	M.D., M.P.H.	M	✓
Assistant Secretary Mr. Korakot Chutasmit	Physician, Department of Medical Services	M.D. M.P.H.	M	✓
Mr. Suchart Chongprasert	Senior Pharmacist, The Food and Drug Administration	B.Sc in Pharm. Ph.D.	M	✓
Mrs. Rachneebool Udomchairat	Senior Health Technical Officer, Department of Medical Services	B.Sc. in Public Health nursing., M.A.	F	-
Mrs. Porntiva Chaloemvipaht	Senior Health Technical Officer, Department of Medical Services	B.Sc. in Nurse & Midwife., M.P.H.	F	✓
Ms. Narukorn Thamkasem	Health Technical Officer, Department of Medical Services	B.Sc. in Nurse & Midwife.,M.A.	F	-

Date of Meeting : 19 May 2004

Date of Approval : ..September..2......,2005

For Protocol : Equity in health care financing and health service utilization before and after universal health care coverage (UC) in Thailand (Ref. No. 68/2547)

Signed : ....(Secretary of Ethics Committee)

LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

ETHICS COMMITTEE

APPROVAL FORM
Application number: 3002

Name of Principal Investigator   **Phusit Prakongsai**

Department   **Public Health and Policy**

Head of Department   **Gill Walt**

Title: **Equity in health care financing and health service utilization before and after universal coverage in Thailand.**

Approval of this study is granted by the Committee.

Chair .....$T.-W.\ Meade$...
Professor Tom Meade

Date ....$30\ \ 3\ \ 2005$...

Approval is dependent on local ethical approval having been received.

Any subsequent changes to the consent form must be re-submitted to the Committee.