EQUITY IN ACCESS TO ANTIRETROVIRAL THERAPY : A CASE STUDY OF CHIANG MAI PROVINCE

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EQUITY IN ACCESS TO ANTIRETROVIRAL THERAPY: A CASE STUDY OF CHIANG MAI PROVINCE

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ABSTRACT

This study aimed to study the differences in access to the antiretroviral treatment service considering availability, affordability, and acceptability and also to evaluate the equity in access by using the Kakwani index. This Quantitative study using questionnaires, incorporated with qualitative research, was used to collect the data. The sample comprised HIV/AIDS patients who had been receiving antiretroviral therapy for more than 6 months and were situated in 8 districts of Chiang Mai. A total of 380 participants were selected using accidental sampling.

The results indicate that (1) in terms of availability, the patients who lived in a rural area and had a low income were experiencing problems of a longer time being taken commuting to the service than any other groups, despite the fact that the distance of travel was not very different from other groups. (2) In terms of affordability, the burden of cost for the low-income group was higher than the high-income group, which mostly was the cost for travel and meals. The low-income group trended to use money from a loan or their relatives more than other groups. (3) In terms of acceptability, groups in the rural areas had more negative perceptions regarding the service than other groups, despite the fact that the overall group satisfaction level was high. (4) In terms of equity in access, there was inequity in access, which means that the rich group had an advantage over the poor group, whereas the poor had a higher progressive proportion of expenditure in accessing antiretroviral drugs than the rich.

The findings lead to policy recommendations including the development of sub-district health promotion hospitals to provide the antiretroviral drugs, the collaboration or extension of the role of the network of HIV-positive volunteers to assist the work of the medical facilities, the improvement in privacy in the service areas, the adjustment of the benefits of the 3 main health coverage schemes, and the contribution of good understanding to society in order to continuously reduce discrimination.

KEY WORDS: EQUITY IN ACCESS / ANTIRETROVIRAL THERAPY /
KAKWANI INDEX

180 pages

ความเป็นธรรมในการเข้าถึงบริการการดูแลรักษาด้วยยาต้านไวรัส กรณีศึกษาจังหวัดเชียงใหม่

EQUITY IN ACCESS TO ANTIRETROVIRAL THERAPY: A CASE STUDY OF CHIANG MAI PROVINCE

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คณะกรรมการที่ปรึกษาวิทยานิพนธ์ : ศิริวรรณ ไกรสุรพงศ์, Ph.D., ศศิเพ็ญ พวงสายใจ, Ph.D., ธรรมรัตน์ มะโรหบุตร, Ph.D.

บทคัดย่อ

การศึกษาครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาความแตกต่างระหว่างกลุ่มทางสังคมที่ต่างกันในการเข้าถึงบริการการดูแลรักษาด้วยยาต้านไวรัส ที่พิจารณาใน 3 ด้าน คือ ความสะดวกในการเข้าถึง ความสามารถในการจ่าย และการยอมรับ พร้อมทั้งประเมินความเป็นธรรมในการเข้าถึงด้วยดัชนีคัควานี การศึกษาครั้งนี้เป็นการศึกษาในเชิงปริมาณโดยใช้แบบสอบถาม ร่วมกับการวิจัยเชิงคุณภาพในขณะเก็บข้อมูลเชิงปริมาณ ในกลุ่มตัวอย่างผู้ติดเชื้อเอชไอวี/เอดส์ที่ได้รับยาต้านไวรัสมาแล้วมากกว่า 6 เดือน ในจังหวัดเชียงใหม่ จำนวน 8 อำเภอ รวม 380 คน โดยการเลือกตัวอย่างแบบบังเอิญ (accidental sampling)

ผลการศึกษาพบว่า (1) ด้านการมีบริการที่เพียงพอ ผู้ที่อยู่ในชนบทและมีรายได้ต่ำจะประสบปัญหากับการใช้เวลาในการเข้ารับบริการที่นานกว่ากลุ่มอื่นแม้จะมีระยะทางในการเดินทางที่ใกล้เคียงกับกลุ่มทางสังคมอื่น แต่สำหรับกลุ่มตัวอย่างที่ใช้สิทธิประกันสังคมจะประสบปัญหาระยะทางระหว่างที่พัก/ที่ทำงานกับสถานพยาบาลที่ห่างไกลกว่ากลุ่มที่ใช้สิทธิการรักษาอื่นๆ (2) ด้านความสามารถในการจ่าย ค่าใช้จ่ายที่เป็นภาระกับกลุ่มที่มีรายได้ต่ำมากกว่ากลุ่มรายได้สูงคือค่าใช้จ่ายในการเดินทางและค่าอาหาร และพบว่ากลุ่มที่มีรายได้ต่ำยังมีแนวโน้มว่าจะใช้วิธีการในการกู้ยืมหรือขอความช่วยเหลือจากญาติพี่น้องในด้านการเงินมากกว่ากลุ่มที่มีรายได้สูง (3) ด้านการยอมรับ กลุ่มที่อยู่ในชนบทรับรู้ถึงการปฏิบัติในเชิงลบจากผู้ให้บริการมากกว่ากลุ่มอื่นๆ แต่ในภาพรวมยังพบว่ามีระดับความพึงพอใจในระดับมาก (4) ความเป็นธรรมในการเข้าถึง พบว่า มีความไม่เป็นธรรมในการเข้าถึงบริการ โดยมีลักษณะที่เอื้อกับคนรวยมากกว่าคนจน โดยคนจนมีสัดส่วนของค่าใช้จ่ายต่อรายได้ในการเข้าถึงบริการยาต้านไวรัสที่มากกว่าคนรวย ผลการศึกษานำสู่ข้อเสนอแนะเชิงนโยบาย อาทิ การพัฒนาศักยภาพให้กับโรงพยาบาลส่งเสริมสุขภาพตำบลเพื่อให้เป็นสถานบริการยาต้านไวรัส การให้อาสาสมัครผู้ติดเชื้อมีส่วนร่วมในการให้บริการและการส่งเสริมสุขภาพกับผู้ติดเชื้อรายอื่นๆ การจัดระบบบริการที่เป็นสัดส่วน การปรับสิทธิประโยชน์ในแต่ละกองทุนหลักประกันสุขภาพให้มีความเท่าเทียมกัน และการสร้างความเข้าใจกับสังคมและผู้ติดเชื้อเอชไอวี/เอดส์เพื่อลดการเลือกปฏิบัติอย่างต่อเนื่อง

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CHAPTER I

INTRODUCTION

1.1 Rational and background

Being in good health is the highest aim for most people. One important component in achieving good health is health care provision, especially the health care system. A good health care system should be the one that its provision should have four important characteristics for all who need and seek for it i.e. availability, accessibility, affordability, and standard quality (Toebes, 1999). However the imbalance in the supply and demand for health care provision ,due to the limitations on public health care resources, such as limited budget, personnel or equipment constraints, on the supply side and growing need for health care on the demand side , has led to another important issue in health care provision i.e. equity in health care. How to allocate health care resources in response to growing needs so as to achieve equity in health care provision or to minimize the differences in health care provision (Culyer & Wagstaff, 1993; WHO, 2000a; Whitehead & Dahlgren, 2007) has become another important objective of public health policy makers, especially the equity of access to standard quality for all.

Access to Antiretroviral therapy: ART is considered as an important component in caring for HIV/AIDS patients. Studies on burden of disease in terms of DALYs loss[1] among Thai people, it was found that AIDs is the number one diseases that contributes to DALYs loss among Thai men, and is the number two disease for DALYs loss among Thai women. It is also found to be the prime disease contributing to DALYs loss for the Thai population in the age group of 15-59 years (Ministry of Public Health, 2550). According to the nature of the disease, those who are infected

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[1] One DALY (Disability Adjusted Life Year) is equivalent to loss of one good healthy year. DALY is equal to the number of years lost due to death before life expectancy year, plus the number of years lost due to illness or disability.

with the HIV would become full blown AIDS patients within 8-10 years, and would die within the following 1.3-3.7 years later if not treated with antiretroviral drug (Medley et al., 1988).

Even though the HIV infection cannot be completely cured, but a number of studies have shown the important role of antiretroviral drug (ARV drugs) in reducing the death incidents among AIDS patients. In the earlier years of its use for treatment, only one type of antiretroviral drug (AZT) was normally used. The treatment has been developed into using more than three drugs together and is commonly known as Highly Active antiretroviral therapy or HAART. The treatment has been found to help stop the amount of HIV virus in the patient's blood circulation, boost his immunity system, and therefore clearly help reduce his chance of getting other opportunistic infections. The treatment thus helps to reduce the use of drugs to cure and prevent these opportunistic diseases. Patients are able to leave hospital quicker, live longer, and with better quality of life (Moore, 2000; Keiser et al.,2001; Valenti, 2001; Jordan et al., 2002; Teixeira et al., 2004; Lloyd-Smith et al., 2006; Sakchai, 2546; Vithaya et al., 2547; Lalida, 2549)

Because the ARV drugs is very important for the health and life quality of the HIV/AIDS patients, access to the drug has become a very important issue in health care at both national and international levels. WHO and UNAIDS have campaigned for support and set as their objective the goal of Universal Access to Prevention Treatment, Care and Support Services by 2010. This goal is to be continued until 2015[2].This policy is based on equity in access issue with importance given to human rights issue (Macklin, 2004).

Thailand has been recognized as one of the developing countries which have been able to achieve this goal of Universal Access to ART (Ford et al., 2007). Since the year 2000 attempts have been made to expand this care to make the

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[2] UNAIDS has set its strategic plan of "Getting Zero" for the years 2011-2015 which is comprised of (1) Zero New Infections with the aim to revolutionize HIV prevention, (2) Zero AIDS related Deaths with the aim to catalyze the next phase of treatment, care and support, and (3) Zero Discrimination with the aim to advance human rights and gender equality for the HIV response.

treatment more complete and continued. At present HIV/AIDS patients who need ART do have access to this health care without to pay for it as the treatment is now covered in the Universal Coverage Scheme, the Civil Servant Medical Benefit Scheme, and the Social Security Scheme. Moreover, there has been NAPHA Extension Program which is a health care program for HIV/AIDS patients who are not covered in any health insurance programs mentioned earlier such as migrant workers, people of ethnic groups, people who are waiting in the process of being proved that they are Thai citizens, and those who are serving sentences in jails. The program aims to cover more target groups in Thailand.

As it is the government policy to extend its provision of ART to be universal and equal, the government has demolished the important barrier to access of ART (Bluestone, 2001; Berwick, 2002; Yamey & Rankin, 2002; Weiser et al., 2003) by giving free ARV drugs according to the health insurance scheme, as well as improving the system of care provision for HIV/AIDS patients continuously through its allocation of health care resources, personnel and budgetary, with Equity in Access to ART as its goal.

According to the estimates of the Thai Working Group on HIV/AIDS, since the year 2000 in which the Universal Access to ART started the number of HIV/AIDS patients needing ART who have received ART has increased continuously, while the number of no ART patients has tended to decline This and the fact that new HIV/AIDS patients needing ART are found to be less each year, it is expected that in the year 2011 the number of new HIV/AIDS patients needing ART is forecasted to be only 29,817 in comparison with 49,069 in 2000 (Table 1.1).

Furthermore, the results of quality performance assessment in the provision of care for the HIV/AIDS patient s using HIVQUAL-T[3] program at the

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[3] The program is used to measure the potentiality in improving the quality of care provisions for HIV/AIDs patients at hospital level. It is devised and operated by the Bureau of AIDS, TB and STIs, Department of Disease Control, Ministry of Public Health. Important indicators on the care performance is divided into 5 groups : follow up of CD4 level, follow up after taking ARV drugs, prevention of opportunistic diseases, screening for AIDS related diseases, and good health promotion.

national level show that 97% of HIV/AIDS patients with indicators needing ART did receive the treatment. However, it should be noted that the median value of CD4 of these patients is found to be at 136 cells/mm ^{3} (http:www.cqihiv.com/Default.aspx, 2 April, 2011) which is the level below 50% of the criterion of those who receive the ART[4]. The results imply that most patients who receive the ART are those who have developed nearly fully the symptoms of the disease. At the same time the results also reflect that, medically nearly all who fall within the criteria of needing ART, did have access to the treatment. In other words, it means that there is no difference in the provision of treatment in medical terms.

Table 1.1 Estimates on the Numbers of Persons Infected with HIV/AIDS, Persons Needing ART, and Persons with ART and Persons with No ART

Type of case	**2000**	**2002**	**2004**	**2006**	**2008**	**2009**	**2010**	**2011**
People living with HIV/AIDS	642,121	590,630	565,067	556,849	532,522	516,632	499,324	481,770
Total needing ART	142,708	144,795	179,041	233,035	266,369	275,821	281,138	283,612
Newly needing ART in year	49,069	47,391	47,078	45,914	40,640	36,884	33,215	29,817
Number entering ART in year	-	9,124	35,855	38,983	38,650	37,717	35,527	33,078
Total on ART end year	-	11,623	51,290	119,324	162,175	179,797	194,127	205,351
Total no ART	142,708	133,172	127,751	113,710	104,194	96,024	87,011	78,262

Source: Ministry of Public Health, 2008 (Thai Working group)

However, wider coverage of health care for HIV/AIDS patients has resulted in AIDS expenditure has increased continuously over time. Figures in Table 1.2 show that the total AIDS expenditure is equal to 2,623 million Baht in the year 2000, is equal to 4,943 million Baht in 2004, and is equal to 7,208 million Baht in

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[4] The criterion for screening patients with no symptoms to start receiving the ARV drugs is those with the CD4 level is lower than 350 cells/mm^{3}

2009. Average expenditure per patient has also clearly shown to rise over time, i.e. from 3,776 Baht to 8,634 Baht, and to 14,417 Baht for the three years respectively.

Table 1.2 Total AIDS expenditure, current year price

	2000	2002	2004	2007	2008	2009
Health Expenditure (million Baht)	167,225	161,634	187,112	248,852	363,771	383,051
AIDS Expenditure						
• Total amount (million Baht)	2,623	3,174	4,943	6,728	6,928	7,208
• Per capita population (Baht)	42	50	77	105	110	114
• Per capita PLWHA (Baht)	3777	4998	8634	11600	14275	14417
• % GDP	0.05%	0.06%	0.08%	0.08%	0.08%	0.08%
• **% Total health expenditure**	1.5%	1.9%	2.5%	2.7%	1.9%	1.9%

Source: Kanjana Tisayaticom et al., 2006
Thai Working Group on National AIDS Spending Assessment, 2010

A large proportion of total AIDS expenditure is spent on the care and treatment of HIV/AIDS patients. In the year 2009, this proportion is as high as 76% of the total expenditure or 5,483 million Baht in absolute amount (Table 1.3). The expenditure on the ART alone in this year is 3,125 million Baht and accounts for 43% of the total AIDS expenditure, while it is only 2,031 million Baht in 2008. The figures therefore show that the expenditure on the ART alone is 54% higher within one year period (Thai Working Group on National AIDS Spending Assessment, 2010).

Since the implementation of the policy for wider and equity in access to the ART, the number of patients receiving the ARV drugs in Thailand has increased and with continuous increasing AIDS expenditure as well. Furthermore, since 2010 the CD4 level criterion used in determining when a patient with no symptom is to start receiving the ART has changed from below 200 cells/mm^3 to below 350 cells/mm^3 (Ministry of Public Health, 2550) , the number of HIV/AIDS patients to receive the ARV drugs is expected to be higher in 2011. This, in turn, means higher expenditure on the ART and therefore pressure on the total government expenditure in the future.

Table 1.3 AIDS expenditure classified by category of healthcare function in 2008-2009, current year price

Category of healthcare function	2008		2009	
	Million Baht	Percent	Million Baht	Percent
1. Prevention	1500	22	987	14
2. Care and Treatment	4560	66	5483	76
• Antiretroviral therapy	2031	29	3125	43
• In-patient Care	942	14	1042	14
• Outpatient care	420	6	491	7
• Specific HIV Laboratory monitoring	697	10	373	5
• Other	472	7	452	6
3. Other	868	12	738	10
GRAND TOTAL	**6928**	**100**	**7208**	**100**

Source: Thai Working Group on National AIDS Spending Assessment, 2010

Reducing barrier to the ART access by proving treatment free of charge may, policy wise, seem to be successful in achieving clearly the goal of wider coverage only. However, equity in access to healthcare should not be considered only from the provider or the supply side, but also from the demand side. Equity in access should also imply equal opportunity for all who are infected with the HIV/AIDS disease in having access to the ART. This means that differences in access among those needing ART should not exist or should be minimized despite their differences in terms of sex, age, education level, or socio-economic background. In other words, equity in access should also mean equal utilization of the ART as well. Only then we can say that equity in access to health care is complete (Thieren, 2005; Thiede, Akweongo & McIntyre, 2007; Mooney, 2009).

In countries where providing ARV drugs free of charge or trying to diminish financial barrier to access, and with good health care provider, differences or inequity in access to the ART among different groups of people of different socio-economic backgrounds such as gender, age, education, economic status, and healthcare insurance type, can still be found (Kitajima et al., 2005; Ntata, 2007). Moreover, access is also affected by geographical factors as well as expenditure incurred in travelling to the healthcare point. These problems affecting access are found among patients in the rural more than those in town despite the fact that these patients are of lower income groups but are faced with higher expenditure for treatment relative to their income. They sometimes are also faced with other problems related to social stigma and discrimination which act as barrier to their access to the ART, especially those of socially marginalized groups who also suffer from physical body difficulty as well as legal system difficulty. Lack of information regarding their rights to access of the ART is also found to be an obstacle in their access ART (Sharpiro et al., 1999; Razum & Okoye, 2001; Sykes, 2002; Keruly et al., 2002; Weiser, 2003; Mshana et al., 2006; Posse et al., 2008). A good example here is the case of Brazil where the ART is provided free of charge, but shortage of the ARV drugs and not enough access to laboratory equipment pose as vital barrier to the equity of ART access instead (Carmody et al., 2003). In Malawi, Africa, it was found that HIV/AIDS patients who are of low income groups have to bear higher expenditure for the ART than patients of higher income groups despite the fact that the ART is provided free of charge as these low income patients tend to live far away from their healthcare centers (Makwiza et al., 2006)

In the case of Thailand, studies on the equity in access to ART have been few. Most studies have focused on the issues of ART access problems or obstacles, patients' satisfaction, or assessment of different types of health care centers. Moreover most studies concentrate on individual issues of the ART access. Well integrated studies of these issues to reflect the equity in access to the ART are still rare. Most studies were also carried out before the policy of expanding health care rights in the national health care scheme is implemented. The results of these studies thus reflect the differences in healthcare rights of different health insurance schemes, and high cost of treatment for those patients whose medical insurance scheme does not cover the cost of ART. (Examples of these studies are Lertpiriyasuwat et al., 2004; Kitajima et al.,2005; Suwat et al., 2006a and 2006b; Vanlandingham et al., 2006; Saether et al., 2007). Only the study by Sukhontha Kongsin et al. (Health Insurance System Research Office, 2553) on ART access which was carried out after the policy of the Universal Health Insurance Scheme is implemented. The results of this study show that the reasons why those patients with criterion to receive the ART but had not been treated yet include the problems related to social stigma, high costs in getting treatment, travel distance from home to healthcare center, as well as systematic factors which deter these patients to receive treatment such as problems related to having different independent health insurance schemes that make it inconvenient for these patients to receive the treatment. Lack of privacy in some healthcare centers was also cited as one of the reasons for some HIV/AIDS patients to refuse treatment. However, the issue on the equity in access is not much discussed in this study.

Equity in access to the ART can occur only when we have a clearer picture of whether at the present time we have equal access to the treatment, and if not why it is not equal. This is the rationale of this study using Chiang Mai as the case study. Chiang Mai has the second highest number of people infected with HIV/AIDS in the Upper North of Thailand, only next to Chiang Rai but the accumulated number of alive HIV/AIDS patients is highest. The data provided by the Bureau of Epidemiology, Ministry of Public Health, show that the accumulated number of HIV/AIDS patients in Chiang Mai since the year 1984 till 15 November, 2011 stands at 5,431 persons, with the accumulated number of 5,431 deaths. Therefore at present there are a total of 17,697 persons who are infected with HIV/AIDS and are still alive in Chiang Mai while Chiang Rai has 24,240 total accumulated patients and 11,885 cases has dead. The total number of patient that remains alive is 12,355. Moreover, the results of quality assessment of healthcare for HIV/AIDS patients using the HIVQUAL-T reveal that, in the budgetary year of 2010 during which the assessment was carried out, of all the 6,102 patients with criterion indication that they need ART as high as 95% of these patients did receive the treatment. The median value of their CD4 level is 148 cells/mm^3 (http:// www.cqihiv.com/Default.aspx, 2 December, 2011) which is the level that is less than half of the criterion used to determine who should start receiving the ART.

Moreover, Chiang Mai is more potential than Chiang Rai in terms of infrastructure and medical service and Chiang Mai is also one of the six pilot provinces in Thailand in developing the care provision and after- treatment monitoring system for HIV/AIDS patients which had been started since the year 2001. A number of project operation patterns have been continuously developed including the National Access to Antiretroviral Programs for PHA: NAPHA. Chiang Mai is also well known for group coordination among people infected with HIV/AIDS as well as the existence of non-government organizations which give assistance to HIV/AIDS patients. The province also has health centers of different levels that offer the ART. There are large sized hospitals with one smaller hospital in each district as well as a medical school that provides health care to HIV/AIDS patients. On the provider or supply side of the ART, Chiang Mai is therefore very appropriate to be chosen for the study on equity in access. This study focuses on equity in access to the ART among adult HIV/AIDS patients by looking at both the supply side as well as the demand side of the ART. Access to the ART between different socio-economic groups, locality of residence, and different health insurance schemes will be compared. The results of this study should be useful in finding the best alternative in providing and receiving the ART that is more equitable and more efficient.

1.2 Research question

The main hypothesis of this research is to see whether there is any difference in access to the ART among HIV/AIDS patients in terms of sex, residing locality, socio-economic status, and having different health insurance schemes. If the differences are found to exist, are they equitable and just?

1.3 Research objective

The main objective of this research is to study the equity in access to the ART among adult HIV/AIDS patients in Chiang Mai province. Present condition of HIV/AIDS is investigated in order that policy alternatives can be suggested regarding to appropriate and equitable distribution and allocation of resources so that the patients can reap fully the benefits from the treatment and the goal of equity in access to the treatment can also be achieved.

1.4 Specific objectives

1. To study whether there exists any difference in the access to the ART among adult HIV/AIDS patients of different socio-economic groups of the population with different health insurance schemes.
2. To measure the level of equity in access to the ART among HIV/AIDS patients.

1.5 Scope of the research

This research is carried out in the context that the environment and the nature of health resources are specific of Chiang Mai province. The study is focused on HIV/AIDS patients in Chiang Mai who are in the age group of 20 – 49 years old because this group of age is in the reproductive period and both as viewed from the whole of the country and from Chiang Mai province, it is seen that most patients are in this ages. Moreover, these patients have been receiving the antiretroviral drug for at least 6 months and can be sure that they will definitely continue drug therapy further. The patients in the Prevention of Mother to Child Transmission (PMTCT) Program are not included because pregnant patients are taken care and follow-up specifically. It has also been taken to prevent HIV infection to the newborn. This study would be considering only those infected with HIV/AIDS in the normal condition. The study is carried out during the period of March – May 2012.

1.6 Expected benefits of the research

This study is an assessment study in order to see whether there exists any difference and equity in access to the ART among adult HIV/AIDS patients in Chiang Mai province or not. Differences among these patients in terms of sex, age, education level, residing locality**,** socio-economic status, and health insurance are considered. The data are then used to arrive at alternatives/guidelines for future policy planning and implementation regarding the distribution and allocation of resources for the ART to assure that access to the treatment is equitable or least inequitable as possible among different groups of patients.

1.7 Operational definition

Antiretroviral treatment (ART) refers to the treatment of triple therapy using three antiretroviral drugs simultaneously. Table 1.4 presents the formula of treatment, preferred and alternative, used in Thailand.

Table 1.4 Primary and alternative antiretroviral therapies in Thailand

NRTIs		NNRTIs		PIs
Preferred	+	EFV NVP	in case of side effect ⟶ derived from NNRTIs	***Preferred***
AZT + 3TC TDF + 3TC/FTC				LPV/r
Alternative				***Alternative***
ABC + 3TC d4T + 3 TC ddI + 3TC				ATV/r DRV/r SQV/r

Source: National guideline on diagnosis and treatment: Thailand, 2010

ART HIV/AIDS patients refer to HIV/AIDS patients who are in the age group of 20-49 years, have received ART in Chiang Mai province for longer than 6 months**,** are not members of the Prevention of Mother to Child Transmission (PMTCT) Program, and have received the preferred formula of treatment as their basic treatment

Criteria in assessing HIV/AIDS patients needing the ART refer to the medical criteria based on the National Guideline on Diagnosis and Treatment of HIV/AIDS Patients, 2010

ART access ART access is viewed from its three dimensions of availability, affordability, and acceptability.

- *Availability* is considered from the patients' travel alternatives to receive the ART, travelling time to receive the treatment, waiting time to receive treatment, and supply of resources (such as health personnel and drug).
- *Affordability* is judged from both direct and indirect costs to receive the treatment such as travelling costs, food expenditure, income foregone from not working while getting the treatment, and ability to manage these costs.
- *Acceptability* is viewed from patients' satisfaction or perception towards the efficiency or the quality of the ART received, as well as their perception on the attitudes of ART providers.

Differences in ART access refer to the differences in getting the ART among different groups of HIV/AIDS patients based on (1) population characteristics, such as sex, residing locality, and ethnicity; (2) socio-economic status, using annual income per capita as indicator; (3) rights according to health insurance scheme**.**

Equity in ART access refers to equal opportunity to receive the ART for every group of HIV/AIDS patients. The Kakwani index is used to measure the existence of equity. The index compares the patients' ability to pay with their income earnings. If the index has a positive value, it means that ability to pay changes in the same direction with income earnings. On the other hand if it has a negative value, it means that ability to pay changes in the opposite direction of income earnings and thus the existence of equity.

Ability to pay for this study, is defined as the level of average income per year of an HIV patient who to take the antiretroviral drug at the hospital considering from the main career, secondary career and others refers to the HIV/AIDS patients' income level.

CHAPTER II

LITERATURE REVIEW

The review of related literature for this study may be classified into 5 groups as the following

1. Current situation of the HIV/AIDS epidemic
2. Development of the Antiretroviral therapy
3. The concept of equity
    - 3.1 The principle of equity
    - 3.2 Equity in health care
    - 3.3 The measurement of equity
4. Related studies
5. Framework of the study

2.1 Current situation of the HIV/AIDS epidemic

The first cases of HIV/AIDS disease were reported in 1981 (United Nations, 2004). The disease has spread around the world. The UNAIDS estimated that up to the end of 2008 there had been 33.4 million of people around the world who had been infected with HIV/AIDS. Of this number 90% of them live in developing countries. For the year 2008, 2.7 million of new cases had been expected to be found in this year only, especially among young people who are 15-20 years of age which is the group of people with the highest incidence of new HIV/AIDS cases. HIV/AIDS deaths have been estimated to be around 20 million (UNAIDS, 2009).

In Thailand the first case of AIDS disease was found in September 1984. Since then, the number of people infected with HIV/AIDS has increased rapidly and continuously. At present the incidence of the epidemic in Thailand has been clearly found to be on a decline, but the total number of infected people is still of serious concern. The epidemic and its related problem still cannot be completely eradicated.

Data on the number of HIV/AIDS patients from health reports of both government and private health centers reveal that during the period of September 1984 till 15 November 2011 there had been a total of 376,690 of cases reported with a total of 98,721 deaths. The highest incidence of the epidemic, i.e. 22.45% of the total number of HIV/AIDS cases, is found in the Upper North region of Thailand.[5] Deaths from HIV/AIDS in this region had also been found to be highest in the country, accounting for 34.9% of the nation's total deaths from HIV/AIDS.

With regard to different age groups, the incidence of the epidemic had been found to be highest among people in the reproductive age groups of 20-49 years, with 335,031 infected persons, or 88.94% of the total. The highest percentage of people infected had been found to be in the 30-34 age group, accounting for 24.97 of the total. The next highest had been the 25-29 age group and the 35-39 age group with 21.7% and 18.9%, respectively. When classified by sex, there had been more males than females with male to female ratio of 2.1:1. It can be clearly seen that the majority of HIV/AIDS patients had been people in the reproductive age groups as well as working groups. The occupations of the majority of these patients are general laborers and farmers (45.48% and 19.49%, respectively). Having sex with no prevention is the most important risk factor for getting the infection among these patients (83.99%) (Bureau of Epidemiology, 2554).

For Chiang Mai, during the same period of 1984 till 15 November, 2011 an accumulated number of 23,128 HIV/AIDS patients with 5,431 deaths had been reported. The highest incidence of the epidemic is also found to be in the age groups of 25-39 years, especially in the 30-34 years age group. This age group of patients account for 24.93% of all total patients reported, followed by the 25-29 years and the 35-39 years age groups, with 22.01% and 17.63% of the total, respectively. There had been more male than female patients, with male to female ratio of 1.96:1 which is more or less the same as that at national level. Sex related is the most important risk factor for getting infection among these patients (89.3%). Mother to child and drug use had been found to account for 4.38% and 1.25% of total infected persons

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[5] The Upper North region covers the 8 provinces of Chiang Mai, Lamphun, Lampang, Phrae, Nan, Phayao, Chiang Rai, and Mae Hong Son

respectively. The occupation of more than half of the patients is general laborers (54.18), and next to farmers (13.08%).

However, the data presented above are of those patients with symptoms of the disease and who had received treatment from various care agencies, both public and private. The data therefore reveal only the total number of HIV/AIDS cases and cannot be used to truly indicate the future trend of the epidemic.

2.2 Development of the ART

The Ministry of Public Health has allocated its financial resources for the ART since 1991. The development of the ART in Thailand may be divided into three phases. The first phase is between the period of 1991-2001, the second phase is between 2001-2005, and the third phase is since 2006 till the present time.

Phase I: The antiretroviral therapy among HIV-infected and AIDS patient, 1991 – 2001

The operation of access to ART project in Thailand has been developed along with the progress in finding antiretroviral drugs in the West. It has been the policy of the AIDS Section (as known at that time, and is now the Bureau of AIDS, TB and STIs) Department of Disease Control, Ministry of Public Health to coordinate and work continuously with various NGOs working on HIV/AIDS as well HIV/AIDS patients' networks with the common goal of achieving equity in access to the ART among all HIV/AIDS patients. The results of their operation during the first phase of development during the period of 1991-2001 are presented below.

(1) Support for the ART for low income patients

Under the agreement with the National AIDS Committee: NAC, the Department of Epidemic Diseases Control, Ministry of Public Health has allocated their resources for the ART for HIV/AIDS patients with low income since 1991. The budget allocated for the ART was 35 million Baht in 1991 and was increased to 300 million Bath in 1997. The price of 100 mg. AZT drug dropped from 45 Baht to only 8 Baht with greater competition in the market of antiretroviral drugs. The Pharmaceutical Authority of Thailand had therefore started to produce its own 100 mg. AZT for the Ministry of Public Health at a price of approximately 9 Baht.

During this period the number of HIV/AIDS patients had increased at quite a rapid rate. New technology in treatment had also been developed. With the assistance from the WHO and the World Bank in supplying a team of experts on health care for HIV/AIDS patients to evaluate the ART in Thailand using cost effectiveness approach. The team found that the investment in the ART at that time was not cost effective as the project had too high costs but low returns, especially among patients who did not want to continue the ART treatment and with no attempts made from medical staff to make sure that patients do get medication punctually. Therefore the full benefits of the ART were not reaped. The results of this study and the fast increasing number of HIV/AIDS patients, led the Ministry of Public Health to set up a research network on medical services to support the ART.

(2) The ART and the research network on medical services

In the fiscal year of 1997, the Ministry of Public Health launched two major projects: the ARVPROT1 and the ARVPROT2. In the ARVPROT1 two antiretroviral drugs were used simultaneously in the treatment of antiretroviral naive patients by starting to give the drugs when the CD4 levels of these patients are found to be lower than 500cells/mm^3 twice in a row of tests. Forty four hospitals/health centers in 20 provinces were selected to join the network on voluntary basis. Medical personnel were asked to participate in Good Clinical Practice training which is the training on the ART and guidelines on the quota of drug supply for each individual hospital. A total of 1,503 patients joined the project.

However, due to limited effectiveness of treatment and limited access to laboratory for CD4 testing as well as lack of financial support in procuring the drugs, the Ministry's guidelines on the use of two simultaneous ARV drugs was found not to be widely practiced.

For the second project, the ARVPROT2, three ARV drugs were used simultaneously. Patients would start receiving the drugs when their CD4 levels are below the range of 200-250 cells/mm^3. The project's set target was 40 patients in two hospitals (Chiang Rai and Rayong). The treatment with three ARV drugs were found to be quite complex and difficult in practice, from both medical personnel and patients' points of view, as the treatment had to be continuous and prompt. Only 10 patients from each hospital were chosen to join the project.

Later there had been attempts to extend this research network on medical services to cover wider scope. Not only to the ART but other treatments for opportunistic diseases had also been supported. Better laboratory practices had also been developed. Drugs given to prevent mother to child infection were also started. The basic structure of the whole service system has also been developed to include alternative care as well. In the 1991 fiscal year the Access to Care: ATC, the service and follow up system of ART for HIV/AIDs patients in Thailand was set up by the above mentioned research network on medical services with the objective to develop the service and follow up of the ART to cover other hospitals not originally included in the research network. The Department of Diseases Control set up a committee to study and select the appropriate, in terms of treatment effectiveness and low cost, formula for the simultaneous use of three ARV drugs. The Committee came up with 8 formulas for adult patients and 8 formulas for children. Financial support was allocated for 1,200 adult patients and 500 children (support was later extended to cover 1,389 adults and 547 children). Only well-equipped hospitals with complete system of health services, in terms of medical personnel, socio-economic, advice giving, patient transfer system, data collection system, efficient reporting system, were chosen to join the ATC.

Phase II: Extension of access to the ART, 2002 – 2005

During this period, the Government Pharmaceutical Organization of Thailand was able to produce the GPO-Vir consisting of 3 antiretroviral drugs in one capsule at much lower cost of 1,200 Baht per month of treatment. The Ministry of Public Health, thus introduced the GPO Vir for the treatment of new HIV/AIDS patients who had never received any ARV drugs before. This much lower cost of the ARV drugs coupled with the perception on the importance of the ART among those NGOs working on HIV/AIDS and patient networks all combined in providing a push for the implementation of national policy for equitable access of the ART. We therefore can see a greater number of HIV/AIDS patients receiving the ART during this period.

With lower cost of treatment using the GPO-Vir it was therefore more possible to widen the access to the ART, the Ministry of Public Health therefore develop the ATC project into the NAPHA (National Access to Antiretroviral Programs for PHA) project with financial support from the Thai government budget and the Global Fund NAPHA is responsible for overseeing the procurement of the ARV drugs, the supply of laboratory raw materials and equipment, the ARV drugs in stock, the development of data collection system, treatment monitor, as well as employment of personnel. In year 2004 the project set its target to cover 50,000 patients, 40,000 patients were to be covered with government budget and the remaining 10,000 were to be covered with financial assistance from the Global Fund. However at the end of the 2004 fiscal year, an accumulated number of 50,752 HIV/AIDS patients received the ART from the Project. The extension of equal access to the ART could be assessed as very successful (www.aidsthai.org/arrv03.html).

Moreover the NAPHA project was also involved in developing new formulas of ARV drugs for patients with problems of allergy to some drugs. This therefore has helped the coverage of access to the ART wider and more equitable. The sizes of target groups, whether adult, young children, or post natal mothers were enlarged to cover more patients. Guidelines for experienced cases of ART were also set up so those patients who had received the GPO-Vir before with successful results may automatically be included in the project. Guidelines of treatment for those patients who had received the other formulas of ARV drugs and not the GPO-Vir were also set so their treatments could be switched to the use of the GPO-Vir so the project could cover as many patients as possible.

It can be clearly seen that the access to the ART among HIV/AIDS patients had increased during this period. However, the demand for the ART was still found to increase continuously. In actual fact the number of patients with access to the ART accounted for only a small proportion of the total number of HIV/AIDS infected persons.

Phase III: Access to the ART of patients covered in the nation's health insurance schemes, 2006 – present

The operation of the NAPHA project has resulted in better quality of life for a number of HIV/AIDS patients. Many of them have been able to resume their employment (Sakchai, 2546; Lalida, 2549). In 2004 the Thai government pledged to the world community that all HIV/AIDS patients would have access to the ART. The rights to the ART were therefore incorporated in the nation's universal healthcare scheme. Before this, many HIV/AIDS patients in Thailand still had to pay for the ART themselves.

The 2006 fiscal year was the first year that the ART were to be covered in the nation's universal healthcare scheme. The National Health Security Office (NHSO), Ministry of Public Health, in cooperation with the various NGOs working on AIDS, and related agencies had set up guidelines for providing services to HIV/AIDS patients under the universal healthcare scheme. The guidelines cover all the steps of treatment, from diagnose to the actual ART, counseling, and monitor and follow ups. The goal of the guidelines is to ensure that more patients do have access to the ART.

In 2007, The National Health Security Office (NHSO) set up a fund for services for the HIV/AIDS patients under the National AIDS Program; NAP. Its financial support is to be allocated from the national budget, separate from the lump sum per head payment allocated to the Universal Coverage Scheme. The aim of the fund is to widen access to medical services among HIV/AIDS patients, especially access to the ART.

Under the Universal Coverage Scheme, rights to healthcare among HIV/AIDS patients cover four areas : (1) antiretroviral therapy, treatment for opportunistic infections, and treatment of hyperlipidemia; (2) laboratory testing ; (3) voluntary counseling &testing :VCT; (4) positive prevention (National Health Security Office, 2550).

Certain clinical criteria and/or immunology criteria are used to indicate whether a patient is to receive the ART. Patients who are considered (by medical personnel),as not being able to receive continuous treatment would not be allow to receive the ART as well as those who cannot medically be treated with antiretroviral drugs[6]. The patients would receive first line treatment or others as set in the treatment guidelines[7].

Besides the Universal Coverage Scheme, the two other national schemes also cover HIV/AIDS treatment: the Social Security Scheme and the Civil Servant Medical Benefit Scheme. Under the Social Security Scheme, the ART is covered beginning August 1, 2004. All those who insure themselves under this scheme would have equal access to the ART under the criteria set by the Social Security Office.[8]

For the Civil Servant Medical Benefit Scheme it is Thailand's first health insurance scheme. The scheme was set up by the government for state officials, state employees, retired government officials, and their immediate family members i.e. parents and children under 20 years old (not more than 3). The scheme has covered the ART from the very beginning as it covers all healthcare expenses for its members.

The three health insurance scheme therefore covers all the citizens of Thailand. This means wider access to the ART for the case of Thailand. Moreover, for those who are not covered by these three schemes, such as migrant laborers, ethnic minorities and prisoners in jails, access to the ART can be attained through the NAPHA Extension program. The program has received financial support from the Global Fund AIDS and provides its services to the HIV/AIDS patients of these groups free of charge. However, some conditions set by the program must be followed (http://dpc9.ddc.moph.go.th/crd/napa_wx.html).[9] The goal of the program is to extend its target groups to cover as many people as possible.

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[6] Please see appendix C for more details on the coverage of rights

[7] Please see appendix B for more details

[8] Please see appendix C for more details on the coverage of rights

[9] Please see appendix C for more details on the coverage of rights

2.3 The concept of equity

In many countries, public policies are often implemented with the importance attached the issue of equity, direct and indirect (Culyer & Wagstaff, 1993; Mooney, 1994; Goddard & Smith, 2001; Oliver & Mossialos, 2004). However, in practice it is still difficult to define or indicate how equity is to be measured, and what exactly does the concept of equity imply. Equity is defined differently in different countries with different cultures (Mooney, 2009). It can also changes over time and place (Whitehead, 1992). Equity is sometimes used with the same meaning as the word equality. In actual fact the two concepts differ. In general, equality implies the notion of being equal which is empirical concept, while equity is value judgmental and it therefore has normative meaning (Le Grand, 1987; Gwatkin, 2002, cited in Palmer, 2008). For example, access to health services may be found to be unequal but under some conditions it may be judged as equitable. Therefore, judging by giving normative value whether a situation is equitable or not is complex and is difficult for everyone to agree. Moreover, judgment cannot be made with real value-free attitude (Culyer, 2001). With such characteristics, McLachlan and Maynard (1982, cited in Culyer and Wagstaff, 1993) say that 'equity, like beauty, is in the mind of the beholder….'.

In this study on the equity of access to the ART and with the complex nature of the term equity, it is therefore necessary to understand clearly the concepts of equity, especially the concept of equity to a service not a commodity, used in this study. The next topic of this chapter is the therefore the literature review on the concept of equity in access to health service. It is divided into 3 parts: the principle of equity, equity in access to healthcare service, and assessment of equity.

2.3.1 The principle of equity

The concept of equity is derived from the basic concept of social justice or fairness. It is an ethical concept which is based on the principles of distributive justice (Braveman & Gruskin, 2003). Therefore, the definition of equity may differ among different countries or different societies. Moreover, the term 'equality' and the term 'equity' are often used to have the same meaning. However these two terms are of different meanings and concepts. ‘Equality’ refers to the state/condition of being equal, while ‘equity’ refers to justness. For example, a society with equality in the distribution of benefits among its members may be or may be not regarded as an equitable society. When a society with equal distribution is regarded as not equitable, ethical principles are often used to answer the question of why inequity still exists in this society. Therefore, in a society which is regarded as equitable, distribution of benefits among its member is not necessary equal.

The concept of equity may be considered horizontally or vertically. Horizontal equity implies that everyone should receive equal treatment, but it must be equal treatment for equal need. This is so because a person in good health does not necessary need equal treatment as a person in poor health (Mooney, 1987 cited in Donaldson & Gerard, 1993). Horizontal equity can be considered at every level of health service, from input level to process level and output level (West, 1981). Generally, it is normally indicated in the form of equal payment for the same care service, access to care, and equal health.

Vertical equity in healthcare refers to unequal treatment for unequal need. Individuals with lower economic status should receive more help from government than those from higher economic status. In other words individuals with higher ability to pay should pay more than those with lower ability to pay. It also implies that individuals who need greater care should receive more service than those with lesser care. However, in practice it is difficult to put this principle into actual use (Wagstaff et al., 1989) as it is hard to assess how people of different health status should be treated differently in order to say that their different treatments are equitable. Is it possible to treat one symptom with higher standard because it is judged as more important? And if it is possible, how higher that standard of treatment should it be in order to say that vertical equity is achieved.

Studies on vertical equity necessitate judgment and critical comments from various concerning parties. It is difficult to get a common conclusion or an agreement on how the differences should be. Therefore, studies on vertical equity have been quite few (van Doorslaer et al., 1993; Mooney, 1998; Waters, 2000; Chaudhuri & Roy, 2008). Horizontal equity concept is used in most studies (examples are: Lairson et al., 1995; Pannarunothai & Rehnberg, 1998; Waters, 2000; Goddard & Smith, 2001; van Doorslaer et al., 2006; Lu et al., 2007). In this study, horizontal equity is used to analyze the differences in access to the ART, and vertical equity is used to analyze equity in healthcare financing.

2.3.2 Equity in healthcare

The most important aim of any healthcare system is equity in health. Equity in health implies minimal differences in health as well as avoidable health affecting factors between different groups of people in the society (Whitehead, 1992; World Health Organization, 2000a; Braveman & Gruskin, 2003). However, it still can be found in general that there are differences in health among different social groups as well as between different geographical areas within the same country.

Differences in health are not determined by healthcare only; they are also affected by other factors other than health itself, such as socio-economic status, education, gender, and even environment (Le Grand, 1987; Whitehead, 1992). Therefore if more equity is found in health affecting factors, equity in health would be easier to achieve. Equity in healthcare is one important component in achieving equity in health. This is so because equity in healthcare is based on the reallocation of health resources in response to needs until equity is reached or at least differences in health are minimized (Culyer & Wagstaff, 1993; World Health Organization, 2000a; Whitehead & Dahlgren, 2007). In other words, the aim of equity in healthcare is to make every group of people in the society have more or less the same health status, or at least the differences in health among them be minimal.

The following presentation of literature review on equity in healthcare concept is divided into 2 parts, starting in the first part with the definition of equity in healthcare and its development. The second part deals with the concepts relating to equity in healthcare i.e. need and access.

2.3.2.1 Definition of equity in health care

The definition of equity in health care has long been debated on the topics of what the important characteristic of healthcare service equity is, and how to measure/assess it. In general, analysis of horizontal equity in healthcare may lead to the definition with four aspects as the following (Mooney, 1983; Le Grand, 1987; Whitehead, 1992; Culyer & Wagstaff, 1993; Wagstaff & van Doorslaer, 2000; Culyer, 2001).

(i) equality in health
(ii) equal expenditure per capita for equal need
(iii) equal access for equal need
(iv) equal utilization for equal need

The definition that refers to equality in health may be considered as the ultimate or highest goal of health development. Therefore the goal of equity in healthcare is to make health level of everyone of all social groups or in every area of the society to be the same with no difference, or with as little differences as possible. However in practice it is difficult or nearly impossible to achieve this goal as an person's health or health status does not depend solely on healthcare, but on other factors as well such as that person's social status, politics, culture, education, available information, law, economic situation, gender, and resource use (Prawet, 2542 cited in Supasit, 2544; Whitehead & Dahlgren, 2007).

However studies in the past have shown that in attempts to achieve equity in healthcare with real equality in health as goal through redistribution of health resources may neither be efficient nor effective in some cases due to high costs involved in changing health status of those who are of very poor health (Le Grand, 1987; Mapelli, 1993 and Gerdham et al., 1999 cited in Waters, 2000). Moreover, it is impossible to transfer good health from one person to another person. In other words, it is impossible to redistribute good health. But redistribution of health resources among individuals is more possible. In policy forming the aim is therefore focused on equity of healthcare services rather than on direct health of individuals (Le Grand, 1987).

On the aspect of equal expenditure per capita for equal need, equity in healthcare can be attained when financial resources for healthcare are distributed equally among different physical regions with population size in each region is taken into consideration. However, this notion may lead to the neglect in taking into account the differences in need among different age groups, or social groups in each area (Whitehead, 1992). Moreover, costs of healthcare should not imply only expenditure in monetary terms, but should include travel costs and other opportunity costs such as income foregone for not working (Le Grand, 1982 cited in Culyer & Wagstaff, 1993; van Doorslaer & Wagstaff, 1992). This aspect of equity in healthcare is therefore faced with quite some limitations in its analysis.

The terms access and utilization can be used to analyze equity in healthcare. However, in many studies, ‘access’’ and ‘utilization’ are used with the same meaning. Examples of these studies are Salkever (1980), Collins and Klein (1980), Puffer (1980), Tobin (1980), and Aday and Anderson (1975) (cited in Culyer & Wagstaff, 1993). However most studies agree that access to healthcare does not have the same meaning as utilization of healthcare (Penchansky & Thomas, 1981; Mooney, 1983; Oliver & Mossialos, 2004). Mooney (1983) and Le Grand (1987) had shown that even policy makers themselves had tried to differentiate the two terms. In most health policies equity in healthcare means equal access for equal need which implies that individuals with equal need should have equal chance to access of healthcare or have equal cost of utilization. It is not necessary for these individuals to have equal use of healthcare despite them having equal chance of using it. Equal utilization for equal need applies to cases when individuals with equal need of healthcare are able to utilize it equally and with equal costs of utilization as well.

However, utilization of healthcare is dependent on many other factors, and is not determined by the supply side only. It is also determined by individual demand for healthcare as well. Persons with equal need of healthcare may have different patterns of consumption with different levels or types of satisfaction. Satisfaction may be in the form of perception of treatment results which in turn may vary according to marginal utilities of income of these persons. Satisfaction also depends on other personal factors such as knowledge, belief, or culture that have some influence on healthcare utilization. Therefore, when equity in healthcare is viewed as equal utilization of healthcare it may lead to distorted policy goal (Mooney et al., 1991).

In the case of Thailand, the extension of access to the ART to be universal for all has been in the nature of extension of opportunity in access to the ART which is the basic rights in accordance with the Thai Constitution that would lead to all Thai citizens to have good health equally. Equity in healthcare in Thailand thus implies the concept of equal access for equal need rather than the concept of equal utilization for equal need. Moreover, differences in the use of the ART may be expected. According to the principles of equity in access to healthcare, such differences are normally accepted (Oliver & Mossialos, 2004). In this study, the concept of equity in healthcare is used to refer to the concept of equal access for equal need.

2.3.2.2 Concepts related to equity of access

When the concept of equal access for equal need is used to indicate equity in healthcare, it is necessary therefore to examine clearly the concepts of need, access, information, and the degree of fit between health system and individual factors.

(1) Need

Need may be regarded as the primary basis for the allocation of healthcare resources to be efficient and equitable since the goal of the allocation is to respond to health need (Culyer, 1995). In health economics, the important difference between need and demand lies in the fact that need is determined by other people who normally are medical experts. The nature of health goods makes the goods to differ from other general goods in the sense that suppliers know better than individuals who demand the goods. Therefore decisions to consume health goods/services are made by the suppliers or providers of the goods while the demand for the goods is determined by individual preferences (Mooney, 1994). Moreover the need for healthcare is due to illness while demand for healthcare reflects the willingness to pay as well as the ability to pay of those who demand it.

The next question is when does need arise? In other words, what the definition of need is? In health economics, the definition of need is generally considered as: (1) need as initial health; (2) need as capacity to benefit (Culyer & Wagstaff, 1993; Culyer, 2001; Oliver & Mossialos, 2004). For the first definition, Culyer (2001) thinks that it is too narrow as no importance is given to preventive services. It is also hard to tell whether a need to healthcare has arisen under the situation of limited healthcare resources to make illness better. If this is the case, it means that there is a need to healthcare but there is no demand for it. Moreover, good health is also something that is determined by different cultures of different regions as well.

With some limitations discussed above, the definition of need has been preferably defined to be need as capacity to benefit. When a person is ill there might be no need for him to receive care if medical technology available at that time is not effective in curing or making his illness better (Culyer & Wagstaff, 1993). According to this definition, need for healthcare is different from need for healthcare service. The definition is therefore based mainly on health resources. Moreover, need would arise only after the assessment is made by medical expert(s) that an individual does have need for healthcare service and that he or she would benefit from better health. In fact, need does not arise from the service provider' side only, it may also arise from individual's perception towards need as well, whether it is his knowledge on health, or his learning of health services in the past, which help him in deciding whether there is a need for himself or not (Allin et al., 2009). However, another question also arises with regard to this definition i.e. how much of the resources we must have in order to be sufficient to answer for all needs that may arise. Limitation on resources means that any healthcare system would not be able to take care of all needs completely. The notion of need as capacity to benefit has been modified to be minimum need sufficient to benefit. In other words, care provider would be the one who decides what should be the minimum need to make better the health of care receiver (Culyer & Wagstaff, 1993; Culyer, 2001; Jeffers et al., 1971, cited in Somchai, 2551). According to this modified notion, even though not all needs would be taken care of, but it helps in deciding how resources should be allocated with equity in access to healthcare as goal (Culyer, 1995).

However in most studies, need is assessed from illness level rather than from capacity to benefit. Information on illness level is easier to obtain and it is therefore easier to assess need. Need assessment using illness level as indicator may be in three types (Goddard & Smith, 2001; Benjakul, 2004; Allin et al., 2009) as the following.

i. *Subjective measure of self-assessed health*. The assessment is carried out by the individual concerned such as by filling health assessment form himself. The assessment may be in the type of ranking the perception of his health status at present or during a given time period. This method of assessment assumes that there is no difference in the perception of health status among different groups of people in questionnaire answering. In fact factors relating to culture, social context, gender, and creed on health may lead to bias in the results of assessment.

ii. *Quasi-objective indicators*. This is the assessment of illness impact on activity of daily living: ADL, including the condition of persistent symptoms. For example, specific symptoms from cancer illness put limitations on ADL such as walking upstairs. The impact of illness on instrumental activity of daily living: IADL is also assessed, such as food taking or cleaning oneself.

iii. *Biomedical measure of health status*. This is need assessment using biological data obtained from medical examination. Physical standard is used as criterion to determine whether there is a need for care. Biological data used include medical history, drug use, and health problems at present. However this type of assessment has some limitations. The fact that health status changes with time, for example blood pressure level of an individual may be different during different time of a particular day, therefore the use of medical history may not give the correct picture of an individual’s present need for care (Masseria et al., 2007, cited in Allin et al., 2009). This type of need assessment must also assume that there is no difference in the supply side of the data, such as equipment used and medical personnel, as well as no other factors such as socio-economic status involved with the data (Goddard & Smith, 2001).

However in equity analysis, it is difficult to conclude which type of indicator provides the best assessment of need. The concept of health is multidimensional and cannot be judged by using only one indicator. In the case of this study, HIV/AIDS patients who are under the ART had been screened according to medical criterion of national guidelines to receive the ARV drugs, need is assessed to be when the patients' illness is at the stage needed to start receiving the ART, or their CD4 levels are below the level of 350 cells/mm^3.

(2) Access

Public policies in most countries are often launched with emphasis on equity in access to healthcare (Mooney et al., 1991). For Thailand, it is written in the constitution that it is the basic rights for all Thai citizens to have access to standard and efficient healthcare (Section 51 of the 2007 Constitution of the Kingdom of Thailand). However the meaning of the word "access" in the context of equity in healthcare is still debatable. The concept of access is complex with a wide variation of definition. The definition of access varies with time. It also has different meanings under different contexts. There has been no clear agreement of what the meaning of access is, and how to measure or assess it (Penchansky & Thomas, 1981; Andersen et al., 1983; Le Grand, 1987; Mooney, 1994; Goddard & Smith, 2001; Oliver & Mossialos, 2004: Thiede et al., 2007; Mooney, 2009).

In general, the different definitions given on access to healthcare may be categorized into two groups. One considers access to healthcare in terms of distribution of health resources, i.e. access to healthcare is viewed from its supply side. The other considers access to healthcare in terms of the relationship between demand and supply of healthcare.

For the first group, access to health care is defined in the terms of the assessment of the level or quantity of resources given to healthcare receivers. Mooney et al. (1991, 1992) define access to healthcare as "the opportunity to receive healthcare whenever there is a need". This implies that there must be sufficient resources to take care of all the needs arisen in the society and with appropriate utilization quality as well. It can be seen that according to Mooney's early notion, access to healthcare is supply-side phenomenon (Le Grand, 1987; Culyer & Wagstaff, 1993; Gulliford, 2002). In order to assess whether individuals have equal access or not, costs of access have to be examined. On this aspect, Le Grand (1987), who has similar idea as that of Mooney, suggests that costs of access may be assessed from total costs (money and time) individuals have to pay in receiving healthcare services. This should include travel time to receive the service as well. In the study of economics, shadow price would be used to estimate this notion of total costs. Equality of access should therefore mean equal payment, in terms of money and time, for everyone.

In the early period of this supply side definition, availability of resources was the main issue of concern. This has led many countries, including Thailand, to focus on healthcare investment, improvements on related infrastructure, increasing the number of healthcare centers and personnel, as well as giving importance to health insurance coverage schemes in order to reduce financial obstacles and travel time in healthcare access (Grumbach et al., 1997 , cited in Gold 1998). Moreover, importance has also been given to the poor, the old, young children, and people in rural areas of different ethnic groups. It is believed that if barriers to access are eradicated through increase in the supply of healthcare, the goal of equity in access can then be achieved.

However, availability alone may not be enough for the healthcare to be utilized. Quality should also be considered. Goddard & Smith (2001) agree with Mooney and Le Grand that the concept of access should imply availability of resources, but they argue that availability does not always guarantee the quality of service. If healthcare that is available is of poor quality or of different quality levels for different groups of people, decisions to use or not to use that healthcare would be affected. Therefore the quality of services that are available for access should also be considered. They further suggest that available information is very important for people’s access to healthcare. In some cases, the supply of healthcare can well cover all needs, but lack of information regarding its availability leads to no access to that service.

Therefore, looking only at the supply side or the availability of healthcare may not lead to a complete picture of access due to its complex nature of multidimensional (Ricketts & Goldsmith, 2005; Thiede et al., 2007; McIntyre et al., 2009). The concept of access to healthcare is therefore later developed to incorporate the demand side to be considered with its supply side as well. The definition of access to healthcare has later been developed in this nature of the relationship between the demand for and the supply of healthcare with focus on different issues.

Donabedian (1973, cited in Travassos, 2004) defines accessibility as the ability to provide healthcare in response to individual needs. It can be seen that access in this case has wider meaning than availability of resources. Not only resources must be available but must be in response and sufficient to existing needs as well. Donabedian argues that accessibility may be viewed from two aspects as socio-organizational accessibility and geographical accessibility. For the first, the focus is on the characteristics of the service provider whether they deter or promote accessibility. For the later, the focus is on the impact of service locality, distance, time, or travel costs on healthcare accessibility. It can be seen that in Donabedian‘s definition focus is still on the supply side of the service, but the demand side is also given some importance.

Penchansky and Thomas (1981) have similar idea of accessibility to that of Donabedian. However not only the ability to provide is considered, but the degree of fit between the clients and the healthcare system is also taken into consideration. Their development on the definition of accessibility helps to reflect more the importance of the relationship between the demand and the supply of healthcare. The degree of fit may be viewed in five dimensions as the following.

(i) *Availability*. This to assess whether the quantity, the types of services, and other related health resources are sufficient in response to needs.

(ii) *Accessibility*. This to assess whether access to the service is convenient or not, using the service’s locality, distance, and travel costs as criteria.

(iii) *Accommodation*. This to assess the convenience involved in the utilization of the provided service such as treatment time, awaiting time, or stages in receiving treatment, including clients’ perception on the convenience to be received.

(iv) *Affordability*. This to assess the ability to pay among service receivers to the service provider including contribution payment to health insurance scheme. It also includes the perception of receivers on the potential benefits in comparison with costs.

(v) *Acceptability*. This indicates the attitudes of service receivers towards the various characteristics of service, and the attitudes of service provider toward service receivers.

Andersen et al., (1983) propose the idea that potential access and realized access should be distinguished from each other. Potential access refers to the opportunity or the ability to gain access while realized access refers to the outcome of the service and individual's satisfaction towards the service. In other words, potential access implies the actual access to service, while realized access implies the utilization of service. Potential access takes into account the relationship between the characteristics of healthcare system such as its size and its resource allocation among different areas which in turn determine its capacity to provide, and individual characteristics such as age, health insurance coverage, and health status. This relationship would have some impact on realized access or the utilization of service which would occur later. This idea proposed by Andersen et al., (1983) is similar to that of Donabedian (1973) who views that access is an important component in explaining the pattern of service utilization. However, later studies by Andersen et al., the focus is found to be on the issue of utilization rather than on the issue of access, with emphasis on finding indicators to be used in the assessment of utilization (Andersen et al., 1995; 2002).

From the concept developed by Aday and Andersen, Gulliford et al.,(2002) extend further the concept of potential access to cover accommodation that would make people being able to receive healthcare appropriately. Potential access should then be considered in three dimensions: availability, utilization, and service outcome. They see that availability is of primary importance for access to be possible. They agree with Donabedian , Penchansky and Thomas that factors on the demand side must also be taken into consideration. Obstacles relating to locality, finance, or culture; or what Penchansky and Thomas call accommodation, affordability, and acceptability, respectively, may lead to the imbalance between the supply and the demand side of the service. This imbalance, in turn, would have impact on decision making whether to receive the service despite the existence of availability. Moreover, service quality must also be taken into account by assessing service outcome whether it has resulted in health improvement or in good response to need. Therefore, in reviewing the concept of equity in access, the above discussed three dimensions should also be considered to see whether there is equal access for equal need among different groups of people.

The definition of access given by the World Health Organization (WHO, 1978 cited in Center for Pharmaceutical Management, 2003) with focus on access to primary healthcare, considers access in four dimensions: 1) geographical accessibility which is assessed from acceptable distance, travel time, and travel mode; 2)financial accessibility which is assessed from ability to pay, no matter how; and 3) cultural accessibility which implies that technical and management approach employed must conform to community culture; and 4) functional accessibility which implies service availability according to need and must be continuous. Similar to the WHO, Whitehead (2007) says that accessibility should be considered in three dimensions: i.e. geographic access, economic access, and cultural access. Functional access is included in the geographic access.

Similar to that given by the WHO and Whitehead, but with wider coverage, is the concept of access developed by Thiede et al., (2007) and McIntyre et al., (2009) using Penchansky and Thomas' s notion of access (1981) as base. They propose that access framework should have three components/dimensions as the following.

a. *Availability* or physical access. This dimension is to assess whether the existing health system is appropriate to users' need in terms of locality, service time, size and type of services provided or not. According to Penchansky and Thomas's notion (1981) access to healthcare should also has the characteristics of accessibility and accommodation. However in general, the concept of availability is used to imply only the size and type of healthcare services as proposed by the two authors above.

b. *Affordability* or financial access. This is to assess the degree of fit between full cost of service and the ability to pay of individual users.

Full cost is comprised of price of service, direct costs such as travel cost and expenditure on food, and indirect costs such as income foregone from having to travel or to wait to receive service. On the ability to pay side, it is assessed from welfare or other types of assistance received; household's ability to bear costs incurred, both in cash and in kind; and social network. Ability to cope with indirect costs that may occur is also considered.

c. *Acceptability* or cultural access. This dimension of access is to assess the degree of fit regarding attitudes and expectations of service provider on one hand and service receiver on the other hand. Differences in attitude may occur due to differences in gender, age, language, culture, ethnicity, or socio-economic status. It also includes belief or past perception of service receiver which might have some impact on service acceptability. Problems relating to acceptability often occur when the service system is managed and run from only the point of view of service provider.

Thiede and McIntyre argue that access to healthcare in the above three dimensions are interrelated as shown in Figure 2.1 below. If an angle of triangle represents one of the three dimensions of access, the three angles are linked to each other. For example improvements in service distribution for remote areas would result in more individuals to gain access to the service. However ability to pay and acceptability factors must also be taken into consideration. An extension of service to cover wider areas but also increase service price, or the service provided is not appropriate or fit well with local culture, no more access can be expected for that extension. Moreover, Thiede and McIntyre also think that each dimension is based on the interrelationship between health system and individuals or households.

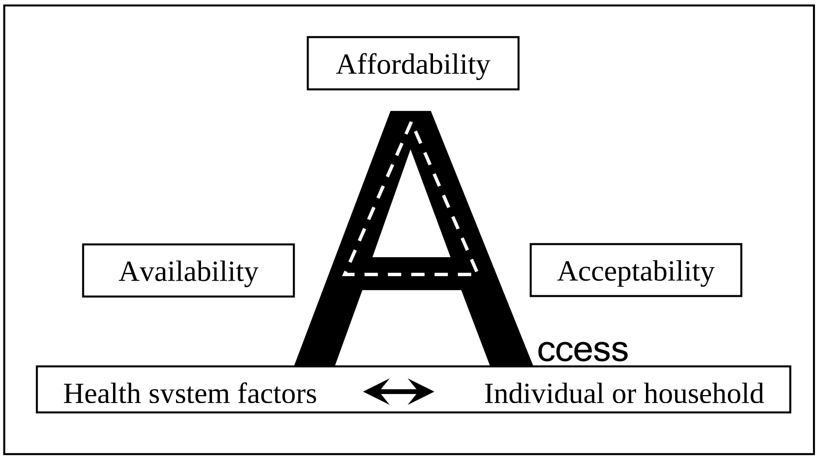


Figure 2.1 Access framework

Source: Thiede and McIntyre, 2007

Access to healthcare as discussed above, is viewed under the whole picture of healthcare. In the case of access to the antiretroviral drugs, only access to the drugs is mainly studied. The World Health Organization (WHO, 2000c) has defined access to essential drugs from consumer point of view as the opportunity for a patient to be able to receive the drug under appropriate travel time. In other words, the drugs must be geographically accessible. The definition also implies that the service provider concerned must have enough drugs for all who need them, or access to drugs must be physically available. The price of the service must also be reasonable, or access to drugs must also be financially available. Four important factors contributing to sustainable access to drugs are: 1) appropriate selection of drugs to be used, basing on national essential drugs list; 2) affordable prices, for both the state as service provider and consumers; 3) sustainable financing under equity budgeting mechanism; and 4) reliable supply systems which arise under the cooperation between the public sector and the private sector.

(3) Information and the degree of fit between health system and individual factors

According to the basic economic principles of public health, the development on the definition of access, from the past till present, has been focused on the making of opportunity in utilization healthcare service, or as Thiede (2005), Thiede et al., (2007) and McIntyre et al., (2009) view to be equivalent to freedom of healthcare utilization. But in Thiede and McIntyre's point of view, the term freedom does not mean availability or opportunity only. In some cases, service availability does not necessary lead to service utilization, not even with the existence of service acceptability and affordability. Lack of information regarding health and healthcare at local level may help explain why service is not utilized. It also helps to reflect the issue of equity in access as well. In these cases empowerment of decision making through better and thorough supply of information on health and healthcare is therefore necessary. Rational decisions based on proper knowledge can then be made, especially regarding to the use of drugs. In decision making to use a drug, not only its quality, but its chemical integrity, its bioequivalence, as well as the quality of healthcare service should all be taken into consideration (WHO, 2000b).

Moreover, good information should not be viewed only from receiving side, the coordination from the provider side is also important. In other words, information provided must fit well with Thiede and McIntyre‘s three dimensions of access. In relation to the aspect of availability, policy maker should have information on geographical distribution of population in order that appropriate allocation of health resources can be made, and with announcement regarding type and period of service. On the affordability aspect, information on service costs must be made known for both service provider and receiver, as well as on acceptable payment patterns, and different rights to waive service fees entitled under various cases/situations. On the dimension of acceptability, information with regard to patient rights should be provided as it does have some impact on the attitude and expectation toward service provider. Therefore, access to drugs does not mean access to medical products only, but it also implies access to necessary information for decision making in consideration to availability and drug use. In cases of HIV/AIDS patients who should be treated with the ARV drugs, if appropriate information with regard to their health status, when to receive the drug, or when to start the drug for effective results, including relating welfare benefits entitled, is made available to them this certainly would help stimulate greater access to the ART. Providing information is therefore the same as making another choice available to these patients.

From the development on the concept of access and the issue on information discussed above we may conclude that in any study on access to healthcare, three major aspects should be viewed i.e. supply, demand, and cultural factors. Details on each aspect has been discussed with emphasis varies from one person to another. For this study, the concept of access as developed by Thiede and McIntyre is used to analyze the equity in access to the ART. Access to the ART is assessed from the three dimensions of availability, affordability, and acceptability. Horizontal equity i.e. equal access for equal need is the focus of this study. Need is assessed with the criteria for adult patients as specified in the national guidelines.

2.3.3 The measurement of equity

The issue of equity can be studied either from its positive aspect or its normative aspect (Morris et al., 2007). Both types of analysis involve explanation of what just allocation of resources is. In this study only the positive approach of equity will be focused. Quantitative technique would be employed to arrive at equity indicators.

In positive approach, assessment of equity is often focused on its measurement, or on explaining the distributive characteristics of the various aspects of health resources, such as health status, use of health services, or health spending/expenditure to see how these resources are distributed among individuals or groups of people in the society. Even though equity is not the same as equality, but positive measurement often analyses equity as equivalent to equality (Morris et al., 2007). For example, individual with equal ability to pay should have equal payment for healthcare, or individuals with equal need should receive equal service.

In general, measurement of equity in health services may be carried out as (1) measurement of equity in health, and (2) measurement of equity in healthcare.

(1) Measurement of equity in health

In measuring equity in healthcare, statistical technique is often used to see whether there is any difference in health or in unavoidable factors determining health among different groups of people in the society or not. It is therefore horizontal equity that we are dealing with. Statistical tools used in measuring inequality are normally descriptive statistics in nature, which include the following (Mackenbach, K. & Kunst, A., 1997; Anand, S. et al., 2001; WHO, 2009).

(i) ***Range***. The most simple tools used in assessing the inequity in health status or the inequity in use of healthcare service among different groups of people such as between male/female population, rural /urban population, or the most well off /the most needy. The results of measurement using range may be presented in two forms: rate ratio (RR) which is the ration between the two groups under comparison; and rate difference (RD) which is the degree of difference between the two groups being compared.

Despite its simplicity, the limitation of using range in measuring equity is that the results obtained are of the two extreme groups with no picture of those in between. Distribution of (in)equity among those in between may change and with no change in the two ends groups.

(ii) ***Lorenz curve.*** The curve expresses the graphical relationship between two variables with distributive values relating to health status. The vertical axis represents cumulative percentage of income received, while the horizontal axis represents cumulative percentage of people or households. For each axis, the values entered would be ranked from the least to the most. Under the situation of perfect equality, the Lorenz curve would become the same line as the diagonal line which is the line of equality and equality in health status is implied. If the Lorenz curve lies below or above the diagonal line, it means inequality with pro-rich or pro-poor implication. The distance between the Lorenz curve and the diagonal line indicates the degree of inequality. The more it is further away from the diagonal line the higher is the degree of inequality.

The use of Lorenz curve has some limitation. It is used to indicate inequality in relative terms only, but not the size of inequality in health status within each different socio-economic group of population. Changes in each individual group may occur without any structural change and therefore no change in the Lorenz curve itself.

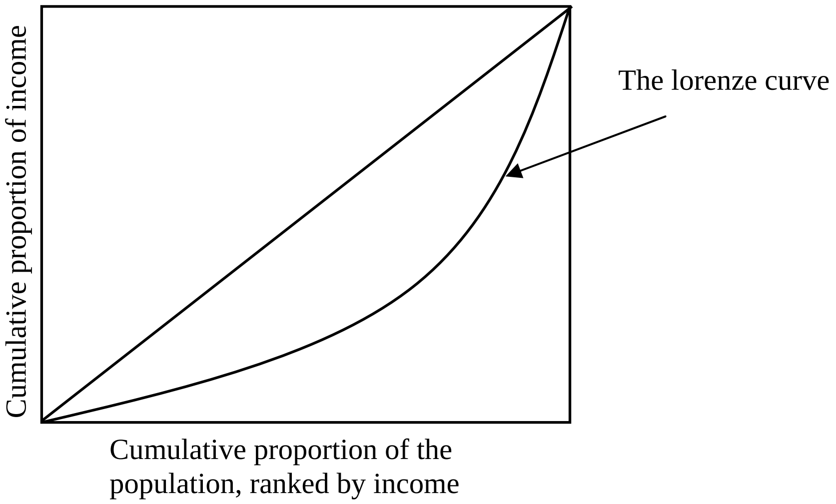


Figure 2.2 The Lorenz curve

(iii) ***Gini coefficient***. The coefficient is a further development of the Lorenz curve. It is calculated from the ratio of the total area between the diagonal line and the Lorenz curve and the total area of the triangle under the diagonal line. Gini coefficient can be calculated with the following formula.

$$G = 1 - \left(\frac{2}{n\mu}\right) * (h_1 + 2h_2 + 3h_3 + \ldots. + nh_n) + \frac{1}{n}$$

And $h_1 > h_2 > h_3 > \ldots > h_n$

When n is the number of groups in the sample

μ is average income

h is income of each individual group

The value of Gini coefficient lies between 0 and 1. When the value is equal to 0, it means perfect equality in income distribution. If the value is equal to 1 it means highly unequal income distribution as it implies that only one individual or only one household receives income while the rest do not.

(iv) ***Index of dissimilarity*** (ID). This index is used to measure the inequality in health status. A reference group is determined and is used to compare the health status of other groups or individuals. The reference group's mean values on health are used in making the comparison in order to see the dissimilarity among different groups with the aim to improve the health status of these groups or individuals to be the same as the mean values of the reference group. The index can be calculated using the following formula.

$$ID = \frac{1}{2}\sum_{j=1}^{n}\left|S_{jh} - S_{jp}\right|$$

When j represents different groups of people, such as classified by income, or classified by health status, etc. , and $j = 1,\ldots..n$

S_{jh} is the j^{th} group's share of the population's health

S_{jp} is the j^{th} group's population share

The difference in values between S_{jh} and S_{jp} denotes the inequality. The greater is the difference, the greater is the inequality. The use of ID has some limitations as the independent variables or the classification of population groups such as socio-economic status must be done in nominal terms or in ordinal scale only. Moreover, making comparison with the average values of the reference group cannot be used in measuring the difference in deaths or illnesses. We also do not make improvements for those groups whose average values are higher than the reference values, improvements should be made only for those groups whose average values are below the average values of the reference group.

(v) ***Concentration curve and concentration index (CI/C).*** The CI/C_is used to indicate the inequality in health of a group or of an individual in comparison with its or his socio-economic status. The curve and the index can be used with other healthcare variables (van Doorslaer et al., 2006). Concentration curve indicates the relationship between health status and socio-economic status. The vertical axis represents cumulative percentage of health status while the horizontal axis represents cumulative percentage of households or individuals ranked by socioeconomic status or income. Each axis starts from the origin which represents the lowest status (poorest) and moves towards the highest status (richest). If health variables are distributed equally among different socio-economic groups, the concentration curve would be the same as the diagonal line, or the equality line. On the other hand, if health variables are not distributed equally with the health status variable has higher value for the lower socioeconomic groups, the concentration curve would lie above the diagonal line, and vice versa. The distance between the diagonal line and the CC reflects the existence of inequality. The greater is the distance the greater would be the inequity.

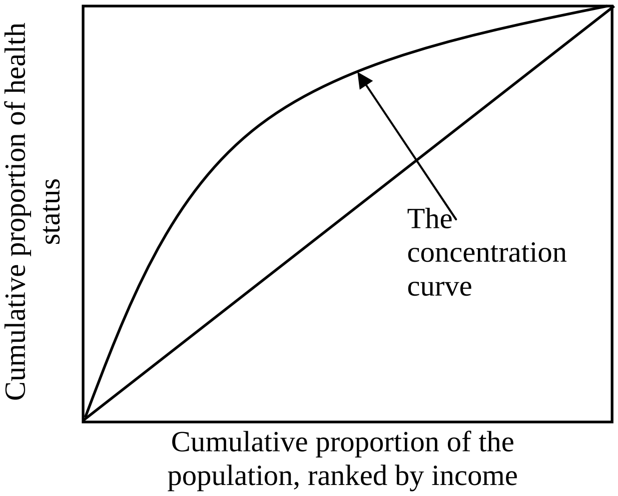


Figure 2.3 The concentration curve

For the concentration index, it can be calculated from the area between the concentration curve and the diagonal line using the following formula.

$$C = \left(\frac{2}{n\mu}\right)\sum_{i=1}^{n} h_i R_i - 1$$

When h_i : health variable of the i^{th} individual

μ : average value of h

R_i : the i^{th} ranked individual in the socioeconomic distribution form the most disadvantaged (i.e. poorest) to the least disadvantaged (i.e. richest)

n : number of households or individuals

The value of concentration index lies between –1 and +1. If there is no relationship between health status and socioeconomic status, or no socioeconomic related inequality, concentration index would have the value of 0. Negative values imply the concentration of health variables in disadvantaged groups of people with concentration curve lies above the diagonal line. Positive values imply the opposite. The digit number of the index indicates greater or lower inequality.

Since the word 'health' means not only physical condition or illness, but its meaning also extends to cover factors affecting the health status of individuals such as the availability of health insurance scheme, waiting time to receive healthcare, distance between home and health center (Anand, S. et al., 2001), the tools used in measuring inequality in healthcare as discussed above would therefore be employed to measure the equity in access to healthcare in this study.

(2) Measurement of equity in healthcare

Equity in healthcare are often measured with two approaches. The first is to measure healthcare delivery. Tools generally employed in measuring healthcare delivery include Le Grand's technique of the direct standardized approach of horizontal inequity and the indirect standardized approach of horizontal inequity. Details of these two methods would not be presented here as this study does not cover healthcare delivery. The second way of measuring equity in healthcare is through health financing. This approach views whether individual or household spending on healthcare is in accordance with the principle of ability to pay or not. According to this principle those with higher income and therefore higher ability to pay should contribute more to healthcare. Those with lower income and therefore lower ability to pay should pay less. In other words spending on healthcare, if measured, should be found to be progressive to income. The concept of equity in this approach is therefore vertical equity. The technique generally used to measure equity through health financing is Kakwani's progressivity index (van Doorslaer et al., 1993; Morris et al., 2007; Supasit & Direk, 2544).

Kakwani's progressivity index (π_K) is used to measure the difference between health spending and ability to pay by comparing the distribution of financial burden on heath with the distribution of income among different income groups. Ability to pay may be evaluated from individual or household income, while spending on health is assessed from both direct and indirect expenditure. The tools used to indicate the distribution of ability to pay and the distribution of health spending are the Lorenz curve (C_y) and the concentration curve (C_p), respectively.

The Lorenz curve represents the relationship between accumulative percentage of individual or household income and accumulative percentage of population, ranked by income in order from the lowest to the highest. The concentration curve indicates the relationship between accumulative percentage of payment for health and cumulative percentage of population, ranked by income. (Figure 2.4)

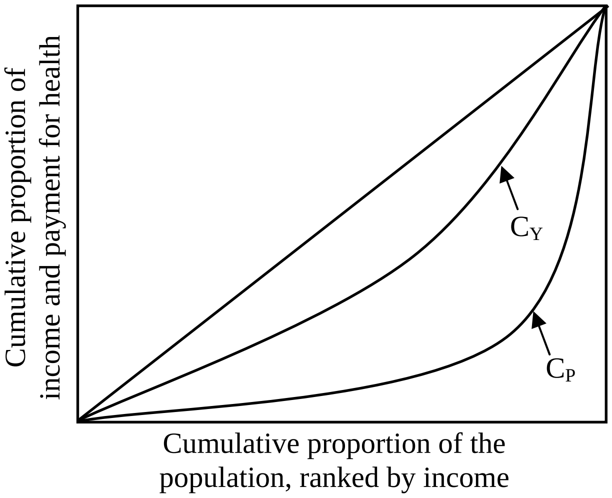


Figure 2.4 The Lorenz curve and the concentration curve for healthcare payment

If payment for healthcare is progressive to income, or it increases proportionally with incremental increase in ability to pay the C_p would lie below the C_y (Figure 2.4). However, if payment for health is regressive to income or it decreases proportionally to incremental increase in ability to pay, the C_p would lie above the C_y. When payment for health increases as a constant proportion of income, or when different individuals or households with different ability to pay but have the same proportion of health payment, the C_p and the C_y coincide.

Kakwani's progressivity index (π_K) can be calculated from the area between the C_p and the C_y, using the following formula.

$$\pi_K = C - G$$

When C : concentration index for health payments
G : Gini coefficient

A positive value of Kakwani progressivity index indicates that healthcare spending is progressive to income and it implies that poorer people bear smaller burden of healthcare spending than richer people. On the other hand a negative value indicates that healthcare spending is regressive to income or poorer people have to carry bigger burden on healthcare than richer people. The value of Kakwani's progressivity index lies between –2 and 1. The index with value of –2 means that the poorest household have to bear all healthcare spending burden and all income accrued to only one household (C = – 1, G = 1). If it has a value equal to 1, this means that the richest individual or household has to carry all healthcare spending, and income is equally distributed among households (C = 1, G = 0). The index with value equal to 0 indicates healthcare spending is of proportionality to income. However, it should be noted that the index may have value equal to 0 when the C_y and the C_p intersect, the use of graphical picture is also important here.

It is important to note that in using the tools discussed above for the assessment of equity, the results obtained are actually derived from a set of complex and multidimensional data of a very large sized sample which are then presented in numerical terms. Therefore, not all the important aspects of equity can be covered. Moreover, as it has been shown earlier that it is difficult to define the term equity itself, the use of these calculated indices to assess equity during a given period of time has to be done with great care.

2.4 Related studies

Due to the fact that the concept of access is multidimensional, most studies on the access to the ART normally focus on one of its dimensions (Ricketts &

Goldsmith, 2005; Allin et al., 2009) whether it is the aspect of availability, affordability, or acceptability. Most studies are found to concentrate on the aspect of utilization rather than access itself. Quantitative studies, especially on affordability are mostly found, while qualitative studies on acceptability are found to be rather few. In the studies on equity, a majority of them are on horizontal equity i.e. equal access for equal need using different groups of people classified by sex, age, education level, income, residing locality, or ethnicity, as indicators of equity in access to the ART.

2.4.1 Equity in ART utilization

Most studies on equity in ART utilization rely on data obtained from various data bases such as socioeconomic survey, registration role of patients, or specific data base of individual countries. In these studies comparisons are made between different groups of people classified by gender, age, education, socioeconomic status, and health insurance scheme.

On the issue of sex and ART utilization, most studies show that females are found to utilize the ART more than males. Examples of the studies with these similar results include the study by Muula et al., (2007) which uses data obtained from an electronic base available between 2000-2006 on the issue of sex and ART (HAART) in South Africa; and the study by Nattrass (2008) which uses data from the South African Demographic and Health Survey. In this study, using regression analysis, the results of the study show that more males are HIV/AIDS infected than females but the utilization of the ART (HAART) is found to be less among the men with statistical significance. The explanation offered for this finding is that it could be due to social norm that men should not show their weakness and therefore do not want to receive the treatment. With similar results is the study by Le Coeur et al. (2009) conducted in Thailand. This study employs data collected from interviewing a sample of 513 HIV/AIDS patients who is at least 18 years old in 4 community hospitals in Chiang Mai province. The results show that more women receive the ART then men despite the fact that in Thailand more men are infected with HIV/AIDS than women. The explanation given for this finding is that it is partly due to the focus of the healthcare system on pregnant women. The study also reveals that men patients start the ART when their CD4 level is much below than that of their female counterparts.

On the issue of age and education, differences among different groups of people are also found. The study by Smith & Kirking (1999) on a sample of outpatients in the U.S.A. using available data from the AIDS Costs and Services Utilization Survey (ACSUS) during 1991-1992 and the Andersen Behavioral Model of Health Services Use with logistic regression analysis, reveal that females in the age group of 15-24 years have lowest utilization of the services than other groups in the sample with statistical significance. In another study by Loubiere et al. (2009) on HIV/AIDS patients using data from data base of patients in Cameroon with the use of logistic regression analysis and multivariate analysis, the results of the study show that out of 2,566 patients in 14 central hospitals and 13 district hospitals who fall within the criterion of having to receive the ART, male patients with primary education have a tendency to receive the ART from central hospitals at lesser proportion.

Moreover, the study by Andersen et al. (2000) which focuses on vulnerable population groups of HIV/AIDS infected persons in the U.S, using behavioral model of health services use in order to find out what are the predisposing factor, enabling factor, and need which can be used to explain the utilization of the ART. The data for this study are obtained from a sample of 2,776 infected adult persons covered in the HIV Costs and Services Utilization Survey (HCSUS). Independent variables which are used to define the vulnerable population groups are being female, drug users, ethnic minorities, and low level of education. Dependent variables are having received the ART or not having received the ART before December, 1996. Multistage logit regression analysis is used in this study. The results of the study show that predisposing factors are being female, drug user, African American, and low level of education.

Socioeconomic status is also often used in equity assessment of healthcare. The results of the study by Wood et al. (2002),on the relationship between socioeconomic status and access to the ART in British Columbia using data from a sample of 1,408 ART patients with Cox model of analysis, show that those who are in low socioeconomic strata based on income tend to utilize the ART less than other groups do. Similar results also found in the study by Morales, Cid Pedraza, & Souteyrand (2003) which is carried out in Chile using data from a sample of 799 individuals obtained from a survey of HIV/AIDS patients during the period of December, 2000 to March 2001. It is found that those with higher socioeconomic status or with per capita income greater than $100 tend to utilize the ART. Those who do not receive the ART tend to be in the alcohol and drug users groups. The study by Cleary et al. (2011) on the equity in the utilization of the ART in public hospitals of urban areas in South Africa, using data from socioeconomic survey and from a survey on sex in HIV-positive adults, show that out of 635 ART patients in 6 government run hospitals who are at least 18 years old, 67% of them are female and 40% of them are in the lowest quintile income group. The results are consistent with the fact that the majority of HIV infected individuals in Africa are female who are in the lowest socioeconomic strata or are local natives of Africa.

On the issue of health insurance and the utilization of the ART, the results of the study by Kitajima et al.,(2005) on the utilization of the ART among HIV/AIDS patients in Khon-khan province using data from medical charts of a sample of 593 persons during December, 2001 to February, 2002 reveal that those patients who are covered under the Civil Servant Medical Benefit Scheme and under the Social Security Scheme have much higher chance of 12.43 times higher to receive the ART than those who are covered under the Universal Coverage Scheme. The results of the study also show that sex factor has no impact on the utilization of the ART. The results of the study by Lillie-Blanton et al. (2010) on the utilization of the ART among 1,354 HIV patients in 2005, using data obtained from the Women's Interagency HIV Study (WIHS) and with the use of Logit regression analysis, show that female patients who are African American or Hispanic have a tendency to utilize the ART less than their white counterparts. When the issue of race/ethnicity is not taken into account, the study shows that women who are not covered by any health insurance or who have insurance with private firms tend to utilize the ART less than those who are covered under the Medicaid.

2.4.2 Equity in access to the ART

Studies on the equity in access to the ART, most are found to be on the supply side or the availability of the service with quantitative methods of assessment. Most of these studies focus on the components or barriers to access on the issues of availability and affordability. The notion of acceptability, which is more of qualitative nature, is often missing or not covered in these studies. Studies on the equity in access to the ART among different groups of people are found to be quite few, especially in the case of Thailand. Most studies on Thailand are on the barriers or factors affecting access to the ART. In comparing access to the ART among different groups of people, comparisons are normally made regarding to sex, socioeconomic status, locality of residence, and health insurance scheme.

The supply-side

Studies which focus on the availability of service are based on the assumption that potential access can be transformed to realized access. Most studies are therefore directed towards that direction of focusing on potential access rather than focusing on realized access. Studies on access to the ART are mostly found to be on the supply side or the availability aspect of access, especially on the supply of health resources. Examples of studies of this nature include the study by Carmody et al. (2003). This study assesses the availability of ART in public health centers in the city of Rio de Janiro in the year 2000, using medical record data of 64 patients. The results of the study show that there are some patients who miss ART for more than one month due to insufficient supply of the drug at these health centers. Similar study in Chile by Morales, Cid Pedraza, & Souteyrand (2003), using data from 799 HIV infected patients. Structural interviews with these patients and related health personnel are conducted. The results of the study show that the problem of drug shortage do occur and it is solved by reducing the use of drug in each treatment leading these patients to come for treatment more often and therefore more expenditure for them as well.

Besides the problem of drug shortage, shortage of health personnel is also found. An example here is a case study in Thailand (Community

Medicine Department, 2004). The study is on the overall picture of Access to Care (ATC), a project on healthcare service development and monitoring system for HIV/AIDS patients in 6 provinces of Northern Thailand (Chiang Mai, Lamphun, Lampang, Chiang Rai, Phayao, and Mae Hongson). Clinical data from 15 provincial hospitals covered in the project in 2002 are used along with observations and interviews of some health personnel as well as 100 patients under the ART, the results of the study show that on the issue of access to the ART the problems related to the shortage of health personnel are found during the time of study with problems related to shortage of ARV drugs found in some periods of the study.

Distance between home and healthcare center poses as another barrier to access of the ART. The review of studies relating to this issue from electronic data bases of the period 1996-2007 in developing countries carried out by Posse et al.,(2008) using Andersen and May framework, shows that the problems relating to healthcare system include distance between home and healthcare center, lack of coordination between different services, and constraints on planning process within community.

Besides the distance factor, healthcare centers' time of services is also found to be an obstacle on the access to the ART. The review of studies on the barrier to access of the ART in areas with constraints on resources by Bartlett et al. (2009) shows that besides the problem of drug supply shortage in some periods, normal period of working time during which healthcare services are given is found to be another barrier to access of the ART. The service time is found not to be suitable for some patients who have to work and therefore have to lose their earnings in receiving the treatment.

The demand –side

On the demand-side, most studies focus on the affordability dimension of access to the ART, with consideration on both direct and indirect costs of receiving treatment. In some studies, the cultural issue or the acceptability dimension is also studied. A good example here is the study by Mshana et al. (2006) on the barrier to access of the ART in the town of Kisesa, Tanzania. This study employs qualitative technique of having a series of conversations with 16 groups of HIV/AIDS patients who openly admit that they are infected with the disease as well as holding in depth interviews with 18 HIV positive persons and some healthcare providers. The results of the study show that for most, the main obstacles to the access of the ART are their worries about travelling costs and spending on food to receive the treatment as well as other difficulties that may arise as they have to continue receiving the treatment till the rest of their lives. They are also afraid of not being socially accepted and therefore do not want to reveal themselves. A similar study in Uganda is carried out by Duff et al. (2010) on the access and acceptability of the ART among HIV positive women who use the care provided by the Ugandan Kabarole Districts's Programme for the Prevention of Mother to Child Transmission-Plus (PMTCT-Plus). The study employs qualitative technique of thematic analysis using in depth interviews with a sample of 45 HIV positive mothers, the results of the study show that economic factor poses as the most important obstacle to the access of the ART, especially costs of travel to receive treatment. Other barriers include waiting time at healthcare center and social stigma.

Cultural issue or the acceptability issue, including the perception on the quality of service provision may also be considered as an important factor hindering access of the ART. A study in the U.S. carried out by Kinsler et al. (2007) on 233 low income HIV positive individuals in Los Angeles show that one in four of these people think that they do get social stigma from medical teams. This therefore leads to low access to the service among them. Another study on the barrier of access to the ART is carried out by Chakrapani et al. (2008) among marginal social groups in India. In this qualitative study, data are collected by group interviews from different population groups of prostitutes, drug users, homosexual men, and Hijaras or transgender women. Interviews with 12 NGOs and community based organizations: CBOs are also made. The sample size of this study is 72 in total. Aday and Andersen's concept of access is used in the analysis. The results of the study show that at individual level, the problem hindering these people's access to the ART is their worries on the side effect of the ART which in turn reflects lack of proper information on the use of ART. Other barriers found include the perception of social stigma and discrimination from health personnel, especially among the group of HIV/AIDS prostitutes.

The study carried out by Genberg et al. (2009) is on the issue of stigma and discrimination using basic data from the U.S. National Institute of Mental Health (NIHM) Project Accept in 4 countries i.e. Tanzania, Zimbabwe, South Africa, and Thailand. Logistic regression models are employed in this study to find out the relationship between negative attitude and perception of discrimination in the past on one hand with knowledge and understanding on ART on the other hand. The results of the study show that negative attitude is found to be related to areas where knowledge on ART is lacking with no provision of information on the issue of HIV/AIDS. The negative attitude is found more in areas where HIV prevalence is lowest while the perception of discrimination is found more in areas where the ART coverage is low.

Comparative studies on access to the ART among different groups of people

The studies on equity in access to the ART among different groups of people normally use socioeconomic status and locality of residence as bases for comparison.

On the issue of **residing locality**, it is found that the groups of people who live in remote areas or in rural areas are met with higher costs of access to the ART than other groups of people. A study on equity in access to the ART in Malawi, Africa in the year 2006 was conducted by Ntata (2007). Qualitative technique is employed in this study through interviews with related individuals and focus groups from both sides of healthcare personnel and HIV/AIDS patients. The results of the study show that people living in remote areas far from healthcare centers do encounter problems of high travel costs to receive the ARV drugs each month each as well as difficulties relating to travel distance itself. Moreover a number of patients are found not to understand the details of the ART well, whether they are about ARV drugs use, or about payment for the ART that it is available free of charge. On the side of service providers, the problems encountered are mainly related to supply shortages such as health personnel or tools and equipment. A similar study was carried out by Makwiza et al. (2009) also conducted in Malawi. The study synthesizes the results of various studies. Qualitative approach is used in this study by interviewing relating health personnel. In depth interviews with HIV patients, those who are still under the ART and those who have exited the ART, and focus group technique are used to obtain the data for the study. The results of the study show that the provision of the ART free of charge results in more people come forward to receive the treatment. For those who receive the ART, 61% of them are female. Problems relating to access are still found, especially among low income people living in the rural areas due to their high opportunity and travel costs.

A study on equity in access to the ART in Ethiopia is carried out by Mekonnen et al. (2010). The study employs qualitative technique of focus group and in depth interviews with both HIV patients and relating health personnel in 9 healthcare centers. The results of the study show that the barriers to access of the ART at individual level include the patients' uncertainty whether they can continue the treatment for a long time, and their fear of ARV drugs side effects. At community level, the barriers to access of the ART are found to include the patients' fear of social stigma and therefore do not want to reveal themselves. For the whole health system, the barriers are found to lie in high indirect costs which include costs in travelling, time waiting to receive the treatment, especially in large hospitals, as well low income groups' spending on drugs for opportunistic infections. Problems relating to shortage of health personnel and tools& equipment are also found to be important obstacles to access of the ART. However on the issue of equity in access to the ART, the study finds that the focus on universal access for all policy results in more access to the ART among the poor and the marginalized, but urban people are found to have more access to the ART than the rural people still.

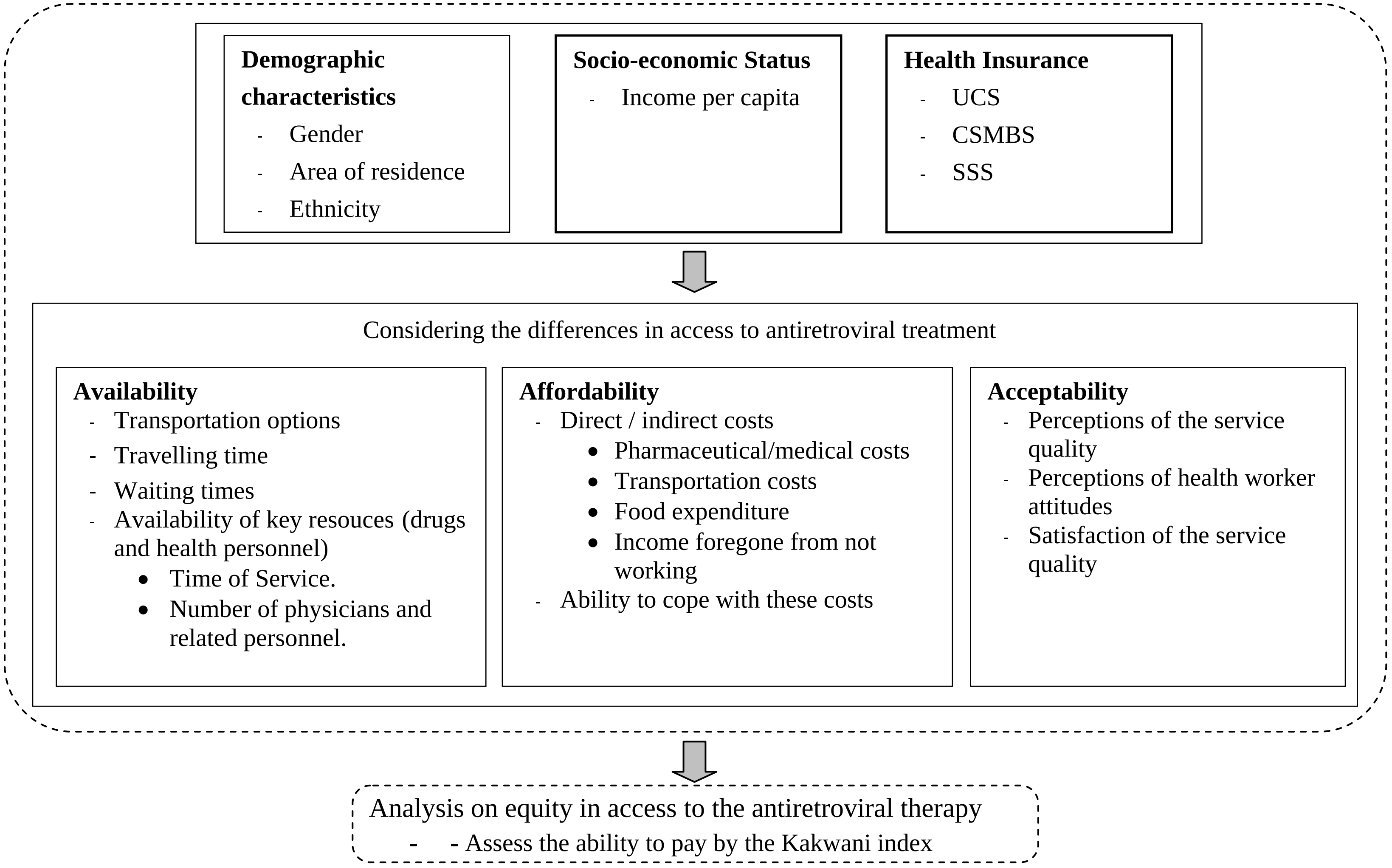
Besides locality, **socioeconomic status** is also used as basis of comparison in some studies. A good example here is the study on the issue of equity in access to the ART by Armstrong (2010) which is carried out in the rural area of Lesotho, Africa. In this study healthcare personnel are interviewed and quantitative method is used to analyze the data of those patients who are under the ART. The results of the study show that from the point of view of healthcare personnel, there is equity in access to the ART as decisions to provide the treatment is made on medical criteria only and see that the problems relating to equity arise from the patients' side as HIV patients who come from low income groups and live in rural areas have higher chance of not receiving the treatment than other higher income groups. Another comparative study on barrier to the utilization of the ART in Nigeria is carried out by Okolil and Cleary (2011). The study employs the concept of access developed by Thiede and Mcintyre in comparing differences in access to the ART between the poorest and the least poor groups of people using asset index as criteria of classification. A total of 240 data samples are collected from 2 healthcare facilities, one urban and one peri-urban. The results of the study show that on the issue of availability, the poorest feel that they have to spend longer time for the service than the other group. On the aspect of affordability, the poorest are found to have higher travel costs than the other group, while on the issue of acceptability, the least poor think that they do not receive as good the service as the poorest.

In conclusion, studies on access to the ART may be classified into 3 groups. The first group of studies comprise of those which focus on equity in the utilization of the ART. The second group comprise of the studies on the problems or obstacles in access to the ART. The third group comprise of those studies on equity in access to the ART. In the studies on equity in utilization and in access to the ART, factors which are found contributing to the differences in utilization or in access to the ART are sex, age, education, socioeconomic status, locality of residence, and type of health insurance. Studies on the problems or obstacles in access to the ART are found to focus on different issues of access. The problems on the supply side include resources constraints, distance too remote, and service giving time. On the demand side the problems include costs relating to getting treatment such as spending on travel and food and income foregone, as well as cultural factors such as social stigma and discrimination.

2.5 Study framework

Access to the ART is part of the whole process of healthcare provision for HIV/AIDS patients. The concept of access can be viewed in many dimensions. In this study, it is considered in three dimensions of availability, affordability, and acceptability as proposed by Thiede et al. (2007) and McIntyre et al. (2009). Each of these three dimensions can be clearly assessed. On the availability aspect, assessment is to see whether the existing healthcare system is appropriate to need in terms of locality and service time or not. Travel options, travel time, time waiting to receive treatment, and supplies of resources (such as drugs and health personnel) are assessed. On the affordability, the degree of fit between total costs of treatment and ability to pay is to be assessed. The total costs of treatment is to be evaluated from both direct and indirect costs such as spending on drugs/medical service, on travel and food, income foregone from not working, and waiting time to receive treatment. Ability to pay would be assessed from ability to cope with the expenditure incurred from receiving treatment (sources of income). Acceptability would be studied from the degree of fit between attitudes and expectations among healthcare personnel and HIV/AIDS patients. It is also to be assessed from the patients' satisfaction and perception toward the efficiency of healthcare service as well as the patients' perception of the attitudes of healthcare personnel toward them.

From the literature review on the analysis of the differences in access to the ART, it may be concluded that issues used in assessing equity in access to ART are mainly related to population characteristics such as sex, age, residing locality, ethnicity, socioeconomic status, and type of health insurance. In studying each of these issues, any difference found is to be reflected in the analysis on equity in access to the ART. The analysis is based on the concept of equity that those with lower ability to pay should pay less.



Demographic characteristics
- Gender
- Area of residence
- Ethnicity

Socio-economic Status
- Income per capita

Health Insurance
- UCS
- CSMBS
- SSS

Considering the differences in access to antiretroviral treatment

Availability
- Transportation options
- Travelling time
- Waiting times
- Availability of key resouces (drugs and health personnel)
  - Time of Service.
  - Number of physicians and related personnel.

Affordability
- Direct / indirect costs
  - Pharmaceutical/medical costs
  - Transportation costs
  - Food expenditure
  - Income foregone from not working
- Ability to cope with these costs

Acceptability
- Perceptions of the service quality
- Perceptions of health worker attitudes
- Satisfaction of the service quality

Analysis on equity in access to the antiretroviral therapy
- - Assess the ability to pay by the Kakwani index

Figure 2.4 Study framework

CHAPTER III

RESEARCH METHODOLOGY

This is a study on the equity in access to the antiretroviral treatment using both quantitative and qualitative analysis. The quantitative study used a questionnaire to see the social and economic status, the alternative available for treatment, the form of available service, both direct and indirect expenses on the service, and also the overall satisfaction and perceived quality of service. For qualitative part, to see the problems or obstacles of accessing of antiretroviral drugs and perceptions and satisfaction with services, an in-depth interviews and observations were carried out with those involved with providing services and the HIV carrier in Chiang Mai.

3.1 The quantitative part

3.1.1 Hypothesis

To study the differences in accessing the antiretroviral treatment, a case study of Chiang Mai, technique of Thiede et al. (2007) and McIntyre et al. (2009) were employed by looking at the 3-Dimensions; Availability, Affordability and Acceptability; by evaluating the differences of accessing into the antiretroviral treatment along the different group of populations. The framework is as follows.

1. The characteristic of the population

1.1 ***Gender***: The gender difference caused the difference opportunities of accessing into the services. Similar results were found by others such as the Muula et al. (2007) Nattrass (2008) Le Coeur et al. (2009) and Loubiere et al. (2009). They found that female had less opportunity than male while at of Smith and Kirking (1999) and Andersen et al. (2000) found that males had more opportunity accessing into the services. This might depend on the structure of health care providing or social and cultural differences.

1.2 ***Residential area***: The differences in the residential area of HIV patients caused the different opportunities to the accessing of the services. As Ntata (2007) Makwiza et al (2009) Mekonnen et al. (2010) found that people with HIV who lived in rural areas had less opportunity of accessing than those who lived in urban areas.

1.3 ***The ethnicity***: By the difference of the ethnic background, especially among minorities in society, might cause the different opportunity in accessing the services. As reported by Andersen et al. (2000) and Lillie-Blanton et al. (2010), they found that black people in America had less chances to access to antiretroviral drugs while Cleary et al. (2011) found in public hospitals in Africa, it was seed that local African had more chances to access into the antiretroviral drugs.

2. **Socioeconomic status**: The differences in socioeconomic status might cause the different opportunities to access the service. Many studies such as the work of Wood et al. (2002) Morales et al. (2003) Armstrong (2010) and Cleary et al. (2011) reported that the HIV patients with low economic status had less chance to access into services.

3. **The type of health insurance**: The different type of health insurance might cause the different chances of accessing into the service. The work of Kitajima et al. (2005) found that HIV patients who owned public welfare had less chances of accessing into the antiretroviral drugs than others with health insurance. Lillie-Blanton et al. (2010) found that the HIV patients in the Medicaid system had more chance to access the service than those who had no health insurance or had health insurance provided by private agencies.

3.1.2 The population and samples

Population of this study were targeted on the HIV/AIDS patients at the age of 20 to 49 since these group of people are in the reproductive age and as they were the majority of the HIV patients both in Chiang Mai and Thailand. These people had received the service for more than six months period and they would keep access the service continuously. And it’s targeted to study with the group had received the first line or formula of drug and it’s the formula defined by the national treatment (as shown in Table 3.1) as preferred type. The second or third set or formulas of drug users were not included since the configuration of services was too complicated and the drugs were very expensive.

Table 3.1 Primary and alternative antiretroviral therapies in Thailand

NRTIs	+	**NNRTIs**	in case of side effect → derived from NNRTIs	**PIs**
Preferred		EFV NVP		***Preferred***
AZT + 3TC TDF + 3TC/FTC				LPV/r
Alternative				***Alternative***
ABC + 3TC d4T + 3 TC ddI + 3TC				ATV/r DRV/r SQV/r

Source: National Guideline for Treatment of HIV/AIDS Patients, 2010

The record, from the year 2010 project on the development of the quality of service of Thailand who took care adults and children with HIV, indicated that the number of the hospital rose to 27 and the number of the patients who received the antiretroviral drugs was 6,150. In this study, the size of the sample was then calculated as Yamane (1973) suggested and the limit of error at 5% as follows.

$$n = \frac{N}{1 + Ne^2}$$

When n is sample size of HIV/AIDS patient receiving antiretroviral therapy

N is size of the population infected with HIV / AIDS receiving antiretroviral therapy.

e is the discrepancy which is set to be equal 5%

so

$$n = \frac{6{,}150}{1+(6{,}150)(0.05)^2}$$

$$= 375.57$$

As a result, the number of samples was supposed to be 375.57 with 95% confidence level, however, researchers decided to rise to 400 samples.

The Researcher had been working with a network of HIV/AIDS infector in Chiang Mai and asking them for the data collection using purposive sampling by considering the number of people infected with HIV/AIDS along with the cooperation of the involved people. 8 districts were selected from the total 25 district of Chiang Mai which were San Kamphaeng, San Pa Tong, Doi Lo, Hod, San Sai, Mae Taeng and Chiang Dao. And 50 samples in each district were collected.

The data collection in each district, the accidental sampling method was used. The patients who were treated at the clinic of the hospital or who went to visit the network of infected people in each district were selected. And in this study, the researcher had defined the characteristic of the sample as follows.

1. Males and females aged 20 – 49 years who underwent the treatment with antiretroviral therapy in the hospital for at least six months since it’s a period of time that people with HIV/AIDS would keep receiving the antiretroviral therapy with first line drug, which was the basic formula.
2. Patients with in Prevention of Mother to Child Transmission (PMTCT) Program were not included because pregnant patients were taken care and follow-up specifically. It has also been taken to prevent HIV infection to the newborn. This study would be considering only those infected with HIV/AIDS in the normal condition.
3. The samples were informed their rights and they were willing to be interviewed.
4. The sample could communicate and understand Thai well.

The data showed that some of the information was incomplete and with the limited of time, the number of samples was 380. However, it was still under the 95% confidence level.

3.1.3 Research instrument

Tools used in this research were the kind of both open and closed end questions. The queries were created to meet the objectives of the study. The process of implementation as follows.

1. Studying of literatures and papers and reviewing of theoretical studies and related research. As well as taking advices from experts and professors.
2. The scope of the query for questionnaires and the variables associated with the conceptual framework for the study were defined.
3. The query that covers the study was created and divided into three parts as follows.

Part 1: General information on the demographic and health coverage, including gender, age, marital status, education, housing, income, and the type of health coverage. Both multiple choice and fill in the gaps types of question were created.

Part 2: The health status and exposure to antiretroviral drugs which were multiple choice question and filling in the gaps were created to collect the data of duration of HIV infection, the viral load, the level of CD4, the duration of receiving antiretroviral treatment, the type of drugs, and reason of changing the type of the drug, the side effects of taking drugs, alternative treatment, and the right to medical care.

Part 3: Information about medical services and other expenses which aimed to see the accessible to the service considering from the following 3 aspects.

1) ***Availability***: This was considered in terms of location, time and the available resources. It was estimated from how to get to the hospital

(Public transportation, personal car/truck, motorcycle, bicycle, friends' car, and on foot. The distance from home to facility was measured in kilometers. The duration of the trip was measured in minutes. The period of waiting for service was measured in minutes and to see the adequacy of resources from their opinion on their experience of not receiving drugs, on the service providers and the timing of service by the provider.

2) ***Affordability***: It was measured from the form of payment made by the patient and source of funds for expenditures incurred which included costs, both direct and indirect costs of the service. The direct one was the cost of the drug / medical costs and traveling expenses, food expenses. And the indirect cost was calculated from the income lost due to lack of chance of working and time spending while waiting for service as follows.

Income lost = (the time spending on waiting for the service)
× (the estimated income if they went to work)

The ability to cope with the expenses incurred considered from the source of money to spend which involves with the income from working, the savings, the loans, and helps from their relatives.

3) ***Acceptability***: This was evaluated form the opinion on the maintaining of the confidential of patients, the perceptions of the patients on the efficiency or quality of service, the perceptions of patients treated by the service providers and the satisfaction on overall service.

On the confidential issues, it was tallied whether it's good or not. The perception performance or quality of service received, the total of 12 questions were created to see whether they received or not. As a result, the total score ranges from 0 to 12 and the researcher interpreted for the perception of the patients on the quality of service as follows.

Score 0 – 6 = service quality is low
Score 7 – 9 = service quality is moderate
Score 10 – 12 = service quality is high

In terms of the negative perception on the treatment of service providers, it was designed to see whether the patients were harassed, ignored, harsh tone of voice, etc. 7 ratio scale questions were created and weighed as follows.

0 = have never felt or been treated
1 = have felt or been rarely treated
2 = have felt or been moderately treated
3 = have felt or been frequently treated

The total score ranges from 0 to 21 points and the interpreting the negative perception of the service provider was as follows

Score 0 – 7 = have felt or been rarely treated in negative way
Score 8 – 14 = have felt or been moderately treated in negative way
Score 15 – 21 = have felt or been frequently treated in negative way

In term of the satisfaction on the service, it was designed to measure time spent on waiting for service which supposed to be less than 30 minutes, the human relationship, the expression of the service provider, and information and recommendations provided. A 5 rating scale set of question was created and the rubric was as follows.

5 = extremely Satisfied
4 = very Satisfied
3 = moderately Satisfied
2 = dissatisfied
1 = very Dissatisfied

The interpretation of the satisfaction level of service was divided into 3 scales as follows.

Score 3.34 – 5.00 = highly satisfied
Score 1.67 – 3.33 = moderately satisfied
Score 1.00 – 1.66 = slightly satisfied

The respondents regarded as anonymous and confidential. In all, there was no record label or any other inscription of the respondents to the questionnaire. And only the research team met the respondents.

3.1.4 Validation of the questionnaire

The researchers had created a query based on the objectives of the study and suggestions from the review of the literature and related research. It then brought to the experts and professors to examine the accuracy and validity of the content. After that, the quality of the tool was examined by trying out with 30 HIV patients who met the qualification as defined to see the wording and the reliability. The reliability of the questionnaire in Part 3 was tested by using the coefficient alpha of Cronbach which was 0.78. For the negative perception on the performance of providers set of questionnaire, the coefficient alpha was 0.84. The coefficients were considered that the internal consistency reliability was acceptable and good, respectively.

3.1.5 Data analysis

1) ***The overview analysis*** of the general population, socio-economic status, type of health care coverage and access patterns (three different aspects which are availability, affordability, acceptability): Descriptive Statistics such as frequency, percentage, mean, standard deviation, maximum and minimum values were used to figure out these overall scheme.

2) ***The analysis of differences between population groups***: To see the differences in accessing to the service, three variables were tested including (1) demographic characteristics including gender, residential area and ethnicity. (2) socio-economic status which was assessed by levels of income and the sample was divided into five groups: the first group with the lowest income. The last group is the group with the highest income. To see the differences, only these two groups were analyzed or compared. And (3) the type of health insurance which was divided into 2 groups: the first group did not need to pay for both the cost of medical services and

health insurance, i.e. the patients who were under the Universal Coverage Scheme and the Civil Servant Medical Benefit Scheme. The second group was the group that must pay for the cost of medical services or health insurance including the patients who were under the Social Security Scheme and some others who participated in medical research or NAPHA Extension. To see the differences, the following testing was conducted.

- The transportation to the service location, adequacy of resources (drug or human services), source of money spending, opinion on the procedure of taking the service, time spent on waiting, service mind by the provider, decision-making, information service or advice. To see the differences, Pearson's Chi square was used to analyze.
- The time spent for transportation, waiting for service and costs, both direct and indirect, costs incurred. To see the differences, t-test was used to analyze.

3) ***Analysis of the equity in access***: To analyze of equity in access the service Kakwani index was used to evaluate the ability to pay along the theoretical framework that those who had low ability to pay supposed to have less ability to pay for their health.

The ability to pay was determined by income level of HIV/AIDS patients who received antiretroviral therapy. Expenditure was determined by both direct and indirect cost incurred for the services of a drug treatment which included of the pharmaceutical/medical services, expenses for travel, food and income lost due to lack of work or time spent in waiting for service.

The value of the Kakwani index ranges from - 2 to 1. The positive index reflecting that the expenditure is in line with the ability to pay. A negative value indicates that the expenditure is in the opposite direction with the ability to pay. This reflects the unfair accessing.

The researcher used computer software ADePT (ADePT: Software Platform for Automated Economic Analysis) to calculate Kakwani index which was developed by the World Bank.

3.2 The qualitative part

In-depth qualitative research was conducted to complement quantitative part in order to precisely or specifically cover the material. As suggested by Thiede, Akweongo and McIntyre (2007), in-depth interviews with the sample was carried out to see that they used to face problems such as having problem for taking drug, no drug available, unable to change drug or modify drug plan. Those findings found from the prior survey interview in order to obtain more precise information. The leaders of the HIV-positive Network, and the service providers (doctors and nurses) in San Pa Tong hospital were interviewed see the overview of service, the existing problem for giving service and also the perspective of the service providers on the equity in access to ART. Observation by the researcher was also made in the study area.

The researcher has taped and recorded while interviewing. The in-depth interview covered all three issues related to access as targeted. The data obtained from both HIV/AIDS patients and the service providers were then analyzed and presented in conjunction with the analysis of quantitative data in order to visualize the problems and obstacles met by both demand and supply sides and also to get views on the issue of equity in access to ART.

3.3 Data collection

The data were collected as follows.

1. To request an approval from the Committee for Research Ethics (Social Sciences) of faculty of Social Sciences, Mahidol University.
2. Contact the HIV/AIDS Coordinator to clarify the purpose of research, ask permission for data collecting and courtesy of an appointment or get the HIV/AIDS patients to be interviewed using questionnaire.
3. The samples must be willing to consent to an interview by signing a permission form and the interviewer must ask the interviewee prior to every interviewing.

4. The quantitative data collected by the researcher and research assistants who were trained to know how to use the questionnaire and interview techniques. The data collecting was carried out during April – May 2012.

5. To collect data, the researcher introduced herself and clarified the objectives of the study to the interviewee and also clarified the rights and protection of the patients. The research team then started interviewing.

6. While collecting the quantitative data, the qualitative data was also collected when needed for complementary.

7. In-depth interview with the HIV/AIDS network leaders was run to discuss various issues, i.e. problems, systematic barriers to providing access to ART. The researcher firstly introduced herself and clarified the objectives of the study and then asked for cooperation and informed their rights and protection. After permitted, the research team then started interviewing.

8. In-depth interviews with doctors and nurses, in San Pa Tong Hospital, responsible for providing antiretroviral drugs were carried out case by case. The interview conducted on various issues, i.e. problems related on service providing and the issues of equity in access to ART. The researcher firstly introduced herself and clarified the objectives of the study and then asked for cooperation and informed their rights and protection. After permitted, the research team then started interviewing.

9. After the data has been collected, the interviewer examined the details, accuracy and completeness of the questionnaire immediately after the interview to see if the data was completed. All collected data immediately brought back that day for analyzing.

CHAPTER IV
RESULTS

This research aimed to study the equity in access to antiretroviral treatment, which collected data from questionnaires from 380 HIV/AIDS patients during April – May 2012. In-depth interview was also conducted with the HIV patients and the service providers such as the leaders of the HIV-Positive Network, medical service providers. The study was divided into three sections to present the overview of the study, the differences in access to ART among the patients and the analysis of equity in access to antiretroviral treatment.

4.1 Overview of the study

4.1.1 General demographic and socio-economic characteristics

The samples were selected from 8 district of Chiang Mai. The total number was 380. It is seen that 54.5% lived in urban areas and most of them were the local residents. Were only 2.1% of the samples were other ethnic, including Shan, Lisu and Lahu, with the proportion of females and nearly two-third, ages were in the range of 40 to 44 years and 45 to 49 years was about 31.8% and more than half of the sample with marital status. The education level of most samples was the elementary level.

The main occupation of the samples was employed as labor at the fraction of two-third. In particular, employment in agriculture area as a percent of 36.1, followed by employment outside the agricultural area percentage, 32.9, of which most of the offshore sewing, carving, or maid, with only 2 people that work in entertainment area. However, the number of samples that had unemployed was 19 cases with 14 cases identified as the cause of the problem of unemployment due to illness. Their prior job was working in manufacturing industrial or private firm staffs.

The income of the average sample per year was 63,850.74 baht, the lowest was 11,000.00 and the highest was 348,000.00 baht. The poorest group's average was 30,895.50 baht while the richest group had average income of 119,059.70 baht

Table 4.1 Demographic and socio-economic characteristics

	Number	Percentage
Residential area		
- Urban	207	54.5
- Rural	173	45.5
Ethnicity		
- Lowland Thais	372	97.9
- Others	8	2.1
Gender		
- Male	150	39.4
- Female	230	60.6
Age		
- 20 – 24 years	6	1.6
- 25 – 29 years	9	2.4
- 30 – 34 years	23	6.1
- 35 – 39 years	91	23.9
- 40 – 44 years	130	34.2
- 45 – 49 years	121	31.8
Mean = 41.19, Median = 42.00, S.D.= 5.63, Min = 20, Max = 49		
Marital status		
- Single	68	17.9
- Married	211	55.5
- Widow	87	22.9
- Divorced	14	3.7

Table 4.1 Demographic and socio-economic characteristics (cont.)

	Number	Percentage
Education attainment		
- Illiteracy	25	6.6
- Primary school	238	62.6
- Secondary school	74	19.5
- High school	38	10.0
- Diploma	4	1.1
- Bachelor degree	1	0.3
Occupation		
- General labor in agriculture area	137	36.1
- General labor outside agricultural area	125	32.9
- Merchant/ Business owner	46	12.1
- Agriculturist	25	6.6
- Factory worker	13	3.4
- Company worker	6	1.6
- Civil servant	3	0.8
- Housewife	5	1.3
- Unemployed	19	5.0
- students	1	0.3
Average income per month		
- Less than 42,000 Baht (1st quintile)	71	18.7
- 42,000 – 51,000 Baht (2nd quintile)	75	19.7
- 51,001 – 60,000 Baht (3rd quintile)	90	23.7
- 60,001 – 78,000 Baht (4th quintile)	73	19.2
- More than 78,000 baht (5th quintile)	71	18.7
Mean = 63,850.74, Median = 54,000.00, S.D.= 37,771.60 , Min = 11,000.00, Max = 348,000.00		

4.1.2 The status of health coverage, the HIV-Positive Network member, and antiretroviral therapy

It is seen that the health insurance status of most sample was Universal Coverage Scheme (UCS). For those who were not in Universal Coverage Scheme, they were in the NAPHA Extension and welfare assistance and 5 cases were under a research project which received assistance in the areas of antiretroviral treatment with no cost. However, the cost of medical services by 50 baht each treatment the patient needed to pay. In addition, the majority joined the HIV-Positive Network. It was found that only 13.4 % of non-members (Table 4.2), information from the depth interviews among the samples and the leaders of the Network reveal that those patients were not participating in a Network due to the fear of being despised by others and did not want to be known in the community. As an informant said,

> *"…I do not want to reveal because I have to work. I am afraid that other will disgust and feel uncomfortable!"*
>
> *"…Some patients still feel that the society is not acceptable. Still afraid of them and discrimination"*
>
> *"…New infected patients only reveal themselves to the doctor but not their friends or fellows; they still feel worried to be denounced"*

Table 4.2 Health insurance, and status of member of the HIV Positive Network

	Number	Percentage
Health insurance scheme		
- Universal Coverage Scheme (UCS)	333	87.6
- Social Security Scheme (SSS)	38	10.0
- Civil Servant Medical Benefit Scheme (CSMBS)	4	1.1
- NAPHA Extension	3	0.8
- Research program	2	0.5
Status of member of the HIV Positive Network		
- Yes	329	86.6
- No	51	13.4

The majority of the sample joined the Universal Coverage Scheme. They must be admitted to hospital as they had to (90.3%). The reason for choosing each service depended on how close to the workplace (65.8%), while existence of large hospital or medical experts seemed to be only 23.2%. They revealed that the medical expert and clinical services remains only in large hospital such as Nakornping, Maharaj Nakorn Chiang Mai and San Pa Tong Hospital. This indicated that the decision of choosing hospital depended on only the existing type of health coverage (Table 4.3).

Table 4.3 Hospital and the reasons for choosing

	Number	Percentage
Hospital		
- San Pa Tong	51	13.4
- Chiang Dao	50	13.2
- San Kamphaeng	46	12.1
- San Sai	40	10.5
- Jomthong	49	12.9
- Hod	33	8.7
- Doi Lo	51	13.4
- Mae Taeng	48	12.6
- Others	12	3.2
Reasons for choosing the hospital [a]		
- Health insurance coverage	343	90.3
- Close to the workplace/residential area	250	65.8
- Large hospital or medical experts	88	23.2
- Persuaded by someone else	35	9.2
- Others	3	0.8

[a] one or more items could be selected

Table 4.4 Period of infection, receiving antiretroviral therapy and CD4 level

	Number	Percentage
Period of infection		
- 6 months – 1 year	5	1.3
- 1 – 4 years	38	10.0
- 5 – 9 years	140	36.8
- 10 – 14 years	124	32.6
- 15 years and over	73	19.2
Period of receiving ART		
- 6 months – 1 year	17	4.5
- 1 – 3 years	55	14.5
- 4 – 6 years	94	24.7
- 7 – 10 years	192	50.5
- 11 years and over	22	5.8
Mean = 6.65, Median = 7.00, S.D.= 3.02, Min = 0.7, Max = 14.0		
CD4 level		
- Below 250 cell/mm^3	46	12.1
- 250 – 350 cell/mm^3	56	14.7
- 351 – 500 cell/mm^3	111	29.2
- Above 500 cell/mm^3	167	43.9
Mean = 497.31 cell/mm^3 , Median = 462.00 cell/mm^3 , S.D.= 219.82 cell/mm^3 Min = 102.00 cell/mm^3 , Max = 1360.00 cell/mm^3		

Considering the duration of infection, it is found that the majority of patients were infected for 5 – 9 years and 10 – 14 years with 36.8% and 32.6%, respectively. Half of the samples had been taking antiretroviral for 7 – 10 years and the average duration of receiving ART was 6.65 years. The majority of the samples had the CD4 level was above 500 cell/mm^3 (43.9%) and the average was 497.31 cell/mm^3. However, it was noteworthy that there were patients who had CD4 level fell below 350 cell/mm^3 the criteria for receiving ART was 26.8%, and if the CD4 level dropped below 250 cell/mm^3 which was also found for 12.1% (Table 4.4). Most of these patients with low CD4 level were the group that received drug for 6 months – 1 year (Table D -4 in Appendix) and the number of males was greater than females (Table D -5 in Appendix).

From in-depth interviews with medical providers, they revealed that the problem was the patients did not want to reveal themselves causing the delay of access. Moreover, many people were not willing to take a blood test or treatment. So, defining the level of CD4 would be successful if we could convince the patients to realize how important was blood checking or taking care. It was said that….

One said,…..

> *"…Actually, the trend is gradually improving but still not in a high level that the patients will be safe from starting the drug treatment. The patients actually came late was not about the system of service but they themselves felt to be unaccepted by the society if they were revealed."*

> *"…Many people have never had their own blood test. They did not aware or made aware of the risk. The patients actually enter the service system and having a high CD4 level must be realized of the spreading risk even the Ministry of Public Health has given a chance for blood testing every year. However, then number of people who have their blood tested to avoid the risk and for earlier treatment is still low."*

> *"…Entering to the treatment process with higher CD4 is the main issue is not on condition made by the NHSO of which the CD4 of 250 or 350 cell/mm^3. But it's the patient who must be aware coming to the process. Not after incurrent diseases came apparent and their getting worse with very low level of CD4, Those are the not about our 200-CD4 level, Typically, most patients came to us only when the CD4 level falls to 0 or 10 or 20 cell/mm^3. It's the patients' problem that they didn't realize or they might hesitate to come to us just because they felt that they don't want to be revealed to others. They made their own blocking from of early diagnosis or treatment."*

Table 4.5 shows that the formula of drug used by the present sample. It is seen nearly half the patients used GPO-VIR Z which was the fundamental formula. The next was TDF + 3TC + EFV / NVP formula which was 23.7% and this was a new type of drugs for the replacement of those drugs with d4T as a component which was mainly in the GPO-VIR S and when the symptoms was shown as defined[10], a change to GPO-VIR Z or TDF + 3TC + EFV / NVP formula would be made. However, it can be noted that the GPO-VIR S formula which was used by the patients as first time also had the d4T as a component with the number that was up to 17.2%. While the drug available for those who encounter the side effects of drugs among the NNRTIs (EFV or NVP) users or other alternative formulas were also quite a few.

Table 4.5 The usage of antiretroviral drugs

	Number	Percentage
Antiretroviral drug formula		
Basic formula		
- GPO VIR S	65	17.2
- GPO VIR Z	186	48.9
- TDF + 3TC + EFV or NVP	90	23.7
- Fixed-dose combination + EFV	10	2.6
Alternative formula		
- TDF+3TC+LPV/r	13	3.4
- AZT + 3TC + LPV/r	5	1.3
- ddI+3TC+NVP	3	0.8
- 3TC + ddI + LPV/r	2	0.5
- Others	6	1.6
Experience of changing drug formula		
- No	93	24.5
- Yes	287	75.5
1 time	*143*	*49.5*
2 times	*99*	*34.3*
3 times and over	*47*	*16.1*

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[10] Please see appendix B for more details

Table 4.5 The usage of antiretroviral drugs (cont.)

	Number	Percentage
Having side effects from taking ARV drugs		
- No	354	93.2
- Yes	26	6.8
Duration of the symptom		
Mean = 6.62 months, Median = 4.50 months, S.D.= 7.02 months		
Min = 1 month, Max = 36 months		
Reason for not having changed drug formula		
- No need to change	15	57.7
- Not included in the health coverage	1	3.8
- Waiting for approval from the doctor	4	15.4
- Be afraid of possible side effect from the new formula	2	7.7
- Had no idea	4	15.4
Have or never have received ARV drugs during the last five years		
- No	373	98.2
- Yes	7	1.8
Other alternative treatments		
- No	366	96.3
- Traditional medication	6	1.6
- Take some kinds of stimulant	8	2.1

GPO-VIR S includes of d4T + 3TC + EFV or NVP

GPO-VIR Z includes of AZT+3TC+EFV or NVP

From the in-depth interviews with medical experts found that the change for drug formula was a good choice but with the limitations of the number of drugs defined for the patients to use in Thailand was still small compared with other countries. So in the process of starting ART, physicians were often provided the first formula, GPO-VIR S, as the first formula and when the side effects of using drug revealed, more options would be available and they could change. Moreover, the side effects took a long time to occur. So, for a short term, they decided to use the drug that had few side effects first.

> *"…In case of d4T, the side effect was the transition of fat, acidosis which caused by the d4T. In other countries where there are many other options, this drug had been cancelled. We don't have many options if we are not to use this type of drug. For instances, in groups of d4 T, i.e. AZT ddI 3TC or TDF, some are allergic to AZT will be unable to use d4T. The choice is really up to 3TC is always used from the start. So when we cut away one type of drug and we cannot use the other drug because its toxicity, we don't have much choice. To cut out the drug seems to be inappropriate."*

> *"…The careful management of the drug usage does not cause side effects for every case. Right here, we use of d4T in patients starting treatment for the most part because the short term side effect is low when compared to AZT. Without d4T in starting treatment but put AZT instead, we will face the variety of side effects of AZT and the patients would then have to cope with side effects of another drug. We then became aware that the side effects of two drugs, it is a problem."*

> *"… I think we have not much and the drug with not too long duration of side effects could be considerable of using. We have to admit that the main side effect of d4T is a long-term not a short term. It will be available in the long run to 2 years to 3 years, the fat transition and the acidity of the blood (toxic mitochondria) which are long-term side effects. For a long run, we are not supposed to use it but for a short time, we see it as an alternative choice that should not be cut."*

> *"…We are not rich like American or European with a lot of drugs everywhere. Not to abandon a few choices we have. If we were to remove only one type of drug, we will face a big problem. So, it's absolutely inappropriate to remove the d4T."*

The record of changing the drug formula informs that the patient only 24.5% have never changed the formula. While almost half of them informed that they had changed the drug formula at least once. And when compared to the various population groups, it is found that nearly one in three men had never changed the drug formula while only one in five women had never changed the formula ($p < 0.05$) (Table D-6 in Appendix).

However, when asked about the side effects from taking current antiretroviral drug formula, it is found that only 6.8% informing that the side effect was to cause skinny arm, leg, and hip the fat accumulated on neck, chest or belly. Approximately, the symptoms had been shown for 6.62 month and the longest duration was 36 months. They insisted that they did not change the drug formula because they thought they were still OK and no need to change the formula. Some insisted that they were in the range of approval from the doctor. It should be noted that there is a case that he has no right to access for his own treatment.

From in-depth interviews with the sample groups and the HIV-Positive Network leaders, it is seen tat that some were using the GPO-VIR S or GPO-VIR Z because it was a combination pill and afraid if the drug could cause some other side effects as some informant said,

> *"…Taking only a tablet of pill as we used to do is simple, no need to take bunch of pills. It's more convenient."*
>
> *"…Having skinny cheek, arm or legs was OK. Taking too much pills could cause the kidney getting worse."*
>
> *"…I used to change the drug formula and I found my skin became wan and I felt exhausted. I then asked the doctor to have the original formula instead."*

In case of the HIV/AIDS patients under the Social Security Scheme in charge of a private hospital, they insisted that they did not change the drug formula because doctors refused to change.

> *"…I told my doctor if I could have my drug formula changed. The doctors told me to remain the original formula until the viral load*

> *result is checked. The doctor might concern about the side effects and concern that a new kind of medication adjustment will be needed."*

Moreover, It is also found that patients who was under the Universal Coverage Scheme was seen to be taken care of drug usage better than those who were under the Social Security Scheme as some patients of the latter group said,

> *"…Those 30 Baht users (Universal Coverage Scheme members) could change the drug formula as they wanted but, for us, our hospitals did not change at all. The doctors prefer not to change."*

When asked about problems that occurred with the specialist. They gave opinion that the case management system that occurs due to the three health security funds were different The problems encountered in the case of the Social Security Scheme was the right decision to modify drug formula which needed to asked permission for changing from the central organization which caused the decision delayed, while the other two funds can be changed or adjusted quickly.

> *"…Each fund has a different way policy causing different practical treatment. For instance, for the Social Security Scheme, it is based on the specialist and the budget saving policy. When compared with the NHSO, there are a lot of doctors in many hospitals. There are many doctors, who can provide counseling, available in all provinces. In some provinces, they even have more than one doctor. For those who are under the social security system, there are fewer services available. The medical consultant must be the doctor from the central, i.e. in case of San Pa Tong district, if there are cases of patients who need to change or modify the formula they must make a note to Social Security Office in Bangkok. The doctors actually have understood that the formula needed to be change, but with the regulation of social security system that needed to ask permission from specialist as the Social Security defined. It took time. The time takes for changing the formula is for months or even years, About 2 years ago, I had the right to change or modify the drug formula in*

> *this hospital but I could not sign for the patients form other hospitals even there was no specialized there. So, under the regulation, they needed to send the details to the central anyway."*

> *"…To change or modify the drug formula for the patients who are under the Social Security Scheme is like a bottleneck. It is a big problem. It may cause from the previous time that we did not know much about the decease. The regulation was made without knowing or too much concern about drug usage. Anyway, it needed to be changed. It should be more dynamic because we have learnt a lot about this disease. The drugs were improved and become more effective. The policy makers should concern and change what have to be changed for easier access to the service. If we took too long time, it could cause a lot of problems. The system makes this group seems have less right than the NHSO even they have spent for the insurance. Their employers have also pay along with money charged from the global fund. Instead of extending the right of greater benefit, they were limited their right."*

> *"…For the government official group, it is based on the guidelines. The change of formula is much easier than other groups. The Universal Coverage Scheme or Social Security Scheme will have guidelines or configurations of each fund which is limited by the amount of the budget while the Civil Servant Medical Benefit Scheme (CSMBS) has national guidelines which is more flexible. This can take drugs that are imported into the country in accordance with guidelines or instructions. The restrictions on the use of drugs are less than other groups."*

In addition, from the doctors' side, it's stated that changing the formula must be done only under the medical condition.

> *" To modify the drug formula, it depends on the side effects or drug toxicity. It must base on the genotypes lab results if it resists the drug and which drug and which formula is supposed to be appropriate.*

> *And consequently, how many kinds of drug are available. We then need not to talk to the patient much because of the usage of the drug. The Civil Servant Medical Benefit Scheme seems to have wider range of drug in* 2nd regimens *but not too much. In case of intolerance or drug toxicity, we can talk to the patient at a level that he or she is allergic to a particular drug and what is an alternative or the possible side effect that could happen. A discussion could be made in the selection of a drug formula."*

Issues that reflect the drug problem at this moment is that if a HIV/AIDS patient was tolerated to all kind of drugs defined by regulation of the fund. The doctor then will be back to use the original drug which is still usable even it is not so effective.

> *"… There is still no* 3th regimen, *so if a patient was tolerant to all kinds of drug. We need to back to use the original drug which is still usable even it is not so effective unless the patients were lucky that they were in a hospital that is carrying out research. They might be treated by a new kind of drug which might be more effective."*

In case of some patients that encountered a problem that they had not received antiretroviral drugs during the past five years, it is found that only 7 patients had never received the drug and 4 cases insisted that they want to stop drug using because they thought they were getting better. There was a case did not come to take drug because he did not want to reveal himself. And another case had a problem because he was moving to live somewhere else. Not receiving drug problem getting from the in-depth interviews with the leader of the HIV-Positive Network and medical providers. All informed that this problem was not from the service providers. Mostly caused from the patient side that they did not come to get the drug probably they did not want to waste time for working, the spouse as well as medical problems.

> *"…Working seems to be the typical problem. They work in a place but need to get the drug from another place. Some patients changed their career so often and finally they disappeared. Some took drug in Chiang Mai but they have to work in Phuket or Pattaya. When they*

> *need to change the formula, there will be a big problem due to any kind of problem. We lost contact and they were back again when the situation has gone worse."*
>
> *"…Some patients had married. If a patient want to marry and the spouse has not been told and he neither wanted to tell his spouse. I have seen this kind of case; the patient did not want his spouse to know about his decease. Some even stopped drug taking just because he did not want to hide his drug and finally he stopped drug taking."*
>
> *"…In case of mine, I occasionally found that the narcotic drug addiction causing loss of taking medicine or some even found in the prison. This has always been an issue that patients stop taking the drug."*
>
> *"… A technical term used by the physicians is 'doubt phatic' which refers to feeling tired to eat. The patients feel not want to take the pills every day. Some have been taking pills for 5-7 years. By forgetting that they have chronic diseases that require whole life drug taking, some do not understand this point. I found that some patiently take the pills and they look fine. The number of virus in control, the CD4 level's good, no side effect found. But for some patients, they are such impatient to take daily medicine and some even stop taking immediately."*
>
> *"…I found a lot, they stop taking pills with any kind of reasons. At first it was thought that they can live without drugs. Stop taking drugs; cease the follow-up treatment. This group were eventually returned when their bodies gone worse with the symptoms of opportunistic infection."*

The problem of being tired of the drug taking, both the HIV/AIDS patients and the leaders of the HIV-Positive Network informed similar information such as,

> *"…Some patients have taken the pills for a while and found that they become stronger, they then stop taking pills. Mostly were men. But*

> *for some patients who are working in our Network, there is rarely a problem because we can talk and persuade them to continue even noting's gone wrong with his/her body."*

The problems, in the service providers' side, seem to be the insufficient number of medicines causing the patients to come too often. Anyway, this issue is very rare. Only during the flood at the end of the year 2011, making transportation or the manufacturing ceased. The doctor then tried to distribute the drug to be enough for everyone during that period. This has been talking and trying to cooperate with patients make sure they understood the situation.

For other alternative treatments, in addition to the antiretroviral treatment, it is found that only 3.7% of the samples have used traditional medication or medical care along with other kind of treatments.

It can be concluded that the overall problem of the antiretroviral drugs access seemed to be no problem. Only the problem of getting drugs was caused by the patient's side. However, it is found that the changing of drug formula suited for each type of health insurance seemed to be different. The patients under the Social Security Scheme had more problems for changing the formula due to the issue of the side effects of drugs than those who were under the Universal Coverage Scheme.

4.2 The differences in access to antiretroviral therapy among the HIV/AIDS patients

Differences in access to ART would be presented in comparison to 3 dimensions; Availability, Affordability and Acceptability by comparing, in each dimension, the differences between demographic groups including sex and residential area. For the other ethnic groups, the data reveal that that there were very few participants form other ethnic, it then were not analyzed. In case of socio-economic status, the samples were divided into 5 groups of income and types of health coverage. The researcher had regrouped because there were only 9 the government official and others patients. They were grouped according to their co-payment including those who do not pay (Universal Coverage Scheme and Civil Servant Medical Benefit Scheme) and the group must co-pay as insurance or medical costs (Social Security Scheme and other groups, i.e. NAPHA Extension and Research). The details are shown below,

4.2.1 The difference of availability

Availability or physical access in this study is defined as the conceptual framework of Thiede et al. (2007) and Mc intyre et al. (2009), which includes both the accessibility and together with the conceptual framework of Penchansky and Thomas (1981) which also considers the availability. The availability was retrieved from the travel options, time waiting for the service and the sufficient of the resources (such as drugs or health personnel). The details are as follows,

Because the majority used their right to health care services, they then used the service in their local area or residence. Therefore, the distance between the residence/working place and the hospital was not very far. It is found that the average distance of approximately 11.00 kilometers (Table 4.7), and most also had to travel less than 11.00 kilometers (63.4% as shown in the table D–7 in Appendix). Most samples then used the motorcycle for traveling and more than four over five of the total sample took less than 30 minutes, or an average of 27.46 minutes, the amount of time spent in travel such that the threshold is generally accepted that they can access into the service in term of this framework (Bosanac et al., 1976; Bagheri et al., 2005; Panelli et al., 2006; Harris et al., 2011) (Table 4.6, Table 4.7 and Table D–7 in Appendix).

When making comparisons between the samples those had different options for travel between the urban and rural samples and with the lowest the highest income groups, it is seen that there were significantly ($p < 0.05$) different. People living in urban areas (84.5%) used motorcycle as a vehicle to the service. While people in rural areas (11.6%) and lowest income (12.7%) used public transport more than those living in urban areas (5.3%) and highest income group (5.6%) as shown in Table 4.6.

Table 4.6 Travelling method to the hospital

	Sample sizes (n)	Travelling method			
		1 (%)	2 (%)	3 (%)	4 (%)
Total	380	8.2	5.5	79.2	7.1
Gender					
Male	150	6.0	8.0	78.7	7.3
Female	230	9.6	3.9	79.6	7.0
Residential area *					
Urban	207	5.3	5.3	84.5	4.8
Rural	173	11.6	5.8	72.8	9.8
Health insurance					
Non co-payment	337	7.4	5.9	79.2	7.4
Co-payment	43	14.0	2.3	79.1	4.7
Income quintiles *					
1st quintile (Poorest)	71	12.7	1.4	74.6	11.3
2nd quintile	75	8.0	4.0	82.7	5.3
3rd quintile	90	10.0	4.4	78.9	6.7
4th quintile	73	4.1	5.5	86.3	4.1
5th quintile (Richest)	71	5.6	12.7	73.2	8.5

1 = public transportation, 2 = Personal car, 3 = Motorcycle, 4 = Other

* $p < 0.05$

For the distance between the residence and the hospital, it is found that there were significant differences (p <0.001) between the samples that did no need to pay (UCS and CSMBS) and the sample that had to pay (SSS, etc.). The first group with the majority (65.5%) traveled less than 11 kilometers, average distance was 10.28 kilometers while the latter group the majority (55.8%) traveled more than 11 kilometers or 16.74 miles causing the average travel time of those who have paid longer than the other group. This might be due to the use of SSS have been hospitalized with counterfeiting. The majority of the private hospitals or large hospitals were also located far from the residence while the national health coverage participant or the government welfare officials could choose the hospital in their close area. It is also found the differences in the distance between the residence and hospitals in the lowest income group with the highest income (p <0.05). It was found that the first group's distance on average was shorter than the latter group (Table 4.7 and Table D-7 in Appendix). It can be noted that the lowest income groups, despite the shorter distance to travel, but they took the bus and this made them take longer time which was close to high-income groups.

Table 4.7 Distance, travel time, and the time spent waiting for service

	Sample sizes (n)	Mean		
		Distance (kilometers)	Travel time (minutes)	Waiting time (minutes)
Total	380	11.00	27.46	134.29
Gender				
Male	150	10.98	26.60	136.13
Female	230	11.02	28.02	133.10
Residential area				
Urban	207	10.89	27.56	125.93*
Rural	173	11.14	27.34	144.31
Health insurance				
Non co-payment	337	10.28***	26.27***	132.39
Co-payment	43	16.74	36.74	146.19
Income quintiles				
1st quintile (Poorest)	71	9.59*	27.49	126.76
2nd quintile	75	10.72	27.64	143.24
3rd quintile	90	12.27	30.33	126.43
4th quintile	73	9.88	23.28	145.41
5th quintile (Richest)	71	12.28	27.88	130.92

* $p < 0.05$, **$p < 0.01$, ***$p<0.001$

When asked about the waiting time for the service, the revealed that the average time spent was 130.29 minutes or about half a day. The differences between groups in urban and rural areas were significantly ($p <0.05$), that is, the majority living in urban areas (58.9%) had spent time to wait for service less than 134.29 minutes (Appendix Table D -7), or took an average of 125.93 minutes, which was lower than the average of the total sample. The samples in rural areas (53.2%) had more time waiting for service or took an average of 134.29 minutes 144.31 minutes (Table 4.7) which was higher than the average of the total sample. With the difference of time waiting for service, the patients who live in cities (70.0%) agreed that this time was too long while those in rural areas, the majority (41.6%), insisted that they waited too long to get services (Table D-8 in Appendix).

Table 4.8 Comments on the medical services

		To increase the number of doctor/nurse		The number of Consultant / pharmacist		Day and time of service	
	Sample size (n)	Agree (%)	Not agree (%)	Enough (%)	Not enough (%)	Appro priate (%)	Not appro priate (%)
Total	380	92.6	7.4	48.9	51.1	85.3	14.7
Gender							
Male	150	92.0	8.0	48.0	52.0	84.0	16.0
Female	230	93.0	7.0	49.6	50.4	86.1	13.9
Residential area							
Urban	207	92.3	7.7	49.3	50.7	88.4	11.6
Rural	173	93.1	6.9	48.6	51.4	81.5	18.5
Health insurance							
Non co-payment	337	93.2	6.8	49.9	50.1	86.1	13.9
Co-payment	43	88.4	11.6	41.9	58.1	79.1	20.9
Income quintiles							
1st quintile (Poorest)	71	93.0	7.0	49.3	50.7	78.9	21.1
2nd quintile	75	96.0	4.0	46.7	53.3	86.7	13.3
3rd quintile	90	91.1	8.9	52.2	47.8	90.0	10.0
4th quintile	73	93.2	6.8	50.7	49.3	83.6	16.4
5th quintile (Richest)	71	90.1	9.9	45.1	54.9	85.9	14.1

Although, as a whole, the majority (63.9%) saw they waited too long for service, however, almost of all samples (92.6%) agreed that increasing the number of doctors and nurses would help to provide faster service. But the officer, consultant or pharmacist insisted similarly that there were enough and not enough officers (48.0% and 51.1%, respectively). In each group of the samples, it is seen that they also insisted in the same way. The day and time of service was 85.3% had seen that were appropriate but 14.7% had seen that was not appropriate, because most of that time the service was running, they would need to be absent from their works. And some insisted that the existing service day and time made them reveal themselves to the public. In a small community hospital, it is found that the number of days of service, such as 1 – 2 days per week, was too low and it was very crowded in these days (Table 4.8).

However, the issue of waiting for delayed service, the results from in-depth interviews with the infected volunteers insisted that the server provider themselves were trying to adapt the system to provide faster service. Both of the clinics that provide services or the specific service provided for the HIV/AIDS patients group alone, without the need to meet medical doctor or just to get to drug and return home immediately.

> *"…The Network had talked to the director and the nurses had arranged a clinic for providing the service. So if I say that the I came for this particular clinic, they then prepared specifically for us and the time we spent was reduced to a half day instead of the whole day (mornings only). But for those who do not to reveal themselves or some new cases, will be appointed in the afternoon. Typically there are four nurses sitting and taking care, if patients do not need to meet the doctor, just to get the GPO-VIR Z, they were able to pay or get to do drugs at the pharmaceutical facilities. But if they want to see a doctor, they need to wait for the doctors with other patients or if just to take a can of drug they can directly go to get at the clinic."*

> *"… The time to CD4 or Viral load test was combined with other patients. The system was later adapted to HIV patients, the blood from six to seven thirty in the morning. The queuing system under normal It is more convenient, faster when drilling is complete, it's going to work on it."*

> *"…The drug is given only in the afternoon. If the appointment was made in the morning, the patients need to show the ID card as other regular patients. Screening process will be made as usual, it takes long time. Afternoon appointment would be the best because there are not so many patients."*

However, an issue that the leaders of the HIV-Positive Network saw as a problem was that to get the service from private hospitals required the whole day for waiting unlike the service at the community hospitals by the Universal Coverage Scheme participants.

> *"…The social security participants who got the service from the private hospitals will have to spend the whole day from 8 am to 4 pm."*

In can be noted that that probably the problem of lacking the HIV-Positive Network with the private hospitals could cause the loss of negotiation from of the groups like the HIV-Positive Network of community hospitals.

4.2.2 Differences in Affordability

To study the differences in affordability, it was determined from the direct costs and indirect costs. The direct costs including the actual expenses paid for medical services which were the expenses for medicine and medical services including travelling costs and food expenditure. The indirect costs were measured from the opportunity cost due to the income lost from the lack of work or time spent waiting for service. The ability to cope with the expense was about the source of funds used to pay for health services occurring.

According to taking of drug depended on the time for taking drug, the new HIV/AIDS patients must meet the doctor for arrangement of monitoring the drug usage more often than other groups. Most of it was approximately two weeks per month. But if there was no side effect or allergy to the medicines, an appointment would be made to receive treatment every month or two months, so most of the samples would need to get a total of 12 times per year, followed by six times per year depending on each hospital.

The cost of drugs and medical services, due to the majority of the samples used their own right for the service according to the type of insurance, so there was no medicine or medical service cost except for the particular patients who were in NAPHA Extension and research programs, they were charged for medical service of

50 baht per service. However, found that there was only 1 patient from the welfare officials group stated that he spent 1,200 baht / time because he did not want to spend time for the documentation process with the workplace. This only case did not reflect expenses that are incurred as a whole. To calculate the medical services, it should be discarded.

Because the majority of the sample had nothing to do with the cost of drug or medical services or the groups who joined a research program would have to pay only 50 bath/time, it caused the cost of the average became very low, only 6.26 baht/year. However, when considering only the co-pay group, the average was 57.31 baht/year, while those who were in other group would had not to pay for any the costs. And when consider the income group, it is seen that the lowest income group had the cost of medicines and medical services averagely 24.64 baht/year, higher than those who were in the highest income group whose average cost was only 4.28 baht/year. It resulted from the pharmacy and medical costs of those who were not in the 3 main funds including the NAPHA Extension and research program participants, the medical costs of 50 baht/time who were mainly in the ethnic group with no right in access into the health care service and the patients this group, generally, were had lower income thus resulting in higher costs than those with high income clearly.

In case of the costs for coming to take the antiretroviral drug which includes travelling costs and food expenditure. The average amount required to pay 986.90 baht/year, with travel expenses and food average of 652.11 and 334.78 baht/year, respectively. It was a cost that was higher than the cost of drug or medical services almost 158 times. But it is seen that the cost of this group found slightly different among each group in the population (Table 4.9).

However, considering the indirect costs, including the income foregone from not working while getting the treatment, which is calculated from the time took to get the service and the wages lost due to the missing from work. The average indirect cost equaled to 628.33 baht/year, with a significant different between sex, income group ($p < 0.001$) and type of health coverage ($p < 0.05$). It is found that males had this cost up to 768.28 baht, while females had the cost about 537.05 baht and the group with the highest income had the cost of waiting averagely 1,207.81 baht/year, while those with the lowest incomes had this cost about 285.54 baht/year. The samples those who were no in co-pay programs (UCS and CSMBS) had an average cost of waiting for service lower than the co-pay patients (SSS and others) were 604.84 and 839.73 baht/year, respectively.

Since male group, high-income group and the social security group had higher cost of waiting for service, this might be the result of the level of income or wage that was higher. So, when calculated the income lost, the expenses then became higher. Moreover, the Social Security participants, most of which had to wait only at large hospital where a large number of people who have been waiting, made them spent longer for the service.

Summing up the costs both direct and indirect cost, it is found that, averagely, the samples would have the cost or total cost for the treatment drug at 1,632.85 baht/year, and when compared between the groups, it was found that, there were differences in the groups of different incomes (p <0.001). The lowest income group had the total cost of 1,327.23 baht/year, while those with high incomes, the total cost of up to 2,330.05 baht/year.

Table 4.9 Costs for accessing the service

Baht / year

		Direct cost						
	Sample size (n)	ART / service cost (1)	Travelling cost (2)	Food expenditure (3)	Costs for coming to take ART (4) = (2) + (3)	Total direct cost (5) = (1) + (4)	Indirect cost (6)	Total cost (7) = (5) + (6)
Total	379	6.26	652.11	334.78	986.90	1,000.56	628.33	1,632.85
Gender								
Male	149	0.00	702.61	326.93	1,029.54	1,033.23	768.28***	1,804.65*
Female	230	10.39	619.17	339.91	959.08	979.02	537.05	1,519.58
Residential area								
Urban	206	1.48	621.99	326.66	948.65	962.93	647.69	1,618.45
Rural	173	11.84	688.15	344.50	1,032.65	1,044.50	605.15	1,649.66
Health insurance								
Non co-payment	336	0.00***	653.74	341.72	995.46	1,000.81	605.38*	1,608.58
Co-payment	43	57.31	639.30	280.46	919.76	998.53	808.13	1,830.54
Income quintiles								
1st quintile (Poorest)	71	24.64	616.90	400.14	1,017.04	1,041.69	285.54***	1,327.23***
2nd quintile	75	0.00	606.66	286.66	893.33	904.65	460.63	1,369.18
3rd quintile	90	3.40	654.55	323.33	977.88	993.97	537.49	1,538.48
4th quintile	72	0.00	626.43	330.13	956.57	956.57	682.39	1,638.97
5th quintile (Richest)	71	4.28	758.61	339.57	1,098.19	1,113.02	1,207.81	2,330.05

* $p < 0.05$, **$p < 0.01$, ***$p<0.001$

Table 4.10 Sources of income spent for the antiretroviral therapy

	Sample size (n)	Sources of income [a]			
		Work (%)	Saving (%)	Helps from relatives (%)	Loan (%)
Total	380	92.4	21.6	10.8	5.8
Gender					
Male	150	91.3	18.0	11.3	4.7
Female	230	93.0	23.9	10.4	6.5
Residential area					
Urban	207	92.3	20.8	10.6	5.8
Rural	173	92.5	22.5	11.0	5.8
Health insurance					
Non co-payment	337	92.3	21.7	11.6	6.2
Co-payment	43	93.0	20.9	4.7	2.3
Income quintiles					
1st quintile (Poorest)	71	94.4	22.5	22.5	12.7
2nd quintile	75	88.0	22.7	8.0	2.7
3rd quintile	90	95.6	18.9	5.6	3.3
4th quintile	73	97.3	20.5	8.2	5.5
5th quintile (Richest)	71	85.9	23.9	11.3	5.6

[a] one or more items could be selected

Table 4.10 shows that the direct costs were spent by money mostly from work (92.4%). It is seen that only 5.8% were borrowing money from friends, loans, or other sources. The majority of the Universal Coverage Scheme participants had asked help from relatives and used loans rather than the Social Security Scheme group who had co-paid. To see the relationship between the social security groups, it is found that the higher income groups tended to use the Social Security Scheme while the low-income group preferred to take the Universal Coverage Scheme (Table D-9 in Appendix). So, it is obvious that the low-income group and the samples those who were no in co-pay programs (UCS and CSMBS) were likely needing helps of loan from others than other groups.

4.2.3 The differences of acceptability

To consider the acceptability, satisfaction or perception on the effectiveness of the services and the perception of the patient on the providers' attitude were measured.

Acceptability or accountability will be generated if the HIV/AIDS patients believed that the hospital had maintained the confidentiality of their patients. As seen from Table 4.11, the majority of the samples believed that the hospital had maintain confidentiality well (85.0%), with only 3.2% insisted that it was not good enough. And considering each group of population, it is seen that there was a significant ($p < 0.05$) difference between the urban area patients and rural area patients. It indicates that the patients those lived in urban areas believed that the hospital could maintain the confidentiality more than those who lived in rural areas (88.9 and 80.3% respectively).

When the patients asked about medical services received which was a measure of the perceived quality of the service, the scores were taken from the tally of answering "have" or "not have" received the service from the total score of 12 points from 12 items of the service in terms of receiving the service, having friendly service, openness of treatment plan, opportunity of asking questions, receiving information about the problems of drug usage, having chance for a decision making for the changing or modification of the drug formula, clarity of given information and easiness of information interpretation, description of side effects and recommendation, and privacy of the service. It is seen that the mean score was 10.72, which is considered high. It is found that each group of population had similar scores and closed to the total average. However, notice that the group in 1st Quintile or the lowest income group's score was lower than the highest income group and apparently lower than the mean score. However, the difference was not statistically significant (Table 4.12).

Table 4.11 Comments on the confidentiality of the hospital

	Sample size (n)	Confidentiality (%)		
		Reliable	Not reliable	No idea
Total	380	85.0	3.2	11.8
Gender				
Male	150	84.7	2.0	13.3
Female	230	85.2	3.9	10.9
Residential area *				
Urban	207	88.9	2.9	8.2
Rural	173	80.3	3.5	16.2
Health insurance				
Non co-payment	337	84.9	3.6	11.6
Co-payment	43	86.0	0.0	14.0
Income quintiles				
1st quintile (Poorest)	71	74.6	8.5	16.9
2nd quintile	75	86.7	1.3	12.0
3rd quintile	90	87.8	2.2	10.0
4th quintile	73	89.0	1.4	9.6
5th quintile (Richest)	71	85.9	2.8	11.3

* $p < 0.05$

However, when consider the need of the service receiver expected to receive and the actual service the receiver received, it is seen that the services most top 3 expected were the medical staffs provide appropriate treatment information and plan (99.7%), the physicians provide friendly service (99.5%) and the recommendation of drug usage is clear and easy to make sense with simple language (99.2%). In term of the actual received service, the data reveal that the patients most satisfied with the recommendation of drug usage and how to deal with the side effects (97.4%), followed by a hearing of drug allergic problem (95.5%) and nurses have service mind (94.5%). The service that less satisfied were physicians give opportunity to ask questions on related issues (77.6%), staffs/pharmacists give opportunity to ask questions on related issues (82.4%) and medical staffs did not provide information about appropriate treatment plan (85%) (Table D -10 in Appendix). It is seen that there was a positive relation between the needs of patients and the service providers.

Table 4.12 Perception on the quality, practice and satisfaction on the services

	Sample size (n)	Quality (12 points)	Treated negatively (21 points)	Satisfaction (5 points)
Total	380	10.72	2.58	3.92
Gender				
Male	150	10.69	2.82	3.89
Female	230	10.74	2.43	3.93
Residential area *				
Urban	207	10.84	2.10***	3.96
Rural	173	10.59	3.17	3.87
Health insurance				
Non co-payment	337	10.70	2.60	3.91
Co-payment	43	10.88	2.49	4.00
Income quintiles				
1st quintile (Poorest)	71	10.15	2.77	3.93
2nd quintile	75	10.77	2.79	3.84
3rd quintile	90	10.81	2.73	3.80
4th quintile	73	11.00	2.58	3.97
5th quintile (Richest)	71	10.85	2.00	4.07

***$p < 0.001$

Due to the issue of doctors having less time for questioning, partly were because of a huge number of patients each day. The majority of those infected patients understood this point,

> *"…Sometimes I just want to talk to a doctor. But he or she does not have time. Because there is no full time doctor at this hospital and there also are a lot of patients are waiting for the doctors. At my district, there is no HIV-specialized doctor too. We have to wait like other regular patients."*
>
> *"…I understand that the community hospital in this district is a small hospital and there is no full time doctor. The doctor from others will occasionally come here as scheduled."*

Considering the differences in services received in the various social groups, it is found that there was a difference in terms of the privacy of the clinical service that was separated from other session among the income groups and the group from different area (p <0.01 and p <0.05, respectively). In the context of the service, it is found that each hospital that provides a clinical service specifically for the HIV/AIDS patients. Except in some hospitals, they provided services together with other regular patients for taking the drugs at the pharmacy, this issue had resulted in some samples that it should be also considered for privacy. However, the in-depth interviews with the Network leaders and the hospital staffs, they revealed that the reason why they could not separate this unit because their hospitals were small hospitals and there were not so many HIV/AIDS patients and it will cost a lot to separate into two units. The only large hospitals like San Pa Tong had clearly distinguished both clinical service and pharmacy departments.

> *"…There are a few who want to see a doctor. Only some those who had genotypic resistance or they really wanted to meet the doctor. Some just went there for taking drug at the clinic. It took less than 30 minutes. But for some, they still think it's too long. The really long time was due to someone who needed to prepare the documentation."*
>
> *"…To take the pills with regular patients, the pharmacists insisted that they need to store the pills in the best condition room, otherwise, the quality of the pills could be lower."*

The majority of samples stated that they received the service in term of listening to the problems from antiretroviral drug usage resulting when asked about the time that doctors had enough time to listen and time of diagnosis as expected, it is found that nearly 3 out of 4 of the respondents stated that they received as they expected. The rest said they did not meet as expected. It is also found that there were a difference among the groups with the lowest income and highest income groups on the issue that there was not enough doctor at the hospital which exceeded to 23.9% while those with the highest incomes with 8.5% stated that there was not enough (p <0.05). In terms of the co-decision making between the doctor and the patient to change the drug formula, it is seen that the samples had participated in decisions about treatment and antiretroviral formula change. Mostly stated that it was enough (85.0%) and there was no difference among the population (Table D-12 in Appendix).

The problem in terms of providing advice on treatment, each of the hospital was trying to provide the HIV/AIDS patients who volunteer to participate in the service. Especially in the service of the medical records, the preliminary treatment, blood pressure test, and instructions on how to take drugs. It is found that a group of volunteers who are infected with HIV had better access to the information of the patients than the medical staffs. Partly were due to the language used which was not too complicated or formal and easier to understand.

> *"…If there were a lot of patients at the hospital, the doctor will not have time for explanation. The volunteer will come and provide some information in an aspect."*
>
> *"…Talking with the doctor and the volunteer, I can feel the differences because we have the same experience and we use the same language."*
>
> *"…When a "friend" volunteered to help and take care about our health problems, taking pills, preparing an appointment with the doctor, the volunteers will be recognized. The volunteers know which patient revealed him/her to others. The volunteers then could be able to monitor or follow that patient. For one who did not want to reveal himself, the conversation took place only at the clinic. For one who just started a new drug, a volunteer always fully informed that patient."*
>
> *"…They speak the same language. If the supervisor was not an HIV/AIDS infected person, they usually spoke different language that seems to be really had to understand."*
>
> *"…In case of patients that did not take the drug on time, an infected volunteer would take care to discuss whether to do."*

Access to antiretroviral drugs in the acceptability issue, one important thing is to recognize the quality of service to understand the way the work of professional doctors do. If the perception of awareness were of negative, it could make a more difficult to be accepted. The value of the total score was 21 points, it is seen that the majority of sample stated that they had never been treated negatively. It is found that the mean total score was 2.58 in each cluster; this means that there was no significant difference. Except for the rural patients, it is found that this score was statistically higher than the urban patients ($p < 0.001$) (3.17 and 2.10 respectively). However, this issue was that the patients saw the problem of delayed services which caused a lot of waiting patients in each day. If considered the issue of the negative treatment, it is found that not to maintain the confidentiality of the patient and yelling the patients seemed to have higher score than other issues (0.32 and 0.31, respectively) (Table 4.12 and Table D-13 in Appendix).

Considering the differences in the perception of the population, it has been found that there were differences among the different residential areas. The sample in the rural area gave higher average score or having trend of negative perception than the sample in the urban and the differences was significant especially in the issues of not paying attention, yelling and talking with unintentional (Table D-15 in Appendix). But for the low-income group, they felt negatively rather than high-income group especially for the issue of not paying attention. or not taking care (Table D-17 in Appendix).

In satisfaction in the services issue, it has been found that most were satisfied with the overall service (44.7%), with an average satisfaction of 3.92 points which can be translated that the samples were very satisfied. And there was no difference among each group of population (Table 4.12).

Of overall satisfaction, when taken into each aspect (Table D-19 in Appendix), it is found that the services that were most satisfied was about information or advice for drug usage (90.8%), followed by the satisfaction in the relationship and the manner of expression of the service providers (89.2%), the service procedures (87.6%) and time spent in waiting for service (68.9%). The matter of the relationship and the manner of expression of the provider, it is seen that the number of samples who live in urban areas is greater than the samples in rural areas significantly ($p < 0.05$). But among other groups, there was no difference (Table 4.12).

When asked about barriers for accessing the ART services, the sample of more than one third agreed that the cost of travel, Food and miscellaneous expenses in the hospital were looked as barriers to the service, followed by a relatively long time to wait for the doctor (33.2%) and lowest barrier was health/medicine costs (2.1%). (Table D-20 in Appendix)

And when consider each group of population; it is found that the sample from different genders had similar opinions regarding the barriers. However, for the samples in different areas, different type of health coverage, and different income groups, they had different opinion on the barrier with significant difference.

Sample group from the rural area had seen that there were barriers from transportation, food and miscellaneous expenses in the hospital (42.8%). The problems such as transportation difficulties, having no car, no one taking to the hospital (8.7%) and lacking from work or having difficulty to be absent from work (24.9%), this group seemed to have more problem than in urban samples which correspondent with the costs and travelling distance that the samples in the rural area had more than the sample in the urban area.

The sample group under the Social Security Scheme (SSS) and other programs saw that that there were more barriers on issues of a long time to wait for the doctor (52.6%) and lacking from work or having difficulty to be absent from work (28.9%) than those who were under the Universal Coverage Scheme (UCS) and Civil Servant Medical Benefit Scheme (CSMBS). This resulted from the first group that had been registered at the hospital where most of the large hospitals that serve a large number of patients. Moreover, this group also had a certain time for working causing this barrier.

The sample group with the lowest income saw that there were barriers in terms of wages or salaries lost during the treatment (4.1%) while the group with the highest income did not see this issue as a barrier. And in the term of travelling to the hospital, having no vehicles, no one taking to the hospital, the lowest income group saw as barriers more than the highest income group (11.4 % and 5.6%, respectively), consistent with the choice of traveling to those with the lowest incomes, they took bus which required both high cost and longer time more than the highest income groups.

The result of the study of the differences in access to antiretroviral treatment, it is seen that the problem of access to services in terms of in three main issues, groups living in rural areas and group with low income faced problems for access to the services in terms of availability, affordability and acceptability. In the issues of differences of the type of health insurance, it is seen that the patients who were under the Social Security Scheme (SSS) had problem in a matter of date, time of accessing the service. They needed to be absent from work. This was mainly due to the nature of their work which time was certain while gender differences were not found to be significantly different.

However, the differences in each issue, as mentioned, are just considered from the differences among the population groups. It cannot exactly determine for certain that there is equity of or not. So the next part, as a result of the study of the equity, only different socio-economic status would be discussed.

4.3 Analysis of equity in access to antiretroviral therapy

To analyze the equity in access to ART, the cost analysis or cost that the individual or household should pay based on ability to pay. It can be said that who have more income supposed to have higher ability to pay and it should be regarded that they should spend more. Who have low incomes should pay less. When measured by income level, it’s regarded to have progressed to income as index used to measure equity according to Kakwani index

The samples were divided into five groups according to income level, it is found that the poorest had an average income which was 30,895.5 baht/year, while the richest with an average of 119,059.7 baht/year, or the richest income than the poorest to almost four times. The average income of all samples was 63,850.7 baht/year. In terms of the cost for the treatment, antiretroviral drugs, it is found that the cost ratio was quite similar in each income group. Except that indirect costs or opportunity cost of waiting for service, it is found that the richest were spending up to 1,154.1 baht/year, or nearly five times that of the poorest groups. All costs incurred, the richest had to be responsible for the cost as high as 2,220.9 baht/year, while the poorest' was the cost of 1,340.9 baht/year (Table D-21 in Appendix).

Considering the proportion of the costs incurred to the income, it was found that the proportion has decreased with the increase in revenue. By the poorest to the proportion of total expenditure and the income was 4.3%, while the richest account only for 1.9% or less than 2 times. The cost with the maximum fraction was the direct cost which the poorest people had to pay out was 3.4% of total income. While the richest pay only 1.5% of income.

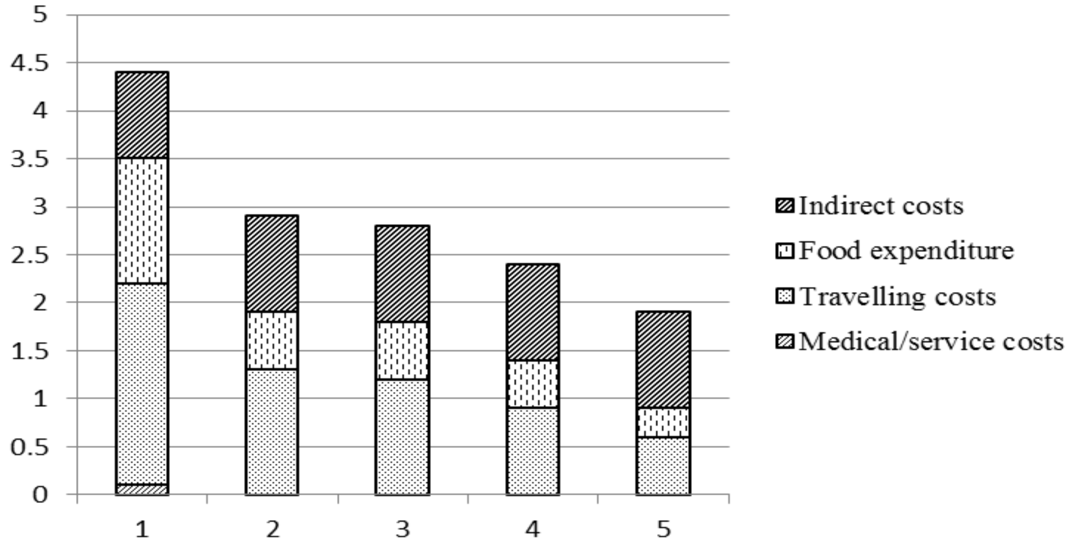
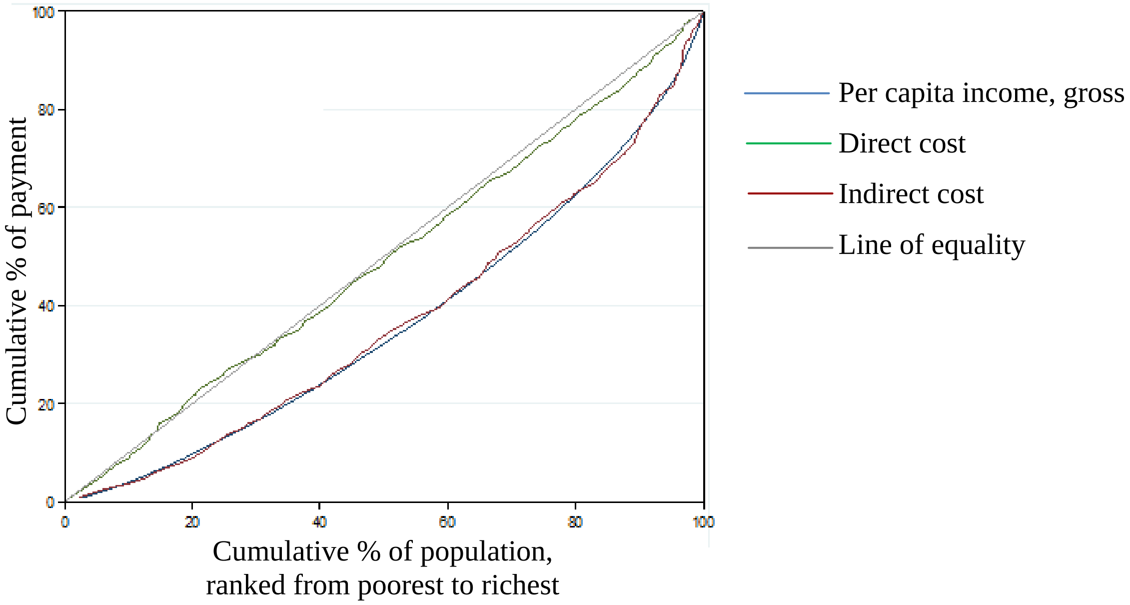


Figure 4.1 The antiretroviral therapy costs shares by quintiles

For the Concentration Index, it is seen that the drug or treatment was negative (- 0.3913), indicating that the poor had to pay more than the rich. In this case, it may cause from the sample that were mostly from the ethnic groups who had to pay for the service anyway. In the differences of access in the case of ability to pay, all indexes were positive which indicated that the rich had to pay more than the poor. The indirect costs incurred in waiting for service or revenue loss to the customers waiting for service where the maximum Concentration Index was 0.2773. While the direct costs' was 0.0345, indicating that the cost of waiting for service, the indirect costs, were more progressively proportional to the income rather than direct costs. The Concentration Index of the total cost was 0.1267 (shown in Table in Appendix -21).

Considering the Kakwani index, it showed that all were negative, except for indirect costs from waiting for service or income lost in waiting for service that was positive, however, it was rather close to 0 (0.0057), indicating that the indirect costs was proportional to income. For the direct costs and total costs, the Kakwani index is negative. (– 0.2371 and – 0.1448, respectively), this indicates the regressive income or the poor had the costs incurred more than the rich (pro-rich) did.

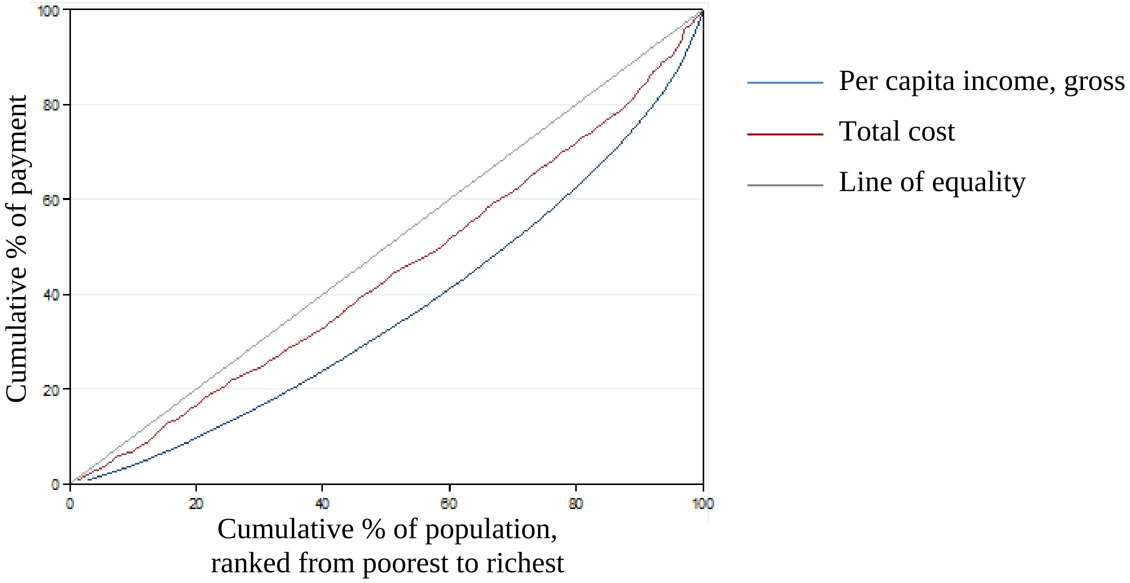
In summary, the issues of equity in access to ART evaluated from the equity of finance, it is seen that the poor had higher proportion of expenditure charged with antiretroviral drug treatment than the rich, or it can be said that there were inequity in access to the medical service.



Kakwani index of Direct payment = – 0.2371

Kakwani index of Indirect payment = 0.0057

Figure 4.2 Gross income Lorenze curve, Direct and Indirect payment Concentration curve and Kakwani index



Kakwani index of Total payment = – 0.1448

Figure 4.3 Gross income Lorenze curve, Total cost Concentration curve and Kakwani index

CHAPTER V

DISCUSSIONS

The study on equity in access to antiretroviral therapy: case study of Chiang Mai Province was conducted with the main objective of studying the disparities in access to service between various population groups to measure the equity in access to care. The study was conducted during April to May 2012 on HIV/AIDS patients in Chiang Mai Province (n=380 cases). The results of the study are under the context of both the service providers and the service recipients in Chiang Mai Province, in which antiretroviral treatment service had been provided for a long period and continuous efforts to improve the efficiency and effectiveness of the service had been made. Therefore, a certain space, time, or change to relevant policy could have an effect on the behaviors of the HIV/AIDS patients who received the service.

The discussion of the study results are divided into 2 parts. The first part discusses the limitations of the data and data analysis, while the second part discusses the results of the study according to the research objectives.

5.1 Data and data analysis

Data in this study were collected from 380 HIV/AIDS patients, based on the sample size calculation formula of Yamane at 95% level of confidence. Data were collected during April - May 2012 using questionnaires and participant interviews as the study tools. Due to the limited amount of time for data collection, the researcher requested the cooperation of the leaders of the HIV-network individuals in each of the 8 study districts in data collected. Data were collected both inside the hospital setting and within the holistic center of each hospital. Therefore, a potential limitation during interview was that the samples might be reluctant to give candid information to the

HIV-infected individuals' leaders who worked closely with the healthcare providers or the hospital. In addition, the interviews were conducted in clinical setting, which might have caused the respondents to lean towards answering the questions to please the interviewers. Thus the respondents were reminded to answer truthfully in order for the results to be used in further improvement of the services.

In addition to general information, data and data analysis on income which served as the proxy of socioeconomic status of the samples could be biased in certain cases, particularly with regard to income from secondary occupations, for which details might not be given as the respondents regarded the monetary amount to be minor. Furthermore, enquiry on income may be prone to under-reporting due to the lack of willingness to reveal the income of oneself or one's family, and might also have depended on the timing of data collection (Prakongsai, 2005; Patama, 2550). However, due to time constraint, use of income was more convenient than consumption expenditures, which required more item-specific details.

In term of care-related expenses, the researcher only collected data on costs from routine ARV retrieval. No questions on access to services related to opportunistic infections were asked. Patients who do not take ARV drugs regularly would have a higher likelihood of receiving treatment for opportunistic infections than those who take the drugs regularly. Lack of access or irregular intake of ARV drugs would be reflected by the higher frequency of receiving treatment for other symptoms or having expenses related to drugs for treatment of opportunistic infections in addition to receiving ARV drugs.

In addition, the study only took into account the opportunity cost from receiving ARV drugs, and did not include the potential opportunity costs due to opportunistic infections in case that the patient did not take the drugs regularly, resulting in absence from work or receiving treatment at various medical facilities.

In this study, data were collected only from public hospitals in rural areas, and no data were collected from private hospitals and urban residents. Thus the overall picture of the study only reflected part of the HIV/AIDS demographics and certain types of public medical facilities. The researcher also did not collect all of the data by herself. Therefore, for some cases in which intriguing answers were given or for those who experienced lack of access, no in-depth interviews were made, causing the overall results to appear as though there was no actual problem with lack of equity in access to treatment.

5.2 Discussion of the study results

Discussion of the study results is divided into 3 parts: Part 1 includes demographic and socioeconomic characteristics and provision of ARV drugs; Part 2 analyzes the discrepancies in access to service, and; Part 3 analyses the equity in access to service and treatment with ARV drugs.

5.2.1 Demographic and socioeconomic characteristics and provision of antiretroviral drugs

Most of the study samples resided in urban areas, defined as within the municipality boundary. Most of the samples were lowland Thais, female, and aged more than 40 years. With regard to gender, it was found that in the entire country and in Chiang Mai Province, there were more male HIV/AIDS patients than females (Bureau of Epidemiology, 2554). However, the higher proportion of female patients in this study was also found by others (Kitajima et al., 2005; Vanlandingham et al., 2006; Suwat et al. 2006a; Le Coeur et al. 2009), possibly due to the fact that pregnant women would receive blood-testing, after which they would be informed of the results and more likely to enter the ARV drug treatment system. Another potential explanation is that men were less likely to display weakness and less likely to participate in the treatment (Muula et al., 2007). Interview with a care-providing physician also showed that men might also not wish to reveal their infection status due to fear that it might affect their work, thus lowering the likelihood of entering the ARV drug system.

In addition, due to the fact that Chiang Mai Province had experienced problems with HIV/AIDS for a long time, a number of the original male HIV-infected patients had died, being survived by female and widowed patients. When the proportions of widowed patients (spouse deceased) were considered, it was found that female widowed patients accounted for as much as 32.6% of all female patients, while male widowed patients only accounted for 13.8% of all patients. Such disparities could reflect the condition which caused the number of female patients to be higher than male patients in this study.

The study found that most samples only finished primary education, but it is also noticeable that male and urban respondents were more likely to have secondary education than other groups. However, the overall level of education among respondents was quite low, and thus most respondents only worked as normal wage-earners within and outside the agricultural sector, causing the level of income to be quite low at 63,850.74 Baht/year or 5,320.89 Baht/month. It was also found that males had higher average income than female, which reflected that the wage for men was higher than the wage for women.

Most of the samples were under the Universal Coverage scheme. At present, the Scheme requires the name of the medical facility to be stated for any type of health insurance. In all health security systems, HIV/AIDS patients do not need to pay for ARV drugs and the related service. However, it was found that some patients came from another province and did not use their rights, thus out-of-pocket expenses were required. The mentioned results were similar to the an assessment report on the service system for ARV drug recipients under the Thai health system in 2009, which found that HIV/AIDS patients did not receive drug at their local facility, but traveled to receive the drugs at the Provincial Hospital or other hospitals far from home. This study also showed that a number of samples did not join the HIV-Positive Network, which organized meetings to follow-up, educate, and share experiences from volunteers who were also infected with HIV on the issues of health maintenance and taking antiretroviral drugs. These problems were caused by the unwillingness of HIV/AIDS-infected persons to reveal themselves due to fear of being stigmatized by the surrounding community. In order to prevent other individuals from knowing their infection status, HIV/AIDS-infected patients must travel across provinces and refuse to join the Network. The results showed that stigmatization and discrimination still existed as problems in Thailand.

In term of receiving ARV drug, it was found that most samples had been receiving ARV drugs for 7 - 10 years, and most samples had changed regimen 1 time, mainly due to the side effects of the drugs. The most common ARV drug regimen was GPO VIR Z, but some respondents also used GPO VIR S, which was the first regimen to be prescribed to those who recently started ARV. Although the current National Guideline for Diagnosis and Care of HIV/AIDS Patients 2010 had already changed for regimen and eliminated d4T due to the side effect of emancipating the limbs and hips and accumulated fat around the upper neck, chest, and abdomen, and the drug was substituted by TDF-type drugs, but the study results showed that both the patients and healthcare providers agreed that if the regimen being used at present still worked well, then the mentioned regimen should be taken for a certain period until the side effects were experienced. HIV/AIDS patients did not deem the external image due to the practice of taking ARV drugs and deemed the old single-dose regimen to be convenient. Healthcare providers deemed at the regimen was according to WHO's regulation, made under the context of countries in which many regimens were available to choose. However, as Thailand had a limited variety of regimens, which was further compounded by problems with pharmaceutical licensing, causing certain drugs to be expensive and fall outside the Universal Coverage Scheme, stopping to use a certain drug would be very difficult to do. Therefore, if the HIV/AIDS patient was still asymptomatic, there would be a tendency to try to keep the patient on the basic drugs as long as possible.

However, in-depth interviews showed that HIV/AIDS patients who used the Social Security Scheme had more difficulty in changing the ARV drug regimen in comparison to those under the Universal Coverage Scheme and the Civil Servant Medical Benefit Scheme. This could be due to a regulation of the Social Security Office which stated that any change in drug regimen must be approved by an HIV/AIDS expert, the number of whom in each province was not very high. For example, in Chiang Mai Province, such experts were practicing only at the Maharaj Nakorn Chiang Mai Hospital, Nakornping Hospital, and San Pa Tong Hospital, all of which had considerably difficult protocol in making referrals. The ARV drug regimens were also not available in as large a variety as those among the Universal Coverage Scheme or the Civil Servant Medical Benefit Scheme. Therefore, when Social Security claimants wished to change the regimen, there would be considerable delays unlike other groups.

The issue of not receiving ARV is a common problem in Africa and South America (Carmody et al., 2003; Morales et al., 2003). A study in Thailand also showed that such problem once existed, such as the Access to Care (ATC) project which studied HIV/AIDS treatment monitoring and service system improvement in 6 Northern provinces (Community Medicine Department, 2004). Such problem was solved by reducing the quantity of ARV drug dispensed to the patient, resulting in more frequent visits and higher expenditure among the patients. However, in this study, only a small number of samples reported missing ARV refill. During the Floods of 2011, certain patients received a lower quantity of drug due to the inability to transport the drugs, creating shortage. Thus an appeal was made to HIV patients for cooperation in receiving fewer drugs, e.g. a normal refill would last 1 month, but under the new ration the refill would last only 15 days. However, the problem of missing refill (not receiving ARV) was due to the patients themselves not coming to get the refill based on the sense that they were apparently still in good health, and boredom for taking drugs constantly, thus intake of ARV drug was stopped. Other reasons included lack of the desire to reveal oneself and problems in the rights to treatment after moving an address. The problem with the right to treatment was the same problem found in the work of Sukhontha Kongsin and colleagues (Health Insurance System Research office, 2553) which found that the lack of access among HIV/AIDS patients was due to systematic issues, e.g. having many separate health coverage schemes, causing inconvenience when rights were changed.

This problem of not receiving ARV due to the patient's own default was a big problem in the service system due to the fact that once the patient stopped taking the drug, their body then became weak, and when they decided to return to the drug regimen, there would be problems with drug resistance or more difficult adjustment of the regimen. In-depth interview with HIV patient group leaders showed that most of those who defaulted by themselves were those who did not participate in the HIV-positive Volunteer Network who tried to emphasize the importance of regular intake of drugs. In addition, the role of the HIV/AIDS volunteer at each hospital's referral center also helped the participants to regularly receive the ARV drug refill according to the doctor's appointment.

For HIV/AIDS patients to be aware of the importance of blood testing and ARV drugs, it is absolutely necessary for the patients to be educated on such matters.

Although this study did not find many problems with lack of ARV drugs, likely due to the data collection process which targeted on those receiving basic regimens, it was found that approximately 10 percent of all HIV/AIDS patients needed the 2nd regimen or those in the higher orders due to the problem of drug resistance or adverse reaction. The mentioned drugs had high cost. For example, the 2nd regimen costs approximately 5,000 - 6,000 Baht per month, while the 3rd regimen costs as much as 20,000 Baht per month, causing significant limitation in adjusting to the new regimen. This is particularly true among Social Security policy-holders who found that in case of drug resistance, the Social Security Office would provide no more than 5,000 Baht in redemption per case per month, and the policy-holders would be responsible for the rest of the extra amount. The mentioned issue could be one of the reasons why the patients still continued to take the same regimen, even after drug resistance. Thus there was no benefit to the treatment and the HIV patients who needed to change the drug regimen could not excess the higher order of drugs, thus the study did not find this type of problem.

5.2.2 Disparities in access to antiretroviral therapy

Access to care in this study was categorized according to Thiede et al. (2007) and McIntyre et al. (2009) into 3 dimensions: availability, affordability, and acceptability. It was found that each issue affected different demographic groups.

5.2.2.1 Availability

When the issue of availability was considered, it was found that urban residents traveled by motorcycle more frequently than those in the rural areas, while rural and low-income residents used public transportation more often than those in urban areas and those with high income. As the method of travel affected the service time, it was found that rural area residents had significantly longer waiting time than those from urban areas, as the waiting time also included the time for transportation even if the distances from the home to the medical facility were similar for both groups.

However, disparity also existed between those under the Universal Coverage Scheme, those under the Civil Servant Medical Benefit Scheme, and those under Social Security and other insurance schemes in terms of distance between place of residence/work and the medical facility. The latter group had longer average distance, resulting in longer travel time, partly due to the fact that those with Social Security rights must choose among a limited number of hospitals that were registered with the Social Security Office, and such facilities were sometimes located quite far from their place of residence/work, unlike those under the Universal Coverage Scheme who were able to choose a hospital near their home. No disparity was found in other demographic groups.

The problem of distance and time of travel to medical service was an important issue for ensuring access for HIV patients. Previous studies showed that such problem was a key obstacle which determined both access and continuity of service (Kitajima et al., 2005; Ntata, 2007; Posse et al., 2008; Armstrong, 2010; Health Insurance System Research office, 2553). The longer the distance was, the higher the traveling expenses and, subsequently, the cost of medical care would be.

The problem of having adequate medical personnel is faced by all countries. In this study, the respondents said that there would be a higher number of medical personnel on service, which concurred with the results of a project for development of the service and treatment monitoring system for HIV/AIDS patients in Thailand (the Access to Care Project, or ARC). Although the mentioned study was conducted in the relatively long past, such problem still persists. Although a separate service unit has been designated for HIV patients, at small community hospitals only 1 – 2 serving physicians would be on duty and only for 1 – 2 days per week, resulting in a large number of patients awaiting the service during the clinic's opening days. Meanwhile, at large community hospitals, although there were more physicians at the HIV/AIDS clinic and service was provided daily, such as at San Pa Tong Hospital, the large number of HIV/AIDS patients each day also resulted in long waiting time. Therefore, if there was an increase in the number of medical personnel on duty, the waiting time could be reduced.

However, attempts have been made to solve the problem of tardiness of service in each hospital based on the collaboration with HIV/AIDS-infected volunteers to provide initial care. These volunteers would rotate to assist the hospitals in providing service and advice to other HIV patients. However, a possible problem would be the remuneration for the volunteers, particularly at small public hospitals with relatively small amount of budget.

In term of the days and hours of service, only 14.7% of all respondents deemed the days and hours to be inappropriate, particularly among those under the Social Security Scheme, most of whom had fixed-hour jobs and were required to be absent from work to receive treatment. The results concurred with a study by Barlett et al. (2009), which found that such service hours also caused absence from work. Another time-related inconvenience was that the mentioned service hours co-incided with the regular outpatient clinics, which required the HIV patients to exposed themselves and reflected the existing fear of stigmatization.

However, in term of the adequacy of health personnel and service days and hours, it was found that there were no significant differences between demographic groups.

5.2.2.2 Affordability

In term of affordability, it was found that there were differences between population groups in unrealized expenses or opportunity costs, based on the loss of income due to their coming to receive ARV drugs, particularly among men, those under the Social Security Scheme, and those with high income who had higher indirect costs than other groups. Due to the higher opportunity costs, such demographic groups thus had higher costs of access to service.

The fact that men, those with higher income, and Social Security rights holders had higher cost of receiving service was probably due to the generally income earned in these groups, thus the loss of opportunity cost also increased accordingly. Furthermore, those under the Social Security Scheme were also required to receive service at large hospitals, which had a large number of patients awaiting service and resulted in longer waiting time.

Most studies showed that expense which posed the highest burden on the service recipients was the cost of traveling, as reported by Ntata (2007), Makwiza et al. (2006), Duff et al. (2010), and Okolil & Cleary (2011), particularly those living in rural areas, far from medical facilities. In this study, when only service-related costs were considered i.e. cost of travel and food, it was also found that such costs were higher than other expenses. When indirect expenses and loss of opportunity due to absence from work or waiting time were considered, it was found that both items were of approximately equal amounts. However, the traveling expenses were not significantly different between groups, even between urban and rural areas, due to the similar distance of travel to the medical facilities in both groups.

However, past studies only considered actual or direct costs from receiving service, while this study expanded the scope to also include unpaid expenses in order to visualize the actual expenses bore by the patients.

In term of the source of expenditures, it was found that most respondents used their income from work, although the proportion of those who borrowed or took loans to meet the expenses was higher among the low income group, and assistance from relatives was more common among those with high income, although such disparities were not statistically significant. Nonetheless, the large proportion of those who borrowed and took loans among the low-income groups showed that the problem of income-expenses difference still existed, even in the Universal Coverage Scheme which did not require payment for service, as other related expenses, particularly travel costs, had the highest proportion among the incurred direct expenditures.

5.2.2.3 Acceptability

Acceptability or cultural access can only exist after there is confidentiality and trust in maintenance of confidentiality among the patients. Most of the study samples deemed the healthcare providers to be able to guard their privacy well, and deemed that they had received the services as expected from their healthcare providers e.g. advices on the side effects of ARV drugs, willingness to listen to problems from using ARV drugs, friendliness in providing service, etc. Discrepancy between social groups was found in term of the proportionality between the service provided by the clinic and the number of patients, particularly between income groups and areas of residents. Those in the low-income group from rural areas deemed the proportionality to be less than those in other groups.

It could be seen that there was a relatively high proportionality between service and needs. However, it was found that while large hospitals separated the HIV/AIDS clinic into its own compartment, smaller hospitals provided such care in the form of a semi one-stop service clinic at the same facility as normal patients, but with a designation of a specific date and time. For example, some hospitals designated HIV/AIDS patients to receive service only on Monday and Wednesday, while others only designated 1 day per week for service to HIV patients. These clinics only provided clinical examination and treatment, while other services must be shared with other patients, e.g. drug pick-up must be made at the pharmacy along with other patients, or the patients must share the laboratory facility with other patients. Thus the HIV/AIDS-infected patients deemed that the facility lacked compartmentalization, and self-exposure created an inconvenience. The San Pa Tong Hospital was the only facility which provided the separated one-stop service, and compartmentalization was made in order to ensure the comfort, security, and confidence from the patients that they would not be discriminated or repulsed by other patients. The problem of compartmentalization of medical facility was also reported in the assessment of service system for HIV/AIDS patients receiving ARV drugs under the Universal Coverage Scheme in Thailand (2010).

In addition to the awareness about the service effectiveness with regard to responding to the patients' needs, awareness about the attitude of the care providers on presence of stigmatization and discrimination was also found to have significant influence on access to ARV drugs (Kinsler et al., 2007; Genberg et al., 2009; Duff et al., 2010). This study, however, did not encounter such problem. When awareness and perception were considered, those living in rural areas tended to have more negative perception of the service received comparing to those from urban areas, particularly with regard to the providers raising a harsh tone of voice, neglecting the patients, and asking or talking without caring much about the patients. Those with low income were significantly more likely than those with high income to sense negative treatments with regard to lack of attention or negligence. Such disparity concurred with the results of Kittaya Yothaprasert (2005) on stigmatization of AIDS patients in the healthcare system in Ratchaburi Province and the form of stigmatization/repulsion. It was found that the severity of stigmatization/repulsion of HIV/AIDS patients was associated with income and area of residence. However, unlike Kittaya Yotraprasert (2005), this study found relatively low level of stigmatization/repulsion due to the fact that most respondents had never experienced stigmatization or negative treatment, and more than half of the respondents had high level of satisfaction with health services. The highest level of satisfaction was in provision of information on lifestyle and intake of ARV drugs, followed by human relations and gestures of the service providers.

This study showed that the attitude of health personnel or service providers had improved from the past, such as in a study by The Pattanarak Foundation (2546) in Northeastern Thailand in 2002 and found problems with stigmatization and improper treatment of HIV/AIDS patients, particularly the marginalized population, due to the fact that medical personnel had received inadequate training. However, as the awareness and understanding about the importance of providing service to HIV/AIDS patients had increased, and as Chiang Mai Province had a long history of providing service to HIV patients resulting in constant improvement, the overall stigmatization from service providers had decreased, and the strong network of HIV patients also allowed for greater power to negotiate with the health service providers.

However, most HIV/AIDS patients were more likely to perceive the overall stigmatization or fear of stigmatization from the society-at-large rather than from the medical service providers alone, such as the fact that several study samples refused to join the HIV patients network, traveled from another province to receive ARV drugs in order to avoid being recognized by acquaintances in their own province, or the need for compartmentalization in order to avoid exposure. All of the mentioned problems were the results of stigmatization from the society.

5.2.3 Analysis of equity in access to antiretroviral therapy

When the samples were divided into 5 income groups, it was found that those in the richest group had nearly 4 times the per capita income of the poorest group, causing the loss of opportunity or income due to waiting time of the richest group to be higher than that of the poorest group in the same proportion. However, the direct costs for access to service were equal in proportion in each income group. When the indirect and direct costs were combined, it was found that the proportion between expense and income decreased among the higher income groups, and the negative Kakwani index (KI = – 0.1448) also showed inequity in expenditure for access to service, particularly in term of direct cost which showed higher equity than all expenditures (KI = – 0.2371). Meanwhile, an analysis of the Thai public health system showed income progressivity, i.e. fiscal equity. A study by Limwattananon (2011) showed that the Thai public health financial system had become more progressive to income after implementation of the Universal Coverage Scheme. In 2000, before the implementation of the UCS, health expenditures was regressive relative to income (KI = – 0.0038), while in 2006, the expenditures became progressive (KI = 0.0406).

However, when the proportion between expenditure in access to care with ARV drug and income was considered, it was found that the proportion did not correlate with the ability to pay, i.e. those with low income had higher burden of payment than those with high income. The results concurred with the analysis of Suphon & Wuttiphan (2554) who analyzed data from the Household Socioeconomic Status Surveys in 1996 - 2009. The analysis showed that creation of the Universal

Coverage Scheme decreased the proportion of burden of payment between the rich and the poor from 6.4-folds in 1992 to 0.9-fold in 2008.

This showed that those with low income still had higher burden of payment than those with high income, whether approached from the overall picture of the country or a particular aspect. It was found that the expenditure item with the highest proportion against the income was travel-related expenses, particularly among the poorest group which found such expense to equal up to 2.1 percent of the overall income, while among the richest group such expense only equaled 0.6 percent of the income, making travel a relatively high burden for the poor people. The results concurred with a large number of studies in the setting of other countries (Mshana et al., 2006; Ntata, 2007; Makwiza et al., 2009; Duff et al., 2010; Mekonnen et al., 2010; Okolil & Cleary, 2011). Data from the Survey on Health and Welfare 2009 showed that the poorest group had the highest usage rate for health centers (34%), while the richest group had the highest usage rate for private hospitals (33.9%). This was due to the fact that health centers were dispersed to all locations and were easily accessible. However, in order to receive ARV drugs, HIV/AIDS patients were required to receive the service at the community hospital level or higher, thus those in the low-income group had higher proportion of travel expenses than those in the high-income group.

In conclusion, on the issue of equity in access based on finances, it was found that the poor had higher proportion of ARV treatment-related expense than the rich, i.e. there was an inequity in access to care.

CHAPTER VI

CONCLUSIONS AND SUGGESTIONS

Access to antiretroviral therapy (ART) is an important component of treatment of HIV/AIDS patients. ART allows the patient to have better immunity, decreasing the morbidity rate due to opportunistic infections, and increases their quality of life. In Thailand, attempts have been made in decreasing the obstacles in access to antiretroviral (ARV) drugs by ensuring free treatment in the health insurance coverage system, together with continuous improvement in provision of service to HIV/AIDS patients. Efforts have been made in distribution of resources, both in term of personnel and budget, in order to create equity in access to ARV drugs. Although health policy emphasizes access to service, but equity in access to ARV drugs does not refer only to the provider or supply side in ensuring equal access to all HIV patients. Such effort must decrease disparities in access to health resources between populations in need with different demographic or socioeconomic statuses in order to ensure complete equity.

Therefore, the study on equity in access to ART: case study in Chiang Mai Province was conducted in order to compare access to ARV drugs among those with different demographic and socioeconomic statuses and health insurance systems. Access to ART was assessed in 3 dimensions: availability, affordability, and acceptability. In addition, the study also measured the equity in access based on the expenses incurred from receiving the service. The results of this study should be able to contribute towards policy and planning in appropriate and fair allocation of resources in order to benefit AIDS patients and achieve the goal of equity in provision of ART.

This research was a questionnaire-based quantitative study conducted simultaneously with qualitative data collection to find the facts and details that could not be obtained by quantitative methods. Medical personnel were also interviewed to gain a clearer picture of the provided service. The sample size for the quantitative study was 380 individuals selected by accidental sampling of out-patients who attended the clinic at one of the 8 study hospitals, as well as from members of the HIV-infected people network in Chiang Mai Province. Inclusion criteria for this study were HIV/AIDS patients aged 20-49 years who had been receiving ART in hospital setting for at least 6 months with first-line and basic drug regimen and must not be a participant in the Prevention of Mother to Child Transmission (PMTCT) Program. Disparities in access between different demographic groups were determined by Pearson's Chi-Square test and t-test, while equity in access to care was assessed using the Kakwani Index.

6.1 Conclusions

6.1.1 Demographic characteristics, socioeconomic status, and receiving ARV drugs

It was found that most samples were urban residents, low-land Thais, females and aged more than 40 years. More than half of the samples only had primary school level of education and were general wage-earners both within and outside the agricultural sector, thus resulting in a relatively low average monthly income of 5,320.89 Baht/month.

In term of health insurance, more than 4 out of 5 respondents were under the Universal Coverage Scheme, allowing them to receive ARV drugs and medical services free-of-charge, while with regard to provision of ARV drugs, it was found that most respondents had been taking ARV drugs for 7-10 years, with CD4 level of more than 500 cell/mm^3 and the mean count of 497.31 cell/mm^3. Most respondents had changed the regimen on 1 occasion due to the side effects. The most common regimen at the time of study was GPO VIR Z. Respondents under the Social Security scheme reported more difficulty in changing the drug regimen than those under other health insurance systems, while those in the low income group changed the regimen less commonly than other groups.

6.1.2 Disparities in access to ART

Access in this study was classified according to Thiede et al. (2007) and McIntyre et al. (2009) into the following 3 dimensions:

1) Availability

Providing adequate service included both the level of service provided and the ability to access such service. It was found that those in the rural areas and those with low income faced problems due to longer waiting time than other groups, as most individuals in the mentioned groups were required to use public transportation even though the actual traveling distance was equal to others. However, those under the Social Security Scheme faced problem with regard to the greater distance between their place of residence/work and the medical facility due to limitation in choice of hospitals under the scheme.

However, with regard to the adequacy of personnel and time and date of service, it was found that there were no significant differences between population groups, but most samples indicated that the number of personnel and date and time of service should be increased, as the waiting time for service was quite long, requiring them to miss work and caused them to lose income.

2) Affordability

Although HIV/AIDS patients are covered by health coverage to receive ART free of charge, but other related expenses, particularly the cost of travel, were considered to be of the highest proportion in service-related expenses. Although no significant differences were found between population groups, it could be observed that those with low income had to pay travel expenses at a similar amount to those with high income, reflecting the fact that the costs were not proportionate to the ability to pay.

With regard to the loss of opportunity or loss of income, it was found that men, those under the Social Security Scheme, and those with high income had higher loss of opportunity than other groups, significantly influencing the overall cost of service which also turned out to be significantly higher than other groups.

The main source of cash to pay for service-related expenses was the wage earned from work. Among the lower income group, however, the proportion of those who were required to take loans and ask for assistance from relatives was higher than in the higher income group, but the disparity was not statistically significant.

3) Acceptability

The fact that each hospital provided service for HIV/AIDS patients separately helped the service to be more convenient and capable of adequately addressing the needs or expectations of the study samples, including provision of advice regarding drug use, listening to the patient's complaints about the problems or obstacles in taking the medication, friendliness in providing service, as well as maintaining the patient's confidentiality. However, it was found that for special clinics, the proportion of those in the low income groups and those from rural area who stated that they had privacy during service was lower than those from other groups, as small medical facilities in some remote areas only had separate service for physical examination and treatment, but the HIV/AIDS-infected patients were still required to share the pharmacy or laboratory facilities with normal outpatients, resulting in the mentioned disparity.

In addition, it was more common for those with low income and those from rural areas to sense negative treatment than other groups, whether by harsh tone of voice, lack of attention or care, and asking or talking without caring much about the patients. However, more than half of all samples still indicated a high level of satisfaction, particularly in the practice of giving advice or recommendation on taking ARV drugs.

Therefore, the problem of stigmatization or discrimination was the one sensed by the HIV/AIDS-infected patients themselves rather than the healthcare providers, whom had been trained and educated continuously. In addition, the presence of a strong HIV-positive network in the area also allowed for greater power to negotiate with the healthcare providers.

6.1.3 Analysis of equity in access to antiretroviral treatment (ART)

Equity in access was assessed based on financial equity using the Kakwani index. The index was found to be negative, which meant that the poor had to allocate a higher proportion of their income for ART than the rich, i.e. there was inequity in access to service. The most unfair expense was the cost of travel, as previously mentioned with regard to the relatively high proportion of travel-related expense in comparison to the overall expense. Meanwhile, the absolute value of the expense was found to be similar among the income groups, thus there was no equity as the amount of travel expense was not proportionate to the ability to pay. The poor, who had low ability to pay, should bear lower expenses than those with higher ability to pay.

6.2 Recommendations from the study

1. Although the availability of health insurance helped to reduce the expenses related to medical service, but other expenses still existed, particularly the cost of travel which posed a burden on the poor and those living in rural areas. Therefore, capacity building in ART should be undertaken among primary care facilities near the residential areas, e.g. sub-district health promotion hospitals (health centers) to be able to provide service to HIV/AIDS patients who only required drug refill without the need to see the doctor. Such action would help to reduce the cost of travel and the congestion experienced at large hospitals, resulting in efficiency and effectiveness of the service and reduction in the loss of opportunity due to absence from work.

2. In order for the expansion of ART to primary health care facilities to be effective, in-depth training must be provided to the personnel of the mentioned primary care facilities to appropriately and correctly provide ARV drugs.

3. A proper understanding should constantly be made with the HIV/AIDS patients' community that AIDS is simply a normal disease just like any other chronic illness in order for the society to understand and reduce its discrimination. A problem that may be encountered at the primary health care level is that the HIV/AIDS patients may be afraid to reveal their status to their local acquaintances due to fear of stigmatization or discrimination, as well as the perception of negative treatment. This could be observed in cases where the patient traveled across the province or district simply to receive treatment at a hospital outside the area in order to hide the HIV/AIDS infection status from others in the patient's society. The mentioned group of patients who have high expense in access to treatment, therefore:

4. The service facility should be compartmentalized in order for HIV/AIDS patients to feel comfortable, safe, and confident that they would not be discriminated or repulsed by other patients. At present, such compartmentalization is being made appropriately, but the service should be modified to become more comprehensive, such as in the case of San Pa Tong Hospital in which patient registration, treatment, and drug dispensary were included in the same area and separated from other patients. Aside from increasing the confident among HIV/AIDS-infected patients, such practice also helped reduce delay in provision of service.

5. As for the problem of delay in receiving health service, there would be collaboration or extension of the role of the network of HIV-positive volunteers to assist the work of the medical facilities, e.g. patient screening and preliminary examination, serving as an additional way to increase the number of staff. In addition, enhancing the role of the volunteers to be involved in health promotion on the topic of how to take ARV drugs, and prevention of the spread of diseases also might help to increase the level of trust among new HIV/AIDS-infected patients, as the volunteers can communicate to the patients as their own peers and were more able to relate to the patients than medical personnel. However, a budget should also be allocated to these volunteers in order to create incentive for work.

6. Requirements and conditions for receiving ART should be modified to be equal among the 3 main health coverage schemes. The study found disparities in access to ART between the 3 main health coverage schemes, particularly among those under Social Security Scheme who were required to pay the premiums but had more limited benefits and rights to service than other groups, including the choice of medical facility which was significantly more limited than those under the Universal Coverage Scheme.

6.3 Suggestion for Future Studies

1. A study should be made on equity in other specific groups, e.g. men who have sex with men (MSM), adolescents, commercial sex workers, inmates, etc. as these groups require a different form of service in order to achieve coverage, more appropriate adjustment to each group, and greater equity.

2. The study on equity may require in-depth interviews in order to obtain information on extra costs, e.g. medical examination in addition to the routine examination to receive the drugs, or other expenses related to access to care, including treatment of opportunistic infections, and adverse reactions to ARV drugs. The use of questionnaires alone cannot account to all the mentioned expenses.

3. The study should be expanded to other areas with different contexts in order to illustrate the disparities in population groups that may be context-specific.

4. The study may be further extended by analyzing the factors affecting access using multivariate statistical analysis methods.

5. At the time of study, the concept of access was still broadly defined without clear conclusion on the indicators or evaluation criteria as to the issues covered. Therefore, a study on the development of indicators or criteria for assessment of access should be made in order to ensure greater coverage and clarity.

BIBLIOGRAPHY

English

Anand, S., et al. (2001) “Measuring disparities in health: methods and indicators.” In Evan, T., et al.(eds.), *Challenging inequities in health: from ethics to action*. New York: Oxford University Press.

Allin, S., Quevedo, C.H. & Masseria, C. (2009) “Measuring equity of access to health care.” In Smith, Peter C., et al. (eds.), *Performance measurement for health system improvement: experiences, challenges and prospects*. Cambridge; New York: Cambridge University Press.

Andersen, R.M., et al. (1983) “Exploring Dimensions of Access to Medical Care.” *Health Services Research, 18*(1), 49 – 74.

Andersen, R.M., et al. (1995) “Revisiting the behavioral model and access to medical care: does it matter?.” *Journal of Health and Social Behavior, 36*, 1 – 10.

Andersen, R.M., et al. (2000) “Access of vulnerable groups to antiretroviral therapy among persons in care for HIV disease in the United States. HCSUS Consortium. HIV Cost and Services Utilization Study.” *Health Services Research, 35*(2), 389 – 416.

Andersen, R.M., et al. (2002) “Access to medical care for low-income person: how do communities make a difference.” *Medical Care Research and Review, 59*, 384 – 411.

Armstrong, R. (2010) “Fairness and equity in the provision of anti-retroviral therapy: some reflections from Lesotho.” *Developing World Bioethics, 10*(3), 129 – 140.

Bagheri, N., Benwell, G. L. & Holt, A. (2005) Measuring spatial accessibility to primary health care. Paper presented at SIRC 2005 – The 17th Annual Colloquium of the Spatial Information Research Centre University of Otago, Dunedin, New Zealand November 24th – 25th 2005.

Bartlett, J. A., et al. (2009) “Obstacles and Proposed Solutions to Effective Antiretroviral Therapy in Resource-Limited Settings.” *Journal of the International Association of Physicians in AIDS Care, 8*(4), 253 – 268.

Benjakul, Sarunya. (2004) Equity of health care utilization by the elderly population in Thailand during the periods of the economic bubble and after the economic crisis: policy options. Thesis submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy (Medical and Health Social Sciences) Faculty of Graduate Studies Mahidol University.

Berwick, D. (2002) “We all have AIDS: case for reducing the cost of HIV drugs to zero.” *British Medical Journal, 324,* 214 – 218.

Bluestone, K. (2001) “Safeguarding developing countries’ rights to affordable medicines for HIV/AIDS: how effective are international trade rules?.” *Lancet 6*, 161 – 162.

Bosanac, E.M., et al. (1976) “Geographic Access to Hospital Care: A 30-Minute Travel Time Standard.” *Medical Care, 14*(7), 616 – 624.

Braveman, P. & Gruskin, S. (2003) “Defining equity in health.” *Journal of Epidemiology and Community Health, 57,* 254 – 258.

Carmody, Ellie R., et al. (2003) “An evaluation of antiretroviral HIV/AIDS treatment in a Rio de Janeiro public clinic.” *Tropical Medicine and International Health, 8*(5), 378 – 385.

Center for Pharmaceutical Management. (2003). Defining and Measuring Access to Essential Drugs, Vaccines, and Health Commodities: Report of the WHO-MSH Consultative Meeting, Ferney-Voltaire, France, December 11–13, 2000. Prepared for the Strategies for Enhancing Access to Medicines Program. Arlington, VA: Management Sciences for Health.

Chakrapani, V., Newman, P. A. & Dubrow, R. (2008) “Barriers to free antiretroviral treatment access for marginalized groups in india: policy and programmatic implications to ensure equity.” *Policy brief,* November 30, 2008.

Chaudhuri, A. & Roy, K. (2008) “Changes in out-of-pocket payments for healthcare in Vietnam and its impact on equity in payments, 1992–2002.” *Health Policy, 88*(1), 38 – 48.

Cleary, S., et al. (2011) “Equity in the use of antiretroviral treatment in the public health care system in urban South Africa.” *Health Policy, 99*(3), 261 – 266.

Community Medicine Department (2004) *A Rapid situation analysis of the access to care project in Northern Thailand.* Chiang Mai: Chiang Mai University.

Culyer, A.J. (1995) “Need: The idea won’t do – but we still need it.” *Social Science & Medicine, 40*(6), 727 – 730.

Culyer, A.J. (2001) “Equity – some theory and its policy implications.” *Journal of Medical Ethics, 27,* 275 – 283.

Culyer, A.J. & Wagstaff, A. (1993) “Equity and equality in health and health care.” *Journal of Health Economics, 12,* 431 – 457.

Donaldson, C. & Gerard, K. (1993) *Economics of Health Care Financing: The Visible Hand*. London: Macmillan.

Duff, Putu., et al. (2010) “Barriers to accessing highly active antiretroviral therapy by HIV-positive women attending an antenatal clinic in a regional hospital in western Uganda.” *Journal of the International AIDS Society, 22*(13) Retrieved February 11, 2012, from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2954932/

Ford, Nathan., et al. (2007) “Sustaining access to antiretroviral therapy in the less-developed world: lessons from Brazil and Thailand.” *AIDS, 21,* Suppl 4: S21 – 29.

Genberg, Becky L., et al. (2009) “A comparison of HIV/AIDS-related stigma in four countries: Negative attitudes and perceived acts of discrimination towards people living with HIV/AIDS.” *Social Science & Medicine, 68*(12), 2279 – 2287.

Goddard, M. & Smith, P. (2001) “Equity of access to health care services: Theory and evidence from the UK.” *Social Science & Medicine, 53,* 1149 – 1162.

Gold, Marsha. (1998) “Beyond Coverage and Supply: Measuring Access to Healthcare in Today’s Market.” *Health Services Research, 33*(3), 625 – 652.

Gulliford, M., et al. (2002) “What does ‘access to health care’ mean?.” *Journal of Health Services Research and Policy, 7*(3), 186 – 188.

Harris B, et al. (2011) “Inequities in access to health care in South Africa.” *Journal of Public Health Policy,32,* S102 – S123.

Jordan R, Gold L, Cummins C & Hyde C. (2002) “Systematic review and meta-analysis of evidence for increasing numbers of drugs in antiretroviral combination therapy.” *BMJ, 324,* 757 – 760.

Kanjana Tisayaticom, et al. (2006) *Thailand National AIDS spending assessment 2000-2004.* [on-line] Available: http://data.unaids.org/pub/Report/2009/nasa_thailand_0001020304_07082009_en.pdf.

Keiser, P., et al. (2001) “Long-term impact of highly active antiretroviral therapy on HIV-related health care costs.” *Journal of Acquired Immune Deficiency Syndromes, 27,* 14 – 19.

Keruly, J. C., Conviser, R., & Moore, R. D. (2002) “Association of medical insurance and other factors with receipt of antiretroviral therapy”. *American Journal of Public Health, 92,* 852 – 857.

Kinsler, J.J., et al. (2007) “The effect of perceived stigma from a health care provider on access to care among a low-income HIV-positive population.” *AIDS Patient Care and STDs, 21*(8), 584 – 592.

Kitajima, T., et al. (2005) “Access to antiretroviral therapy among HIV/AIDS patients in Khon Kaen Province, Thailand.” *AIDS Care, 17*(3), 359 – 366.

Kittaya Yothaprasert. (2005) Stigmatization of AIDS patients in the medical care service system. Thesis submitted in partial fulfillment Of the requirements for The degree of master of arts (medical and health social science) Faculty of graduate studies Mahidol university.

Lairson, D.R., et al. (1995) “Equity of health care in Australia.” *Social Science and Medicine, 41* (4), 475 – 482.

Le Coeur, S., et al. (2009) “Gender and access to HIV testing and antiretroviral treatments in Thailand: why do women have more and earlier access?.” *Social Science and Medicine, 69* (6), 846 – 853.

Le Grand, J. (1987) “Equity, Health, and Health Care.” *Social Justice Research, 1*(3), 257 – 274.

Lertpiriyasuwat, C., et al. (2004) *Access to antiretroviral drugs in northern Thailand: perspectives of persons living with HIV/AIDS.* International Conference on

AIDS. July 11 – 16, 2004; 15: abstract no. ThPeB7185. [on-line] Available: http://gateway.nlm.nih.gov/MeetingAbstracts/ma?f=102280965.html.

Lillie-Blanton, M., et al. (2010) "Association of Race, Substance Abuse, and Health Insurance Coverage With Use of Highly Active Antiretroviral Therapy Among HIV-Infected Women, 2005." *American Journal of Public Health, 100*(8), 1493 – 1499.

Limwattananon S., et al. (2011) *The equity impact of Universal Coverage: health care finance, catastrophic health expenditure, utilization and government subsidies in Thailand*. International Health Policy Program, Ministry of Public Health, Thailand.

Lloyd-Smith, Elisa, et al. (2006) "Impact of HAART and injection drug use on life expectancy of two HIV-positive cohorts in British Columbia." *AIDS, 20*(3), 445 – 450.

Loubiere, S., et al. (2009) "Decentralization of HIV care in Cameroon: Increased access to antiretroviral treatment and associated persistent barriers." *Health_policy, 92*, 165 – 173.

Lu, R.J., et al. (2007) "Horizontal equity in health care utilization evidence from three high-income Asian economies." *Social Science and Medicine, 64*(1), 199 – 212.

Macklin, R. (2004) *Ethics and Equity in Access to HIV Treatment – 3 by 5 Initiative*. Background paper for the Consultation on Ethics and Equitable Access to Treatment and Care for HIV/AIDS. Geneva, Switzerland.

Mackenbach, K. & Kunst, A. (1997) "Measuring the magnitude of socio-economic inequalities in health: an overview of available measures illustrated with two examples from Europe." *Social Science and Medicine, 44*(6), 757 – 771.

Makwiza, I., et al. (2006) "Equity, justice, accountability, sustainability and efficiency: monitoring equity and health systems in the provision of anti-retroviral therapy in Malawi." *Malawi Medical Journal, 18*(2), 84 – 88.

Makwiza, I., et al. (2009) "Who has access to counseling and testing and anti-retroviral therapy in Malawi – an equity analysis." *International Journal* for Equity in Health, 8(13). Retrieved February 20, 2012, from http://www.equityhealthj.com/content/8/1/13/

McGuire, A., Henderson, J. & Mooney, G. (1987) *The economics of health care : An introductory text*. London : Routledge & Kegan Paul.

McIntyre, D., Thiede, M. & Birch, S. (2009) “Access as a policy-relevant concept in low- and middle-income countries.” *Health Economics, Policy and Law, 4*, 179 – 193.

Medley G.F., et al., (1988) “Estimating the incubation period for AIDS patients.” *Nature, 333*, 504 – 505.

Mekonnen, Yared, Rachel Sanders, Senait Tibebu, & Priya Emmart. (2010) *Equity and Access to ART in Ethiopia*. Washington, DC: Futures Group, Health Policy Initiative, Task Order 1.

Ministry of Public Health. (2008) *The Asian Epidemic Model (AEM) projections for HIV/AIDS in Thailand : 2005-2025*. Nonthaburi: The Ministry of Public Health.

Mooney, G. (1983) “Equity in health care: Confronting the confusion.” *Effective health care, 1*(4), 179 – 185.

Mooney, G. (1994) *Key Issues in Health Economics*. New York: Harvester Wheatsheaf.

Mooney, G. (1998) “And now for vertical equity? Some concerns arising from Aboriginal health in Australia.” *Health Economics, 5*(2), 99 – 103.

Mooney, G. (2009) “Is it not time for health economists to rethink equity and access?.” *Health Economics, Policy and Law, 4*, 209 – 221.

Mooney, G., Hall, J., Donaldson, C. & Gerard, K. (1991) “Utilisation as a measure of equity: weighing heat?.” *Journal of Health Economics, 10*, 476 – 480.

Mooney, G., Hall, J., Donaldson, C. & Gerard, K. (1992) “Reweighting heat: Response to Culyer, van Doorslaer and Wagstaff.” *Journal of Health Economics, 11*, 199 – 205.

Moore RD. (2000) “Cost effectiveness of combination HIV therapy: 3 years later.” *Pharmacoeconomics, 17*, 325 – 330.

Morales, C., Cid Pedraza, C. & Souteyrand, Y. (2003) “Expanding Access to Antiretroviral Therapies in Chile: Economic and Financial Issues for

Patients and the Health System" In Moatti, Jean-Paul., et al. (ed.) *Economics of AIDS and Access to HIV/AIDS Care in Developing Countries. Issues and Challenges.* Paris : ANRS, Collection Sciences Sociales et Sida.

Morris, S., Devlin, N. & Parkin, D. (2007) *Economic analysis in health care*. Chichester ; Hoboken, NJ : John Wiley & Sons.

Mshana, G. H., et al. (2006) "Barriers to accessing antiretroviral therapy in Kisesa, Tanzania: A qualitative study of early rural referrals to the National Program." *AIDS* Patient care and STDs, 20 (9), 649 - 657.

Muula, A.S., et al. (2007) "Gender distribution of adult patients on highly active antiretroviral therapy (HAART) in Southern Africa: a systematic review." *BMC Public Health, 7*(63). Retrieved March 11, 2012, from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1868718/

Nattrass, Nicoli. (2008) "Gender and Access to Antiretroviral Treatment in South Africa." *Feminist Economics, 14*(4), 19 – 36.

Ntata, Pierson R.T. (2007) "Equity in access to ARV drugs in Malawi." *Journal of Social Aspects of HIV/AIDS, 4*(1), 564 – 574.

Okoli1, Chijioke I., & Cleary, Susan M. (2011) "Socioeconomic status and barriers to the use of free antiretroviral treatment for HIV/AIDS in Enugu State, south-eastern Nigeria." *African Journal of AIDS Research, 10*(2), 149 – 155.

Oliver, A. & Mossialos, E. (2004) "Equity of access to health care: outlining the foundations for action." *Journal of Epidemiology and Community Health, 58*, 655 – 658.

Olsen, Abel Jan. (1997) "Theories of justice and their implications for priority setting in health care" *Journal of Health Economics, 16*, 625 – 639.

O'Donnell, O., et al. (2008) *Analyzing health equity using household survey data : a guide to techniques and their implementation*. Washington, D.C.: The World Bank.

Palmer, N. (2008) "Access and equity: Evidence on the extent to which health services address the needs of the poor" In Bennett, Sara. (ed.) *Health, Economic*

Development and Household Poverty: From understanding to action. London; New York: Routledge.

Pannarunothai, S. & Rehnberg, C. (1998) *Equity in the delivery of health care in Thailand*. Nonthaburi: Health Systems Research Institute.

Panelli, R., Gallagherb, L. & Kearnsc, R. (2006) "Access to rural health services: Research as community action and policy critique." *Social Science & Medicine, 62*(5), 1103 – 1114.

Penchansky, R. & Thomas, W. (1981) "The concept of Access : Definition and Relationship to Consumer Satisfaction." *Medical Care, 19*(2), 127 – 140.

Pereira, J. (1989) *What does equity in health mean?*. Discussion paper No 61. Health Economics, University of York. [on-line] Available: http://www.york.ac.uk/inst/che/pdf/DP61.pdf.

Posse, M., et al. (2008) "Barriers to access to antiretroviral treatment in deviloping countries: a review." *Tropical Medicine and International Health, 13*(7), 904 – 913.

Prakongsai, Phusit. (2005) An application of asset index for measuring household living standards in Thailand. การประชุมวิชาการระดับชาติของนักเศรษฐศาสตร์ ครั้งที่ 1, 28 ตุลาคม 2548. 17 หน้า Available from URL: http://www.nesdb.go.th/econSocial/macro/TNCE/Download/Phusit.pdf

Prakongsai, Phusit. (2008) The Impact of the Universal Coverage Policy on Equity of the Thai Health Care System. Thesis submitted to the University of London for the Degree of Doctor of Philosophy Health Policy Unit Department of Public Health and Policy London School of Hygiene and Tropical Medicine.

Razum, O. & Okoye, S. (2001) "Affordable antiretroviral drugs for developing countries: dreams of the magic bullet." *Tropical Medicine and International Health, 6*, 421.

Revenga, Ana., et al. (2006) *The Economics of effective AIDS treatment : evaluating policy options for Thailand*. Washington, DC: World Bank.

Ricketts, T.C. & Goldsmith, L.J. (2005) "Access in health services research: The battle of the frameworks." *Nursing Outlook, 53*, 274 – 280.

Saether, S.T., et al. (2007) “Migrants’ access to antiretroviral therapy in Thailand.” *Tropical Medicine and International Health, 12*(8), 999 – 1008.

Sen, A. (1997) *Inequality re-examined*. (4th edition.) Cambridge, Massachusetts: Harvard University Press.

Shapiro, M. F., et al. (1999) “Variations in the care of HIV-infected adults in the United States.” *Journal of American Medical Association, 281*, 2305 – 2315.

Smith, S.R. & Kirking, D.M. (1999) “Access and use of medications in HIV disease.” *Health Services Research, 34*(1 pt 1), 123 – 144.

Suwat Chariyalertsak, et al. (2006a) *Demand for Enrolment in Antiretroviral Program Among HIV Positive Individuals Who Are on the Waiting List*. Bangkok: International Health Policy Program, Ministry of Public Health.

Suwat Chariyalertsak, et al. (2006b) *Supply capacity for scaling up the voluntary counseling & testing and ART program in Thailand : Final report*. Bangkok: International Health Policy Program, Ministry of Public Health.

Sykes, R. (2002) “Commentary: The reality of treating HIV and AIDS in poor countries.” *British Medical Journal, 324*, 216– 217.

Teixeira, P. R., et al. (2004) “Antiretroviral treatment in resource-poor settings: the Brazilian experience.” *AIDS, 18* (Supplement 3), S5 – S7.

Thai Working Group on National AIDS Spending Assessment. (2010) *National Expenditure on HIV/AIDS 2008-2009*. Final version. Reporting date March 10,2010. [on-line] Available: http://ihppthaigov.net/publication/attachresearch/190/chapter1.pdf.

Thiede, M. (2005) “Information and access to health care: is there a role for trust?.” *Social Science & Medicine, 61*, 1452 – 1462.

Thiede, M., Akweongo, P. and McIntyre, D. (2007) “Exploring the dimensions of access.” In McIntyre, Di. And Mooney, G. (ed.) *The Economics of Health Equity*. Cambridge ; New York : Cambridge University Press.

Thieren, M. (2005) Technical Meeting for the Development of a Framework for Universal Access to HIV/AIDS Prevention, Treatment and Care in the Health Sector. Background paper on the concept of universal access. WHO, Geneva, 18 – 20 October 2005.

Toebes, B. (1999) *The Right to Health as a Human Right in International Law Intersentia, Antwerpen.* Brussels/Oxford, Intersentia/HART.

Travassos, C. & Martinez, M. (2004) “A review of concepts in health services access and utilization.” *Journal of Public Health, 20,* suppl.2, s190 – s198.

Tsai, Alexander C., Chopra, Mickey, Pronyk, Paul M. & Martinson, Neil A. (2009) “Socioeconomic disparities in access to HIV/AIDS treatment programs in resource-limited settings.” *AIDS Care, 21*(1), 59 – 63.

UNAIDS. (2009) *AIDS epidemic update*. Switzerland : UNAIDS, December 2009.

UNAIDS. (2010) *Getting to zero: 2011-2015 strategy Joint United Nations Programme on HIV/AIDS (UNAIDS).* Switzerland : UNAIDS.

United Nations Research Institute for Social Development (UNRISD). (2007) Conference news. Equitable access to health care and infectious disease control: concepts, measurement and interventions. Geneva: United Nations Research Institute for Social Development; 2007

United Nations. (2004) *The impact of AIDS.* Department of Economic and Social Affairs, Population Division. New York : United Nations.

Valenti W.M. (2001) “HAART is cost-effective and improves outcomes.” *AIDS Read, 11*, 260 – 262.

van Doorslaer, E., & Wagstaff, A. (1992) “Equity in the delivery of health care: Some international comparisons.” *Journal of Health Economics, 11,* 389 – 411.

van Doorslaer, E., Masseria, C. & Koolman, X. (2006) “Inequalities in access to medical care by income in developed countries.” *Canadian Medical Association Journal, 174*(2), 177 – 183.

van Doorslaer, E., Wagstaff, A. & Rutten, F. (1993) *Equity in the finance and delivery of health care: An international perspective.* London: Oxford University Press.

Vanlandingham, M., Im-em, W. & Yokota F. (2006) “Access to treatment and care associated with HIV infection among members of AIDS support groups in Thailand”. *AIDS Care, 18*(7), 637 – 646.

Wagstaff, A. & van Doorslaer, E. (2000) “Equity in Health Care Finance and Delivery” In Culyer, A.J. and Newhouse, J.P. (ed.) *Handbook of Health Economics*. Amsterdam; Elsevier.

Wagstaff, A., van Doorsler, E. & Paci, P. (1989) “Equity in the finance and delivery of health care: some tentative cross-country comparisons.” *Oxford Review of Economic Policy, 5*(1), 89 – 112.

Waters, H.R. (2000) “Measuring equity in access to health care.” *Social Science and Medicine, 51,* 599 – 612.

Weiser, S., et al. (2003). “Barriers to antiretroviral adherence for patients living with HIV infection and AIDS in Botswana.” *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology, 3,* 281 – 288.

West, P. (1981) “Theoretical and practical equity in the National Health Service in England.” *Social Science and Medicine, 15c,* 117 – 122.

Whitehead, M. (1992) “The concepts and principles of equity and health.” *International Journal of Health Services, 22*(3), 429 – 445.

Whitehead, M. & Dahlgren, G. (2007) *Concepts and principles for tackling social inequities in health: Levelling up Part 1*. Denmark : WHO Regional Office for Europe.

Wood, E., et al. (2002) “Socioeconomic status, access to triple therapy, and survival from HIV-disease since 1996.” *AIDS,16*(15), 2065 – 2072.

World Health Organization. (2000a) *Equity in access to public health*. Report and Documentation of the Technical Discussions held in conjunction with the 37th Meeting of CCPDM New Delhi, August 31, 2000.

World Health Organization. (2000b) MSH (Management Sciences For Health): Defining and Measuring Access to Essential Drugs, Vaccines, and Health Commodities. Report of the WHO-MSH Consultative Meeting. Ferney-Voltaire, France, December 11–13, 2000.

World Health Organization. (2000c) *WHO Medicines Strategy: 2000 - 2003*. Geneva : World Health Organization Essential Drugs and Medicines Policy Department

World Health Organization. (2005) *Health and the Millennium Development Goals*. Geneva : World Health Organization.

World Health Organization. (2009) *Health inequities in the South-East Asia Region: selected country case studies*. India : World Health Organization, Regional Office for South-East Asia.

Yamane, T. (1973) *Statistic, an Introductory Analysis*. 3 rd ed. New York: Harper and Row.

Yamey, G. & Rankin, W. (2002) “AIDS and global justice.” *British Medical Journal, 324*, 181– 182.

Thai

กระทรวงสาธารณสุข. (2550) *การสาธารณสุขไทย 2548-2550.* สุวิทย์ วิบุลผลประเสริฐ (บรรณาธิการ). กรุงเทพฯ : สำนักนโยบายและยุทธศาสตร์ กระทรวงสาธารณสุข.

กระทรวงสาธารณสุข. (2554) *การสาธารณสุขไทย 2551-2553.* สุวิทย์ วิบุลผลประเสริฐ (บรรณาธิการ). กรุงเทพฯ : สำนักนโยบายและยุทธศาสตร์ กระทรวงสาธารณสุข.

มูลนิธิพัฒนรักษ์. (2546) *เสียงจากคนชายขอบ*. กาญจนบุรี : มูลนิธิพัฒนรักษ์.

ฉัตรสุมน พฤฒิภิญโญ. (2553) *เศรษฐศาสตร์ประยุกต์: งานสุขภาพและสาธารณสุข*. กรุงเทพ : เจริญดีมั่นคงการพิมพ์.

ประกาศคณะกรรมการการแพทย์ ตามพรบ.ประกันสังคม เรื่องหลักเกณฑ์และอัตราสำหรับประโยชน์ทดแทนกรณีผู้ประกันตนที่ติดเชื้อ HIV และผู้ประกันตนที่เป็นโรคเอดส์ 4 ธันวาคม.2549, บังคับใช้ 1 มกราคม.2550.

ประพันธ์ ภานุภาค และคนอื่น ๆ. บรรณาธิการและเรียบเรียงเนื้อหา (2553) *แนวทางการตรวจวินิจฉัยและการดูแลรักษาผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์ ระดับชาติ ปี พ.ศ. 2553.* พิมพ์ครั้งที่ 1. กรุงเทพ : ศูนย์พัฒนาระบบบริการยาต้านไวรัสสำหรับผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์ในประเทศไทย.

ปัทมา ว่าพัฒนวงศ์. (2550) วิธีการสร้างดัชนีวัดสถานภาพเศรษฐกิจสังคม. การประชุมวิชาการประชากรศาสตร์แห่งชาติ 2550 จัดโดยสมาคมนักประชากรไทย.

ลลิดา ชานนท์. (2549) “การประเมินผลโครงการการเข้าถึงบริการยาต้านไวรัสเอชไอวีระดับชาติสำหรับผู้ติดเชื้อ/ผู้ป่วยเอดส์ จังหวัดกาญจนบุรี ปี 2547 – 2549”. *วารสารวิชาการสาธารณสุข*. 15(4), 632 – 637.

วิทยา กุลสมบูรณ์, สถิตพงศ์ ธนวิริยะกุล และ วสันต์ ภิญโญวิวัฒน์. (2547) “การวิเคราะห์ต้นทุนผลได้เพื่อรวมสิทธิประโยชน์การให้ยาต้านเชื้อไวรัสเอชไอวีในระบบประกันสุขภาพถ้วนหน้า”. *วารสารวิชาการสาธารณสุข*. 13(6), 1022 – 1033.

วิโรจน์ ณ ระนอง และ อัญชนา ณ ระนอง. (2550) *ดัชนีชี้วัดความเป็นธรรมด้านสุขภาพ*. รายงานเล่มที่ 2. ชุดโครงการวิจัยประเมินผลกระทบของระบบประกันสุขภาพถ้วนหน้าด้านการเงินการคลัง: โครงการวิจัยการใช้ข้อมูลการสำรวจมาวัดผลกระทบของโครงการ 30 บาทฯ และหลักประกันสุขภาพถ้วนหน้าที่มีต่อภาระค่าใช้จ่ายด้านสุขภาพของประชาชนและการลดความยากจน และการสร้างดัชนีชี้วัดความเป็นธรรมด้านสุขภาพ. กรุงเทพ : สถาบันวิจัยเพื่อการพัฒนาประเทศไทย.

ศักดิ์ชัย ไชยมหาพฤกษ์. (2546) “การประเมินผลโครงการรักษาผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์ด้วยยาต้านไวรัสแบบสามชนิดพร้อมกันในเขต 9”. *วารสารวิชาการสาธารณสุข*, 12(1), 138 - 143.

ศุภสิทธิ์ พรรณารุโนทัย. (2543) *ความเป็นธรรมในระบบสุขภาพ*. พิมพ์ครั้งที่ 1. นนทบุรี : สถาบันวิจัยระบบสาธารณสุข.

ศุภสิทธิ์ พรรณารุโณทัย. (2544) *เศรษฐศาสตร์สาธารณสุข ในยุคปฏิรูประบบสุขภาพ*. พิมพ์ครั้งที่ 2. พิษณุโลก : ศูนย์วิจัยและติดตามความเป็นธรรมทางสุขภาพ คณะแพทยศาสตร์ มหาวิทยาลัยนเรศวร.

ศุภสิทธิ์ พรรณารุโณทัย และ ดิเรก ปัทมสิริวัฒน์. (2544) *ดัชนีเศรษฐมหภาคเพื่อวัดความเป็นธรรมทางการคลังและการใช้บริการสาธารณสุขระหว่างปี 2529-2541*. ศูนย์วิจัยและติดตามความเป็นธรรมทางสุขภาพ คณะแพทยศาสตร์ มหาวิทยาลัยนเรศวร.

สงวน นิตยารัมภ์พงศ์. (2548) *บนเส้นทางสู่หลักประกันสุขภาพถ้วนหน้า*. กรุงเทพ : มติชน.

สถาบันวิจัยและพัฒนาองค์การเภสัชกรรม.(2545) *การผลิตยาต้านไวรัสเอดส์*. กรุงเทพ : องค์การเภสัชกรรม.

สมชาย สุขสิริเสรีกุล. (2551) *เศรษฐศาสตร์สุขภาพ*. พิมพ์ครั้งที่ 1.กรุงเทพ : สำนักพิมพ์แห่งจุฬาลงกรณ์มหาวิทยาลัย.

สุพล ลิมวัฒนานนท์ และวุฒิพันธ์ วงษ์มงคล (2554) วิเคราะห์การสำรวจอนามัยและสวัสดิการ พ.ศ. 2552 ใน *การสาธารณสุขไทย 2551-2553*. สุวิทย์ วิบุลผลประเสริฐ (บรรณาธิการ). กรุงเทพฯ : สำนักนโยบายและยุทธศาสตร์ กระทรวงสาธารณสุข.

สำนักงานโครงการพัฒนาแห่งสหประชาชาติ (2547) *ประเทศไทยกับโรคเอดส์ : ความก้าวหน้าและสิ่งท้าทาย*. กรุงเทพ : สำนักงานโครงการพัฒนาแห่งสหประชาชาติ.

สำนักงานวิจัยเพื่อการพัฒนาหลักประกันสุขภาพไทย. (2553) *รายงานการประเมินระบบบริการของผู้ที่รับยาต้านไวรัสเอดส์ภายใต้ระบบประกันสุขภาพ ในประเทศไทย*. นนทบุรี : สำนักงานวิจัยเพื่อการพัฒนาหลักประกันสุขภาพ.

สำนักงานหลักประกันสุขภาพแห่งชาติ. (2550) *คู่มือบริหารจัดการ การดูแลผู้ติดเชื้อเอชไอวี/ผู้ป่วยเอดส์ ภายใต้ระบบหลักประกันสุขภาพถ้วนหน้า*. นนทบุรี : สำนักงานหลักประกันสุขภาพแห่งชาติ.

สำนักระบาดวิทยา, กรมควบคุมโรค, กระทรวงสาธารณสุข. (2554) *สถานการณ์โรคเอดส์ (AIDS)*. [on-line] Available: http://www.boe.moph.go.th/files/report/20111206_35941163.pdf.

สุวจี จันทร์ถนอม-กู๊ด. (2543) *รายงานโครงการวิจัยการค้นหาแนวคิดเรื่องสิทธิและความเป็นธรรมในสุขภาพจากมุมมองทางสังคมและวัฒนธรรม เพื่อการปฏิรูปการดูแลสุขภาพในประเทศไทย*. นนทบุรี : สถาบันวิจัยระบบสาธารณสุข.

อมร รักษาสัตย์ และคณะ. (2544) *การเมืองการปกครองไทย ตามรัฐธรรมนูญฉบับประชาชน*. (พิมพ์ครั้งที่ 2). กรุงเทพ : โรงพิมพ์ วี.เจ.พรินติ้ง.

APPENDICES

APPENDIX A
AIDS-DEFINING ILLNESSES ACCORDING TO THE CDC CLASSIFICATION

1. Candidiasis of bronchi, trachea, or lungs
2. Candidiasis, esophageal
3. Cervical cancer, invasive
4. Coccidioidomycosis, disseminated of extrapulmonary
5. Cryptococcosis, extrapulmonary
6. Cryptosporidiosis, chronic intestinal (>1 month)
7. Cytomegalovirus disease (other than liver, spleen, or nodes)
8. Cytomegalovirus retinitis (with loss of vision)
9. Encephalopathy, HIV-related
10. Herpes simplex: chronic ulcer(s) (>1 month); or bronchitis, pneumonitis, or esophagitis
11. Histoplasmosis, disseminated or extrapulmonary
12. Isosporiasis, chronic intestinal (>1 month)
13. Kaposi's sarcoma
14. Lymphoma, Burkitt's (or equivalent term)
15. Lymphoma, immunoblastic (or equivalent)
16. Lymphoma, primary, of brain
17. *Mycobacterium avium* complex or *M. kansasii*, disseminated or extrapulmonary
18. *Mycobacterium tuberculosis*, any site (pulmonary or extrapulmonary)
19. *Mycobacterium*, other species or unidentified species, disseminated or extrapulmonary
20. *Pneumocystis* pneumonia
21. Pneumonia, recurrent
22. Progressive multifocal leukoencephalopathy

23. Salmonella septicemia, recurrent
24. Toxoplasmosis of brain
25. Wasting syndrome due to HIV
26. Nocardiosis
27. Penicillosis
28. Rhodococcosis

APPENDIX B

ANTIRETROVIRAL DRUGS AND TREATMENT IN ADULTS

1. Antiretroviral drug

Antiretroviral drug refers to a drug that is synthesized to stop or interfere with attachment and entry of a virus. Antiretroviral drugs that are sold in Thailand can be divided into 5 groups as follow:

1) ***Nucleoside or Nucleotide Reverse Transcriptase Inhibitors (NRTIs)*** are drugs which prevent a virus from transcribing the body's genetic materials. Drugs in this group include Zidovudine (AZT), Stavudine (d4T), Lamivudine (3TC), Emtricitabine (FTC), Didanosine (ddI), Abacavir (ABC) and Tenofovir (TDF). Drugs in this group also exist in fixed-dose combination, e.g. AZT/3TC 300/150 mg, TDF/FTC 300/200 mg (FTC only exists in fixed-dose combination with TDF). When a drug in this group is used in monotherapy, the plasma viral load is decreased only by 0.3-0.7 log10, i.e. less than 10 folds. For example, if the patient has a viral load of 100,000 copies/cm^3, treatment with nucleoside RTI monontherapy (e.g. AZT or ddI) at maximum efficiency will only result in the patient having a viral load of more than 10,000 copies/cm^3 and problem with drug resistance may eventually occur, thus the incidence of AIDS and mortality cannot be prevented.

2) ***Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs)*** are drugs which prevent the virus from destroying the body's immune cells. Drugs in this group include Nevirapine (NVP), Efavirenz (EFV), Etravirine (ETR). NVP also exists in fixed-dose combination with NRTIs such as d4T/3TC/NVP 30/150/200 mg and AZT/3TC/NVP 250/150/200 mg. The advantage for most NNRTIs is that the drug is long-lasting and only 1-2 intake per day is required, thus enabling favorable adherence. The disadvantage of this group of drugs is that drug resistance develops very rapidly, particularly when used in monotherapy or in combination of drugs that are weak or have failed in earlier treatment. Once the virus is resistant against one

drug, the virus will also become resistant against other drugs in the group. This is due to the fact that although each drug in this group has different chemical structures, the binding pocket to the RT enzyme is located in the same place. This group of drugs can also be used as part of a triple therapy, particularly in non-advanced patients.

3) ***Protease Inhibitors (PIs)***. This group of drugs acts to protect the body from HIV-infected cells. Drugs in this group include Indinavir (IDV), Ritonavir (RTV), Nelfinavir (NFV), Saquinavir (SQV), Lopinavir/ritonavir (LPV/r), Atazanavir (ATV) and Darunavir (DRV).

4) ***Integrase Inhibitors (INSTIs)***. Drugs in this group include Raltegravir (RAL)

5) ***Fusion Inhibitors***, i.e. Enfuvirtide (ENF) is the only existing injecting antiretroviral drug, delivered by sub-cutaneous injection twice daily. The drug can destroy the virus together with the infected cell. The drug acts to destroy the virus together with the infected blood cell. The drug attaches itself to the virus at the CD4 membrane, thus the drug can destroy the virus more effectively than all previously-existing drugs. Trials in patients who were resistant to other drugs showed that the drug decreased the viral load to a non-detectable level. However, a rare but severe side effect of this drug is pneumonia. Doctors normally consider the use of this group of drugs on a case-by-case basis due to the novelty and extremely high cost of the drug (price per year of this drug is 20,400 US Dollars per year, in comparison to 3 types of the old drugs which costed 15,000 US Dollars). Thus this group of drug is kept in reserve after all other types of drugs have been exhausted and met with resistance. Patients would use this drug as a monotherapy and not in mixture with other drugs.

Table B-1 Antiretroviral drugs available in Thailand

NRTIs	NNRTIs	Pis	INSTIs	FIs
Zidovudine (AZT) Stavudine (d4T) Lamivudine (3TC) Emtricitabine (FTC) Didanosine (ddI) Abacavir (ABC) Tenofovir (TDF)	Nevirapine (NVP), Efavirenz (EFV), Etravirine (ETR)	Indinavir (IDV) Ritonavir (RTV) Nelfinavir (NFV) Saquinavir (SQV) Lopinavir/ritonavir (LPV/r) Atazanavir (ATV) Darunavir (DRV)	Raltegravir (RAL)	Enfuvirtide (ENF)
Fixed-dose *combination*				
AZT/3TC TDF/FTC d4T/3TC/NVP AZT/3TC/NVP				

There are 16 drugs that are listed in the National List of Essential Medicines (3rd Edition) of 2011 A.D. as per the National AIDS Policy of the Department of Disease Control, the Social Security Office, the National Health Security Office and the Comptroller General's Department, namely: (1) Atazanavir sulfate, (2) Didanosine (ddI), (3) Efavirenz (EFV), (4) Indinavir sulfate (IDV), (5) Lamivudine (3TC), (6) Lamivudine + Stavudine + Nevirapine (3TC/d4T/NVP), (7) Lopinavir + Ritonavir (LPV/r), (8) Nelfinavir mesilate (NFV), (9) Nevirapine (NVP), (10) Ritonavir (RTV), (11) Saquinavir (SQV), (12) Stavudine (d4T), (13) Tenofovir disoproxil fumarate, (14) Zidovudine (AZT), (15) Zidovudine + Lamivudine (AZT/3TC) and (16) Zidovudine + Lamivudine + Nevirapine (AZT/3TC/NVP)

2. Antiretroviral therapy that are used in treating HIV-infected patients in Thailand

At present, it is widely accepted that at least 3 antiretroviral drugs must always be used in combination (Highly Active Antiretroviral Therapy; HAART). Monotherapy or double therapy, as was the case in the past, has been proven to be ineffective and is a significant cause of drug resistance. The AIDS, Tuberculosis, and Sexually-Transmitted Infections Bureau, Department of Disease Control, Thai Ministry of Public Health, has recommended the primary and alternative therapies for HIV/AIDS-infected patients who has never received antiretroviral drug, in order to support various hospitals and medical facilities, as listed in Table B-2.

Table B-2 Primary and alternative antiretroviral therapies in Thailand

NRTIs		NNRTIs		PIs
Preferred	+	EFV NVP	in case of side effect ⟶ derived from NNRTIs	***Preferred***
AZT + 3TC TDF + 3TC/FTC				LPV/r
Alternative				***Alternative***
ABC + 3TC d4T + 3 TC ddI + 3TC				ATV/r DRV/r SQV/r

Source: National guideline on diagnosis and treatment: Thailand, 2010

However, drug regimens which include d4T are being modified at the moment due to the wide variety of side effects, such as lipoatrophy/lipodystrophy, peripheral neuropathy, and hyperlipidemia, causing many developed countries to eliminate d4T from the List of Essential Medicines. However, as Thailand still has a large number of HIV-infected individuals who take d4T and there may be HIV patients who must take d4T regimens due to their inability to withstand other drugs, the approaches to change regimens containing d4T among HIV patients are as follow:

1. For HIV patients currently taking regimen containing d4T or GPO-VIR S (d4T + 3TC + NVP), if signs of lipoatrophy/lipodystrophy are shown, e.g. shrinkage of the cheeks, temples, limbs or hip , protrusion of the blood vessels on the arms, and accumulated fat in the neck, chest, or abdomen, the patient would be tested for viral load. If the viral load is less than 50 copies/mL, these patients will be the first group to switch from GPO-VIR S to TDF + 3TC + NVP or TDF + 3TC + EFV immediately.

2. HIV patients currently taking d4T or GPO-VIR S with no sign of lipoatrophy/lipodystrophy will gradually change to GPO-VIR Z. Before switching the regimen, the viral load within the past 12 months should be less than 50 copies/mL. If the patient has not been tested, a confirmation test for viral load of less than 50 copies/mL will be done. The regime will first be switched among those with the longest period of taking GPO-VIR S. All patients should switch their regimen by the end of 2011. If the HIV patient cannot withstand the side effects of AZT or experiences lipoatrophy/lipodystrophy even if the patient has changed to GPO-VIR Z (AZT + 3TC + NVP) for more than 6 months, the regime should be changed to TDF + 3TC + NVP or TDF + 3TC + EFV.

3. In all cases in which the use of d4T or GPO-VIR S is necessary, only d4T 30mg or the smaller dose should be given, even if the patient weights less than 60kg, in order to avoid the undesirable side effects of d4T.

However, selection of the regimen must also depend on the co-morbidity of the patient (e.g. tuberculosis, hepatic disease, depression), as well as the patient's cooperation in using the drug and convenience in taking the drug (e.g. the drug is to be taken with meal or separately from the meal). Undesirable symptoms may include pre-existing conditions, reaction between the drug and the other drugs that the patient is using, pregnancy or likelihood of pregnancy, drug resistance and gender, in combination with the pre-treatment CD4 level (in case that Nevirapine is chosen). The recommended regimen for treatment of HIV is the same for men and women.

3. Treatment with antiretroviral drugs in adults

Antiretroviral drug does not need to be started immediately for all patients. Premature start, when the patient is still asymptomatic with very high CD4 level, may not only result in high level of expense but also cause drug resistance, further complicating the selection of drugs in the future. Late initiation, when the patient's conditions have deteriorated or the CD4 level is too low, may cause the patient to be unable to withstand the drugs and the immunity level may return too little or too late. In addition, the initiation of antiretroviral treatment does not only depend on the patient's conditions or CD4 level, but also on the acceptance and cooperation in taking the drugs. Therefore, before the antiretroviral drug is given, the following principles and observations should be taken (National guideline on diagnosis and treatment: Thailand, 2010).

1. Ask the patient about the medication that he or she is taking, and history of receiving antiretroviral drug, in order to guide the selection of the drug regimen to be used.
2. The regimen should start when the patient is ready and understand the importance of taking drugs regularly throughout his or her lifetime, the method of taking the medications and their side effects, and avoidance of medications which may react with antiretroviral drugs.
3. Select a regimen that is suitable for each individual patient based on various factors: medical information, available drugs, economic status, cost of the drugs, the patient's accessibility to the drugs, side effects, and co-morbidities e.g. Hepatitis-B, tuberculosis, and other drugs that the patient is taking which may interact with antiretroviral drugs.
4. The patient should be explained about the importance of taking drugs continuously and constantly in order to avoid drug resistance and enable the drug to be effective as long as possible.
5. After a period of receiving antiretroviral drug, the patient may develop signs/symptoms of opportunistic infection due to higher immunity, also known as the Immune Reconstitution Inflammatory Syndrome (IRIS)

6. Recommended laboratory tests to be performed before starting antiretroviral drug treatment include CBC, CD4 count, viral load (if possible), FBS, SGOT, SGPT, Lipid profile (TC, TG, LDL), UA HbsAg, VDRL, CXR, Pap smear (in women), and in patients who will start TDF or IDV, the creatinine level should also be tested.

7. Perform fundoscopy (eye ground) on patients whose CD4 cell count is below 50 cell/mm^3 before starting all antiretroviral drug, as the HIV-infected patient may have asymptomatic CMV Retinitis, which must be treated before starting antiretroviral drug, otherwise the resulting IRIS may be severe enough to cause blindness.

However, indicators for not selecting the HIV/AIDS patients for antiretroviral drug treatment are as follow (10th Region Disease Control Office, Chiang Mai Province, 2006):

1. History of allergy to any substance that is the component of all 3 regimens
2. No readiness to take drugs constantly (based on the discretion of the healthcare team)
3. The patient still exhibit risky behaviors, e.g. drug use (the patient must be treated for drug use first)
4. Pulmonary TB patients diagnosed with AIDS with CD4 > 250 cell/mm^3

4. Criteria for starting antiretroviral treatment in Thailand

are according to these criteria and observations:

1. The chance that HIV patients would develop AIDS depend on the CD4 level and plasma viral load
2. In Thailand, consideration for starting antiretroviral drug is based on the symptoms and CD4 count (Table B-3)
3. The target of the treatment is to achieve the lowest plasma viral load for the longest time possible, and to enable the CD4 count to return to normal as

much as possible in order to lower the risk of developing AIDS-related illnesses.

Table B-3 Criteria for starting antiretroviral drug treatment in Thailand

Clinical Symptoms	**CD4 cell count (cells/mm^3)**	**Recommendation**
AIDS-defining illness*	Any level	Begin antiretroviral treatment
Symptomatic**	Any level	Begin antiretroviral treatment
Asymptomatic	≤ 350	Begin antiretroviral treatment
Asymptomatic	> 350	Do not begin antiretroviral drug treatment yet. Monitor the symptoms and check for CD4 count every 6 months
Pregnant women	Any level	Begin antiretroviral drug treatment, and stop the administration after childbirth if the treatment result in CD4 count of >350 cells/mm^3

Remark: * Denotes 28 diseases indicating AIDS (Appendix A)

**The symptoms include oral thrush, pruritic papular eruptions (PPE), chronic fever from unknown cause, dysentery due to unknown cause for more than 14 days, weight loss of more than 10 percent within 3 months, and herpes zoster with more than 2 dermatomes

Source: National guideline on diagnosis and treatment: Thailand, 2010

5. Importance of CD4-level testing

CD4 testing plays a role in monitoring the immunity level of the body and indicates the time for stopping each opportunistic infection prophylaxis. Viral load count and CD4 testing are important indices to indicate the progress of disease. However, bloodstream viral load is only available at referral hospitals or those with ready equipments, thus CD4 becomes the key indicator in monitoring the effectiveness of the treatment. Generally, CD4 count should be made every 3 months in order to ensure close monitoring of the treatment results. However, as each hospital has unequal level of readiness, allowances have been made to check the CD4 level every 6 months. Besides monitoring the body's immunity, CD4 count also indicates whether the treatment has failed. If the CD4 level decreases or does not increase while receiving antiretroviral drug, review and reconsideration should be made on the treatment plan for the individual patient.

6. Treatment of HIV/AIDS patients who do not respond to the initial treatment

After the patient starts receiving antiretroviral drug (ARV), it is essential to monitor the treatment results regularly in order to assess the treatment results and adverse reactions. The treatment is considered as a failure when the viral load is found to be more than 400 copies/mL after taking regular ARV drug for 6 months, or when a viral load exceeding 50 copies/mL is found after taking ARV drug regularly for more than 12 months, or when the viral load has decreased to less than 50 copies/mL and rises back to more than 50 copies/mL while receiving ARV.

When treatment failure occurs, the immediate course of action is to find the cause of failure both on the side of the HIV patient e.g. irregular drug intake, incorrect drug intake, etc. and on the side of the healthcare provider e.g. prescribing an incorrect regimen, not providing proper counseling to the patient, starting ARV while the patient is not yet ready, reaction between ARV and other drugs. Finding these causes will allow for proper solution before beginning the new ARV regimen, otherwise such treatment failure will occur again in the new regimen due to the same reason, eventually affecting the long-term survival rate of the HIV patient.

Actions to take when treatment failure occurs

1) Review history of previous treatment with ARC, problems from drug interaction, and detailed history of illness
2) Performed physical examination to assess the chance of opportunistic infection and the drugs' side effects
3) Assess the adherence of HIV-infected person
4) Send sample for genotypic resistance testing while the HIV-infected patient has been taking the failed ARV for at least 2 weeks, and review previous genotypic resistance test results
5) Consider the most appropriate ARV regime for the patient to minimize the viral load (viral load <50 copies/mL)
6) Closely monitor the results of treatment with the new ARV regimen.

Guideline for selection of ARV drug after the first regimen fails

1) The goal of the 2nd regimen remains to decrease the viral load to be less than 50 copies/mL to prolong the survival of the HIV patient as far as possible
2) The change in the ARV regimen among HIV patients whose treatment fails must be based on previous history of treatment with other regimens in combination with the ARV drug resistance test results
3) The general guideline in selecting the new regimen is to select from the drug for which no resistance has been shown, and at least 3 drugs that are still effective (based on test results) must be used. If less than 3 effective drugs are found, at least 2 types of drug should be used and the results of the treatment should be closely monitored by checking the viral load at 3 months after changing the drug regimen. Monotherapy should be avoided in order to prevent resistance to new drug and treatment failure after a short period of time.
4) For HIV patients using NNRTIs as the first regimen, if treatment failure occurs, the virus normally would be resistant to NNRTIs, thus

both NVP and EFV in the 2nd regimen should be avoided, and only boosted PI-based regimens should be used.

4.1) Use boosted PIs, such as LPV/r, in combination with another 2 effective NRTIs based on the ARV resistance test

4.2) In case that only 1 type of NRTIs is still effective, LPV/r is to be used in combination with the 1 type of effective NRTIs based on the results of the ARV drug resistance test, as well as 3TC

4.3) In case that no effective NRTIs remain, an expert physician should be consulted.

5) Among users of PIs, if the first regimen fails, the HIV virus normally will be resistant to NRTIs and PIs (if the non-boosted drugs are used). A regimen with boosted PIs should be given, in which the new boosted PIs will be given in combination with 2 types of NRTIs and/or NNRTIs that are still effective based on the ARV resistance test results, as shown in Table B-4.

Table B-4 Recommended 2nd regimens after the failure of the 1st regimen

First Regimen	Recommended 2nd Regimen
2NRTIs + NNRTI	Boosted PI + 2NRTIs (based on the ARV resistance test results)
2NRTIs + PI	1) New boosted PI + 2NRTIs (based on the ARV resistance test results)
	2) New boosted PI + 1NNRTI + 1NRTI (based on the ARV resistance test results)
	3) NNRTI + 2NRTIs (based on the ARV resistance test results) Selection of this 3rd regimen must include 2 types of NRTIs that are truly effective and must be ascertained that the patient has never received NNRTIs in the past, nor has the patient received monotherapy or duotherapy treatment before.

7. Indicators for end of treatment

1. The patient requests withdrawal from the project
2. The treatment fails according to the National Guideline for Diagnosis and Care of HIV/AIDS Patients
3. The patient does not come to the appointment and/or has not taken ARV continuously for more than 7 days for no reason
4. Death

APPENDIX C

1. Benefits and Conditions of the Universal Coverage Scheme

A. Condition of Service

1. Thai nationality, with 13-digit identification number
2. Be entitled to the Universal Health Coverage Scheme, or be eligible
3. Registered in the Project through the NAP (National AIDS Program)
4. In case that the patient has no right, does not have Thai nationality, or does not have the 13-digit identification number (e.g. migrant worker), exception will be made only for former patients who were registered with the NAPHA Project before 1 October 2005
5. Has medical indications, i.e. clinical criteria and/or immunological criteria, according to the established requirements
6. The registered patient must consent to strict compliance with the physician's treatment plan
7. No contra-indication against receiving ARV drugs

B. Exclusion Criteria

1. For those with medical benefits for civil servants, or social security coverage, redemption of expenses can be made according to each fund's criteria
2. Those who are unable to continuously receive treatment (based on the discretion of the healthcare team)
3. Those with contra-indication against receiving ARV drugs

C. Entitled Benefits

Receive basic ARV drug regimen or resistance regimen. When the patient has indication(s) for receiving ARV drug, the physician always should start with the basic regimen.

Basic ARV drug regimens for adult patients consist of the following:

"A-Group" basic regimens, to be given when the patient has indication for receiving ARV drug

1. Stavudine (d4T) + Lamivudine (3TC) + Nevirapine (NVP), or;
2. Stavudine (d4T) + Lamivudine (3TC) + Efavirenz (EFV), or;
3. Zidovudine (AZT) + Lamivudine (3TC) + Nevirapine (NVP), or;
4. Zidovudine (AZT) + Lamivudine (3TC) + Efavirenz (EFV)

* Zidovudine (AZT)+Lamivudine (3TC) or Stavudine (d4T) + Lamivudine (3TC) are low-priced and effective drugs that can be produced in Thailand.

* Nevirapine (NVP) is a drug with good effectiveness, can be produced in Thailand at low price, and is available in a combined dose which can increase consistency of intake.

* Efavirenz (EFV) is an effective drug that is to be taken only once daily, used in case of allergy or severe hepatitis from using. **Efavirenz (EFV) is NEVER to be used in pregnant women.**

"B-Group" basic regimens, to be given when the patient has contra-indication against receiving ARV drug and cannot withstand the side effect or the patient is allergic to the basic regimen in the "A-Group".

1. Stavudine (d4T) + Lamivudine (3TC) + Indinavir (IDV) + Ritonavir (RTV)
2. Zidovudine (AZT) + Lamivudine (3TC) + Indinavir (IDV) + Ritonavir (RTV)

* Use Indinavir (IDV) 400-600 mg./Ritonavir (RTV) 100 mg. 2 times per day in case of severe side effect from Nevirapine (NVP) and Efavirenz

(EFV). Indinavir (IDV)/Ritonavir (RTV) is currently the least expensive boosted PI. Kidney function is to be monitored at least every 6 months by serum creatinine test.

"C-Group" basic regimens, to be given when the patient has contra-indication against ARV drug in this group and cannot withstand the side effect or the patient is allergic to basic regimens in Group-A and Group-B. The change to the Group-C drug must be made with approval from an HIV/AIDS specialist.

1. Didanosine (ddI) + Lamivudine (3TC) + Efavirenz (EFV)
2. Didanosine (ddI) + Lamivudine (3TC) + Nevirapine (NVP)
3. Tenofovir (TDF) + Lamivudine (3TC) + Efavirenz (EFV)
4. Tenofovir (TDF) + Lamivudine (3TC) + Nevirapine (NVP)
5. Didanosine (ddI) + Lamivudine (3TC) + Nevirapine (NVP)
6. Tenofovir (TDF) + Lamivudine (3TC) + Indinavir (IDV) + Ritonavir (RTV)

Change of formula in the basic regimen

When the patient has indication(s) for receiving ARV drug, treatment must begin with the "A-Group" drugs from the 1st to the 4th regimens, respectively. In case that the patient cannot withstand or becomes allergic to the A-Group drugs, the regimen will change to the "B-Group" from the 1st to the 2nd regimen. The change of the basic regimen from the A-Group to the B-Group can be made according to the mentioned principles and necessity.

However, if the patient suffers from metabolic complication or cannot withstand the side effects of the A-Group and B-Group drugs, the regimen is to change to the drugs in the C-Group. In case that such change is made, the physician must receive approval to use such drugs from an HIV/AIDS specialist at a general hospital or a referral hospital that is approved by the National Health Security Office or the district-level committee of experts consisting of 2 internal medicine specialists, 1 pediatric specialist, 1 representative from the Regional Disease Control Office, and 1 representative from the Regional Health Security Office.

ARV resistance regimens in adults

"D-Group" (resistance drugs). When the patient presents an indication for receiving ARV in this group, the patient must receive approval from an HIV/AIDS specialist physician. The resistance regimens include:

1. Stavudine (d4T)+Lamivudine (3TC) + Boosted PIs
2. Didanosine (ddI) + Lamivudine (3TC) + Boosted PIs
3. Zidovudine (AZT) + Lamivudine (3TC) + Boosted PIs
4. Zidovudine (AZT) + Didanosine (ddI) + Boosted PIs
5. Zidovudine (AZT) + Tenofovir (TDF) *+ Boosted PIs
6. Tenofovir (TDF) + Lamivudine (3TC) + Boosted PIs
7. Nevirapine (NVP) + Boosted PIs (Only in case of resistance against NRTIs)
8. Efavirenz (EFV) + Lamivudine (3TC) + Tenofovir (TDF) + Boosted PIs

(The AZT + 3TC + TDF + Boosted PIs regimen is to be used in case of multi-NRTI resistance Q151M and/or T69Si and/or TAM at more than or equal to 4)

* Tenofovir (TDF) is a drug to be used in patients who are more than 16 years of age.

D. Treatment Standards

Treatment standards for ARV drugs include:

1. Provision of basic and resistance ARV regimen in adults
2. Provision of basic and resistance ARV regimen in children
3. Modification of the regimen from the basic regimen to the resistance regimen in both adults and children

E. Service Units

1. Service units that have been previously contracted and dispensed drugs under the NAPHA Project will be automatically listed as an ARV drug-dispensing unit.

2. Service units other than the mentioned facilities that wish to dispense ARV drug must pass a registration evaluation. The motion for such evaluation can be filed at the Provincial Public Health Office or the Regional Health Security Office. Each service unit should have all 5 types of service, namely:
    - 2.1 Treatment by trained physicians
    - 2.2 Nursing care by experienced nurses
    - 2.3 Drug dispensary by pharmacists knowledgeable about ARV drugs
    - 2.4 Laboratory testing by clinical lab scientists
    - 2.5 Counseling service by a trained team

2. Benefits and Conditions under the Social Security Scheme

1. Social security policy holders are entitled to receive ARV drug from the Social Security Office must specify the following indication(s) for receiving ARV drug:
    - 1.1 The HIV-infected policy holder has CD4 value of lower than 200 cell/mm^3
    - 1.2 The HIV-infected policy holder has CD4 value of lower than or equal to 250 cell/mm^3 but has one or more of the following co-presenting symptoms:
        - Chronic fever due to unknown cause
        - Dysentery due to unknown cause for more than 14 days
        - weight loss of more than 15 percent within the past 3 months
2. The Social Security Office will dispense the following ARV drug regimens:

    Basic Regimens, given when the policy holder has an indication(s) for receiving the ARV drug, namely:

1. Stavudine + Lamivudine + Nevirapine or (GPOvirS30, GPOvirS40)
2. Zidovudine + Lamivudine + Nevirapine or (GPOvirZ250 when technically confirmed)

Alternative Regimens, given when the policy holder has an indication(s) for receiving the ARV drug (in case that the patient cannot withstand the side effects or becomes allergic to the basic regimens), namely:

1. Stavudine + Lamivudine + Efavirenz
2. Zidovudine + Lamivudine + Efavirenz
3. Stavudine + Lamivudine + Indinavir + Ritonavi
4. Zidovudine + Lamivudine + Indinavir + Ritonavir

Resistance Regimens, given when the policy holder had an indication(s) for receiving ARV drug to treat drug resistance. Approval from an HIV/AIDS specialist must be given before using the resistance regimen (Tenofovir is not to be used with Didanosine, and double boosted Protease Inhibitor will not be dispensed). The alternative regimens are as follow:

1. Didnosine + Lamivudine + Lopinavir + Ritonavir
2. Didnosine + Lamivudine + Atazanavir + Ritonavir
3. Didnosine + Zidovudine + Lopinavir + Ritonavir
4. Didnosine + Zidovudine + Atazanavir + Ritonavir
5. Zidovudine + Lamivudine + Lopinavir + Ritonavir
6. Zidovudine + Lamivudine + Atazanavir + Ritonavir
7. Tenofovir + Lamivudine + Lopinavir + Ritonavir
8. Tenofovir + Lamivudine + Atazanavir + Ritonavir
9. Tenofovir + Zidovudine + Lopinavir + Ritonavir
10. Tenofovir + Zidovudine + Atazanavir + Ritonavir

11. If the physician in charge wishes to use other regimens of resistance drugs (according to the Social Security Office's List of Essential Medicines), permission from an HIV/AIDS specialist must be sought first.

Remark: and/or other Protease Inhibitors can only be dispensed when the price of the drug follows the pattern of Lopinavir + Ritonavir

3. In case of drug resistance, the Social Security Office will only dispense no more than 5,000 Baht/case/month, and the policy holder will be responsible for the exceeding amount.
4. The Social Security Office will pay for the CD4 testing at no more than 500 Baht/test and no more than 1,000 Baht/case/year.
5. In case that the policy holder needs to test for viral load and/or drug resistance, the Social Security Office will pay the policy holder no more than 12,500/person/year.
6. In case that the policy holder purchases the 1st or the 2nd regimen from another facility, the policy holder can change and receive the old regimen from the SSO at no cost. If the policy holder is using another regimen, the SSO will compensate no more than 5,000 Baht/case/month, and the policy holder will be responsible for the exceeding amount.
7. Procedures in dispensing ARV drug to policy holders:
    7.1 The policy-holder is diagnosed by the physician at the medical facility listed in the Health Care Coverage Card that the policy-holder must receive ARV drug according to the criteria established by the SSO.
    7.2 The policy-holder must fill the application form as indicated by the Social Security Office. The information will be kept confidential.
    7.3 The policy-holder must cooperate and follow the physician's treatment plan, including history interview, physical

examination, and blood test to evaluate the treatment outcomes and drug safety.

3. National Access to Antiretroviral Program for People living with HIV/AIDS Extension Project (NAPHA EXTENSION)

a. Eligibility

1. HIV/AIDS patients outside the health coverage schemes, including those who have and have never received ARV drug, including:
    - Thais who are displaced or awaiting proof of rights
    - Migrant workers with health coverage, but the coverage does not include ARV drugs
    - Hilltribes and migrants of various causes
    - Other groups with no health insurance
2. HIV/AIDS patients with health insurance, but have limited access to care

b. Services that the patients are entitled from NAPHA Extension Project will cover the following areas of medicine

1. Basic regimen of ARV drug according to the established criteria
2. Resistance regimen of ARV drug according to the criteria and discretion of the medical committee
3. CD4 testing in asymptomatic HIV patients, 2 times per year
4. Laboratory monitoring for CD4 level among patients receiving ARV drugs, 2 times per year
5. Viral load testing, 1 time per year
6. HIV resistance testing, 1 time per year
7. HIV prevention service
8. Promotion of completeness and adherence to drug intake, and voluntary counseling and testing for HIV (VCT)
9. Additional CD4, viral load, and HIS resistance test, 1 more test each, as deemed appropriate by the physician

All patients do not need to pay any fee for the treatment (conditions are according to the regulations of the Project)

c. List of ARV drugs provided to HIV/AIDS patients in the Project

ARV drug regimens recommended for use in HIV/AIDS patients who participated in the NAPHA Extension Project 2009 include the following drugs for service and dispensing:

1. Basic Regimen: Zidovudine + Nevirapine
2. Alternative Regimens:
   - Zidovudine + Lamivudine + Efavirenz
   - Zidovudine + Lamivudine + Lopinavir / ritonavir

However, the selection of the regimen depends on the discretion of the physician providing the treatment.

Table C-1 List of ARV drugs provided to the participating HIV/AIDS patients.

Order	Item	Type	Package Size
1	Zidovudine 300 mg + Lamivudine150 mg (LAMIVUDINE 150 MG AND ZIDOVUDINE 300 MG.)	Tablet	60’s
2	Nevirapine 200 mg (NEVIPAN)	Tablet	60’s
3	Efavirenz 600 mg (STOCRIN)	Capsule	30’s
4	Lopinavir 133.3 mg+ Ritonavir 33.3 mg (KALETRA)	Soft gelatin Capsule	180’s

APPENDIX D

Table D-1 Demographic and socio-economic characteristics

		Gender		Residential area		Health insurance scheme		Income quintiles				
	Total	Male	Female	Urban	Rural	Non co-payment	Co-payment	1 (Poorest)	2	3	4	5 (Richest)
Sample size (n)	380	150	230	207	173	337	43	71	75	90	73	71
(%)	100.0	39.4	60.6	54.5	45.5	88.7	11.3	18.7	19.7	23.7	19.2	18.7
Average age (years)	41.2	41.07	41.27	41.95	40.28	41.4	39.4	42.3	41.5	40.5	40.7	40.8
Education attainment (%)												
- Illiteracy	6.6	5.5	7.4	5.8	7.5	5.6	14.0	9.9	4.0	11.1	5.5	1.4
- Primary school	62.6	58.6	66.8	58.9	67.1	65.3	41.9	69.0	69.3	64.4	58.9	50.7
- Secondary school	19.5	22.1	16.6	23.7	14.5	18.4	27.9	14.1	14.7	17.8	24.7	26.8
- High school	10.0	12.4	7.9	10.6	9.2	9.5	14.0	7.0	10.7	5.6	9.6	18.3
- Diploma	1.1	1.4	0.9	0.5	1.7	0.9	2.3	0.0	1.3	1.1	1.4	1.4
- Bachelor degree	0.3	0.0	0.4	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.4

Table D-1 Demographic and socio-economic characteristics (Cont.)

	Total	Gender		Residential area		Health insurance scheme		Income quintiles				
		Male	Female	Urban	Rural	Non co-payment	Co-payment	1 (Poorest)	2	3	4	5 (Richest)
Occupation (%)												
- General labor in agriculture area	36.1	37.2	35.8	30.4	42.8	38.9	14.0	45.1	46.7	43.3	19.2	23.9
- General labor outside agricultural area	32.9	26.9	36.7	32.9	32.9	33.2	30.2	35.2	32.0	33.3	47.9	15.5
- Merchant/ Business owner	12.1	14.5	10.0	13.0	11.0	12.8	7.0	4.2	9.3	10.0	11.0	26.8
- Agriculturist	6.6	9.0	5.2	8.7	4.0	6.5	7.0	11.3	2.7	2.2	6.8	11.3
- Factory worker	3.4	3.4	3.5	5.3	1.2	1.5	18.6	0.0	1.3	4.4	6.8	4.2
- Company worker	1.6	2.1	1.3	1.9	1.2	0.3	11.6	0.0	0.0	0.0	5.5	2.8
- Civil servant	0.8	0.7	0.9	1.0	0.6	0.3	4.7	0.0	0.0	0.0	0.0	4.2
- Housewife	1.3	0.0	2.2	0.5	2.3	1.5	0.0	1.4	2.7	2.2	0.0	0.0
- Unemployed	5.0	6.2	3.9	6.3	3.5	4.7	7.0	2.8	4.0	4.4	2.7	11.3
- students	0.3	0.0	0.4	0.0	0.6	0.3	0.0	0.0	1.3	0.0	0.0	0.0
Average income per year (Baht/year)	63,850.7	71,895.4	58,604.1	66,864.5	60,244.6	62,174.1	76,991.2	30,895.5	45,243.4	54,819.7	68,075.3	119,059.7

Table D-2 Period of HIV/AIDS infection

		Period of infection (%)				
	Sample size (n)	6 months – 1 year	1 – 4 years	5 – 9 years	10 – 14 years	15 years and over
Total	380	1.3	10.0	36.8	32.6	19.2
Gender						
Male	150	2.0	8.7	46.7	30.7	12.0
Female	230	0.9	10.9	30.4	33.9	23.9
Residential area						
Urban	207	1.0	7.2	42.0	29.5	20.3
Rural	173	1.7	13.3	30.6	36.4	17.9
Health insurance						
Non co-payment	337	1.5	11.0	38.0	31.5	18.1
Co-payment	43	0.0	2.3	27.9	41.9	27.9
Income quintiles						
1st quintile (Poorest)	71	2.8	9.9	32.4	29.6	25.4
2nd quintile	75	2.7	12.0	40.0	26.7	18.7
3rd quintile	90	0.0	6.7	40.0	38.9	14.4
4th quintile	73	0.0	9.6	38.4	35.6	16.4
5th quintile (Richest)	71	1.4	12.7	32.4	31.0	22.5

Table D-3 Period of receiving antiretroviral therapy

	Sample size (n)	Period of receiving antiretroviral therapy (%)					
		Mean (years)	6 months – 1 year	1 – 3 years	4 – 6 years	7 – 10 years	11 years and over
Total	380	6.6	4.5	14.5	24.7	50.5	5.8
Gender							
Male	150	6.5	4.0	10.7	32.0	48.7	4.7
Female	230	6.7	4.8	17.0	20.0	51.7	6.5
Residential area							
Urban	207	6.7	3.9	14.0	24.6	51.2	6.3
Rural	173	6.5	5.2	15.0	24.9	49.7	5.2
Health insurance							
Non co-payment	337	6.6	4.7	14.8	24.6	50.1	5.6
Co-payment	43	6.9	2.3	11.6	25.6	53.5	7.0
Income quintiles							
1st quintile (Poorest)	71	6.1	8.5	14.1	31.0	39.4	7.0
2nd quintile	75	6.3	6.7	20.0	20.0	49.3	4.0
3rd quintile	90	7.3	2.2	7.8	25.6	54.4	10.0
4th quintile	73	6.8	1.4	15.1	26.0	53.4	4.1
5th quintile (Richest)	71	6.7	4.2	16.9	21.1	54.9	2.8

Table D-4 The relationship between the CD4 level and the duration of receiving antiretroviral therapy

CD4 level	Duration of receiving antiretroviral therapy					Total
	6 months – 1 year	1 – 3 years	4 – 6 years	7 – 10 years	11 years and over	
Below 250 cell/mm^3	7 (41.2)	12 (21.8)	8 (8.5)	19 (9.9)	0 (0.0)	46 (12.1)
250 – 350 cell/mm^3	6 (35.3)	12 (21.8)	21 (22.3)	15 (7.8)	2 (9.1)	56 (14.7)
351 – 500 cell/mm^3	4 (23.5)	15 (27.3)	30 (31.9)	56 (29.2)	6 (27.3)	111 (29.2)
Above 500 cell/mm^3	0 (0.0)	16 (29.1)	35 (37.2)	102 (53.1)	14 (63.6)	167 (43. 9)
Total	17 (100.0)	55 (100.0)	94 (100.0)	192 (100.0)	22 (100.0)	380 (100.0)

Figures in the parenthesis indicate the percentage

Table D-5 The latest CD4 level of each group of patient

	Sample size (n)	CD4 level				
		Mean	Below 250 cell/mm^3 (%)	250 – 350 cell/mm^3 (%)	351 – 500 cell/cm^3 (%)	Above 500 cell/mm^3 (%)
Total	380	497.31	12.1	14.7	29.2	43.9
Gender						
Male	150	471.04	15.3	17.3	27.3	40.0
Female	230	514.45	10.0	13.0	30.4	46.5
Residential area						
Urban	207	501.46	11.6	13.5	28.5	46.4
Rural	173	492.35	12.7	16.2	30.1	41.0
Health insurance						
Non co-payment	337	491.63	13.1	15.1	28.5	43.3
Co-payment	43	541.84	4.7	11.6	34.9	48.8
Income quintiles						
1st quintile (Poorest)	71	451.01	14.1	22.5	31.0	32.4
2nd quintile	75	480.52	12.0	14.7	26.7	46.7
3rd quintile	90	487.68	11.1	16.7	33.3	38.9
4th quintile	73	521.12	15.1	8.2	28.8	47.9
5th quintile (Richest)	71	549.08	8.5	11.3	25.4	54.9

Table D-6 Experience of changing ARD formula

	Sample size (n)	No (%)	Yes (%)			
			total	*1 time*	*2 times*	*3 times and over*
Total	380	23.9	76.1	*49.5*	*34.3*	*16.1*
Gender*						
Male	150	30.7	69.3	*45.7*	*41.9*	*12.5*
Female	230	19.6	80.4	*51.6*	*29.9*	*18.4*
Residential area						
Urban	207	20.3	79.7	*50.6*	*34.1*	*15.2*
Rural	173	28.3	71.7	*48.0*	*34.4*	*17.6*
Health insurance						
Non co-payment	337	25.2	74.8	*50.0*	*33.2*	*16.4*
Co-payment	43	14.0	86.0	*45.9*	*40.5*	*13.6*
Income quintiles						
1st quintile (Poorest)	71	31.0	69.0	*49.0*	*22.4*	*28.6*
2nd quintile	75	28.0	72.0	*56.6*	*28.3*	*15.1*
3rd quintile	90	14.4	85.6	*46.8*	*39.0*	*14.2*
4th quintile	73	26.0	74.0	*42.6*	*42.6*	*14.8*
5th quintile (Richest)	71	22.5	77.5	*54.5*	*36.4*	*9.1*

* $p < 0.05$

Table D-7 Distance, travel time, and the time spent waiting for service

	Sample size (n)	Distance (%)		Travel time (%)		Waiting time (%)	
		≤ 11 km	> 11 km	≤ 30 min	> 30 min	≤ 134.29 min	> 134.29 min
Total	380	63.4	36.6	84.2	15.8	53.4	46.6
Gender							
Male	150	64.7	35.3	83.3	16.7	53.3	46.7
Female	230	62.6	37.4	84.8	15.2	53.5	46.5
Residential area							
Urban	207	62.8	37.2	83.6	16.4	58.9*	41.1
Rural	173	64.2	35.8	85.0	15.0	46.8	53.2
Health insurance							
Non co-payment	337	65.9**	34.1	85.2	14.8	54.0	46.0
Co-payment	43	44.2	55.8	76.7	23.3	48.8	51.2
Income quintiles							
1st quintile (Poorest)	71	73.2**	26.8	88.7	11.3	63.4	36.6
2nd quintile	75	60.0	40.0	81.3	18.7	50.7	49.3
3rd quintile	90	66.7	33.3	80.0	20.0	50.0	50.0
4th quintile	73	64.4	35.6	93.2	6.8	45.2	54.8
5th quintile (Richest)	71	52.1	47.9	78.9	21.1	59.2	40.8

* $p < 0.05$, **$p < 0.01$

Table D-8 Comments on the waiting time for the service

	Sample size (n)	Comment (%)		
		Not too long	Too long	Others
Total	380	63.9	34.2	1.8
Gender				
Male	150	65.3	32.7	2.0
Female	230	63.0	35.2	1.7
Residential area*				
Urban	207	70.0	28.0	2.0
Rural	173	56.6	41.6	1.8
Health insurance*				
Non co-payment	337	65.0	33.8	1.2
Co-payment	43	55.8	37.2	7.0
Income quintiles				
1st quintile (Poorest)	71	54.9	45.1	0.0
2nd quintile	75	69.3	28.0	2.7
3rd quintile	90	67.8	30.0	2.2
4th quintile	73	57.5	39.7	2.7
5th quintile (Richest)	71	69.0	29.6	1.4

* $p < 0.05$

Table D-9 Association between socio-economic factors

	Gender	Residential area	Health insurance	Income
Gender	1	– 0.018	0.068	– 0.219**
Residential area	– 0.018	1	– 0.010	– 0.110*
Health insurance	0.068	– 0.010	1	0.142**
Income	– 0.219**	– 0.110*	0.142**	1

*Spearman's rho correlation test (2 -tailed) significant at 0.05

** Spearman's rho correlation test (2 -tailed) significant at 0.01

Table D-10 The expected service and the actual service received

	Expected service (%)	Actual service received (%)										
		Total	Gender		Residential area		Health insurance		Income quintiles			
			Male	Female	Urban	Rural	Non co-payment	Co-payment	1 Poorest	2	3	4	5 Richest
Sample size (n)	380	380	150	230	207	173	337	43	71	75	90	73	71
1. Physicians provide friendly service	99.5	87.9	87.3	88.3	89.4	86.1	84.1	94.7	83.1	89.3	86.7	87.7	93.0
2. Nurses have service mind	98.9	94.5	94.7	94.3	95.2	93.6	94.2	97.4	98.6	92.0	93.3	94.5	94.4
3. Staffs/pharmacists have service mind	99.2	89.2	88.7	89.6	88.4	90.2	88.6	94.7	88.7	89.3	90.0	93.2	84.5
4. The medical staffs provide appropriate treatment information and plan of treatment	99.7	85.5	82.7	87.4	85.0	86.1	85.1	89.5	81.7	82.7	84.4	89.0	90.1
5. Physicians give opportunity to ask questions on related issues	97.9	77.6	72.7	80.9	82.1	72.3	76.6	86.8	69.0	77.3	77.8	82.2	81.7
6. Staffs/pharmacists give opportunity to ask questions on related issues	97.4	82.4	84.0	81.3	84.1	80.3	81.0*	94.7	71.8	84.0	85.6	86.3	83.1
7. Listening to the problems from antiretroviral drug usage	98.4	95.5	96.0	95.2	96.1	94.8	95.3	97.4	87.3	100.0	97.8	97.3	94.4
8. Co-decision for making change of the drug formula	96.8	90.0	90.7	89.6	90.3	89.6	90.0	81.6	84.5	93.3	90.0	89.0	93.0
9. Instruction of drug usage with simple language	99.2	90.0	89.3	90.4	89.9	90.2	89.8	92.1	87.3	88.0	91.1	93.2	90.1
10. The recommendation for drug using is clear	99.2	94.2	94.0	94.3	93.7	94.8	94.4	92.1	93.0	93.3	96.7	94.5	93.0
11. The recommendation of drug usage and how to deal with the side effects	98.9	97.4	98.7	96.5	98.1	96.5	97.1	100.0	94.4	98.7	97.8	98.6	97.2
12. The privacy of the clinical service	98.4	88.2	90.7	86.5	91.3*	84.4	88.3	86.8	76.1*	89.3	90.0	94.5	90.1

* $p < 0.05$

Table D-11 Perception on the quality of the services

	Sample size (n)	Level of Perception (%)		
		Low (1 – 6 points)	Moderate (7 – 9 points)	High (10 – 12 points)
Total	380	3.9	19.5	76.6
Gender				
Male	150	2.7	22.7	74.7
Female	230	4.8	17.4	77.8
Residential area				
Urban	207	3.4	16.9	79.7
Rural	173	4.6	22.5	72.8
Health insurance				
Non co-payment	337	4.2	19.9	76.0
Co-payment	43	2.3	16.3	81.4
Income quintiles				
1st quintile (Poorest)	71	7.0	29.6	63.4
2nd quintile	75	1.3	24.0	74.7
3rd quintile	90	2.2	17.8	80.0
4th quintile	73	4.1	12.3	83.6
5th quintile (Richest)	71	3.9	19.5	76.6

Table D-12 The co-decision making and the sufficiency of time for diagnosis

		Co-decision			Sufficiency of time for diagnosis		
	Sample size (n)	Enough (%)	Not enough (%)	No chance for co-decision (%)	Sufficient (%)	Not Sufficient (%)	No chance for talking with the doctor (%)
Total	380	85.0	12.6	2.4	74.5	25.0	0.5
Gender							
Male	150	86.0	11.3	2.7	74.0	26.0	0.0
Female	230	84.3	13.5	2.2	74.8	24.3	0.9
Residential area							
Urban	207	87.0	10.6	2.4	74.9	25.1	0.0
Rural	173	82.7	15.0	2.3	74.0	24.9	1.2
Health insurance							
Non co-payment	337	84.5	12.9	2.6	74.9	24.6	0.6
Co-payment	43	89.5	10.5	0.0	71.1	28.9	0.0
Income quintiles							
1st quintile (Poorest)	71	73.2*	23.9	2.8	71.8	26.8	1.4
2nd quintile	75	89.3	8.0	2.7	78.7	21.3	0.0
3rd quintile	90	83.3	13.3	3.3	67.8	31.1	1.1
4th quintile	73	90.4	9.6	0.0	78.1	21.9	0.0
5th quintile (Richest)	71	88.7	8.5	2.8	77.5	22.5	0.0

* $p < 0.05$

Table D-13 Perception on the negative treatment from healthcare providers

	Sample size (n)	Perception level Never (%)	Rarely (%)	Moderately (%)	Frequently (%)	Mean score
Insult	380	83.3	14.7	1.3	0.7	0.19
Ignorant	380	76.7	19.3	3.3	0.7	0.27
Not paying attention	380	76.7	18.7	4.7	0.0	0.27
Harsh tone of voice	380	70.0	26.7	2.7	0.7	0.31
Not to maintain the confidentiality of the patient	380	74.7	17.3	1.3	6.7	0.32
Talking with unintentionally	380	76.7	19.3	3.3	0.7	0.25
Delayed services	380	38.0	27.3	26.7	8.0	0.97

Table D-14 Perception on the negative treatment from healthcare providers categorized by gender

	Male (%)					Female (%)				
	0	1	2	3	Mean	0	1	2	3	Mean
Insult	83.3	14.7	1.3	0.7	0.19	84.8	12.2	2.2	0.9	0.19
Ignorant	76.7	19.3	3.3	0.7	0.28	78.3	18.3	2.2	1.3	0.27
Not paying attention	76.7	18.7	4.7	0.0	0.28	80.4	13.5	5.7	0.4	0.26
Harsh tone of voice	70.0	26.7	2.7	0.7	0.34	77.0	18.7	3.5	0.9	0.28
Not to maintain the confidentiality of the patient	74.7	17.3	1.3	6.7	0.40	81.3	13.5	2.2	3.0	0.27
Talking with unintentionally	76.7	19.3	3.3	0.7	0.28	81.3	14.8	3.0	0.9	0.23
Delayed services	38.0	27.3	26.7	8.0	1.05	43.9	26.1	23.5	6.5	0.93

0 = Never, 1 = Rarely, 2 = Moderately, 3 = Frequently

Table D-15 Perception on the negative treatment from healthcare providers categorized by residential area

	Urban (%)					Rural (%)				
	0	1	2	3	Mean	0	1	2	3	Mean
Insult	86.0	12.1	1.9	0.0	0.16	82.1	14.5	1.7	1.7	0.23
Ignorant	81.2	15.9	2.4	0.5	0.22	73.4	22.0	2.9	1.7	0.33
Not paying attention**	83.1	14.0	2.9	0.0	0.20	74.0	17.3	8.1	0.6	0.35
Harsh tone of voice ***	81.6	16.9	1.0	0.5	0.20	65.3	27.7	5.8	1.2	0.43
Not to maintain the confidentiality of the patient	82.1	11.6	1.4	4.8	0.29	74.6	19.1	2.3	4.0	0.36
Talking with unintentionally*	83.1	14.5	1.9	0.5	0.20	75.1	19.1	4.6	1.2	0.32
Delayed services***	48.3	25.1	22.2	4.3	0.83	33.5	28.3	27.7	10.4	1.15

0 = Never, 1 = Rarely, 2 = Moderately, 3 = Frequently

* $p < 0.05$, **$p < 0.01$, ***$p<0.001$

Table D-16 Perception on the negative treatment from healthcare providers categorized by health coverage

	Non co-payment (%)					Co-payment (%)				
	0	1	2	3	Mean	0	1	2	3	Mean
Insult	84.8	12.6	2.0	0.6	0.18	78.9	18.4	0.0	2.6	0.26
Ignorant	77.2	19.3	2.3	1.2	0.27	81.6	13.2	5.3	0.0	0.24
Not paying attention	78.4	15.8	5.6	0.3	0.28	84.2	13.2	2.6	0.0	0.18
Harsh tone of voice	73.4	22.2	3.5	0.9	0.32	81.6	18.4	0.0	0.0	0.18
Not to maintain the confidentiality of the patient	78.1	14.9	2.0	5.0	0.34	84.2	15.8	0.0	0.0	0.16
Talking with unintentionally	79.2	17.3	2.6	0.9	0.25	81.6	10.5	7.9	0.0	0.26
Delayed services	41.8	26.0	24.9	7.3	0.98	39.5	31.6	23.7	5.3	0.95

0 = Never, 1 = Rarely, 2 = Moderately, 3 = Frequently

Table D-17 Perception on the negative treatment from healthcare providers categorized by income quintiles

	1st quintile (%)					5th quintile (%)				
	0	1	2	3	Mean	0	1	2	3	Mean
Insult	87.0	12.2	0.8	0.0	0.14	88.5	8.6	2.2	0.7	0.15
Ignorant	75.6	22.0	1.6	0.8	0.28	80.6	13.7	4.3	1.4	0.27
Not paying attention*	72.4	18.7	8.1	0.8	0.37	84.2	10.8	5.0	0.0	0.21
Harsh tone of voice	75.6	19.5	4.9	0.0	0.29	80.6	15.1	2.9	1.4	0.25
Not to maintain the confidentiality of the patient	77.2	14.6	3.3	4.9	0.36	84.2	10.1	1.4	4.3	0.26
Talking with unintentionally	84.6	13.0	2.4	0.0	0.18	81.3	12.9	4.3	1.4	0.26
Delayed services	39.0	23.6	30.1	7.3	1.06	48.2	25.2	19.4	7.2	0.86

0 = Never, 1 = Rarely, 2 = Moderately, 3 = Frequently

* $p < 0.051$

Table D-18 Satisfaction on the overall services

		Satisfaction level					
	Sample size (n)	Extremely Satisfied (%)	Very Satisfied (%)	Moderately Satisfied (%)	Dissatisfied (%)	Very Dissatisfied (%)	Average score
Total	380	23.7	44.7	31.1	0.5	0.0	3.92
Gender							
Male	150	20.0	49.3	30.0	0.7	0.0	3.89
Female	230	26.1	41.7	31.7	0.4	0.0	3.93
Residential area							
Urban	207	24.2	47.3	28.5	0.0	0.0	3.96
Rural	173	23.1	41.6	34.1	1.2	0.0	3.87
Health insurance							
Non co-payment	337	22.8	45.6	31.0	0.6	0.0	3.91
Co-payment	43	31.6	36.8	31.6	0.0	0.0	4.00
Income quintiles							
1st quintile (Poorest)	71	31.0*	32.4	35.2	1.4	0.0	3.93
2nd quintile	75	20.0	44.0	36.0	0.0	0.0	3.84
3rd quintile	90	16.7	47.8	34.4	1.1	0.0	3.80
4th quintile	73	27.4	42.5	30.1	0.0	0.0	3.97
5th quintile (Richest)	71	25.4	56.3	18.3	0.0	0.0	4.07

* $p < 0.05$

Table D-19 The percentage of samples group who were satisfied with each type of service

		Type of service			
	Sample size (n)	Service procedures (%)	Time spent in waiting for service (%)	Human relationship (%)	Information or advice for drug usage (%)
Total	380	87.6	68.9	89.2	90.8
Gender					
Male	150	88.7	67.3	85.3	89.3
Female	230	87.0	70.0	91.7	91.7
Residential area					
Urban	207	89.9	72.5	92.8*	89.9
Rural	173	85.0	64.7	85.0	91.9
Health insurance					
Non co-payment	337	87.1	70.2	88.6	90.9
Co-payment	43	92.1	57.9	94.7	89.5
Income quintiles					
1st quintile (Poorest)	71	78.9	67.6	84.5	91.5
2nd quintile	75	88.0	73.3	89.3	90.7
3rd quintile	90	88.9	64.4	87.8	86.7
4th quintile	73	90.4	63.0	93.2	97.3
5th quintile (Richest)	71	91.5	77.5	91.5	88.7

* $p < 0.05$

Table D-20 The barriers of access to ARD services

	Total	Gender		Residential area		Health insurance		Income quintiles				
		Male	Female	Urban	Rural	Non co-payment	Co-payment	1 (Poorest)	2	3	4	5 (Richest)
Sample size (n)	380	150	230	207	173	337	43	71	75	90	73	71
- Health/medical costs	2.1	1.3	2.6	2.4	1.7	2.0	2.6	2.8	1.3	1.1	4.1	1.4
- Travel, meals and miscellaneous expenses	36.3	35.3	37.0	30.9*	42.8	37.4	26.3	47.9	40.0	34.4	27.4	32.4
- Wages or salaries lost during the treatment	2.6	2.7	2.6	3.9	1.2	2.6	2.6	5.6*	1.3	3.3	2.7	0.0
- Long waiting time for the doctor	33.2	32.0	33.9	36.2	29.5	31.0**	52.6	32.4	26.7	37.8	31.5	36.6
- Transportation barriers; having no car, no one taking to the hospital	5.3	5.3	5.2	2.4*	8.7	5.3	5.3	15.5*	4.0	2.2	0.0	5.6
- Discrimination perception	2.6	2.0	3.0	2.9	2.3	2.9	0.0	1.4	6.7	1.1	1.4	2.8
- Lacking from work or having difficulty to be absent from work	17.4	19.3	16.1	11.1***	24.9	16.1*	28.9	18.3	16.0	13.3	27.4	12.7
- No barrier	18.4	20.7	17.0	22.7	13.3	19.6	7.9	19.7	16.0	17.8	20.5	18.3

One or more items could be selected

* $p < 0.05$, **$p < 0.01$, ***$p<0.001$

Table D-21 Average income, average cost, Gini coefficient, Concentration Index and Kakwani index

Baht / year

	Income per capita	Direct cost					Indirect cost	Total cost
		ARD / service cost (1)	Travelling cost (2)	Meal expenditure (3)	Costs for coming to take ARD (4) = (2) + (3)	Total direct cost (5) = (1) + (4)	(6)	(7) = (5) + (6)
Quintiles of Per capita income, gross								
1^{st} quintile (Poorest)	30,895.5	23.3	633.6	399.6	1,033.2	1,056.5	284.3	1,340.9
	(100.0)	(0.1)	(2.1)	(1.3)	(3.3)	(3.4)	(0.9)	(4.3)
2nd quintile	45,243.4	0.0	590.9	283.9	874.9	862.2	459.3	1,321.5
	(100.0)	(0.0)	(1.3)	(0.6)	(1.9)	(1.9)	(1.0)	(2.9)
3rd quintile	54,819.7	3.9	655.8	325.0	980.8	973.7	547.7	1,521.4
	(100.0)	(0.0)	(1.2)	(0.6)	(1.8)	(1.8)	(1.0)	(2.8)
4th quintile	68,075.3	0.0	644.9	332.8	977.6	977.6	684.8	1,662.4
	(100.0)	(0.0)	(0.9)	(0.5)	(1.4)	(1.4)	(1.0)	(2.4)
5th quintile (Richest)	119,059.7	3.9	734.1	333.5	1,067.6	1,066.8	1,154.1	2,220.9
	(100.0)	(0.0)	(0.6)	(0.3)	(0.9)	(0.9)	(1.0)	(1.9)
Total	63,850.7	6.2	652.1	334.7	986.9	987.4	628.3	1,615.7
	(100.0)	(0.1)	(1.0)	(0.5)	(1.5)	(1.5)	(1.0)	(2.5)
Gini coefficient	0.2716							
Concentration Index		-0.3913	0.0551	0.0058	0.0368	0.0345	0.2773	0.1267
Kakwani index		-0.6629	-0.2164	-0.2658	-0.2348	-0.2371	0.0057	-0.1448

Figures in the parenthesis indicate the proportion of expenditure over income per capita

Source : from calculation

BIOGRAPHY

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