Health Insurance Status and Access to Antiretroviral Treatment Among HIV/AIDS Patients in Northeast Thailand: a Patient-based Analysis

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Keywords: AIDS/HIV, Access, Antiretroviral Treatment, Health Insurance, Thailand

Abstract
The objective of this study is to assess the differences in access to antiretroviral treatment among health insurance recipients, using a patient-based analysis.

METHODS: The subjects were 324 outpatients with the human immunodeficiency virus who were treated at a regional hospital for infectious diseases in Khon Kaen Province. We collected data every visit of the patients during the study period between April 1 and September 30 in 2002. We defined access to antiretroviral treatment as having a prescription for antiretroviral drugs on at least one visit during the study period. We examined the relationship between access to antiretroviral treatment and age, sex, stage of acquired immune deficiency syndrome (AIDS), and health insurance. We also compared the results of the patient-based analysis and the record-based analysis that was used in our previous study.

RESULTS: Multiple logistic regression analysis shows that patients insured by the Civil Servant Medical Benefit Scheme have better access to antiretroviral treatment than the others (vs. Universal Coverage; odds ratio=11.38, 95% confidence interval=4.09, 31.65). We have also shown that patients with AIDS-related complex have better access to antiretroviral treatment compared to asymptomatic AIDS patients (odds ratio=3.38, 95% confidence interval=1.31-8.76). Values of these odds ratios were lower in the record-based analysis than in the patient-based analysis.

CONCLUSIONS: Patients insured by the Civil Servant Medical Benefit Scheme had better access to antiretroviral drugs. We reconfirm the differences in access to antiretroviral treatment among health insurance recipients, using the patient-based analysis.
Introduction

Since the mid-1990s, drug therapies have changed the picture of the human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS) epidemic in developed countries. The availability of new antiretroviral treatment has lead to a significant reduction in the instances of AIDS-defining opportunistic illnesses and mortality among HIV/AIDS patients1)~5). The high cost of the treatment, however, inhibits many developing countries from delivering antiretroviral treatment through their public health care systems6).

Several cross-sectional7)~8) and longitudinal studies9)~12) have demonstrated that health insurance coverage is significantly related to access to antiretroviral treatment. Smith et al. showed that changes in health insurance coverage restricted drug use for HIV/AIDS diseases11). Access to the treatment extends the survival time of patients with HIV/AIDS. Few studies have reported the relationship between health insurance coverage and access to antiretroviral treatment in developing countries.

Thailand is one of the most HIV-prevalent countries in Asia. In 2000, the number of people with HIV/AIDS was estimated at 695,000, the number of cases of serious AIDS was expected to be 55,000, and the infection rates were 2% for adult males and 1% for females13). Access to antiretroviral treatment is a key to the control of AIDS morbidity and mortality in Thailand14). In October 2001, the Thai Government introduced universal health insurance coverage. This has resulted in a health insurance system composed of a Civil Servant Medical Benefit Scheme, a Social Security Scheme, and Universal Coverage15). All of these cover medical expenses for the treatment of opportunistic infections in people with HIV/AIDS. However, only the Civil Servant Medical Benefit Scheme covers medical expenses for antiretroviral treatment. Some patients with HIV/AIDS can access antiretroviral treatment on a self-pay basis. In Thailand, therefore, health insurance was expected to be an important cause of the difference in access to antiretroviral treatment.

Our previous study16) examined the factors associated with the use of antiretroviral drugs among HIV/AIDS patients with cross-sectional data at two large public hospitals in Khon Kaen Province, Thailand. The analysis in the previous study, however, was based on the medical record of a patient’s visits. A record-based analysis does not permit identification of whether the same patient came more than once. Based on the record-based analysis, repeat visits by patients influenced the results. In this latest study, we collated data identifying each patient during the study period which permitted analysis at the individual patient level. The objective of this study is to reassess the differences in access to antiretroviral treatment among health insurance recipients using this patient-based analysis.

Methods

1. Subjects

The subjects were patients with HIV/AIDS who were 20 years old or over at the time of the study at a regional hospital for infectious diseases. The study hospital, the same one that cooperated in the previous study, is located in Khon Kaen Province and specializes in the treatment of infectious diseases, focusing on the 19 provinces in Northeast Thailand. Khon Kaen is one of these provinces in an economically less-developed part of Thailand, and has often been chosen as a model province for new policies before the Ministry of Public Health implements them nationwide. Its population was 1.75 million in 2001.

Nurses in the department for HIV/AIDS at the hospital collected the following data from medical charts and prescription forms: sex, age, health insurance status, laboratory tests, treatment, names of drugs, cost of treatment, drugs, tests, and the amounts of co-payment. They entered data for every visit of 361 outpatients on questionnaire sheet from 1 April 2002 to 31 September 2002. Hospital staff coded names of the patients so that outside researchers could not identify individual patients.

With regard to the stages of HIV, physicians in the hospital grouped patients as having asymptomatic HIV, AIDS-related complex, or clinical AIDS symptoms according to the 1993 US Center for Disease Control and Prevention staging system for HIV, which the Thai Government has adapted for its surveillance case definition17). If not specifically mentioned in the medical chart, the stage was determined according to the diagnosis. This study
covered antiretroviral drugs including AZT, ABC, ddI, d4T, 3TC, Combid, Efaviranz, or GPO-VIR. We defined access to antiretroviral treatment as having a prescription for antiretroviral drugs on their medical record once or more during the study period. We used data on age, sex, and health insurance obtained at the entry to the study, and the worst stage of HIV/AIDS during the study period as the data on their stage of HIV/AIDS. Thirty-two subjects who changed their health insurance, five patients who had missing information on their age, or date of attending as an outpatient, were removed from the statistical analysis. Finally we used 324 subjects for the statistical analysis.

2. Statistical analysis

We provided proportions or means of subjects’ characteristics such as age, sex, health insurance, and stage of AIDS according to the access to the antiretroviral treatment. We tested the association of the stage of HIV according to health insurance by chi square test. Logistic regression analysis was used to obtain crude and adjusted odds ratios (ORs) and their 95% confidence intervals (95% CIs). The ORs were compared between access to antiretroviral treatment as the dependent variable, and the subjects’ characteristics: age, sex, stage of HIV/AIDS, and health insurance as the independent variables. To evaluate the effect of the unit of analysis, we analyzed the record-base data by logistic regression analysis with the same independent variables. We provided the proportions of visit with antiretroviral drug prescription to all visits among the subjects receiving antiretroviral treatment. The Kruskal-Wallis test was applied to test the difference of the means among the subjects’ characteristics. All analyses were done using the SAS statistical software package (version 8.0.2).

Results

We studied 324 outpatients with HIV/AIDS in the study hospital. The mean of the subjects’ age was 33.5 (SD= 6.7). The numbers of male and female subjects were 172 (53.1%) and 152 (46.9%). The numbers and proportions of study subjects by health insurance were 25 (7.7%) for the Civil Servant Medical Benefit Scheme, 33 (10.2%) for the Social Security Scheme, 205 (63.3%) for Universal Coverage, and 61 (18.8%) for self-payment. The number of subjects who received antiretroviral treatment was 76 (23.5%).

Table 1 shows the proportion with sex, age category, health insurance, and HIV stage for subjects according to whether or not they were receiving antiretroviral treatment. The average age of subjects receiving antiretroviral treatment was 35.0 (SD=7.5), and that of those without antiretroviral treatment was 33.0 (SD=6.5).

The numbers and proportions at the HIV stage for asymptomatic, AIDS-related complex, and AIDS according to the type of health insurance were: Civil Servant Medical Benefit Scheme; 3(12.0%), 10 (40.0%), and 12 (48.0%), Social Security Scheme; 4 (12.1%), 19 (57.6%), and 10 (30.3%), Universal Coverage, 34 (16.6%), 63 (30.7%), and 108 (52.7%), and self-pay; 19 (31.1%), 28 (45.9%), and 14 (23.0%). The chi-square test indicates the association between health insurance and HIV stages (p<0.01).

Table 2 shows the logistic regression analysis for crude and adjusted ORs with access to antiretroviral treatment. The crude ORs for sex, age, health insurance status, and HIV stages were related to access to antiretroviral treatment. In the multivariate analysis for the association between health insurance and antiretroviral treatment, the Civil Servant Medical Benefit Scheme was associated with access to antiretroviral treatment (vs. the Universal Coverage; OR=11.38, 95%CI=4.09, 31.65) after adjusting age, sex, and HIV stage. AIDS-related complex was associated with access to antiretroviral treatment (vs. asymptomatic; OR=3.38, 95%CI=1.31, 8.76).

Table 3 shows the logistic regression analysis for adjusted ORs with access to antiretroviral treatment on a medical record basis. Values of ORs were mostly lower in the record-based analysis than in the patient-based analysis.

Table 4 shows proportions of visits with antiretroviral drug prescription to all visits among the subjects receiving antiretroviral treatment (n=76). The mean of the proportions of antiretroviral treatment among self-pay patients (0.68; SD=0.30) was lower than for the patients of the Universal Coverage (0.83; SD=0.20) (p<0.01).

Discussion

The results of this study indicated that there were
inequalities in access to antiretroviral treatment among HIV/AIDS patients by health insurance status. Those insured by the Civil Servant Medical Benefit Scheme had better access than those insured by the Universal Coverage. Patients with AIDS-related complex were associated with access to antiretroviral treatment.

The previous study\(^\text{16}\) indicated that those insured by the Civil Servant Medical Benefit Scheme were more likely to receive antiretroviral treatment than those insured by the Universal Coverage (OR=12.43, 95%CI=6.03, 25.62). There was small difference between this study and the previous one in the ORs for the Civil Servant Medical Benefit Scheme. We think that it is because the coverage and payment for treatment under both schemes continued unchanged until April 2005 in this study area.

The result for the Social Security Scheme (OR=3.53, 95%CI=2.07, 6.01) when we analyzed the current data using a record-based analysis as in the previous study, the sample size of the medical charts increased up to 959 visits, which was nearly twice as large as that of the previous study (n=593). The adjusted OR for the Social Security Scheme was 1.87 by the record-based analysis (95%CI=1.18, 2.96), which was similar to the results of the previous study (Table 3). There was a wide distribution in terms of the proportion of visits with the prescription to all visits among those patients receiving antiretroviral treatment (OR=3.53, 95% CI=2.07, 6.01). When we analyzed the current data using a record-based analysis as in the previous study, the sample size of the medical charts increased up to 959 visits, which was nearly twice as large as that of the previous study (n=593). The adjusted OR for the Social Security Scheme was 1.87 by the record-based analysis (95%CI=1.18, 2.96), which was similar to the results of the previous study (Table 3). There was a wide distribution in terms of the proportion of visits with the prescription to all visits among those patients receiving antiretroviral treatment insured by the Social Security Scheme (0.92; SD=0.21, minimum=0.33, maximum=1.00) (Table 4). This wide distribution would explain the difference between the patient-based analysis and the record-based analyses.

In Khon Kaen Province, the percentages of people covered by the health insurance schemes in February
2005 were 7.5% for the Civil Servant Medical Benefit Scheme, 14.2% for the Social Security Scheme, 78.0% for the Universal Coverage, and 0.3% for others including private school teachers and veterans18). The proportions of the insured by the Social Security Scheme and the Universal Coverage were somewhat lower in this study. As a result, there were 61 (18.8%) patients with self-payment in this study, though the Universal Coverage had been introduced in the previous year of this study.

The background of these self-pay patients was unclear, but the reason why they received treatment on a self-payment basis was assumed to be that the Universal Coverage was not effective enough one year after enforcement. Additionally, if they intentionally chose self-payment method, this would avoid their diagnoses being known to their local hospital where they had registered to use the Universal Coverage. This is possibly supported by the fact that there were no self-payment patients from the Ban Had district where the study hospital is located. Those insured by the Civil Servant Medical Benefit Scheme also possibly chose self-payment to avoid their diagnoses becoming known to their place of work by the process of reimbursement.

Another reason is the existence of private health insurance. The number of people insured by private health insurance was estimated to be 1.1 million (1.8%) out of a total population of 62 million19). The nationwide proportion for private health insurance schemes was much lower than that for the self-pay patients in our study (18.8%). The possibility, however, remains those insured by private health insurance were treated in the self-payment category in this study. The patients insured by private health insurance were difficult to identify their medical records and prescription forms, because payment of medical expenses by private health insurance is based on a refund system.

Subjects insured by the Universal Coverage had restricted access to antiretroviral treatment compared with the other health insurance schemes. The Universal Coverage is a health insurance scheme that covers those uninsured by the Civil Servant Medical Benefit Scheme or the Social Security Scheme. Those insured by the Universal Coverage were able to receive medical treatment with a co-payment of 30 Baht (1 Baht = 3 Japanese yen) only in public hospitals; however, the Universal Coverage does not cover the cost of antiretroviral treatment. The proportion of AIDS patients was high (52.7%) in patients covered by the Universal Coverage in this study. The possibility remains that the patients covered by the Universal Coverage came to hospital only when their disease was past curing. Delays between the HIV infection and the first visit were suggested among HIV/AIDS patients20). Differences in health insurance scheme were one possible cause of such delays. Our cost analysis21) showed that a reduction in the cost of antiretroviral treatment is necessary to popularize antiretroviral treatment in Thailand. It is considered that differences in access will improve with the reduction in the cost of antiretroviral treatment that would follow domestic production of the generic medicine.

The patients with AIDS-related complex had better access to antiretroviral treatment than the asymptomatic AIDS patients (odds ratio=3.38, 95% CI=1.31-8.76). Antiretroviral treatment has been recommended to start at the point where the CD4 cell count drops below 200 cells/mm³ or when patients exhibit symptoms of AIDS-related complex. The CD4 count will be an important parameter for antiretroviral treatment in Thailand, because viral load assays are still expensive.14 Although the cost of the CD4 count was not covered by health insurance during the study period, the study hospital carried out CD4 cell count tests for 84 times (72 patients) out of a total of 959 patient visits. Among those 72 patients, 37 patients (51.4%) had received antiretroviral treatment. Manifestation of AIDS-related complex is an alternative criterion for starting antiretroviral treatment when conditions are still inadequate to test CD4 cell counts. Therefore, the better access for AIDS-related complex patients might be related with antiretroviral treatment initiation. In contradiction to the AIDS-related complex, AIDS patients were not associated with access to the treatment. For AIDS patients, other treatments for opportunistic infections had priority over the ones with antiretroviral drugs. Additionally, because of the insufficient supply of antiretroviral drugs, those patients with AIDS-related complex were more likely to be selected to receive the treatment by hospital committees based on their social
backgrounds; for instance, appropriate health behavior, compliance with the treatment, family responsibilities, and ability to work.

This study has some limitations. First, there could be biases in the study subjects because they were sampled from one hospital in Khon Kaen Province. We chose this hospital, because it specializes in the treatment of infectious diseases for patients living in Northeast Thailand and has an HIV clinic and an inpatient ward for HIV positive patients. Second, the study was conducted in the period of transition to a universal health insurance system and the beginning of generic antiretroviral drug production in Thailand. The production of antiretroviral drugs increased in Thailand after the study and this increase may lower the barrier to antiretroviral treatment in spite of health insurance status. Third, we gathered the data only for a half-year period. The length of follow-up was different among the subjects and was not suitable to analyze the effect on the frequency to receive antiretroviral treatment. Forth, our analyses were based on the data from medical charts and prescription forms and we could not analyze the influence of other important factors. Our following research is gathering data from patients about behavioral and social factors.

In summary, the findings indicated that the type of health insurance affected access to antiretroviral treatment. In addition, the results of the patient-based analysis indicated different aspects from the record-based analysis.

Acknowledgments

We are grateful to Pimkan Paisarn, Udomlack Vannasiri, and their staff for their efforts in collecting data in the Northeast Regional Hospital for Infectious Diseases. This research was supported by a Grant for Health Cooperation Research (13-C3) from the Ministry of Health, Labor and Welfare of Japan. We declare that we have no conflict of interest.

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