Referrals from Primary Care to Tertiary Care in the University Hospital

Prapaporn Noparatayaporn, B.Sc.*, Tanita Thaweethamcharoen, Ph.D.*, Siriphongs Charoenvidhya, M.D., Phanpinon Pinidsathil, B.Sc.***

**Department of Pharmacy, **Division of Primary Care, Faculty of Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.*

ABSTRACT

Objective: To assess the situation and cause of referral of outpatients who are covered by Siriraj universal coverage (UC) scheme from primary care unit (PCU) to tertiary care (TC) hospital (both PCU and TC hospital are a part of Siriraj Hospital).

Methods: This study used the 2008-2011 computerized data to explore the financial situation of the hospital in influencing the use of universal coverage scheme and the cause of referral situation from the PCU to the TC hospital.

Results: The top ten diseases which were the important causes of referral of UC patients from the PCU to the TC hospital were cataract, diabetes, hypertension, cancer, abnormal joint, osteoarthritis, infection, allergic rhinitis, depression, and wound complication. Inadequate essential drug list, unsupportable workloads, lack of specific equipment, and lack of specific physicians at the PCU have tended to refer the chronic or complicated patients to TC.

Conclusion: The trends of UC patients at the PCU were continuously increasing and more than half of patients were referred to the TC. Referral from PCU to TC was the important reason for high expenditure of the registered contractors' units. This is the challenging situation which the administrators have to manage in the limited resource.

Keywords: Referral, primary care, tertiary care, university hospital

Siriraj Med J 2014;66:91-96
E-journal: http://www.sirirajmedj.com

INTRODUCTION

Universal Coverage scheme (UCS) of Thailand is the healthcare system for Thai citizens since 2001. The annual coverage cost per capita of UCS is limited from National Health Security Office (NHSO).[1,2] If the entire expenditure exceeds the coverage, the subsidy becomes zero. The health system of Thailand comprises mainly 3 schemes including Civil Servant Medical Benefit Scheme (CSMBS), Universal Coverage (UC), and Social Security Scheme (SSS). In 2011, population coverage under the CSMBS was about 5 million people (8% of population) and the SSS was about 10 million people (16% of population) while the UC scheme covered about 47 million people (76% of population).[3] For beneficiary, the CSMBS group can receive services at any public hospitals with the retrospective fee-for-service (FFS) payment on outpatient service and diagnosis related groups (DRG) on inpatient service. The SSS group can receive services at the private or public hospitals which is the registered contractors'

Correspondence to: Tanita Thaweethamcharoen
E-mail: tanitath@gmail.com
Received 10 July 2013
Revised 18 September 2013
Accepted 24 September 2013

hospital and the payment method of outpatient and inpatient is capitation. For UC groups must receive services at their registered contractors' hospital for primary care (PC). When the registered contractors' hospital cannot give treatment, they will refer patients to the higher level of health care unit.[4] The health status of Thai people has improved significantly in the past three decades as shown as the increasing of life expectancies which were 71.24 years male, 76.08 years female in 2011. However, the health and drug expenditures have been increasing at very fast rate, particularly in the last decade.[5] Drug expense increased from US$1,080 million in 1993 to $8,700 million in 2009. The total drug expenditure of total health expenditure rose from 35% in 1993 to 46% in 2009.[5,6] This situation is the important issue for the health system in Thailand especially the university hospital which is the contracting unit for primary care (CUP) and contracting unit for tertiary care (CUT) such as Siriraj Hospital. A university hospital is a teaching school for medical health care personnel, particular consultative health care, typically for inpatients and on referral from a primary or secondary health care, in a capacity that has personnel, instruments, and facilities for advanced medical treatment. It has specific divisions for specialized treatment such as chemotherapy, neurosurgery, cardiac surgery, brain surgery, plastic surgery, severe burns, advanced neonatology services, palliative care, and other complex medical treatments. However, some university hospitals also have the role of primary care for prevention and basic treatment. Part of this role is to actively support social well-being and a fulfilling life style for their patients. In the real situation, the CUP or Primary care unit (PCU) has the responsibility for treatment especially the treatment of chronic diseases such as hypertension, diabetes, and hyperlipidemia which impact to financial burden. The PCU will refer patients to the higher level of health care unit; CUT or the tertiary care TC hospital, when the PCU cannot give treatment. Referral is the one of the causes which increases the financial burden. From the critical financial situation and the limited revenue, the budget from the govern-ment is not adequate for all treatments in the PCU and the problem is still increasing.[7] The increasing expenditure affects the long-term cost containment in the future so the PCU has to manage expenditure within the received budget. This study assessed the situation and cause of referral of outpatients who are covered by the universal coverage (UC) scheme from PCU to the tertiary care TC hospital. The results of this study are beneficial for administrators and the policy makers for management of the budget or the appropriate policy in the future.

MATERIALS AND METHODS

This was a single center study at the large university hospital (Siriraj Hospital) in Thailand which is the contracting unit for primary care and contracting unit for tertiary care. This study used the 2008-2011 computerized data of the registered Siriraj UC patient of PCU and outpatient (OP) department in the TC hospital (both PCU and TC hospital are a part of Siriraj Hospital). This study was composed of two parts in which the first part analyzed the expenditure and type of patients which was categorized by service center. The data of expenditure of the outpatient which was incurred at the PCU and TC hospital were evaluated based on the actual expenses of the treatment event. The percentages of the expen-ditures classified by the drug expenditure, laboratory expenditure, and other expenditure were measured by the average annual change from 2008 to 2011. The second part analyzed the referral situation of the UC patients at the PCU of this University Hospital in 2008-2011. Three hundred and sixty-eight of the referred patients in 2011 were randomly chosen for the intensive finding of the reason of referral, disease diagnosis which was classified by ICD-10 classification, length of referral permission, cause of referral, and the referred division at the TC hospital. All data were obtained from the hospital database system, medical record book, and the opinion

TABLE 1. Summary the registered population and outpatients at the primary care unit during 2008 to 2011.

List	2008	2009	2010	2011
Registered population	101,633	96,599	92,990	94,627
Outpatients (OP)	14,025	14,672	14,489	17,328

of physicians at the PCU. (This study was a part of the topic "Income and expense analysis of universal coverage patient's treatment at Siriraj Hospital" Institution Review Board (IRB). No. Si.195/2012, protocol number 069/2555(EC3)).

RESULTS

All the registered population under UC scheme of this PCU and the number of outpatients who visited the PCU have been shown in the Table 1.

From the OP, total expenditure from PCU and TC hospital of UC patients was classified by the drug expenditure, laboratory expenditure, X-ray expenditure, and other expenditure by percentage. The trend of total expenditure has been increasing and the drug expenditure represented the most proportion of all expenditures with approximately 50% as shown in the Table 2.

During 2008 to 2009, expenditures decreased by 8.33 percent for total expenditure (a combination of drug, laboratory, x-ray and other). In 2009, all categories and total expenditure were increased versus 2010 in which the total expenditure increased 19.69 percent as shown in Table 3. From 2009 to 2010, drug expenditures dropped 2.73 percent in the PCU while it increased 13.40 percent in the TC hospital thus the overall drug expenditure also increased. From 2010 to 2011, all categories of expenditure increased more than 15 percent and the total expenditure increased 21.89 percent as shown in Table 3.

From the overall annual expenditure, the expenditure was classified by service center. The study revealed that the expenditure of TC hospital was 82.27 to 87.41% of all expenditure between 2008 and 2011 which was higher than the PCU (12.59 to 17.73%) as shown in Fig 1. UC outpatients can be divided by service center into two groups; (1) the patients who receive service from only PCU, (2) the patients who receive service from PCU and TC hospital (referred patient). The trend of referral was

TABLE 2. Annual expenditure (Baht) of UC patients during 2008 to 2011.

Annual expenditure (Baht)	2008	2009	2010	2011
Drug	48,075,587.65 (51.80%)	45,629,802.03 (53.63%)	49,838,283.95 (48.94%)	58,017,421.10 (46.74%)
• Essential drug	44,274,676.65 (47.70%)	41,890,413.03 (49.24%)	45,527,343.95 (44.71%)	52,978,642.10 (42.68%)
• Non-essential drug	3,800,911.00 (4.10%)	3,739,389.00 (4.40%)	4,310,940.00 (4.23%)	5,038,779.00 (4.06%)
Laboratory	10,558,219.00 (11.38%)	10,149,150.00 (11.93%)	12,079,360.00 (11.86%)	14,846,569.00 (11.96%)
X-ray	1,733,282.00 (1.87%)	1,726,664.00 (2.03%)	2,470,550.00 (2.43%)	2,881,402.00 (2.32%)
Others	32,445,656.59 (34.96%)	27,574,396.94 (32.41%)	37,442,327.93 (36.77%)	48,372,118.40 (38.97%)
Total	92,812,745.24 (100%)	85,080,012.97 (100%)	101,830,521.88 (100%)	124,117,510.50 (100%)

TABLE 3. Annual expenditures (Baht) by major category of UC patients and percent changes during 2008 to 2011.

Annual expenditure (Baht)	2008	2009	2010	2011	Percent change 2008-2009	2009-2010	2010-2011
Medicine cost	48,075,588	45,629,802	49,838,284	58,017,421	-5.09	9.22	16.41
PCU	9,705,557	11,821,118	11,498,538	11,682,213	21.80	-2.73	1.60
TC hospital	38,370,031	33,808,684	38,339,746	46,335,208	-11.89	13.40	20.85
Laboratory cost	10,558,219	10,149,150	12,079,360	14,846,569	-3.87	19.02	22.91
PCU	1,777,600	2,314,465	2,498,980	2,534,710	30.20	7.97	1.43
TC hospital	8,780,619	7,834,685	9,580,380	12,311,859	-10.77	22.28	28.51
X-ray cost	1,733,282	1,726,664	2,470,550	2,881,402	-0.38	43.08	16.63
PCU	204,150	334,900	353,050	342,030	64.05	5.42	-3.12
TC hospital	1,529,132	1,391,764	2,117,500	2,539,372	-8.98	52.15	19.92
Other expenditure	32,445,657	27,574,397	37,442,328	48,372,118	-15.01	35.79	29.19
PCU	802,374	613,824	717,340	1,070,605	-23.50	16.86	49.25
TC hospital	31,643,283	26,960,573	36,724,988	47,301,513	-14.80	36.22	28.80
Total expenditure	92,812,745	85,080,013	101,830,522	124,117,511	-8.33	19.69	21.89
PCU	12,489,681	15,084,307	15,067,908	15,629,558	20.77	-0.11	3.73
TC hospital	80,323,065	69,995,706	86,762,614	108,487,952	-12.86	23.95	25.04

Fig 1. Expenditure (Baht) of UC patients between the PC and the TC hospital during 2008 to 2011.

increasing from 57% in 2008 to 64% in 2011 as shown in the Fig 2.

Three hundred and sixty-eight of the referred patients in 2011 were random chosen for the intensive finding of the reason of referral, disease diagnosis, length of referral permission, and the referred division. Table 4 has shown the top five division of receipt within the TC hospital for the UC patients from PCU in 2011. Most of patients were referred to the Division of Medicine in the TC hospital because of the complication of disease such as diabetes, hypertension and cancer. Another reason of referral was the inadequate drug list in the pharmacy unit at the PC hospital. The second ranking was the Division of Ophthalmology and the disease of these patients was senile cataract which needs the specialist and higher technology instrument for diagnosis and treatment. The third ranking was the Division of Surgery because the patients needed operations for the abnormal bone or joint such as knee osteoarthritis (Knee OA) or cancer.

Fig 2. Number of referred patient during 2008 to 2011.

TABLE 4. Top five of divisions of receipt within the TC hospital for the UC patients from PCU in 2011.

Division of receipt	Number of patients	%
Division of Medicine	123	33.4
Division of Ophthalmology	82	22.3
Division of Surgery	36	9.8
Division of Ear Nose Throat	22	6.0
Division of Pediatric	19	5.2
Other divisions (9 divisions)	86	23.3

Table 5 has shown the top ten referral diseases that a physician decided to refer a patient from the PCU to the TC hospital such as cataract, diabetes, hypertention, cancer, joint abnormal, osteoarthritis, infection, allergic rhinitis or depression.

DISCUSSION

The trend of total expenditure has been increasing and the medicine costs represent the most proportion of all expenditures with approximately 50% as shown in Table 2. The percentage change of all expenditure between 2009 and 2011 increased as shown in Table 3 and Fig 1. The patients at the PCU do not reduce, but rather increase the number of the patients at the TC hospital as shown in Fig 2. Insupportable manpower, lack of specialists and poor equipment for diagnosis or treatment at most PCUs are a reason for referral from PCU to TC hospital.[7-9] This often occurred at the TC hospital as over-referral, and puts a burden on them, especially the healthcare expenditure such as drug expenditure and laboratory expenditure as shown in Table 6. Most of the top ten referral diseases for which the PCU refers a patient to the TC hospital are the complicated chronic disease for which the medicine at the PCU is not adequate to treat them or needs an operation by a surgeon or needs to use the complex instrument for diagnosis as shown in Table 5. After review the chart of OP-visited patient book and the physicians' opinions at the PCU, the main reasons for referral consisted of 3 reasons. The first reason was inadequate drug list at the PCU the as same as the previous study.[10] Although the essential drug (ED) list is the basic medicines which covers the UCS patients, all ED listed medicines were not available at the PCU because of the high price of some items. Therefore, the doctors at the PCU have to push the patients to the TC hospital to receive that medicine. The second reason for referral was the complicated disease which over the ability to treat them such as cancer, invasive infection, HIV. The third reason is a lacks specific equipment for treatment such as

TABLE 5. Top ten of diseases that the PCU referred to the TC hospital in 2011.

Disease	Number of patients	%
Cataract	29	7.9
Diabetes	27	7.3
Hypertension	20	5.4
Cancer	19	5.2
Joint abnormal	16	4.3
OA	12	3.3
Infection	12	3.3
Allergic rhinitis	10	2.7
Depression	9	2.4
Wound complication	9	2.4
Other diseases (64 diseases)	205	55.8

cataract, joint abnormality or OA. These are a burden on the TC hospital and these situations cause the repeated work of the health care personnel to find the root cause of the patient's symptom and need to use the high technology instrument for diagnosis. All situations lead to the 35% increasing expenditure of the TC hospital from 2008 (80,323,064.59 baht) to 2011 (108,487,952.40 baht) while the expenditure of PCU increased about 25% from 2008 (12,489,680.65 baht) to 2011 (15,629,558.10 baht) as shown in Table 3. Although the PC system focuses on health promotion and disease prevention through community volunteers, the results of this study and the previous study show that the PC system fails to promote the disease prevention[7] and the policy of PC sectors should be to revise the role of the PCU, the budget for management and the budget allocation which should be revised based on the real situation such as the promotion of complicated disease prevention.

CONCLUSION

The trend of UC patients at primary care has increased and more than 50% of patients were referred to the higher level health care service. Referral from the PC to TC hospital was the important reason of the high expenditure of the contracting unit hospital for the UC patient for which the subsidy became zero and also was the increasing workloads in the TC hospital. Finally, the burden has occurred in university hospitals' which function as PC and TC hospital for UC patients. These financial and workload burdens have become the challenging problem for policy makers to manage with the limited resources available.

ACKNOWLEDGMENTS

Source of financial support: These findings are the result of work supported by Siriraj Research Development Fund (Managed by Routine to Research: R2R), Mahidol University, Bangkok, Thailand.

All authors have no conflicts of interest to declare.

REFERENCES

1. Supachutikul A. Situation Analysis on Health Insurance and Future Development. Bangkok: The National Health-Foundation, 1996.
2. Tangcharoensathien V, Jongudomsuk P. From policy to implementation: historical events during 2001-2004 of universal coverage in Thailand. National Health Security Office; Nonthaburi: 2004.
3. The National Health Security Office (NHSO) Podthbpits-BMoPH, Thailand; 2011.
4. Mills A, Bennett S, Siriwanarangsun P, Tangcharoensathien V. The response of providers to capitation payment: a case-study from Thailand. Health Policy. 2000 Apr;51(3):163-80.
5. Tangcharoensathien V, Supachutikul A, Lertiendumrong J. The social security scheme in Thailand: what lessons can be drawn? Soc Sci Med. 1999 Apr;48(7):913-23.
6. Praditsitthikorn N, Teerawattananon Y, Tantivess S, Limwattananon S, Riewpaiboon A, Chichareon S, et al. Economic evaluation of policy options for prevention and control of cervical cancer in Thailand. Pharmacoeconomics. 2011 Sep;29(9):781-806.
7. Chamchan C. Impacts and Constraints of Universal Coverage in Thailand's Public Health:A Survey Study in the Northeast Region. Southeast Asian Studies. 2007;45(2):229-71.
8. Rasanathan K, Posayanonda T, Birmingham M, Tangcharoensathien V. Innovation and participation for healthy public policy: the first National Health Assembly in Thailand. Health Expect. 2012 Mar;15(1):87-96.
9. Limwattananon S, Tangcharoensathien V, Tisayaticom K, Boonyapaisarncharoen T, Prakongsai P. Why has the Universal Coverage Scheme in Thailand achieved a pro-poor public subsidy for health care? BMC Public Health 2012; 12(Suppl 1):S6:1-11.
10. Garabedian LF, Ross-Degnan D, Ratanawijitrasin S, Stephens P, Wagner AK. Impact of universal health insurance coverage in Thailand on sales and market share of medicines for non-communicable diseases: an interrupted time series study. BMJ Open. 2012;2(6):1-10.