Medical Cost and Illness Pattern Among Ramathibodi Medical Students

KORNTHONG ASSAVANICH, M.D.*,
SAISUNEE TUBTIMTES, M.Sc.*,
SOMJIT PRUEKSARITANOND, M.D.*

Abstract

Background : In Thailand, health care expenditure has increased more than three times from the 1982 to 1992. Health care of medical students does not reflect the actual costs because of the strong personal relationship between doctors and patients (ie. medical students). Many items are waived in the patient's favour. The objectives of study in medical students were analysed in unit cost, cost recovery, illness pattern and health service uses.

Method : From May 1997 to April 1998 the prescription cost and illness pattern were retrospectively studied and analysed. There were 1,063 out-patient visits and 8 in-patient cases from 416 medical student case records of Ramathibodi Hospital. The annual subscription for medical student is 700 baht per person per year, but the actual medical costs are higher 53,213 baht, excluding investment, materials and labour cost. The most common illness was upper respiratory tract infection. The average cost per prescription was 163 baht (range 6-1391 baht) and the sixth year students spent more than the fourth and fifth years. Frequency of consultation was more in the fourth than the fifth and sixth year students and total medical students (namely 4.01, 1.66, 1.92, 2.55 times/student/year respectively). The consultation was done in the emergency room (72.0%) more often than in the health clinic (1.9%).

Conclusion : Medical students should attend special clinics regularly, except in an emergency, to get continual medicare and save medical costs. Determining the maximum medical cost per student per year is a strategy of saving cost. To promote understanding and allay anxiety, medical students should have the benefit of health promotion, prevention and orientation as they are in continual contact with all forms of contagious diseases. If this preventive measure is effective, the incidence of illness should be lower and the cost reduced.

Key word : Medical Cost, Illness Pattern, Medical Student

ASSAVANICH K, TUBTIMTES S, PRUEKSARITANOND S
J Med Assoc Thai 2001; 84: 402-407

* Department of Family Medicine, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok 10400, Thailand.

Health care costs in many countries have increased rapidly and steadily. In 1993, the United States (U.S.) spent about fifteen per cent of the nation's gross domestic product (GDP) on health care. Projections are eighteen per cent of the GDP by the year 2000[1]. During the 1980's and early 1990's, health care costs in the U.S. increased significantly from 9.3 per cent of GDP in 1980 to 13.9 per cent of GDP in 1992[2]. In Thailand, health care expenditures tripled from 46,549 million baht (4.5% of GDP) in 1982 to 148, 455 million baht (5.9% of GDP) in 1992[3]. The bureau of health policy and plan forcasts that health care expenditure will reach 8.1 per cent of GDP by the year 2000[4]. Per capita health care spending rose 3 fold from 852.90 baht in 1978 to 2,568.90 baht in 1992. The real term increase of health care expense per capita was 11.9 per cent per year during 1998 and 1992. This number was higher than the increase in the GDP over the same period. The greater proportion of the expenditure was on curative care, rather than on preventive and promotive care[4]. The annual per capita drug consumption of Thai people was 450 baht for wholesale price (two-fold higher than that in the Philippines) and 840 baht for retail price (three-fold higher than in Indonesia)[5]. The growth rate of drug expenditure was 23 per cent per year, higher than the increasing rate of health expenditure. Furthurmore, over prescribing seems to prevail among health care personnel because of the close personal relationship between doctors and patients [6]. The study of evidence based management of URI in a family practice teaching clinic by English - JA, Bauman - KA revealed that patients' age, social class, education, concomitant diagnosis and the physician's prior knowledge of the patient all influenced the decision to prescribe[7]. Over perscribing is often practised to maintain and preserve a good doctor-patient relationship. Physicians often feel the need to "Do Something" for the patient as a gesture of attention. However, not only does over prescribing give rise to unneccesary side effects but it also increases health care costs. The medical cost analysis of medical students at Ramathibodi Hospital regarding costs and illness pattern will improve the cost effectiveness.

Objectives

1. To determine the unit cost of out-patient, in-patient and cost recovery of medical students.

2. To study illness patterns and health services used by medical students.

METHOD

There were 416 medical students (143, 142, 131 students in the fourth, fifth and sixth year respectively). The medical records from May 1, 1997 to April 30, 1998 of students and prescription costs were retrospectively studied. There were 1063 visits as out-patients and 8 cases of in-patients. The data were medical cost and illness pattern recorded in the health clinic, the family medicine department of Ramathibodi Hospital. The statistical analysis was calculated using the program SPSS for Windows version 7.50 for the median test and two tailed probability value less than 0.05 indicated a significant difference.

RESULTS

1. Medical cost analysis

1.1 Cost recovery :

Out-patients : The total drug cost was 278,249 baht per year, laboratory investigation cost 11,917 baht per 46 cases and X-ray cost 5,770 baht per 39 cases. The total cost composed of the former three costs was 295,936 baht with an average cost per visit of 278.39 baht and an average cost per student of 711.38 baht per year.

In-patients : The total cost was 48,477 baht (total cost = drug, laboratory, X-ray, bed and food cost), and the average cost per case was 6,059.62 baht. The total cost of out and in-patients was 344, 413 baht and average cost per student was 827.91 baht.

The annual subscription for medical service among medical students was 700 baht per year. The registered cost was lower than the real cost of in and out patients (average 827.91 baht per student per year and -53,213 baht per year) although the total cost did not include capital, material and labor costs. Because some out-patients have complex problems requiring expensive drugs and investigations such as ; chronic joint pain, hip lesion, rabies vaccination and sinusitis etc (>1,000 baht per student per visit).

1.2 Cost of out and in-patients :

Out-patients : The median of drug cost was 163.00 baht, (range 2-5,178 baht). The discrepancy varied among illness problems such as com-

Table 1. Medical cost and cost recovery of medical students.

Medical cost	Times/Year	Total cost	Cost/Time	Cost/Student
1. Out-patient cost				
1.1 Drug	1063	278,249	261.75	
1.2 Lab investigation	46	11,917		
1.3 X-ray	39	5,770		
1.4 Total	1063	295,936	278.39	711.38
2. In-patient cost	8	48,477	6059.62	
3. Total cost (1+2)	1063	344,413		827.91
4. Cost from registed student	= 416 students x 700 baht/year = 291,200 baht			
5. Cost recovery (4-3)	= 291,200 - 344,413 = -53,213 baht			

Table 2. Consultation rate in the fourth, fifth and sixth year students.

Year of students	n	Consultation (times)		Total times	Consultation rate (times/student)
		Male	Female		
4th	143	244	330	574	4.01
5th	142	121	116	237	1.66
6th	131	99	153	252	1.92
Total	416	464	599	1063	2.55

mon cold, diarrhea, sinusitis and peptic ulcer. The costs for more complex problems such as chronic joint pain, hip lesion, rabies vaccination, sinusitis and peptic ulcer with gastroscope etc. was over 1,000 baht per student.

The most common illness was upper respiratory infection (URI). The total and median of this drug cost was 91,291 and 163 baht respectively (range 6-1,391 baht). There were significant differrences among the fourth, fifth and sixth year medical students (p-value = 0.0026). The sixth year students spent more than the fourth and fifth year students, but there was no significant differrence between male and female (p-value = 0.8023).

In-patients : Only 8 cases were admitted, 4, 2, 2 students from the fourth, fifth and sixth year, respectively. The diagnosis was viral infection, breast cyst, ear cyst, German measles, haemorrhagic fever, sinusitis and tonsillectomy. The longest hospitalisation was 15 days and the shortest was 1 day. Patients preferring to be admitted to a private hospital was the reason for the shortest hospitalisation and high fever with viral infection which was diagnosed at the time of discharge.

The total cost of in-patients (drug, lab, room, surgery and food) was 48,477 baht per case per year (range 446-14,066 baht). The median of in-patient cost was 4,763 baht per case per year. (Table 1)

2. Illness pattern :

Out-patients : The average consultation rate of all the medical students was 2.55 times per person per year. The fourth year students had a higher consultation rate than the fifth and sixth year students and total number of medical students was 4.01, 1.66, 1.92, 2.55 times per student respectively. (Table 2) Most of them went to the emergency room (72.0%), to the skin OPD (7.7%), ENT OPD (6.7%), medicine OPD (14.3%), eye OPD (2.7%), orthropaedics OPD (1.4%), dental clinic (1.2%) and health unit (1.9%).

The most common illness was URI 38.3 per cent and the rest was skin disease and wounds 8.7 per cent, peptic ulcer and dyspepsia 6.6 per cent, eye problem 4.0 per cent, diarrhea 2.7 per cent, headache 1.9 per cent, toothache and sinusitis 1.6 per cent, hepatitis check up 1.5 per cent, rabies

vaccination 1.4 per cent and the rest were a variety of problems 31.6 per cent.

DISCUSSION

The cost recovery analysis revealed that total student registered cost was lower than total medical cost of out and in-patients by 53,213 baht per year although cost from registered students was the same as the insurance cost. Statistics showed that health cost control was essential and must be managed effectively. The minimum and maximum drug costs were significantly different (2 and 5,180 baht per visit) because of the diagnosis and duration of illness. Some of them had complex problems such as systemic lupus erythematosus,chronic joint pain, hip lesion, arthritis and rabies vaccination etc. So the cost was high (>1,000 baht per visit). The drug cost in outpatient services was 270.93 baht per visit which was more than the other clinic's study as follows : the unit cost study of the pharmacy department, Chonburi Hospital, 1991[8], cost of each prescription was 115.27 baht, Sena Hospital of Ayuthaya 1997[9], was 126.16 baht per prescription, Suppasittiprasong Regional Hospital of Ubolrachathani 1986[10], was 39.30-180.00 baht per visit and Chulalongkorn Hospital, 1990[11], was 266 baht per visit and 241.73 baht per new visit [12].

The study of evidence-based management of URI in a family practice teaching clinic revealed that twenty-six per cent of all patients visited were given unneccessary and potentially harmful medication. These unneccessary medications accounted for almost 60 per cent of the total prescription cost. Other factors also influenced prescribing behavior although factors such as patients' age, social class, education, concomitant diagnosis and the physician's prior knowledge of patients all influenced the decision to prescribe, preservation of the doctor - patient relationship (one of the most common reasons given to explain overprescribing). Physicians may prescribe because they feel the need to "Do Something" for the patient to increase patient satisfaction. However, not only are the side effects of some of these medications dangerous, but unnecessary prescriptions also increase health care costs [7]. In this study, the sixth year students who had a closer relationship with their residents in the emergency room had higher costs than the fourth and fifth year students.

Drug cost of common illness : URI, median was 163 baht per visit, the minimum and maximum were significant (6 and 1391 baht per visit respectively). Higher cost of some patients was because of antibiotics which is similar to a study of URI patients from a Kentucky medical claim that for out-patients, antibiotics accounted for 23 per cent of the total cost of care. For emergency department visits, antibiotics accounted for 8 per cent of the costs of URI. Antibiotics cost, on average, $9.91 for each episode of care in an out-patient office visit. An estimate of the cost of antibiotics for URI's in one year for the Kentucky medicaid program was $1.62 million. The result indicated that a substantial proportion of resources in medicaid are used for nonindicated and ineffective treatments for URI's. With the increase in antibiotic-resistant pathogens and shrinking public health care funding, the current treatment for URI's should be reexamined[6].

Some medical students were seen in the health unit (1.9%) although the health unit was reserved for medical students. The consultation rate was lower than expected because of the close relationship with their medical residents who worked in the emergency room. Students preferred the emergency room to the health clinic because of unofficial time and absence from lectures. The most common illness was URI (38.3%), more than Mahidol University students, a total of (21.3% from a study by Tunsakul[13]) and more than the study of Fugpolngam[14], patients of family medicine, Ramathibodi Hospital, 30.0 per cent. The fourth, fifth and sixth year medical students are clinical year students who work hard and have less leisure time. They easily catch infectious diseases from patients or they have low resistance. Some fourth year students told us that they had not much experience in self protection from illness, they were anxious about contracting infection from patients especially in the pediatric ward. When they had fever or did not feel well, they had to go to see their resident in the emergency room. So selfcare orientation before clinical study is necessary also instruction techniques in the infectious patients' ward. Prevention of illness and promotion of healthy conditions should be provided for medical students.

Comment :

Medical students should attend clinics regularly for all illnesses except in an emergency to

get continuous care and promote medical cost saving. The other strategy in saving is to determine the maximum medical cost per student per year. Essential drug lists were introduced in the Faculty of Medicine, Ramathibodi Hospital after the economic crisis in mid 1998. A study of the influence of essential drugs should be conducted to investigate the impact on the medical cost of medical students.

(Received for publication on October 2, 2000)

REFERRENCES

1. Bootman JL, Townsend RJ, McGhan WF. Introduction to pharmacoecomics. In: Bootman Jh, Townsend RJ, McGhan WF, eds. Principles of pharmacoeconomics. Ohio (OH) : Harvey Whitney Books; 1996: 4-18.
2. Wiley MM, Laschober MA, Gelband H, eds. Hospital Financing in Seven Countries. Washington D.C.: Government Printing Office; 1995.
3. Tangcharoensathian V. Tuk, Samuthai in health system and health insurance in Thailand. Bangkok : Health System Research; 1996.
4. Bureau of health policy and plan. Health in Thailand 1995-1996. Bangkok : The Beterans Press; 1997.
5. Vibulpholprasert S, eds. Drug system in Thailand. Bangkok : Arun Printing House; 1994.
6. Mainus AG 3rd, Hueston WJ. The cost antibiotics in treating upper respiratory tract infections in a medicaid population. Arch Fam Med 1998; 7: 51-2.
7. English JA, Bauman KA. Evidence Based management of upper respiratory infection in family practice teaching clinic. Family Medicine 1997; 29: 38-41.
8. Chetchotsak P. Unit cost of pharmacy unit cost of pharmacy unit in Chon Buri Hospital (dissertation). Bangkok : Mahidol University; 1998.
9. Thadtapong K. Unit cost analysis or pharmacy services at Sena Hospital, Ayudthaya (dissertation). Bangkok : Faculty of Pharmacy, Mahidol University; 1998.
10. Runghanapirom S, Luevisethpaibul V, Tangcharoensathian V. et al. Unit cost of Ubon Ratchathani Hospital. Ubon Ratchathani Hospital; 1998.
11. Kongsawat S. Unit cost of medicine department, Chulalongkorn Hospital (dissertation). Chulalongkorn University; 1991.
12. Vannavake J. Unit cost of Chulalongkorn Hospital (dissertation). Chulalongkorn University; 1991.
13. Tunsakul P. Health service and insurance for students of Mahidol University. Mahidol University gazette 1999; 24: 8.
14. Fugpholngam V, Tubtimtes S. Medical expenditure for out-patients, department of Family Medicine, Ramathibodi Hospital. J Prim Hlth Care and Devel 1996; 9: 15-27.

ค่ารักษาพยาบาลและแบบแผนการเจ็บป่วยของนักศึกษาแพทย์รามาธิบดี

กรทอง อัศวาณิชย์, พ.บ.,*
สายสุนีย์ ทับทิมเทศ, วท.ม. (สาธารณสุขศาสตร์),*
*สมจิต พฤกษะริตานนท์, พ.บ.**

ความเป็นมา : ค่ารักษาพยาบาลของประเทศไทยเพิ่มสูงขึ้นอย่างรวดเร็วเป็น 3 เท่า จากปี 2525 ถึงปี 2535 โดยเฉพาะอย่างยิ่งนักศึกษาแพทย์ซึ่งเป็นบุคลากรทางการแพทย์ ที่มีความสัมพันธ์กับแพทย์อย่างใกล้ชิด และสามารถเข้าถึงบริการได้โดยง่ายนั้น จะมีค่ารักษาพยาบาลมากกว่าค่าประกันสุขภาพหรือไม่ แบบแผนการเจ็บป่วยเป็นอย่างไรและแบบแผนอะไรบ้างที่มีผลกระทบต่อค่ารักษาพยาบาล

วิธีการ : เป็นการศึกษาแบบย้อนหลังตั้งแต่ พฤษภาคม 2540 ถึงเมษายน 2541 เก็บรวบรวมข้อมูลจากนักศึกษาแพทย์ชั้นปีที่ 4, 5, 6 จำนวน 416 คน เป็นผู้ป่วยนอก 1,063 ครั้ง และเป็นผู้ป่วยใน 8 ราย

ผลการวิจัย : ค่ารักษาพยาบาลตลอดปีมากกว่าค่าประกันสุขภาพเป็นจำนวน 53,213 บาทต่อปี ทั้งๆ ที่ค่ารักษาพยาบาลนี้ไม่รวมถึงค่าใช้จ่ายในการลงทุน, ค่าวัสดุและค่าแรงงาน ปัญหาที่พบบ่อย คือ โรคติดเชื้อของทางเดินหายใจส่วนต้น ซึ่งมีค่ามัธยฐานของการรักษานี้เท่ากับ 163 บาทต่อครั้ง (ค่าต่ำสุด 6 บาท, ค่าสูงสุด 1,391 บาท) พบว่านักศึกษาชั้นปีที่ 6 มีค่ารักษาพยาบาลมากกว่าชั้นปีที่ 4, 5 แต่อัตราการใช้บริการของนักศึกษาชั้นปีที่ 4 มากกว่าชั้นปีที่ 5, 6 และมากกว่านักศึกษาแพทย์ทั้งหมด (4.01, 1.66, 1.92, 2.55 ครั้งต่อคน) นักศึกษาส่วนใหญ่มาใช้บริการที่แผนกฉุกเฉินมากกว่าหน่วยอนามัย (72.0%, 1.9%)

ข้อเสนอแนะ : นักศึกษาแพทย์ควรใช้บริการสุขภาพที่คลินิกเฉพาะ เพื่อให้การดูแลอย่างต่อเนื่องและประหยัดค่าใช้จ่าย ยกเว้น กรณีฉุกเฉิน นักศึกษาแพทย์เหล่านี้เป็นผู้ที่สัมผัสและใกล้ชิดกับผู้ป่วย ฉะนั้นการป้องกันและส่งเสริมสุขภาพจึงไม่ควรละเลย โดยเฉพาะอย่างยิ่งการปฐมนิเทศก่อนฝึกปฏิบัติงานบนหอผู้ป่วย ควรกระทำอย่างมีประสิทธิภาพเพื่อป้องกันการติดเชื้อและลดความวิตกกังวล ซึ่งคาดว่าจะส่งผลต่อการเจ็บป่วยและลดค่าใช้จ่ายในการรักษาพยาบาลดังกล่าว

คำสำคัญ : ค่ารักษาพยาบาล, แบบแผนการเจ็บป่วย, นักศึกษาแพทย์

กรทอง อัศวาณิชย์, สายสุนีย์ ทับทิมเทศ, สมจิต พฤกษะริตานนท์
จดหมายเหตุทางแพทย์ ฯ 2544; 84: 402–407

* ภาควิชาเวชศาสตร์ครอบครัว, คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี, มหาวิทยาลัยมหิดล, กรุงเทพ ฯ 10400