Hospital Tuberculosis Control Activities and Treatment Success in Thailand during the Implementation Year of the Admission Policy for New Smear Positive Pulmonary Tuberculosis Patients

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Objective: *To demonstrate the tuberculosis (TB) control activities in hospital and treatment success rate during the implementation year of the admission policy.*
Material and Method: *The hospital-based survey was conducted in 12 provinces, five hospitals of each province. The medical records of hospitalized patients, with new sputum smear positive (NSS+) pulmonary tuberculosis (PTB), registered between October 2008 and September 2009 were reviewed, as well as the TB control activities.*
Results: *Fifty-one hospitals with complete hospital information were included. Of 2,290 patients, less than half (46.1%) were hospitalized, while the treatment success rate was 83.8% (1,921 patients). This is slightly lower than World Health Organization target of 85%. In 2009, the six main control activities implemented in the studied hospital as part of the National Tuberculosis Program guideline of 15 items were 1) annual plan project for TB control program (51/51 hospitals, 100%), 2) protective equipment to prevent TB infection for personnel (50/51 hospitals, 98.0%), 3) appointment of committee in hospital for TB control program (49/51, 96.0%), 4) surveillance TB infection system in hospital for personnel (49/51, 96.0%), 5) protective equipment protection TB infection (mask) for patients and relatives (48/51 hospitals, 94.1%), and 6) intensive health education for NSS+ PTB patients with admission (48/51 hospitals, 94.1%).*
Conclusion: *During the implementation year of admission policy, the hospitalization rate was low and treatment success rate was not as high as expected. However, the enhanced effect of program activities on admission and treatment success was not fully supported by the present study.*

Keywords: *Tuberculosis control, Admission policy, Treatment success rate, Hospital activity*

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Estimated epidemiological burden of tuberculosis (TB) in 2008: In 2008, Thailand was the eighteenth country out of 22 high TB burden countries (80% of all cases worldwide) with 92,987 cases among 67,386,304 population (136.6 per 100,000 population)[1]. From 1995 to 2008, the TB treatment success rates were below the World Health Organization (WHO) target of 85%[2]. In the fiscal year 2009, between October 2008 and September 2009, the Ministry of Public Health (MoPH) of Thailand announced a new policy to hospitalize all new sputum smear positive (NSS+) pulmonary tuberculosis (PTB) patients for two weeks, right after the report of positive smear results to provide daily directly observe treatment (DOT), intensive information education, communication (IEC) to patients' relatives, and close observation to detect adverse drug reaction (ADR)[3]. MoPH expected that the admission became a measure to strengthen TB control, with a high success rate of 90%.

The authors aimed to demonstrate the TB control activities in hospital and treatment success rate during the implementation year of the admission policy.

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Material and Method

The present study proposal was approved by the Ethics Committee, Faculty of Medicine, Prince of Songkla University.

In the 12 provinces of highest number of NSS+ PTB admission, five hospitals of each province

(one tertiary/secondary care, and four randomized primary care hospitals) were enrolled between October 2008 and September 2009. On the hospital-based survey, the medical records of hospitalized patients, with new sputum smear positive (NSS+) pulmonary tuberculosis (PTB), and the TB control activities were reviewed.

According to the National Tuberculosis Program (NTP), the standard 6-month drug regimen for NSS+ was two months of initial phase with isoniazid (H), rifampicin (R), pyrazinamide (Z), and Ethambutol (E), plus four months of continuation phase with H and R.

The treatment was considered successful if the patient received the full course of medication, with or without negative smear at the end of treatment.

R program with Epicalc package was used for all analyses[4].

Results

Fifty-one hospitals with complete information were included. Of 2,290 patients, 910 had sputum AFB of 3+ (39.7%). The patient characteristics were male (73.3%), age of 31 to 60 years old (57.4%), tertiary/second care setting (44.7%), any co-morbidity including HIV (50.0%), and co-morbidity related HIV (12.7%). The hospitalization was quite low of less than a half (46.1%), while the treatment success rate was 83.8%, with the ADR of about one-fourth (25.5%), as demonstrated in Table 1.

In 2009, the six main control activities of the 15 items NTP implementation guideline were very highly implemented in studied hospital. Those were 1) annual plan project for TB control program (51/51 hospitals, 100%), 2) protective equipment to prevent TB infection for personnel (50/51 hospitals, 98.0%), 3) appointment of working committee for TB control program (49/51, 96.0%), 4) surveillance TB infection system in hospital for personnel (49/51, 96.0%), 5) protective equipment to prevent TB infection for patients and relatives (48/51 hospitals, 94.1%), and 6) intensive health education for NSS+ PTB patients with admission (48/51 hospitals, 94.1%).

Table 1. Proportion of new sputum smear positive (NSS+) pulmonary tuberculosis (PTB), adverse drug reaction (ADR) and hospitalization

Items (n = 2,290)	No. (%)
Degree of NSS+	
1+/scanty	912 (39.8)
2+	468 (20.5)
3+	910 (39.7)
Any co-morbidity including HIV	940 (50.0)
Co-morbidity related HIV	290 (12.7)
Any ADR	583 (25.5)
Hospitalization	1,056 (46.1)
Treatment success	1,921 (83.8)

The remaining nine activities were highly implemented. They were conference/meeting/annual meeting to conclude/summary TB control program (47/51), system of appointment/follow-up NSS+ PTB patients after discharged (47/51), isolation rooms for admitted NSS+ PTB patients (46/51), conference/meeting to follow-up/monitor TB control program (46/51), surveillance ADR system for NSS+ PTB patients with admission (46/51), DOT at ward for NSS+ PTB patients with admission (46/51), home visit for NSS+ PTB patients after discharge (46/51), beds support NSS+ PTB patients (44/51), and training personnel taking care of TB patients (38/51).

Some hospitals did eight additional activities, the allocation personnel for infectious control in hospital was the most engaged activity (49/51, 96.0%), allocation nurse for ward admission TB cases (29/51), budget planning for creating TB patient care (21/51), allocation of compensation when staff have TB infection (12/51), incentives for NSS+ PTB patients to attract them to be hospitalized (9/51), gift for NSS+ PTB patients when discharged (6/51), allocation extra payment for personnel who take care of TB patients (4/51), and gift for NSS+ PTB patients' relative when patients were discharged (3/51).

Discussion

In 2008, 5.7 million cases of TB (new cases and relapse cases) were notified to NTP. Among pulmonary cases, globally, 57% of total notifications were smear-positive. In 22 high burden countries, Thailand was 63% smear-positive[1]. Thus, in high incidence countries, TB control depends on passive case finding in patient complaining of pulmonary symptom. The diagnosis relies on clinical symptoms and/or laboratory diagnosis using serial sputum smear microscopy. Unfortunately, the sensitivity of sputum smear microscopy has been reported to vary in the range of 20 to 80%. This depends on the specimen collection, smear procedure, and stained smears[5]. In resource-poor setting, quality assurance programs including quality control and external quality assessments are often lacking. Furthermore, there is a

critical need for new, sensitive, easy, rapid point-of-care diagnostics, for investments in laboratory infrastructure, quality assurance programs, and well-trained staff.

The treatment success rate was comparable with WHO target of 85%[2], and a bit higher than a study in Tajikistan of 80%[6]. The ADR in the present study is about one-fourth. Proper ADR management is essential as ADR related to treatment failure due to non-adherence to anti-tuberculosis drugs[7,8]. The health system needs better trained health care worker, supervision, and health education for patients and families.

The advantages of hospitalization of the TB patient are to further investigate the disease condition and to decrease the high proportion of failed outpatient therapy. In addition, combined medical and psychosocial management is required[9]. Therefore, the admission policy may not only be a conclusive factor for TB successful treatment[10,11].

The limitation of the present study was the detail of the main control activities as 8 of 59 hospitals provided no information. Furthermore, the remaining hospitals might be subjected to recall bias. For the eight additional activities, allocation extra payment for personnel who take care of TB patients (4/51 hospital, 7.8%) was not significantly related with admission rate nor treatment success rate. In contrast with several studies, financial incentive was shown to be associated with better success rate of TB treatment from Taiwan[12,13], Russian Federation[14], and United States of America[15]. The incentive might increase job satisfaction among Health care workers, enhance their working efficiency, and lead to better treatment results.

In conclusion, during the implementation year of admission policy, the hospitalization rate was low and treatment success rate was not as high as expected. However, the enhanced effect of program activities on admission and treatment success was not fully supported by the present study.

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Potential conflicts of interest

None.

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กิจกรรมควบคุมวัณโรคในโรงพยาบาลและความสำเร็จการรักษาในประเทศไทยระหว่างปีดำเนินการนโยบายรับผู้ป่วยวัณโรครายใหม่และย้อมเสมหะได้ผลบวกไว้ในโรงพยาบาล

จุฑาพัฒน์ รัตนดิลก ณ ภูเก็ต, เพชรวรรณ พึ่งรัศมี, วีระศักดิ์ จงสู่วิวัฒน์วงศ์

วัตถุประสงค์: *เพื่อแสดงกิจกรรมควบคุมวัณโรคในโรงพยาบาลกับอัตราความสำเร็จของการรักษาระหว่างปีดำเนินการนโยบายรับผู้ป่วยไว้ในโรงพยาบาล*

วัสดุและวิธีการ: *สำรวจโรงพยาบาลใน 12 จังหวัด จังหวัดละ 5 แห่ง ทบทวนเวชระเบียนของผู้ป่วยวัณโรคปอดรายใหม่ และย้อมเสมหะได้ผลบวก ร่วมกับการทบทวนกิจกรรมควบคุมวัณโรค ระหว่างเดือนตุลาคม พ.ศ. 2551 ถึง เดือนกันยายน พ.ศ. 2552*

ผลการศึกษา: *โรงพยาบาล 51 แห่ง มีข้อมูลครบถ้วน มีผู้ป่วย 2,290 ราย น้อยกว่าครึ่ง (ร้อยละ 46.1) รับไว้รักษาในโรงพยาบาล ขณะที่อัตราความสำเร็จของการรักษา 1,921 ใน 2,290 ราย (ร้อยละ 83.8) ต่ำกว่าเป้าหมายขององค์การอนามัยโลก (ร้อยละ 85) ในปี พ.ศ. 2552 กิจกรรมตามแนวทางการดำเนินงานควบคุมวัณโรคแห่งชาติ ซึ่งโรงพยาบาลส่วนใหญ่ปฏิบัติมี 6 กิจกรรม (จาก 15 กิจกรรม) ได้แก่ 1) แผนโครงการประจำปีสำหรับงานควบคุมวัณโรค (51 ใน 51 โรงพยาบาล ร้อยละ 100) 2) เครื่องมือป้องกันการติดเชื้อวัณโรคสำหรับบุคลากร (50 ใน 51 โรงพยาบาล ร้อยละ 98.0) 3) แต่งตั้งคณะกรรมการวัณโรคของโรงพยาบาล (49 ใน 51 โรงพยาบาล ร้อยละ 96.0) 4) ระบบสำรวจการติดเชื้อวัณโรคสำหรับบุคลากรในโรงพยาบาล (49 ใน 51 โรงพยาบาล ร้อยละ 96.0) 5) เครื่องมือป้องกันการติดเชื้อวัณโรค (หน้ากากอนามัย) สำหรับผู้ป่วยและญาติ (48 ใน 51 โรงพยาบาล ร้อยละ 94.1) 6) การให้สุขศึกษาเข้มข้นสำหรับผู้เป็นวัณโรคปอดและย้อมเสมหะได้ผลบวก (48 ใน 51 โรงพยาบาล ร้อยละ 94.1)*

สรุป: *อัตรารับไว้ในโรงพยาบาลต่ำและอัตราความสำเร็จของการรักษาวัณโรคต่ำกว่าความคาดหวังของการดำเนินนโยบาย อย่างไรก็ตาม การศึกษานี้ไม่เป็นข้อสนับสนุนว่ากิจกรรมควบคุมวัณโรคในโรงพยาบาลมีผลเพิ่มอัตรารับผู้ป่วยวัณโรคไว้ในโรงพยาบาล และเพิ่มอัตราความสำเร็จของการรักษา*