

Adherence of Physicians-in-Training to the 2009 International Standards for Tuberculosis Care (ISTC) at the University of the Philippines-Philippine General Hospital

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Abstract

Introduction: The international standards for tuberculosis care (ISTC) was published to provide widely accepted level of care that all practitioners should follow in managing confirmed TB or suspected TB patients. Various initiatives were started in order to reinforce the standards embodied in the ISTC since 2006. Hence the investigators would like to evaluate the adherence of third year residents - in - training (Internal Medicine and Family Medicine from University of the Philippines, Philippine General Hospital (UP-PGH), 2012-2013) to the ISTC 2009 guidelines.

Methodology: This study was done through review of randomly selected 59 outpatient records from January 2012 to December 2013 of TB patients seen by all third year residents from Internal Medicine and Family Medicine in UP-PGH. Outcome variables were the number of residents-in-training following the selected ISTC core standards: Standards for: Diagnosis (2,3); Treatment (8,10,13); HIV Infection and other Co-morbid Conditions (14); and Public Health and Prevention (21).

Results: Standards 2 (at least 2 sputum specimens), 17 (thorough assessment of co-morbidities), and 8 (use of 1st line treatment regimen) were noted with higher number of residents adhering with 88.1% (52/59), 76.3% (45/59) and 64.4% (38/59) respectively. Standard 14 (HIV testing among TB patients) was only documented in 15.2% (9/59) residents.

Conclusion: Standards 2, 17, and 8 were the most adhered ISTC guideline while standard 14 was least adhered to. Reinforcements are needed to provide updates to scale up TB management of residents-in-training based on international standard through regular continuing medical educations (CMEs), forums and/or seminars and feedbacks. Mechanisms and infrastructures should be in place to facilitate adherence to the ISTC.

Keywords: Tuberculosis; Sputum microscopy; Fatigue; Malaise

Introduction

The problem of tuberculosis disease is global and the Philippines is 9th out of the 22 highest TB-burden countries in the world [1]. Effects of the disease go beyond health, but also cause pronounced burden in the country's economy. Aside from immediate loss of income for the infected household member, other family members are also affected in their efforts to provide care. Hence, it is estimated that some countries lose from four to seven percent of their GDP because of the disease [2]. In our country, the individual economic losses are about 7.9 billion pesos (US\$145 million) in lost wages from illness or disability and premature deaths [3]. Definitely, care of people with TB is extremely important thus strategies to control TB are crucial to both confirmed and suspected individuals who harbor this disease.

Various guidelines [1,2,4-11] have been published in an effort to standardize the management of TB worldwide. Efforts have been made to encourage adherence of physicians to these guidelines. Thus, the World Health Organization (WHO) and the American Thoracic Society (ATS) published the first edition of the International Standards for Tuberculosis Care (ISTC) in 2006 [4,5]. Its purpose was to provide

a widely accepted level of care that all practitioners should follow to in managing patients who have, are suspected of having, or are at increased risk of developing TB [1,5-7]. The first version of the ISTC set 17 standards: six on TB diagnosis, nine on treatment, and two for the public health responsibilities that every health provider who care for persons afflicted with TB should adopt. At the time the first edition was published, a commitment was made to ensure that the ISTC became a living document that would be updated as new information emerged. Hence, in 2009 a second edition was made to encourage associated health professionals to endorse the standards and promote engagement of non-National Tuberculosis Program (NTP) care providers [1,8]. This time, it incorporated 21 standards, which included revisions and expansion of some of the original standards and four completely new standards addressing co-morbid conditions, isoniazid preventive therapy in children and HIV-infected persons, and prevention of infection transmission in health care facilities [4,8]. The consistent adoption of these new standards is perceived to enhance the care of TB persons and reduce morbidity and mortality of the disease worldwide [4].

Recent studies showed that in the 22 countries with the highest prevalence of TB including the Philippines, a mean of 62.6% of the total health expenditure is spent on private health professionals [9].

Furthermore, 1/3 of all Filipinos with TB symptoms prefer to consult private physicians for treatment. And lots of these private practitioners (PPs) prefer to use management options other than TB DOTS, a treatment strategy which may have serious implications on the quality of TB care [10].

Auer et al. and Portero et al. [9,11] showed that private practices for diagnosis and treatment of TB usually deviate from guidelines. Among private practitioners in Malabon, Manila in 2005, most of them relied on the clinical presentation and result of CXR to diagnose PTB. Only 13% of the respondents routinely also asked for sputum examination and 96% used CXR as a tool to monitor treatment. A similar trend unfortunate trend is seen in terms of treatment practices.

In 2011, the Department of Health reported that there was limited engagement of private doctors practicing within the hospital and limitation of hospital staff to default-trace losses from external referrals [12]. Hence, significant efforts were exerted to encourage private practitioners to be engaged in terms of national initiatives in TB control.

With the activities and initiatives started in 2009 to reinforce the standards embodied in the ISTC since 2006, the investigators would like to describe the adherence of third year residents -in- training (Internal Medicine and Family Medicine from University of the Philippines, Philippine General Hospital, 2012-2013) to the ISTC 2009 guidelines (Appendix 1). These trainees had been through multiple CMEs, round table discussions, and TB seminars during their training, hence it is the aim of this paper to determine if the efforts made since 2009 were translated into knowledge and actual practices of the physicians especially those who are in-training. These residents-intraining acts as front liners in the delivery of primary health care services in the various points-of-care in hospitals and are probably expected to pursue private practices in the future.

Significance of the study: Tuberculosis is a treatable disease hence management strategies are important. Thus, adherence to tuberculosis guidelines by physicians while in training is vital.

Objectives of the Study

General objective

To determine the proportion of third year residents -in-training under Internal Medicine and Family Medicine from the University of the Philippines- Philippine General Hospital from 2012 to 2013 adhering to International Standards for Tuberculosis Care (ISTC) 2009.

Specific objectives

To determine the proportion of physicians-in-training under Internal Medicine, and Family Medicine from the University of the Philippines- Philippine General Hospital from 2012 to 2013 adhering to International Standards for Tuberculosis Care (ISTC) 2009 based on:

- Standards 2, 3 (Diagnosis)
- Standards 8, 10, 13 (Treatment)
- Standard 14 (Addressing HIV Infection and other Co-morbid Conditions)
- Standard 21 (Public Health and Prevention)

These standards were selected based on the common practices and considered by investigators deemed important in tuberculosis care. To

determine the most and the least adhered to standards among the said population.

Definition of Terms

Standards refer to the international standards of TB care 2009. TB patients in this paper refers to adult (19 years old and above), service, outpatient, suspected/confirmed TB, pulmonary/extra-pulmonary TB patients seen by involved residents from January 2012 to December 2013 at the University of the Philippines-Philippine General Hospital.

PTB suspects in this paper refers to all patients from 19 years old and above suspected to have TB either based on symptoms and (i.e., cough of long duration (two or more weeks), and with or without one or more of the following symptoms: fever; chest and/or back pains not referable to any musculo-skeletal disorders; hemoptysis or recurrent blood-streaked sputum; significant weight loss; and other symptoms, such as sweating, fatigue, body malaise, and shortness of breath) with ancillary procedures positive for TB.

New TB patients refer to those who have never had treatment for TB, or have taken anti-TB drugs for less than 1 month. Retreatment patients are those previously exposed to anti-TB for at least one month regardless of assigned outcome.

Extra-Pulmonary TB (EP)

- A patient with at least one mycobacterial smear/culture positive from an extra pulmonary site (organs other than the lungs: pleura, lymph nodes, genito-urinary tract, skin, joints and bones, meninges, intestines, peritoneum, and pericardium, among others).
- A patient with histological and/or clinical evidence consistent with active extra pulmonary TB and there is a decision by a physician to treat the patient with anti-TB drugs.

Methodology

Study design: Descriptive study

Setting: Two adult medicine out-patient clinics (Internal Medicine and Family Medicine)

Study population: The study population included all the third year residents-in-training from Internal Medicine and Family Medicine departments of the University of the Philippines-Philippine General Hospital for the years 2012 and 2013. There were 59 residents-in-training: 40 residents from IM department and 19 residents from FM from 2012-2013 (Table 1).

	2012	2013	Total
IM	21	19	40
FM	8	11	19
Total	29	30	59

Table 1: Study population.

Data Collection

The study was done through review of outpatient records from January 2012 to December 2013 of TB patients seen by the third year residents from IM and FM in the Philippine General Hospital.

List of TB patients seen by each resident was retrieved from the logbooks from OPD or individual's census. Therefore, 59 patient charts were retrieved, one for each resident-in-training. To select the charts of patients, random number generator application was used.

Patient selection

The following were the inclusion criteria for patients reviewed:

- Suspected/confirmed TB
- Pulmonary or extra-pulmonary TB
- Seen by the involved resident at outpatient clinic during his/her 3rd year residency (2012 or 2013)
- Followed up with the involved resident for at least three months

Excluded were those patients who completed their treatment, those initially seen by other resident-on-training for the same complaint/disease and those who are currently on anti-TB treatment.

In case the selected chart was excluded, the investigators got another chart (based from random number generator) to complete the required charts (Figure 1).

The patient chart was reviewed using a checklist containing the selected standards (see Appendix 2). To consider adherent (yes), if the standard was done and non-adherent (no) if not reflected in the reviewed chart. The standards in the checklist may not be applicable at all times probably due to varied nature of practices among the residents in terms of adequate documentation. This was an inherent methodologic limitation.

An independent person handled all statistical analysis. The research protocol was approved by both technical and ethical review boards of the Philippine General Hospital.

Data variables: The key outcome variables were the number of residents-in-training following the selected ISTC core standards: Standards for Diagnosis (standards 2,3,); Standards for treatment (standards 8,10,13); Standards for Addressing HIV Infection and other Co-morbid Conditions (standard 14) and Standards for Public Health and Prevention (standard 21).

Plan of analysis: For the purpose of analysis, frequency distributions and Z- test were used.

Results

Fifty nine third year residents-in-training were included from 2012 to 2013 represented by 40 residents from IM (21 in 2012 and 19 in 2013) and 19 from FM (8 in 2012 and 11 in FM) for a total of 59 randomly selected charts.

Frequency of adhering residents-in-training to selected ISTC (2009)

The table and figure below show the frequency of adhering residents-in-training to selected ISTC. Among the Standards for Diagnosis, standard two (recommendation on sputum microscopy as the initial diagnostic test) gained the highest number of residents noted to adhere, with 88.14% (85% from IM and 94.74% from FM).

Among the Standards for treatment, standard eight (standardized treatment of six months with 2HRZE/4HR) gained 64.41% (55%, 84.21% from IM and FM respectively).

Standard 17 (thorough assessment for co-morbid conditions) has 76.27% residents' adherence (92.5% from IM and 42.11% from FM) for

Standards for Addressing Co-morbidities and HIV. On the other hand, only 55.93% of residents adhere to standard 21 for Standard for Public Health and Prevention (proper reporting of all TB cases to public health authorities) (Table 2 and Figure 2).

To compare if the adherence of the two specialties to each standard was significantly different or not, z-test was used. As shown in Table 2, the proportion of IM residents adherent to standard three (patients suspected of having extra-pulmonary TB (EP), appropriate specimens should be obtained for examination) is significantly higher compared to the proportion of FM residents (72.50 vs. 21.05) while the proportion of IM residents adherent to standard eight is significantly lower compared to the proportion of FM residents (55.00 vs. 84.21).

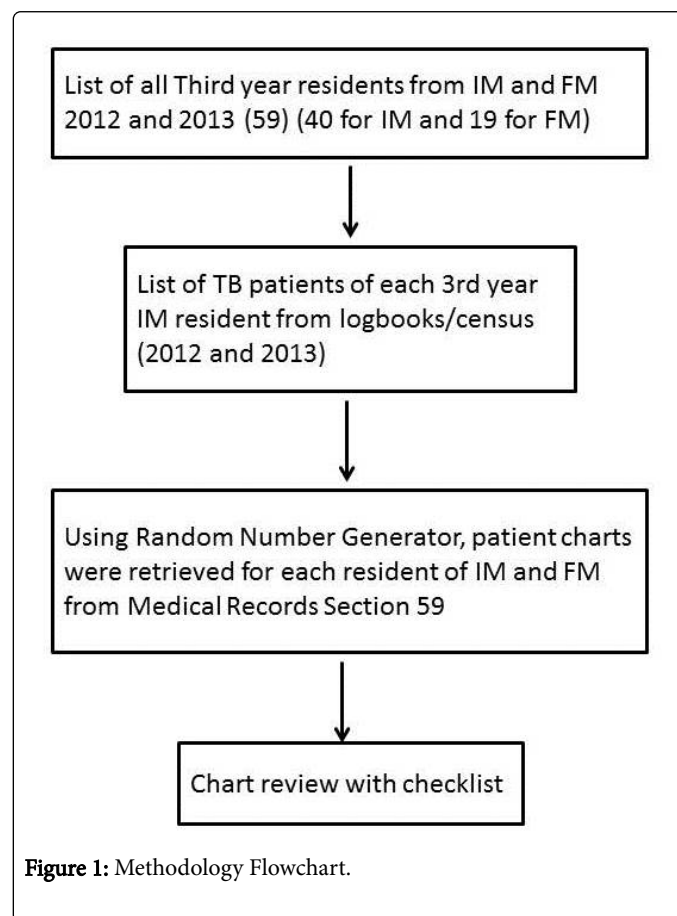


Figure 1: Methodology Flowchart.

For the proportion of adherence to standard 13 (adequate recording of all medications or adverse reactions), the IM residents have significantly higher proportion compared to FM (37.50 vs. 10.53). Lastly, the proportion of IM resident's adherent to standard 17 is significantly higher compared to the proportion of FM (92.50 vs. 42.11) (Table 3).

Discussion

Standard for diagnosis

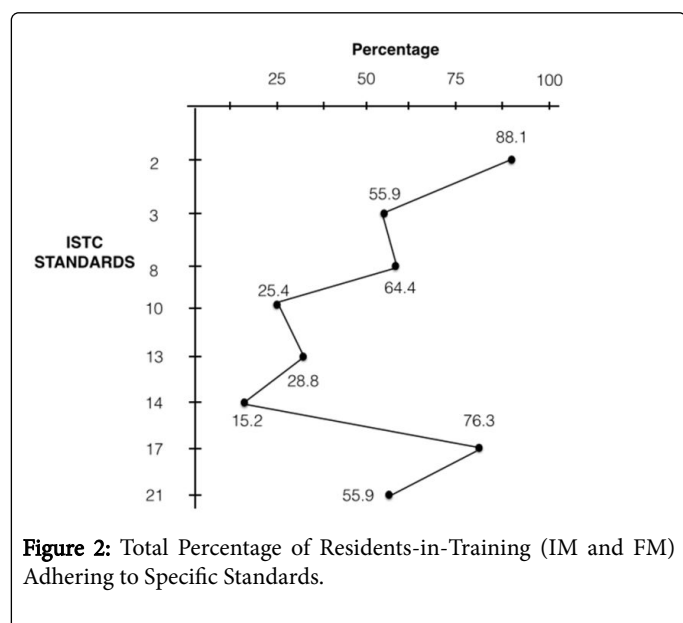
It was observed that both specialties used sputum microscopy as diagnostic test in all of their suspected TB patients. UP-PGH has the available, affordable and advanced examinations for rapid identification of acid-fast bacilli (AFB) from basic AFB microscopy to GeneXpert/ TB-PCR making diagnosis of TB efficient and fast. This is in congruent with various guidelines that good-quality microscopy will identify the vast majority (95–98%) of smear-positive TB patients

especially in highly prevalent countries [8,11,13,14]. However, as seen in Figure 1, only 88.1% of the residents requested the procedure. A similar trend was shown in studies done in India [15,16], among 122 private practitioners (PPs) in Maharashtra, India, 15% did not consider sputum examination to be necessary, likewise, in West Bengal, India

among 221 PPs, only 17% preferred sputum examination. Chest xray was shown to be the preferred diagnostic tool for most PPs in India and this over-reliance on CXR could either be due to lack of awareness among the PPs about the reliability of sputum microscopy in diagnosing TB.

ISTC Standard	Total (n=59) (%)	Internal Medicine (n=40) (%)	Family Medicine (n=19) (%)
Standard for Diagnosis			
Standard 2 (sputum microscopy)	52 (88.14)	34 (85.00)	18 (94.74)
Standard 3 (extrapulmonary TB)	33 (55.93)	29 (72.50)	4 (21.05)
Standard for Treatment			
Standard 8 (standardized treatment)	38 (64.41)	22 (55.00)	16 (84.21)
Standard 10 (response to therapy with sputum follow-up)	15 (25.42)	10 (25.00)	5 (26.32)
Standard 13 (adequate recording of all medications/ adverse reactions)	17 (28.81)	15 (37.50)	2 (10.53)
Standard for Addressing Co-morbidities and HIV			
Standard 14 (HIV screening among TB patients)	9 (15.25)	8 (20.00)	1 (5.26)
Standard 17 (assessment of other co-morbidities)	45 (76.27)	37 (92.50)	8 (42.11)
Standard for Public Health and Prevention			
Standard 21 (reporting of TB cases)	33 (55.93)	22 (55.00)	11 (57.89)

Table 2: Frequency of Adherence of Study Participants to selected International Standard of Tuberculosis Care (2009).



smear-positive TB and is more common than smear-negative TB amongst them [14]. Hence the authors would like to emphasize the importance of doing sputum microscopy for TB patients especially among those suspected ones. A focus-group discussion could have been done to validate these observations and possibly more accurately account for them.

A low adherence rate of 55.9% is noted for patients considered with EP. The EP cases are less common than pulmonary, comprising of 1.1% of all TB cases [6]. The IM group had higher proportion of adherence (72.5% vs. 21%) which congruently observed that more number of considered EP patients was directly triaged to IM in OPD. However, among IM residents, only 72.5% did EP tests consisting of pleural effusion studies, and ascitic fluid AFBs and cultures. Poor documentation could possibly account for this and others resort to referring patients to subspecialties directly for further tests. Moreover, EP cases in our institution were seen by other specialties (i.e., Infectious Disease (IDS), Neurology, Orthopedics, Rheumatology, Obstetric-IDS).

Obtaining material for confirmation of EP is often challenging in most patients due to difficulty accessing affected organs. Nonetheless, diagnosis and workups for suspected EP is expected among all practitioners especially among those in-training for they are continuously exposed to this type of patients during residency. Thus, it becomes imperative to increase the awareness of these residents about international guidelines on TB (pulmonary and EP) and encourage to further investigate EP through the most accessible and affordable ways as much as possible (i.e., lymph node or mass biopsies-imaging-guided or through fine needle or core; fluid aspiration of suspected EP should be obtained for culture).

Although not systematically examined in this paper, patients probably were treated based on clinical judgment and/or CXR results and other patients may not be able to produce sputum specimen hence no sputum request noted. Furthermore, inadequate documentation by the residents-in-training could also account for the quite low adherence rate. It is noted that sputum microscopy is the cornerstone of TB diagnosis, even among immunocompromised patients (i.e., people living with HIV). TB microscopy still has a role in diagnosis for

ISTC Standard	Total (n=59) %	Internal Medicine (n=40) %	Family Medicine (n=19) %	p-value
Standard for Diagnosis				
Standard 2 (sputum microscopy)	52 (88.14)	34 (85.00)	18 (94.74)	0.2798
Standard 3 (extrapulmonary TB)	33 (55.93)	29 (72.50)	4 (21.05)	0.0002
Standard for Treatment				
Standard 8 (standardized treatment)	38 (64.41)	22 (55.00)	16 (84.21)	0.0286
Standard 10 (response to therapy with sputum follow-up)	15 (25.42)	10 (25.00)	5 (26.32)	0.9136
Standard 13 (adequate recording of all medications/adverse reactions)	17 (28.81)	15 (37.50)	2 (10.53)	0.0326
Standard for Addressing Co-morbidities and HIV				
Standard 14 (HIV screening among TB patients)	9 (15.25)	8 (20.00)	1 (5.26)	0.1413
Standard 17 (assessment of other co-morbidities)	45 (76.27)	37 (92.50)	8 (42.11)	<0.0001
Standard for Public Health and Prevention				
Standard 21 (reporting of TB cases)	33 (55.93)	22 (55.00)	11 (57.89)	0.8342

Table 3: Proportions of Adhering Residents-in-training to each standard between Internal Medicine and Family Medicine.

Standard for treatment

Almost two-thirds of residents gave the standardized treatment in accordance with the guidelines for patients treated as TB. It is important to note that, exact numbers of suspected and confirmed TB patients were not identified thus explain the low value. Nevertheless, the authors observed that treatment practices among the residents are consistent with the international guidelines. It is a given knowledge that providing correct treatment is an important key to avoid multi-drug resistance especially among TB patients.

On the other hand, both specialties achieved only 25.4% and 28.8% for standards 10 and 13 respectively. International studies involving consultants [17,18] showed similar pattern of practices. Sputum microscopy was not given emphasis for follow-up as well as in those physicians observed; most of them did not keep proper recordings of patients. Monitoring patients' response as well as the adverse reactions to anti-TB drugs provides a vital role in the therapy. Studies revealed that occurrences adverse reactions during treatment post as major factors for poor adherence to anti-TB treatment of patients. Thus it is important that health professionals are trained to recognize these reactions and should provide pretreatment counseling to their patients on possible side effects of medications [19-21].

Various reasons may account for this observation. Not having enough sputum to be collected during this period is always a possibility. Another potential reason might be monitoring of these individuals just based on clinical grounds.

Standard for addressing co-morbidities and HIV

Standards 14 and 17 adherence rates are 15.2% and 76.3% respectively. Addressing co-morbid conditions commonly associated with tuberculosis can decrease treatment failures, increase case findings, and prevent drug resistance as depicted in numerous studies. Hence it is important to reiterate among the residents the value of good history taking. As pointed out earlier PPs tend to have inadequate

recordings of patients under treatment which could also be the case in this study.

However, the low adherence to HIV screening among TB patients is alarming. It is recommended by the ISTC (2009) to do HIV testing to all patients suspected or noted to have TB, for according to WHO in 2012 [22] approximately 1 in 3 of the 42 million people living with HIV are co-infected with the disease. In our country, according to Montoya [23], 49% of HIV patients, overall, regardless of CD4 count were shown to have mycobacterial disease either by AFB smear or culture. In 2009, it was reported that TB-HIV committee was created to ensure collaboration between the National HIV/AIDS and STI Prevention and Control Program (NASPCP) and the National Tuberculosis Control Program (NTP). Trainings were provided in partnership with other organizations on HIV counseling and Provider Initiated Counseling and Testing (PICT) to improve diagnostic care, and preventive services for people living with HIV and TB [24]. Knowledge of co-morbidities status influences the approach of the diagnostic evaluation for TB as well as treatment regimen and success.

Standard for public health and prevention

As noted, only 55.93% of residents report or refer their cases to local authorities (TBDC or DOTS). It is the duty of all health professionals to report all cases of TB to local public health authorities to ensure proper documentation and treatment of cases. Numerous studies noted that reporting or referring patients is an effective system to monitor progress and treatment outcomes of patients and in evaluating the overall performance of the tuberculosis control programs, at the local, national, and international levels [8,14,25]. TB-DOTS facilities are strategically located nationwide and UP-PGH has been equipped with it since 2009. Hence, residents-in-training as well as the private practitioners in our institution should be encouraged to utilize all accessible means to help in the control of TB.

Conclusion and Recommendations

This study showed that the third year residents-in-training of UP-PGH, 2012-2013, generally adhere to ISTC specifically standards 2, 17, and 8. However, reinforcements are still needed to scale up TB management of the residents based on international standards especially on standards concerning co-morbidities and HIV screening and on standards for Public Health and Prevention. This could be done through regular continuing medical educations (CMEs), forums, seminars and exposures to local TB health authorities or centers (i.e., TBDC or TB-DOTS) to increase their awareness and improve their practices. It is also recommended to do adherence study on other TB health providers (barangay health centers or DOTS facilities) for they are the usual initial providers sought by patients as well as the providers of treatment. Mechanisms and infrastructures are encouraged to be put in place in order for adherence to be facilitated.

The findings of this study should be further validated through a focus-group discussion among respondents. This study also presented some potential points where public-private collaboration efforts may be strengthened.

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