Tuberculosis Diagnostic Committees' contribution to the National TB Program in Manila and Quezon Cities

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Setting: The Philippines Tuberculosis Diagnostic Committees (TBDCs) were created to improve the quality of diagnosis of sputum smear-negative chest radiography suggestive of pulmonary tuberculosis (sn-PTB).

Objective: To determine current TBDC activities, obstacles and possible solutions for improvements in the quality of diagnosis of sn-PTB in Manila City and Quezon City.

Design: A descriptive review of TBDC Masterlist records and interviews with TBDC members using a semistructured questionnaire.

Results: A record review of nine of 10 TBDCs was conducted, with interviews of 33 of the 49 current members. During the second and third quarters of 2009, respectively 1142 and 1563 sn-PTB cases were evaluated by the TBDCs in both cities. Of these, 53% in Manila City and 65% in Quezon City were classified as active TB patients. There were significant variations in the percentage of patients recommended for anti-tuberculosis treatment by the TBDC. The participation of its members is based on their expressed commitment to program sustainability.

Conclusion: TBDC activities contribute to TB control in the Philippines by ensuring the judicious use of resources. Further research to assess the contributions of TBDCs in reducing diagnostic and treatment delays, and factors affecting the sustainability of the TBDCs, is recommended.

he Philippines National Tuberculosis Control Programme (NTP) uses chest radiography (CXR) as an adjunct to sputum microscopy in the diagnosis of tuberculosis (TB).¹ It is usually applied in symptomatic patients with suspected TB disease with three negative sputum examinations and persistence of symptoms after a 2-week course of anti-tuberculosis treatment. The relatively low specificity of CXR diagnosis in TB may result in a high level of overdiagnosis. In 2011, a study in China revealed that the occurrence of overdiagnosis is influenced by a variety of factors, including the quality of CXR. The use of CXR for the diagnosis of pulmonary TB can be compromised by poor film quality, low specificity and difficulties in interpretation.^{2,3} Another study in 2004 showed that the diagnosis of TB by CXR alone would yield 37% overdiagnosis, and that limiting the diagnosis of TB to smear-negatives using CXR still led to 23% overdiagnosis.4,5

Reader disagreement is also a factor in the quality of the diagnosis of TB. In 1968, an International Union Against Tuberculosis study showed 34% disagreement on normal CXR findings and 28% disagreement on CXRs with cavitary lesions.^{6,7} The introduction of a peer-review mechanism,^{5,8,9} a reading and recording system to improve the CXR diagnosis of smear-negative TB, contributed to improvements in the programme.¹⁰

Since the mid-1990s, the Philippines NTP has been assisting local governments in setting up Tuberculosis Diagnostic Committees (TBDCs) to improve the quality of diagnosis of patients with CXRs suggestive of smear-negative pulmonary TB (sn-PTB). In 1997, Cebu Province was one of the DOTS pilot areas in the Philippines where the TBDC was organised in partnership with the private sector to deliberate on and assess sputum-negative CXR-positive cases.¹¹ After 100% government coverage of DOTS in 2003, the President of the Philippines promulgated an Executive Order¹² for a comprehensive, unified policy to harmonise TB control for both the public and private sector in the country.13 The Department of Health (DOH) issued an Administrative Order¹⁴ highlighting the critical role of the hospitals in TB control, which included the establishment of the NTP DOTS clinics and the formation of TBDCs, which are composed of experts in the hospitals in collaboration with local government units.

Five TBDCs were created in Manila and Quezon City. Each committee covers certain districts, and committee members usually meet once or twice per month. In 2008, the number of patients referred to TBDCs ranged from 551 to 1368 in Manila City, while in Quezon City it ranged from 217 to 948; 34–51% of patients referred in Manila City and 60–72% of those referred in Quezon City were recommended for treatment.

As required by the NTP, the TBDC meets to determine the appropriate management of sn-PTB cases seen at the health centres in Manila City and Quezon City. The meetings are convened by the public-private mix DOTS (PPMD) unit head or, in their absence, the City TB Coordinator. Case records are presented individually, the history is obtained from the TBDC referral form and discussed by the TB Coordinator, and consensus is reached by the TBDC members on the appropriate management of the case. TBDC recommendations range from treatment initiation to surveillance of a patient not categorised as an active case of TB. Repeat CXR is recommended by the TBDC in situations where the quality of the CXR prevents them from making an accurate interpretation. All the cases seen and recommendations made are listed on the TBDC Referral Form and on the TBDC Masterlist.¹ The TBDC Referral Form is used for referring sn-PTB suspects to the TBDC; it contains general information about the patient and the TBDC's findings/decisions and recommendations. The TBDC Masterlist is the listing

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KEY WORDS

chest radiography; sputum; diagnosis

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PHA 2012; 2(3): 82–86 © 2012 The Union of all sn-PTB suspects referred to the TBDC, which is completed by the TBDC secretariat at each meeting.

The present study aims to describe the present TBDC activities, the opinions of TBDC members on current TBDC mechanisms, including obstacles encountered and possible solutions, and to provide information on TBDC mechanisms for improvement of TBDC performance.

METHOD

This study comprises a descriptive record review of the TBDC Masterlist and an interview using a semi-structured questionnaire that includes questions on the overall impression of the current TBDC. Each TBDC has on average six members, usually including a radiologist, a pulmonologist, the PPMD Unit Head, the NTP Medical Coordinator, the NTP Nurse Coordinator and the PPMD Nurse. The committees generally meet every 2 weeks, except for one which meets on a weekly basis.

All five TBDCs in Quezon City and four (out of five) in Manila City were included in the study. One TBDC in Manila City was unavailable at the time of interview. The NTP Medical Coordinator, NTP Nurse Coordinator, PPMD Unit Head, radiologist, pulmonologist and the PPMD Nurse of each TBDC were interviewed. The questionnaire covered the following main areas: profile of the respondent, reasons for joining the TBDC, barriers and suggested solutions, and overall perception of the TBDC. Record reviews of the TBDC were conducted for the second and third quarters of 2009.

The study protocol was approved by the DOH Research Ethics Committee in the Philippines. We obtained permission from the Medical Directors prior to conducting the study. Informed consent was provided by respondents before the interview and before observing the TBDC meeting.

RESULTS

Nine of 10 TBDC records were reviewed, and an in-depth interview of 33 of the 49 TBDC members was conducted. The committee evaluates an average of 20–29 referrals per meeting. All TBDCs use the TBDC Masterlist to record referrals. The results of the read-

ings usually reach the DOTS facility after 1–2 days, except for one which takes around 3–6 days. All TBDCs submit quarterly reports to the City Health Office.

Three of the nine TBDCs surveyed previously received external funding for honoraria and refreshments during meetings. Despite the withdrawal of funding support in 2009, these TBDCs continued to meet and fulfilled their commitments to the NTP. The general information and profile of the respondents are shown in Table 1.

During the second and third quarters of 2009, respectively 1142 and 1563 sn-PTB patients were evaluated by the TBDCs of Manila City and Quezon City. Of those evaluated, 601 (53%) in Manila City and 1015 (65%) in Quezon City were classified as active TB cases and recommended for anti-tuberculosis treatment. There were significant variations in the proportions of patients recommended for treatment by the TBDC in 2009 (Table 2).

In-depth interviews with the TBDC members indicated that the most common reasons for joining TBDC were commitment (52%), advocacy (12%), a wish to learn about field experiences (9%), the fact that it was part of their job as NTP coordinators (21%) and the fact that this was a requirement for a hospital to become a DOTS clinic (6%; Table 3).

For six of the nine TBDCs each meeting lasted 1–2 h, while for the three others they lasted 2–3 h (Table 4). Difficulty in arranging a common schedule to convene and CXR quality were the most common constraints for the TBDC members in the performance of their roles. To address these issues, most TBDCs have adopted flexible time schedules for their meetings. To improve CXR quality, the following were suggested: 1) identify those diagnostic laboratories with poor quality CXRs; 2) conduct training courses for radiological technicians on how to produce a goodquality CXR; and 3) enable referring facilities to screen CXRs prior to submission to the TBDC.

Other constraints identified by the respondents were 1) lack of mechanisms to assess TBDC performance and the need to build the capacity of TBDC members, and 2) lack of feedback from the health facilities regarding the outcome of patients recommended by the TBDC for treatment. The following recommendations were made: 1) establish mechanisms to assess the overall quality of TBDC performance and the individual competencies of its members, define

TABLE 1 General information and	I profile of the respondent
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TBDC	Members n	Frequency of meetings	Quorum	Referrals per meeting	Turnarounc time, days*	Funds for conducting TBDC meeting	Type of funding	Usage
City of Manila TBDC 1	6	Every 2 weeks	4	10–20	1–2	Yes	Global Fund	Honoraria for TBDC members
TBDC 2	5	Every 2 weeks	3	20-30	1–2	No	None	NA
TBDC 3	5	Every 2 weeks	4	20-30	1–2	No	None	NA
TBDC 4	4	Every 2 weeks	4	30–40	1–2	No	None	NA
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TBDC 1	5	Weekly	5	5–15	1–2	No	None	NA
TBDC 2	7	Every 2 weeks	4	30-40	1–2	No	None	NA
TBDC 3	7	Every 2 weeks	3	35–45	3–6	No	None	NA
TBDC 4	5	Every 2 weeks	3	20-30	1–2	Yes	Global Fund	Snacks
TBDC 5	5	Every 2 weeks	3	5–10	1–2	Yes	Global Fund	Coffee and snacks
Average	5.4†		3.6 [‡]	19.4–28.9§				

*Number of days within which the DOTS facility was able to receive the decision/recommendation of the TBDC from the time the patient was referred to the TBDC. †Average number of TBDC members.

[‡]Average guorum.

[§]Minimum and maxiumum number of referrals evaluated by the TBDC per meeting.

TBDC = Tuberculosis Diagnostic Committee; Global Fund = Global Fund to Fight AIDS, Tuberculosis and Malaria; NA = not applicable.

TABLE 2 Second and third TBDC Report 2009

TBDC	Total number referred to TBDC	Total evaluated	Not evaluated	Active TB n (%)	Inactive TB	Other lung diseases	Other recom- mendations*	Saved from risk of anti- tuberculosis drug toxicity n (%) [†]
Manila City								
TBDC 1	194	194	0	90	49	10	45	104
TBDC 2	262	262	0	146	88	27	1	116
TBDC 3	311	289	22‡	191	49	49	0	98
TBDC 4	412	397	15‡	174	129	94	0	223
Total	1179	1142	37	601 (52.6)	315	180	46	541 (47.4)
Quezon City								
TBDC 1	270	270	0	184	43	18	25	86
TBDC 2	410	410	0	252	116	24	18	158
TBDC 3	458	458	0	354	92	10	2	104
TBDC 4	319	317	2§	177	54	30	56	140
TBDC 5	108	108	0	48	12	7	41	60
Total	1565	1563	2	1015 (64.9)	317	89	142	548 (35.1)

*Further tests, such as CT scan, biopsy, or surveillance.

[†]% saved from possible risk of anti-tuberculosis drug toxicity among total evaluated = [(inactive TB) + (other lung diseases) + (with other recommendations)/(total evaluated) \times 100.

[‡]Not evaluated due to poor quality film.

[§]Not evaluated due to incomplete patient profile.

TBDC = Tuberculosis Diagnostic Committee; TB = tuberculosis.

standard NTP criteria for evaluation, ensure each TBDC member is acquainted with NTP guidelines with training in programmatic skills and quality improvement, and designate a team to monitor the TBDC; and 2) maintain systems operations, such as proper/ complete filling-out of TBDC referral forms and feedback of treatment outcomes to the TBDC.

DISCUSSION

The TBDCs were created to reduce over- and underdiagnosis of sn-PTB patients. All smear-negative patients who failed to respond to 2 weeks of antibiotic treatment were requested to undergo a CXR. Those with no abnormal findings on CXR were asked to consult again if they developed signs and symptoms suggestive of TB. The DOTS physician-in-charge submits a referral form to the TBDC for evaluation and proper management of TB symptomatic patients identified as having abnormal CXR findings. The TBDC evaluates each case based on clinical history and their conclusions on CXR. When necessary, the patient may be requested by the TBDC to undergo an assessment to clarify the clinical and CXR findings. Patients are usually not present, limiting the possibilities of examination and investigation during the evaluation.

TABLE 3 Members' reasons for joining the TBDC

	Respondents*				
Reasons for joining TBDC	Total Manila City <i>n</i>	Total Quezon City <i>n</i>	Grand total n (%)		
Commitment	13	4	17 (52)		
Advocacy	2	2	4 (12)		
Part of job as NTP Coordinator	4	3	7 (21)		
To learn about the experiences from the field	0	3	3 (9)		
Requirement for hospital to be accredited as a DOTS clinic	0	2	2 (6)		

*Interviewees for this study were TBDC members.

TBDC = Tuberculosis Diagnostic Committee; NTP = National TB Programme.

Of the 1142 cases evaluated by the Manila City TBDCs, 315 were categorised as inactive TB, 180 as having other lung diseases and 46 were provided with 'other recommendations' (CT scan, biopsy, or surveillance). Likewise, of 1563 cases evaluated by the Quezon City TBDCs, 317 were categorised as inactive TB, 89 as other lung diseases and 142 were provided with 'other recommendations'. Respectively 541 and 548 cases were possibly spared the potential risk of toxic reactions to anti-tuberculosis drugs and freed from the psychological burden of TB in Manila City and Quezon City. The TBDC has no cohort information on patients who were not classified as 'active TB cases' but who later became symptomatic.

In one of the interviews, the NTP Coordinator of Quezon City noted that the DOH would have incurred an additional expenditure of US\$447 488.51 had the 3062 cases referred by the health centres to the TBDC from 2007 to 2010 for evaluation* been treated for TB. In a 2009 study in Iloilo City, Philippines, 185 (84%) of 221 subjects were considered by the TBDC as sn-PTB and 36 (16%) were labelled as inactive/non-TB.¹⁵ In 1997, Chaulet found that 25% of cases diagnosed using CXR at selected DOTS pilot sites in the Philippines had findings suggestive of PTB; 36% had suspicious shadows and 39% had no evidence of TB.¹⁶

TABLE 4	Hours devoted	by members	to each	TBDC meeting
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TBDC	Hours per TBDC meeting min-max*	
City of Manila TBDC 1 TBDC 2 TBDC 3 TBDC 4	1–2 1–2 1–2 2–3	
Quezon City TBDC 1 TBDC 2 TBDC 3 TBDC 4 TBDC 5	1–2 2–3 2–3 1–2 1–2	

*Minimum and maxiumum number of hours spent by members per TBDC meeting. TBDC = Tuberculosis Diagnostic Committee.

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CXR is being used as a complement to sputum microscopy in TB diagnosis. The efficiency of diagnosis is dependent on CXR quality and the reader's interpretation of the results. The NTP therefore assisted the local government units in organising the TBDC to reduce over- and underdiagnosis of TB and ensure that active cases are placed on treatment. Overdiagnosis could lead to a waste of resources (i.e., medicines, manpower to conduct DOTS),¹⁷ and subjects the patients to the psychological suffering and potential risk of adverse reactions to anti-tuberculosis drugs.

CXR interpretation is also subject to a high level of disagreement among readers (inter-observer error) and in the same reader (intra-observer error). Den Boon et al. showed that the agreement between two readers was 0.69 (95% confidence interval [CI] 0.64–0.74) for abnormalities consistent with TB, and 0.47 (95%CI 0.42–0.53) for any abnormalities, while intra-reader agreement was 0.90 (95%CI 0.81–0.99) for abnormalities consistent with TB, and 0.85 (95%CI 0.74–0.95) for any abnormalities.¹⁸ As the TBDC is composed of TB experts representing various disciplines, they may have differences in opinion.

The following limitations were encountered by the investigators: 1) TBDC reports were limited to the second and third quarters of 2009, thus making it difficult to establish trends; 2) the study was not able to provide specific documentation on agreement and disagreement among readers to explain the degree of variations in the accuracy of results; 3) because of the tight schedules of TBDC members, there was no opportunity to interact and validate recommendations with other TBDCs; 4) the study is unable to provide data on the number of cases with TB symptoms identified by the referring units (DOTS facilities) and the proportion of pulmonary TB cases to compare how many were diagnosed as smear-negative vs. smear-positive.

The research provides information for local and national TB programmes on the TBDC and its potential contribution in the light of changes and amendments in the national protocol and programme manual. The apparent dearth of information regarding the TBDCs makes this study an important reference, as it describes various aspects of the TBDC's contribution to TB control. For example, 1) it was able to elucidate the significance of the role of the TBDC in the diagnosis of sn-PTB patients; 2) it was able to identify constraints in conducting their meetings, and possible solutions were suggested by committee members; and 3) it was able to evaluate the commitment of the members to TB control.

Based on these observations, the authors make the following recommendations to improve the efficiency of the TBDC and the quality of CXR diagnosis: 1) advocate for policy institutionalising the TBDCs at local level; 2) facilitate monitoring/supervision/ evaluation to improve the quality of the TBDCs; 3) conduct regular feedback and skills enhancement within and among the TBDCs; 4) educate health staff on CXR quality; and 5) conduct further operational research on the other potential institutional roles of the TBDCs in national TB control, and determine the accuracy of TBDC diagnosis with culture as the gold standard.

CONCLUSION

The study showed that commitment of health service providers is vital to the success of the programme. The success of the TBDC is also dependent on referring facilities and diagnostic laboratories. The present TBDC activities in Manila City and Quezon City contributed to the NTP by ensuring the judicious use of resources, freed patients from undue psychological burden and reduced the workload of health personnel. Further research to assess the TBDCs' contribution in reducing diagnostic and treatment delays and factors affecting sustainability of the TBDCs is recommended.

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^{*}Category I: US\$92.26/case and Category II: US\$200/case, Bangko Sentral ng Pilipinas Dollar Exchange Rate, 2009.

Contexte : Les Philippines ont organisé les Comité de Diagnostic de la Tuberculose (TBDC) afin d'améliorer la qualité du diagnostic des cas de tuberculose pulmonaire à frottis négatif des crachats (sn-TBP) avec cliché thoracique suggestif.

Objectif : Déterminer les activités actuelles du TBDC, les obstacles et les solutions possibles en vue d'améliorer le diagnostic de qualité des sn-TBP dans les villes de Manille et Quezon.

Schéma : Il s'agit d'une étude descriptive utilisant une révision des dossiers de la Masterlist TBDC et l'interview des membres du TBDC au moyen d'un formulaire de questionnaire semi-structuré.

Résultats : On a mené une révision des dossiers de neuf TBDC sur 10 et interviewé 33 des 49 membres actuels. Au cours des 2ème et 3ème trimestres de 2009, on a évalué par le TBDC dans les deux villes 1142 et 1563 patients TB à frottis négatif des crachats. Parmi ceux-ci, on a classé comme patients TB atteints de TB active 53% dans la ville de Manille et 65% dans la ville de Quezon. On n'a pas noté de variations significatives dans le pourcentage des patients auxquels le TBDC a recommandé un traitement pour la TB. La participation de ses membres repose sur leur engagement exprimé pour la persistance du programme.

Conclusion : Les activités du TBDC ont contribué en garantissant une utilisation judicieuse des ressources. Des recherches complémentaires sont recommandées pour évaluer les contributions du TBDC dans la réduction des délais de diagnostic et de traitement et les facteurs diminuant le caractère persistant des TBDC.

Marco de referencia: En las Filipinas, se organizó el Comité de Diagnóstico de la Tuberculosis (TBDC) con el propósito de mejorar la calidad del diagnóstico de los pacientes con imágenes radiográficas indicativas de tuberculosis pulmonar y baciloscopia de esputo negativa (sn-TBP).

Objetivo: Determinar las actividades actuales del TBDC, los obstáculos que confronta y las posibles soluciones que permitirían mejorar la calidad del diagnóstico de la sn-TBP en las ciudades de Manila y Quezon.

Método: Fue este un estudio descriptivo en el cual se analizaron los registros de la lista de referencia del TBDC y se realizó una encuesta a los miembros del TBDC mediante un cuestionario semiestructurado. **Resultados:** Se analizaron los registros de nueve de los 10 TBDC y se

encuestaron 33 de los 49 miembros actuales. Durante el segundo y el tercer trimestre del 2009, el TBDC estudió en cada ciudad 1142 y 1563 pacientes con baciloscopia negativa. En Manila, 53% se clasificaron con diagnóstico de TB activa y en Quezón esta proporción fue 65%. Se observaron variaciones considerables en la proporción de pacientes para los cuales el TBDC recomendó el tratamiento antituberculoso. La participación de los miembros del TBDC se basa en su compromiso explícito en favor de la sostenibilidad del programa. **Conclusión:** Las actividades del TBDC favorecen el uso acertado de los recursos. Se recomiendan nuevas investigaciones encaminadas a evaluar la contribución del comité a la disminución de los retrasos en el diagnóstico y el tratamiento de la TB y a definir los factores que

influyen sobre la sostenibilidad del comité.

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