

# Tuberculosis Case Finding and Case Holding Practices In Selected Drug Abuse Treatment and Rehabilitation Centers (DATRCS) In Luzon, Philippines

Jonathan P. Guevarra, RN, RM, MAN,<sup>1</sup> Eleanor C. Castillo, RN, MPH, MSN, DrPH,<sup>1</sup>  
 Carl Abelardo T. Antonio, MD, MPH,<sup>2,3</sup> Mikko Anthony L. Ting,<sup>4</sup> Lolita L. Cavinta, MSPH,<sup>5,6</sup>  
 Audrey B. Lara,<sup>4</sup> Kyle Patrick Y. Eugenio,<sup>7</sup> Kristine Joy L. Tomanan,<sup>4,8</sup> Ma. Vilma V. Diez, MD, MHA,<sup>9</sup>  
 Anna Marie Celina G. Garfin, MD,<sup>10</sup> Manuel C. Panopio, MD<sup>11,12</sup> and Salvador Benjamin D. Vista, MD<sup>13,14</sup>

<sup>1</sup>Department of Health Promotion and Education, College of Public Health, University of the Philippines Manila, Manila, Philippines

<sup>2</sup>Department of Health Policy and Administration, College of Public Health, University of the Philippines Manila, Manila, Philippines

<sup>3</sup>Department of Applied Social Sciences, The Hong Kong Polytechnic University, Kowloon, Hong Kong SAR

<sup>4</sup>College of Public Health, University of the Philippines Manila, Manila, Philippines

<sup>5</sup>Department of Medical Microbiology, College of Public Health, University of the Philippines Manila, Manila, Philippines

<sup>6</sup>Institute of Herbal Medicine, National Institutes of Health, University of the Philippines Manila, Manila, Philippines

<sup>7</sup>College of Medicine, University of the Philippines Manila, Manila, Philippines

<sup>8</sup>Department of Community Development, College of Social Work and Community Development, University of the Philippines Diliman, Quezon City, Philippines

<sup>9</sup>Dangerous Drug Abuse Prevention and Treatment Program, Department of Health, Manila, Philippines

<sup>10</sup>National Tuberculosis Control Program, Department of Health, Manila, Philippines

<sup>11</sup>Philippine College of Addiction Medicine, Quezon City, Philippines

<sup>12</sup>Department of Health Treatment and Rehabilitation Center – Bicutan, Taguig City, Philippines

<sup>13</sup>Group for Addiction Psychiatry of the Philippines, Pasig City, Philippines

<sup>14</sup>Department of Psychiatry and Behavioral Medicine, College of Medicine and Philippine General Hospital, University of the Philippines Manila

## ABSTRACT

**Background and Objectives.** Tuberculosis (TB) remains a public health problem in the Philippines despite trends indicating a decline in the burden of disease. Persons who use drugs who are confined in government-retained drug abuse treatment and rehabilitation centers (DATRCs) face an increased risk for TB because of the congestion in the facility coupled with the absence of guidelines on TB management specific to DATRCs. Thus, this study was conducted to document the current case finding and case holding practices as well as TB treatment pathway in six (6) Luzon-based, government-retained DATRCs.

**Methods.** Key informant interviews were conducted with DATRC personnel involved in TB diagnosis and management in six selected DATRCs in Luzon, Philippines. Interviews were transcribed and coded for thematic analysis. We compared the DATRC practices with the provisions of the 2014 National TB Control Program (NTP) Manual of Procedures. Results were validated through a workshop with (a) a group of physicians and rehabilitation practitioners assigned in other DATRCs; and (b) a group of experts who have experience in managing or overseeing DATRCs in the country.

**Results.** Two physicians and four nurses participated in the interviews. Variations in case finding and case holding practices in six DATRCs have been found. National guidelines exist for congregate settings but are more specific to jails/prisons, which are administratively and operationally different from DATRCs.

**Conclusion.** Development of special guidelines for TB case finding and case holding in DATRCs as well as staff training on the latest NTP Manual of Procedures are recommended. However, gaps and inequities posed by the current set-up underscore the need to address health system-wide factors affecting the practice and performance of these facilities.

**Key Words:** tuberculosis, case finding, case holding, drug abuse treatment and rehabilitation centers, Philippines

Presented during the ACDP Brown Bag Session 2: "Public Health Consequences of Substance Use Disorders" held on 18 February 2021 via Zoom.

Corresponding author: Jonathan P. Guevarra, RN, RM, MAN  
 Department of Health Promotion and Education,  
 College of Public Health  
 University of the Philippines Manila  
 625 Pedro Gil St., Ermita, Manila 1000  
 Email: jguevarra2@up.edu.ph

## INTRODUCTION

Tuberculosis (TB) remains to be a public health concern in the Philippines, with an overall prevalence of 1,159 per 100,000 population<sup>1</sup> although trends indicate a decline due to heightened surveillance and continued cooperation among health care sector (public and private), communities and other stakeholders. Gains from the strong control program implementation will have to be further improved as the elimination of TB is still included in the post-2015 global agenda.<sup>2</sup> However, at the national and local levels, there is an identified need to profile groups vulnerable to TB including those living in congregate settings such as drug abuse treatment and rehabilitation centers (DATRCs), so that appropriate intervention can be developed to cater to their unique needs and context.<sup>3</sup>

As of 2012, the DOH accredited a total of 44 Treatment and Rehabilitation Centers (TRCs) nationwide.<sup>4</sup> The majority of these are residential facilities (86.36%), and only three are offering services on an out-patient basis. The Department of Health operates about a fifth of the facilities (20.45%), while the private sector manages about a third (63.64%). Reports collated in the Integrated Drug Abuse Data and Information Network (IDADIN) in 2014 indicate that there were 4,160 persons confined in TRCs, 81.44% of whom are new cases, while the rest are re-admissions.<sup>5</sup> Of the total number of reported cases, about 1,800 (or 43.27%) were admitted in DOH-operated rehabilitation centers. This disproportionate volume of cases in the public, compared to the private, sector has resulted in some centers being reportedly full of patients.<sup>6</sup>

With the Duterte administration's intensified campaign against illegal drugs, government-retained treatment and rehabilitation facilities are described as full. Common risk factors associated with the development of TB include residing in an institutional facility such as prisons or rehabilitation centers, close contact with TB patients, and substance abuse, which are factors often present in DATRCs.<sup>7</sup> With the increased risk in this special population and the absence of guidelines on TB management specific to DATRCs, a study was conducted to provide inputs to inform and improve existing national and institutional policies, programs and practices related to TB in case finding and case holding among drug users and dependents in treatment and rehabilitation centers in the Philippines.

This paper presents the study's findings regarding current practices of TB diagnosis and management (i.e. case finding and case holding) and further describes the TB treatment pathway practiced in selected Luzon-based, government-retained DATRCs.

## MATERIALS AND METHODS

A descriptive, qualitative study was undertaken from April to October 2017 in six selected Department of Health

(DOH)-retained DATRCs in Luzon. At the time of the study, there were 13 public drug abuse treatment and rehabilitation centers in the Philippines. Of this number, eight were in the Luzon island group. Per advice from the Dangerous Drugs Abuse Treatment and Rehabilitation Program of the DOH, two Luzon DATRCs were excluded from the study as these were recently established (i.e., in late 2016) and had yet to take in residents. We purposively selected the study sites to attain the depth of understanding of the practice on tuberculosis case management practices, something which could not have been accomplished had we aimed for a larger number of DATRCs. Purposeful case selection is a well-established practice in qualitative research, which can generate valid findings.<sup>8,9,10</sup> Pragmatic considerations further informed our site selection, i.e., the study duration and available funding.

To determine the case finding and case holding practices in these facilities, key informant interviews were conducted by the research team using a pre-tested interview guide. Health care personnel, specifically physicians or nurses identified by the heads of DATRCs, were the target study informants. One physician or nurse involved in the diagnosis and treatment of TB for at least one year before the study were interviewed. The actual names of the interviewees and six facilities were concealed and assigned codes (i.e. DATRC A, B, C, D, E, F) for confidentiality.

Audio recordings of the interviews were transcribed in verbatim and responses in Filipino were translated to English. Open coding of interview transcripts was done independently by two researchers and any discrepancies were settled through a consensus. Focused coding was then done by a project investigator to identify the key themes from the interview transcript. We compared the DATRC practices with the provisions of the 2014 National TB Control Program (NTP) Manual of Procedures.

The research proposal was reviewed by an internal project expert panel, as well as by an independent panel of referees selected by the sponsoring organization. Ethics approval before the conduct of data collection was obtained from the University of the Philippines Manila Research Ethics Board (UPMREB 2016-511-01) and the WHO Western Pacific Regional Office Ethics Review Committee (WPRO ERC 2017.4PHL2.MVP).

## RESULTS

### Background of key informants

Two physicians and four nurses participated in the key informant interviews. All informants were involved in the management of medical cases especially tuberculosis. Two nurses have undergone training for the Directly Observed Treatment, Short-course (DOTS). They also have key responsibilities such as coordination with external medical facilities and are involved in the admission process as well as screening and treatment of TB.

### Case finding and case holding practices

Table 1 shows a comparative analysis of TB case finding and case holding practices across the six DATRCs included in the study. Specific practices on case finding and case holding are described in the following sections.

### Case Finding

#### Identification of presumptive TB

Admission requirements in all DATRCs include chest x-ray which is the preliminary tool used in screening tuberculosis among new residents, among other baseline

laboratory tests such as a urinalysis, fecalysis, and an ECG. For one DATRC facility, the facility's physician occasionally requests a second chest x-ray in apicolordotic (AP) view. Half of the DATRCs (three out of six) conduct history taking of previous anti-TB treatment, or presence of presumptive TB in the workplace, among housemates, and family members.

During the admission process, once a patient is suspected of TB based on chest x-ray results, he or she is referred to an external TB-DOTS facility for the diagnostic exams such as direct sputum smear microscopy (DSSM) or GeneXpert, except for one DATRC which has its TB-DOTS facility. In another DATRC, the family of the resident is the one who

**Table 1.** Comparative Analysis of TB Case Finding and Case Holding Practices in Selected Luzon-Based Drug Abuse Treatment and Rehabilitation Centers (DATRC)

	DATRC A	DATRC B	DATRC C	DATRC D	DATRC E	DATRC F
Case Finding	<ul style="list-style-type: none"> <li>Chest x-ray on admission</li> <li>Referral to TB DOTS unit if positive on x-ray for DSSM</li> <li>GeneXpert used if x-ray is positive and sputum is negative</li> </ul>	<ul style="list-style-type: none"> <li>Chest x-ray if with cough for 2 weeks</li> <li>GeneXpert (in a local hospital) for potential MDR cases</li> </ul>	<ul style="list-style-type: none"> <li>Chest x-ray on admission</li> <li>DSSM done in-house</li> <li>GeneXpert (in local TB DOTS unit) for potential MDR cases</li> </ul>	<ul style="list-style-type: none"> <li>Chest x-ray on admission</li> <li>Referral to TB DOTS unit if positive on x-ray for DSSM</li> <li>GeneXpert (in local TB DOTS unit) for potential MDR cases</li> </ul>	<ul style="list-style-type: none"> <li>Chest x-ray on admission</li> <li>Some patients undergo DSSM</li> </ul>	<ul style="list-style-type: none"> <li>DSSM, done at local TB DOTS unit</li> <li>GeneXpert (in local TB DOTS unit) for potential MDR cases</li> </ul>
Case Holding	<ul style="list-style-type: none"> <li>Patients given medication treatment regimen based on diagnosis</li> <li>Nurse serves as treatment partner</li> <li>Potential ADRs managed or referred</li> </ul>	<ul style="list-style-type: none"> <li>Patients given medication treatment regimen based on diagnosis</li> <li>Nurse serves as treatment partner</li> <li>Patients monitored with check-ups every two weeks</li> </ul>	<ul style="list-style-type: none"> <li>Patients given medication treatment regimen based on diagnosis</li> <li>Patients undergo monthly check-ups with physician (including monitoring for ADR)</li> </ul>	<ul style="list-style-type: none"> <li>Patients given medication treatment regimen based on diagnosis</li> <li>If with ADR, medication stopped and patient referred to TB DOTS facility</li> </ul>	<ul style="list-style-type: none"> <li>Patients given medication treatment regimen based on diagnosis</li> <li>Nurse serves as treatment partner</li> <li>Equipped for medical emergencies</li> </ul>	<ul style="list-style-type: none"> <li>Patients given medication treatment regimen based on diagnosis</li> <li>Nurse serves as treatment partner</li> <li>Treatment card for monitoring of compliance to treatment</li> </ul>
Prevention / Screening	<ul style="list-style-type: none"> <li>Presumptive TB cases isolated in a specific dormitory until diagnosis is confirmed</li> </ul>	<ul style="list-style-type: none"> <li>Presumptive TB cases isolated in a cubicle until diagnosis is confirmed, and are asked to wear a mask</li> </ul>	<ul style="list-style-type: none"> <li>Diagnosed TB cases isolated for 2-4 weeks depending on diagnosis</li> <li>Dorms undergo cough surveillance</li> </ul>	<ul style="list-style-type: none"> <li>Diagnosed TB cases isolated for 2, and are observed for changes in symptoms</li> </ul>	<ul style="list-style-type: none"> <li>Presumptive or diagnosed TB cases are isolated for 2 weeks</li> </ul>	<ul style="list-style-type: none"> <li>TB patients are oriented on how to minimize transmission (e.g. patients are instructed to use mask especially when in isolation)</li> </ul>
Recording / Reporting	—	<ul style="list-style-type: none"> <li>Recording processes guided by RHU</li> </ul>	<ul style="list-style-type: none"> <li>Reporting guided by NTP forms for paperwork</li> </ul>	—	—	—
Drug Distribution	<ul style="list-style-type: none"> <li>TB DOTS facility provides medications</li> </ul>	<ul style="list-style-type: none"> <li>TB DOTS facility replenishes medication kits</li> </ul>	<ul style="list-style-type: none"> <li>Drugs needed for treatment requested through LGU or DOH Regional Office</li> </ul>	<ul style="list-style-type: none"> <li>TB DOTS facility provides medications</li> </ul>	<ul style="list-style-type: none"> <li>Family of patient buys drugs from pharmacy</li> <li>TB DOTS facility provides medications (if available)</li> </ul>	<ul style="list-style-type: none"> <li>TB DOTS facility provides medications</li> </ul>

TB DOTS, directly observed treatment, short course; DSSM, direct sputum smear microscopy; MDR, multi-drug resistant; ADR, adverse drug reaction; RHU, rural health unit; NTP, National TB Control Program; LGU, local government unit; DOH, Department of Health

coordinates with the TB-DOTS facility. Sputum collection among presumptive TB patients is done by asking patients to submit two sputum specimens.

For two facilities, new clients who are suspected of TB are recommended to be enrolled in a TB-DOTS program outside the DATRC before being admitted. For DATRC E, clients who are not enrolled in a TB-DOTS program before admission will have to shoulder the expenses and will have to source their medication from private drugstores.

GeneXpert test is used as another diagnostic tool for TB in five of the facilities. For three DATRC facilities, GeneXpert tests are ordered by their partner TB-DOTS facilities only for patients with a history of unfinished TB treatment as well as those previously diagnosed with TB. In the case of the other two DATRC facilities, the GeneXpert test is used as a primary diagnostic tool instead of DSSM. All GeneXpert tests are done by external facilities such as the nearby rural health unit (RHU).

### **Cough Surveillance**

Only one facility actively screens for possible TB cases through cough surveillance. Cough surveillance is the procedure wherein the facility monitors residents who manifest with symptoms of TB such as cough of at least two weeks' duration and fever.

### **Case Holding**

In most DATRCs, once a patient has been diagnosed, he/she is enrolled in a partner TB-DOTS facility which also provides anti-TB drugs. Medicines are administered by the nurses inside the facility using the directly observed approach. Treatment duration usually lasts for six months in most cases. Treatment progress is monitored using x-ray or DSSM results done three times throughout the treatment. Any changes in weight are also monitored to adjust the dosage of the medicine provided.

### **Treatment administration**

Treatment is administered inside the facilities under the direct supervision of nurses. Anti-TB medications are taken daily in front of the DATRC nurses, usually every morning before breakfast.

### **Treatment duration**

Five key informants stated that TB treatment lasts for a duration of six months while for one DATRC, the treatment duration was stated to last for four to six months.

### **Treatment monitoring**

Varied practices are seen in the participating DATRCs, with the utilization of both sputum microscopy and GeneXpert. In one facility, monitoring is done on the third and fifth month of treatment using DSSM only while in two others, it is done on the second, fifth, and sixth month using both DSSM and GeneXpert. Aside from the mentioned

practices, DATRC F requests for a monthly acid-fast bacilli (AFB) test while DATRC E monitors only through chest x-ray results. Four facilities (DATRC B, DATRC C, DATRC D, and DATRC F) monitor the patients' weight to adjust the dosage of the drugs administered.

### **Adverse drug reactions**

Adverse drug reactions to the TB medications are initially managed through over-the-counter medications such as anti-histamine for hypersensitivity reactions and omeprazole for gastritis. In case of complications that require more extensive management, treatment is stopped, and patients are referred to either the facility's physician or admitted to a hospital outside the DATRC. Generally, DATRC facilities have nurses and clinics open round the clock in cases of emergencies. DATRC E is also equipped for medical emergencies.

### **Other issues with treatment**

In cases where residents have completed the residential program ahead of their TB treatment, they are endorsed to the DATRC's aftercare program for the continuation of their TB treatment. The aftercare program usually instructs the patient to report to the DATRC each month for assessment. Continuation of treatment in the aftercare program is done in all DATRCs except for DATRC E, where final discharge instructions are provided, and the rest of the medication is turned over to the family of the patient. There is no mention of DATRCs having specific guidelines for patients with HIV co-infection but referral systems are in place with coordination with the nearest TB-DOTS facility.

### **Prevention of TB**

#### **Isolation**

All DATRCs have protocols for isolation. As explained by one key informant, patients with a history of two-week cough, colds, night sweats, fever, and chills are usually placed in isolation. Patients under isolation are not allowed to be integrated into the DATRC community until they finish the initial two-week treatment. During isolation, patients are confined in certain rooms and only facility health workers, particularly nurses, are allowed access to.

#### **TB Infection Control Program**

None of the DATRCs report having a specific TB infection control program but two DATRCs advise personnel to wear personal protective equipment when dealing with patients who are presumed to have or have been diagnosed with TB. One DATRC also reports conducting annual physical examinations on its health care personnel. All six DATRCs reported utilizing cost-effective environmental controls against TB such as natural and mechanical ventilation; however, only one DATRC reported having specialized equipment or ventilator systems designed for TB control.

## Recording and reporting

All DATRCs refer patients to the nearest RHU or TB-DOTS facility. DATRC B and C mentioned the use of the NTP card specifically for recording the treatment progress.

## Drug distribution

TB medications are provided by the partner TB-DOTS facility in five out of six DATRCs included in the study. In one DATRC, the family members of residents are the ones coordinating with the TB-DOTS facility for the procurement of medication. Another DATRC requires family members to purchase medication from local private drug stores when the facility runs out of TB drugs.

## DISCUSSION

The variations in case finding and case holding practices of the DATRCs included in the study highlight the differences in implementation of the National TB Control Program despite existing protocols and processes defined in the 2014 NTP Manual of Procedures. The NTP Manual of Procedures serves as the main reference for policies and guidelines for standardized program implementation towards achieving the goals set by the Philippine Department of Health.<sup>11</sup> The special population of drug dependents and users is highlighted in this study since they are at an increased risk of morbidity and mortality from tuberculosis. Illegal drug users are known to be more infectious, take longer to see a clinical and microbiological response to medication, and have increased rates of transmission which are all due to the immunosuppressive effects of certain illegal drugs.<sup>12</sup>

According to the 2014 NTP Manual of Procedures, case finding is the identification and diagnosis of TB cases among individuals with signs and symptoms pointing to tuberculosis, with passive and intensified case finding is the dictum of the policy. One of the main points in the section of the guidelines state that direct sputum smear microscopy (DSSM) should be the primary case finding diagnostic tool of choice before diagnosis of TB, with all presumptive TB patients capable of expectoration expected to submit two sputum specimens for analysis which should be sent to either an in-house facility or an accredited microscopy facility.

However, based from the interviews conducted, DATRCs participating in the study still use chest x-ray as the main modality of diagnosis of TB, with DSSM being used as a confirmatory test once the x-ray results yield positive. This is of concern since the gold standard for the diagnosis of TB is still through sputum microscopy, with a chest x-ray having a reported sensitivity and specificity of 73-79% and 60-63%, respectively. The addition of a lateral view of the chest increases the sensitivity and specificity of the test by 2% and 3%, respectively.<sup>13</sup> Also, five out of the six DATRCs in the study have either an in-house facility or a tie-up with an accredited DOTS facility for DSSM diagnostics. Collaborating with external facilities is a good practice

that must be pursued to effectively address tuberculosis. In Portugal, community involvement, with the creation of multi-institutional networks, resulted in an increased number of drug users screened for TB, availability of therapy to a higher proportion of TB cases, and improvement in active TB treatment compliance.<sup>14</sup>

On the other hand, two DATRCs mentioned using GeneXpert as the primary tool for diagnosis. GeneXpert is a single-step diagnostic tool that can detect *Mycobacterium tuberculosis* as well as determine Rifampicin-resistant strains present in sample.<sup>15,16</sup> While it offers a more rapid method of detecting the pathogen in sample sputum, it is still recommended to be done alongside conventional sputum tests.<sup>17</sup> The informant from DATRC A stated that GeneXpert is used by the partner TB-DOTS and is suggested to be used in cases of smear-negative TB or for screening multi-drug resistant TB (MDR-TB).

Moreover, no DATRC specified conducting diagnostic procedures for extrapulmonary TB (EPTB). These conditions may cause DATRCs to miss TB cases that can be captured using these diagnostic methods.

Furthermore, the latest NTP Manual of Procedures (2014) underscores the importance of intensified case finding, where active case finding must be done for those belonging to special populations such as close household contacts of clients known to be diagnosed with TB, persons living with HIV (PLHIV), residents in urban/rural poor communities, and individuals in congregate settings such as prisons or elderly housing facilities.

As DATRCs are considered as congregate settings, the participating DATRCs' efforts on intensified case finding are minimal, with only one out of six facilities mentioning conduct of cough surveillance amongst their residents. The 2014 NTP Manual of Procedure states that there should be at least four points of case finding in congregate settings: (1) specifically upon entry to the facility, (2) during detention via cough surveillance, (3) before transfer to another facility, and (4) before re-integration into their respective communities. Nonetheless, the majority of the DATRCs focus their efforts on case finding during the admission process, and except for DATRC C, did not mention doing case finding in the other three points outlined in the manual.

Case holding practices also differed among DATRCs in the study. Practices or activities during case holding are aimed at ensuring patients complete the treatment regimens assigned to them. The directly observed approach is one of the cornerstones of TB management and requires strict compliance with daily administration of anti-TB medications for six months. All six DATRCs were able to comply with this guideline primarily through having nurses as treatment partners. In a study conducted in India, Dhingra et al concluded that directly observed treatment was effective in drug addicts with tuberculosis. Further, de-addiction counseling and intensive motivation for adherence to TB treatment along with nutritional supplementation achieved

positive results in drug addicts with TB.<sup>18</sup> Although not used in the Philippines, the detention of non-compliant patients has been used to meet treatment outcomes. In New York City, interventions utilizing public health orders, including orders for detention for those non-compliant TB patients including those suffering from substance use, has become an integral part of the city's successful efforts to control tuberculosis. However, implementers of this policy stated that detention remained a last resort to cure patients, but, when applied, was highly successful in ensuring treatment compliance.<sup>19</sup>

Another critical consideration for case holding is drug supply and management. As revealed in the interviews, TB drug procurement differs per facility, with one DATRC necessitating patient's out-of-pocket expenses for drugs in cases where TB drugs in the facility are out-of-stock. This is contrary to the NTP Manual provision that explicitly states that TB medications should be free and provided for by the local government and that the local government should ensure supplies are adequately distributed to facilities within their jurisdiction, including special facilities such as jails and prisons.

Recording and reporting is also a vital part of the TB case holding. The 2014 NTP Manual of Procedures contains several forms for quarterly reports. Furthermore, for record-keeping, the manual states that patient records must be kept for at least seven years before being discarded. Only two DATRCs (DATRC B and C) indicated using NTP forms while the rest did not mention any recording and reporting system for TB patients in their facilities.

Likewise, adequate monitoring is important in case holding as it ensures treatment progression and if necessary, re-classification of the patient's treatment category. Most DATRCs were able to comply with the recommended monitoring guidelines for TB (i.e., monitor every second, fifth, and sixth month of treatment using DSSM). However, some DATRCs utilize the GeneXpert test for routine monitoring. According to the NTP Manual, the test is only recommended in cases of treatment failure for the screening of drug resistance.

Monitoring and addressing adverse events related to TB treatment is another important practice in case holding. All TB-DOTS facilities should be adequately equipped in handling adverse drug reactions. Four DATRCs (DATRC A, C, D, and E) monitor for adverse reactions and facility staff have received training for managing these events. DATRC E explicitly stated being equipped to handle cases of emergencies. They have a driver and a vehicle on standby, as well as nurses on duty for 16 hours.

In terms of treatment outcomes, although patient outcomes were not mentioned by the informants in DATRCs, aftercare programs are in place for clients discharged from the center. When a patient is not able to complete his/her TB treatment regimen within his/her confinement period in the DATRC, the patient is endorsed for the continuation of his/her TB treatment to the DATRC aftercare program.

Furthermore, most DATRCs utilize their existing tie-ups with local TB-DOTS facilities in this situation. Patients are re-absorbed or re-integrated to the local health center (or RHU) for TB treatment completion. These are indications of good practice by Luzon-based DATRCs. A study by Zenner and colleagues in 2013 showed that the treatment completion rate was as high as 89% among illegal drug users whose screening and follow-up was embedded in a local TB clinic in their community.<sup>20</sup>

Finally, prevention of tuberculosis through a TB infection control program should also be implemented in all facilities with case finding and holding practices as outlined in the NTP manual. In European and Central Asian countries, a relatively recent study found that each percentage rise in the incarceration rate related to almost a 0.3% increase in TB prevalence which highlights the importance of preventive measures, broadly categorized into administrative, engineering, and respiratory controls.<sup>21</sup> Despite guidelines included in the NTP Manual of Procedures, the majority of the DATRCs use personal protective equipment for their staff with some administrative measures, such as isolation of presumptive TB cases and cough surveillance (which was only mentioned by DATRC C). Moreover, no DATRC has an explicit TB infection control program, as recommended in the manual.

Overall, many gaps and inequities were highlighted in the findings. While national guidelines exist for jails/prisons, these settings are administratively and operationally different from drug abuse rehabilitation and treatment centers, as jails or prisons are largely managed by the Bureau of Jail Management and Penology (BJMP) as an attached agency of the Department of Interior and Local Government (DILG). On the other hand, the participating DATRCs are managed by the government through the Department of Health (DOH) (i.e., DOH-retained). For DATRC C, their in-house DOTS facility has already gained separate funding from the local government through the initiative and persistent lobbying of their staff, while for other DATRCs this is not the case. From this perspective, fund allocation constraints play a major role in influencing case finding and case holding practices of DATRCs, from an adequate number of TB-DOTS trained staff to the availability of TB diagnostics, drug supply, and management.

With the current administration's intensified anti-illegal drug campaign, admissions to DATRCs has dramatically increased. Considering the magnitude of the present situation, it is expected that the number of TB cases will correspondingly rise. Thus, accuracy and speed in diagnosing and managing clients must be prioritized. Aside from the administration of anti-TB medications, extra care and adequate nutritious food must also be provided to help them in recovery.

While the existing policy and operations set-up is far from the ideal, there is a need to recognize the good practices already implemented by several DATRCs, especially with the external referral system and coordination done with

TB-DOTS facilities in their area. However, to sufficiently address the persistent prevalence of TB in the Philippines, policies, organizational structures and funding sources in all facilities implementing the National TB Control Program must be re-examined. Special attention to address existing gaps and inequities should be pursued as a major goal. Specifically for DATRCs, the development of special guidelines for TB case finding and case holding in these facilities (providing vs referral facility) and training of staff on the latest NTP Manual of Procedures are recommended at the moment while large-scale changes are carried out.

The findings of this project should be cautiously interpreted in light of limitations inherent to the design of the study. Foremost, the study results were derived from a small subset of purposively selected government drug rehabilitation centers, which may preclude generalizations to other facilities (including those in the private sector). The validation with stakeholders, however, points to the high probability that the study team has exhaustively gathered data from the participating sites and that there is little difference in the experience of other facilities from the ones reported in this paper. Furthermore, the clients' compliance with TB treatment in the aftercare program was not assessed. Isolation was mentioned as one of the TB prevention measures; however, the team was not able to observe the condition or structure of the isolation rooms in the study sites. Specification of isolation areas in DATRCs should also be described in the NTP guidelines.

## CONCLUSION

Despite the full coverage of the National TB Control Program in the public sector across the country, there is still a need to strengthen its implementation to specialized populations such as those in drug rehabilitation facilities as they are at high-risk for TB infection. The variations in practices among the DATRCs documented by the study vis-à-vis with the 2014 NTP Manual of Procedures underscore the need to consider the health system-wide critical factors affecting the practice and performance of these facilities: existing policies, monitoring, organizational structures, and fiscal arrangements. Addressing the gaps and inequities posed by the current setup will require a strong commitment from all stakeholders to the overall goal of eradicating tuberculosis as a public health and socioeconomic problem.

## Acknowledgments

Dr. Nina G. Gloriani (College of Public Health, University of the Philippines Manila) guided the team throughout the whole research process for this project. Ms. Jillian T. Rausa (School of Public Health, Boston University) participated in the collection and preliminary analysis of part of the data used for this study. Ms. Glenda Gonzales (Division of Communicable Diseases, World Health Organization Regional Office for the Western Pacific,

Manila, Philippines) and Ms. Rosario P. Vacal (University of the Philippines College of Public Health Foundation, Inc.) provided administrative support in the implementation of the project.

## Statement of Authorship

CTA – conceptualization and design, data collection, data analysis, manuscript writing, approval of final version submitted.

JPG, LLC, ECC – design, data collection, data analysis, report writing, approval of final version submitted.

ABL, MLT – data collection, data analysis, report writing, approval of final version submitted.

All other authors – data analysis, report writing, approval of final version submitted.

## Author Disclosure

Dr. Antonio received professional fees from Johnson & Johnson (Philippines), Inc.

Dr. Diez was program manager with the Department of Health overseeing DATRCs at the time of the study.

Dr. Garfin is program manager with the Department of Health overseeing implementation of the tuberculosis control program.

All other authors declare no conflict of interest.

## Funding Source

This study was funded through the 2016-2017 cycle of the Joint World Health Organization Western Pacific Region (WPR) and Special Programme for Research and Training in Tropical Diseases (TDR) Small Grants Scheme for implementation research in infectious diseases of poverty (Contract No. 201590488).

## REFERENCES

1. Department of Health. National Tuberculosis Prevalence Survey 2016 Philippines [Internet]. 2018 [cited 2021 Feb 20]. Available from [http://www.ntp.doh.gov.ph/downloads/publications/Philippines\\_2016%20National%20TB%20Prevalence%20Survey\\_March2018.pdf](http://www.ntp.doh.gov.ph/downloads/publications/Philippines_2016%20National%20TB%20Prevalence%20Survey_March2018.pdf)
2. United Nations. Sustainable Development Goals. [Internet] United Nations, New York, n.d. [Cited: Feb. 22, 2016.] Available from <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>.
3. Department of Health. 2010-2016. Philippine Plan of Action to Control Tuberculosis [Internet] 2014. [2017 Nov 15] Available from [http://www.ntp.doh.gov.ph/downloads/publications/plans/PhilPACT\\_2010-2016\\_Updated.pdf](http://www.ntp.doh.gov.ph/downloads/publications/plans/PhilPACT_2010-2016_Updated.pdf)
4. Dangerous Drugs Board. DOH-accredited Treatment and Rehabilitation Centers. [Internet] Dangerous Drugs Board, Quezon City, Philippines, December 31, 2012. [Cited: Feb. 22, 2016.] Available from <http://www.ddb.gov.ph/component/content/article/46-sidebar/65-doh-accredited-rehabilitation-centers>.
5. 2014 Statistics. [Online] Dangerous Drugs Board, Quezon City, Philippines, 2014. [Internet] [Cited: Mar. 1, 2016.] Available from <http://www.ddb.gov.ph/research-statistics/statistics/45-research-and-statistics/246-2014-statistics>.
6. Demecillo, By Jean Marvette A. Drug rehab centers now full of patients. [Internet] February 10, 2015. [Cited: Feb. 22, 2016.] Available from <http://www.philstar.com/cebu-news/2015/02/10/1422173/drug-rehab-centers-now-full-patients>.

7. Center for Disease Control and Prevention. TB Risk Factors. (2016, March 18). [Internet] Available from <https://www.cdc.gov/tb/topic/basics/risk.htm>
8. Flick, U. (2014) Sampling. In: An introduction to qualitative research (5th ed.). Los Angeles: SAGE. pp. 167-181.
9. Palinkas, L., Horwitz, A., Green, S., Wisdom, M., Duan, C., & Hoagwood, J. (2015). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(5), 533-544.
10. Suri, H. (2011). Purposeful Sampling in Qualitative Research Synthesis. *Qualitative Research Journal*, 11(2), 63-75.
11. Department of Health. Manual of Procedures of the National Tuberculosis Control Program [5th ed.]. 2014. [Internet] [2017 Nov 15] Manila, Philippines. Available from [https://www.doh.gov.ph/sites/default/files/publications/MOP\\_Final\\_a.pdf](https://www.doh.gov.ph/sites/default/files/publications/MOP_Final_a.pdf)
12. Gupta A, Mbwambo J, Mteza I, Shenoï S, Lambdin B, Nyandindi C, Doula BI, Mfaume S, Bruce RD. Active case finding for tuberculosis among people who inject drugs on methadone treatment in Dar es Salaam, Tanzania. *The international journal of tuberculosis and lung disease: the official journal of the International Union against Tuberculosis and Lung Disease*. 2014 Jul;18 (7):793.
13. Piccazzo R, Paparo F, Garlaschi G. Diagnostic accuracy of chest radiography for the diagnosis of tuberculosis (TB) and its role in the detection of latent TB infection: a systematic review. *The Journal of Rheumatology Supplement*. 2014 May 1;91:32-40.
14. Duarte R, Santos A, Mota M, Carvalho A, Marques A, Barros H. Involving community partners in the management of tuberculosis among drug users. *Public Health*. 2011 Jan;125(1):60.
15. Zeka AN, Tasbakan S, Cavusoglu C. Evaluation of the GeneXpert MTB/RIF assay for rapid diagnosis of tuberculosis and detection of rifampin resistance in pulmonary and extrapulmonary specimens. *Journal of clinical microbiology*. 2011 Dec 1;49(12):4138-41.
16. Center for Disease Control and Prevention. Availability of an assay for detecting Mycobacterium tuberculosis, including rifampin-resistant strains, and considerations for its use. *Morbidity and Mortality Weekly Report*. 2013; 62(41):821-824. [Internet] [2017 Nov 15] Available from <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6241a1.htm>
17. Center for Disease Control and Prevention. A new tool to diagnose tuberculosis: The Xpert MTB/RIF Assay: Fact sheet. [Internet] [2017 Nov 15] Available from [https://www.cdc.gov/tb/publications/factsheets/testing/xpert\\_mtb-rif.htm](https://www.cdc.gov/tb/publications/factsheets/testing/xpert_mtb-rif.htm)
18. Dhingra VK, Lall D, Aggarwal N, Vashist RP. DOTS in drug addicts with TB: Delhi experience. *Indian J Tuberc*. 2008 Jul;55(3):122-6.
19. Gasner MR, Maw KL, Feldman GE, Fujiwara PI, Frieden TR. The use of legal action in New York City to ensure treatment of tuberculosis. *New England Journal of Medicine*. 1999 Feb 4;340(5):359-66.
20. Zenner D, Southern J, Van Hest R, DeVries G, Stagg HR, Antoine D, Abubakar I. Active case finding for tuberculosis among high-risk groups in low-incidence countries [State of the art series. Case finding/screening. Number 3 in the series]. *The International Journal of Tuberculosis and Lung Disease*. 2013 May 1;17(5):573-82.
21. Dara M, Acosta CD, Melchers NV, Al-Darraj HA, Chorgoliani D, Reyes H, Centis R, Sotgiu G, D'Ambrosio L, Chadha SS, Migliori GB. Tuberculosis control in prisons: current situation and research gaps. *International Journal of Infectious Diseases*. 2015 Mar 1;32:111-7.