

Evaluation of a Local Level Tuberculosis Detection and Control Program

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Abstract

Objectives: To examine family practitioner familiarity with diagnosis, treatment, management of tuberculosis (TB), and determine their awareness of Central District Health Department (CDHD) TB clinic, and their perceptions about the clinic.

Methods: An evaluative survey of the existing TB control practices was administered to family practice physicians in Ada, Boise, Elmore, and Valley Counties. A total of 64 (41.6%) self-administered surveys were returned. Responses were entered into an Excel database. Simple statistics were used to analyze results.

Results: The majority of respondents reported being satisfied with the TB Clinic services provided at CDHD. Physicians reported that they perceived their primary role to be diagnosis, and CDHD's primary role to be treatment and management. Provider responses highlight a lack of familiarity regarding the treatment of both latent and active TB. Results also show that the CDHD TB clinic is not being fully utilized by practitioners in the health district's four county area.

Conclusion: The survey identified current gaps in physician awareness of both patient treatment and management, and TB Clinic services provided at CDHD. Efforts to better educate physicians regarding the treatment of TB and the services offered at CDHD may assist in improving the current system of care.

Introduction

Tuberculosis (TB) is a significant worldwide disease and is the world's greatest infectious killer of women of reproductive age and the leading cause of death among people with HIV/AIDS.¹ Research from the World Health Organization (WHO) revealed that, in 2008, there were an estimated 9.4 million new cases of TB globally. Of these, an estimated 1.4 million new cases were reported among HIV-positive patients. Over 90% of the HIV positive cases were reported from Africa and Southeast Asia. In 2008, an estimated 1.3 million deaths were contributed to TB globally.²

Pulmonary TB in humans is caused by exposure to the bacterium *Mycobacterium tuberculosis* and is spread person-to-person through droplets released by coughing or sneezing. TB infection can be either active or latent. Individuals infected with active TB who are potentially contagious typically demonstrate symptoms such as a persistent cough that lasts three weeks or longer, pain in the chest, coughing up blood or sputum, weakness or fatigue, weight loss, inappetance, chills, fever, and night sweats. Individuals with latent TB possess no signs or symptoms and are not contagious, yet are still at risk for developing active TB at some point in their life if prophylactic treatment is not completed.³

Early diagnosis and management of active TB remains the most effective strategy for public health control of this disease. The symptoms of TB often imitate other diseases, such as pneumonia, lung abscesses, tumors, and fungal infections. In order to properly diagnose TB, physicians must rely on physical signs and symptoms, an individual's history of exposure to TB, and x-rays that may reveal evidence of TB infection. The appearance of lesions or cavities in the lungs may indicate current or past active TB disease. A positive diagnosis can be attained through TB bacteria grown in cultures of sputum or other specimens.⁴ Tuberculin skin testing or an interferon gamma release assay is used to diagnose LTBI. A physician makes the LTBI diagnosis and treatment plan.³

One strategy utilized by WHO in the treatment of active TB is Directly Observed Therapy Short-course (DOTS). The DOTS program involves a nurse or surrogate who delivers the medication and supervises patients taking all the doses of their anti-TB drugs

on a regular basis, rather than relying on the patients to manage their own medication schedule. The patients may choose either to come to a health facility, or to be visited at another location, such as their home.

Client compliance is especially important when treating TB for a couple reasons. First, it is a difficult disease to cure and the bacteria are adept at becoming resistant to antibiotics if a patient does not take their medication at regular intervals. Failure to adhere to TB treatment plans results in resurgence of resistant strains, making it even more challenging to cure.⁵ Second, a comparison of self-treatment versus the DOTS strategy has revealed that a greater number of treatments are completed successfully when under the supervision of an observer. The DOTS method provides a way to ensure patient compliance with a lengthy and clinically necessary treatment schedule.

The ever-increasing rates of multi-drug resistant (MDR) TB and extensively drug resistant (XDR) TB have heightened providers' concern about this disease. In 2007, there was an estimated 0.5 million cases of MDR-TB worldwide.² MDR-TB develops due to improper or incomplete treatment or when inadequate dosing regimens of the anti-TB medications are prescribed. This results in a strain of TB that is very resistant to first-line drugs. XDR-TB also originates from inadequate TB control and the subsequent development of drug-resistant strains and is associated with high mortality rates, particularly in HIV-infected patients.⁶

WHO developed a plan to reduce the TB burden by the year 2015. This approach is known as the Stop TB Strategy. CDHD has adopted some of the goals identified in the strategy as their own and is in part, reflected in this research.⁷ The six major components or goals of the strategy are: (i) pursue high-quality DOTS expansion and enhancement; (ii) address TB/HIV, MDR-TB, and the needs of poor and vulnerable populations; (iii) contribute to health system strengthening based on primary health care; (iv) engage all care providers; (v) empower people with TB, and communities through partnership; and (vi) enable and promote research.² This study focused on identifying weaknesses in the primary health care system and ways to engage health care providers in TB diagnosis, treatment, and management.

Central District Health Department's TB Program has two major components: case investigations and TB clinical services. Case investigations that occur when an

active case is reported to CDHD are carried out by infectious disease epidemiologists and involve interviewing the infected person to determine the source of his or her infection. Epidemiologists also try to identify close contacts of the ill person who would benefit from TB testing. Contacts are skin-tested for TB and, if positive, are referred to their primary care physician or to CDHD's TB Clinic for follow-up. If referred to CDHD's TB clinic, the TB physician rules out active TB and may prescribe a preventive course of treatment, often with the antibiotic isoniazid (INH). Preventive antibiotic treatment generally lasts for nine months. A clinic nurse routinely follows patients through the course of their treatment. If gaps in knowledge or service among the health care community and CDHD's TB clinic can be identified and remedied, the clinic will produce results synonymous with that of WHO's Stop TB Strategy.

Methods

In July 2010, an evaluative survey of screening and treatment practices for tuberculosis (TB) among health care providers was administered in Health District 4. Health District 4 includes Ada, Boise, Elmore, and Valley Counties. The population of this area is roughly 380,000, with the majority living in the urban core of Ada County, and less than 10% living in rural and frontier areas of Boise, Elmore, and Valley Counties. This survey was designed to evaluate the population of family practitioners in the health district. The intent was to analyze TB focused practice patterns and awareness regarding the CDHD TB clinic in order to determine what, if any, gaps exist in TB familiarity, detection, and control services in Health District 4. Physician demographic information was also obtained.

Study Population and Method of Survey Distribution

Surveys were mailed to 154 family practice physicians who are members of the Idaho Medical Association (IMA) and practice in Ada, Boise, Elmore, and Valley Counties. Providers were asked to return the surveys via mail in a self-addressed stamped envelope. Two mailings were sent out, one month apart, to the same population in order to facilitate an increase in response rate.

Survey Design

The survey consisted of 19 questions regarding TB familiarity, practice patterns, and awareness of the CDHD TB Control program. The survey was constructed by CDHD

staff and subjected to two rounds of critical peer review before distribution (Appendix A).

Data Analysis

Self reported data from returned surveys were entered into an Excel database for analysis. Data entry was confirmed by a second party to guarantee quality of the dataset. Cumulative percentages were calculated for each categorical response.

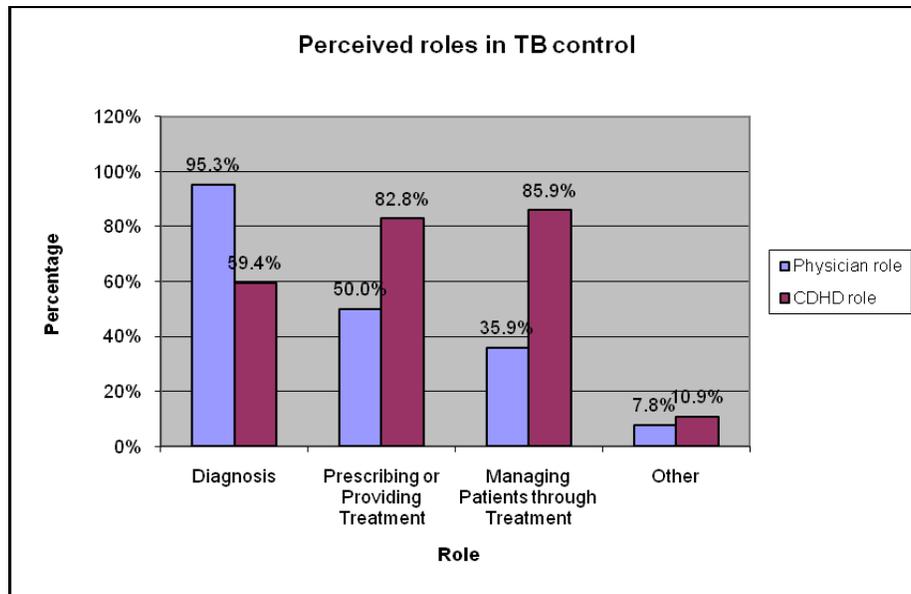
Results

A total of 64 of the 154 surveys were returned, for an overall response rate of 41.6%. Physicians were asked to identify the type of organization they represented. More than half (54.7%) were currently employed by a private practice with less than 10 providers, 9.4% were employed a private practice with 10 or more providers, 26.6% said they were a provider in a large group, and 7.8% said they belonged to a Federally Qualified Health Center (FQHC). Over half of respondents (67.2%), reported that they were currently accepting Medicaid patients. A third (31.3%) were not accepting Medicaid and 1.5% did not provide a response. More than half (54.7%), had been practicing for more than 10 years, 15.6% had been practicing for 6-10 years, and 10.9% and been practice for 0-5 years. Nearly a fifth (18.8%) of participants did not report their years in practice. Just 45.3% of respondents reported receiving Health Alert Network Messages from CDHD, which is the primary method CDHD uses to communicate timely and important medical information to providers.

When asked whether physicians had referred a patient to the Central District Health Department (CDHD) TB clinic in the past 24 months, 21.8% of respondents reported that they had. If participants responded that they had utilized the clinic, they were then asked to rate their satisfaction with the service. Of those that had existing experience with the clinic, 78.6% said they were satisfied, 7.1% said they were unsure, and 14.3% did not respond. No physicians indicated that they were unsatisfied with the service provided by the clinic.

Physicians were asked to identify their perceived role(s) in TB detection and control. Results showed that 95.3% of respondents felt they played a role in diagnosis, 50.0% felt they were needed to prescribe or provide treatment, 35.9% thought they

played a role in managing patients through treatment, and 7.8% felt they played other roles. When asked about their perception of CDHD's role(s) in TB detection and control, 59.4% of practitioners chose diagnosis, 82.8% chose prescribing or providing treatment, 85.9% chose managing patients through treatment, and 7.8% felt they served other roles (Fig. 1).



When asked if their clinic has the ability to provide TB services to individuals who do not have the ability to pay, 62.5% of physicians reported that they do not possess this ability. When questioned about their ability to provide TB services at no cost, 10.9% stated that they could provide a clinic visit, 7.8% could supply free medications from Idaho Department of Health and Welfare, and 4.7% could conduct hepatotoxicity monitoring. However, the majority (84.4%) of participants did not provide a response.

When asked about their familiarity regarding diagnosis and treatment of latent tuberculosis infection (LTBI), the majority (43.8%) of physicians reported being familiar or very familiar with the diagnosis of this disease. On the other hand, only 28.1% of physicians reported being familiar or very familiar with the treatment of LTBI (Fig. 2). When questioned about their familiarity of the diagnosis and treatment of active TB, 50.0% reported being familiar or very familiar with the diagnosis, while only 26.6% reported being familiar or very familiar with the treatment of active TB (Fig. 3).

When asked to rate their familiarity regarding treatment guidelines for multi-drug resistant (MDR) and extensively drug resistant (XDR) TB, 71.9% of physicians reported being either somewhat familiar or not familiar with MDR TB treatment guidelines and 89.1% reported being somewhat familiar or not familiar with XDR treatment guidelines.

Discussion

Prior to this evaluative study, little was known about the level of awareness that general practitioners have about TB or how they perceive their role and the role of CDHD in TB control. Our survey reveals that there is a need to ensure that general practitioners are kept current regarding testing, diagnoses, and treatment guidelines used in TB detection and control.

The findings also suggest that physicians believe that TB control is a community effort. The majority of physicians reported that diagnosis of TB was their responsibility. While just half, felt responsible for prescribing or providing treatment. The majority of providers reported that patient management through the course of treatment was the role of CDHD. Although not directly reported, it is assumed that the oversight and long-term management necessary to ensure completion of prophylaxis or treatment for TB creates a cost burden to the patient and physician that can be minimized by utilizing TB prevention and control services provided by CDHD. If these services were not available it is possible that less oversight would occur in the management of TB infection and the risk for active disease would increase over time as fewer people would be appropriately treated for LTBI and active disease.

A few limitations of this study warrant discussion. The majority of general practitioners had not reported referring any LTBI patients to CDHD in the past two years. A possible limitation of this survey could be that information regarding number of TB cases reported to each physician was not obtained. It is difficult to know if poor utilization of the CDHD TB clinic was due to a low number of patients being tested, few cases of symptomatic diseases or due to a lack of knowledge regarding the clinic. Idaho is considered a low-incidence state for TB infection and; therefore, poor utilization may be the direct result of low numbers.

Conclusion

There is an identified need for increasing physician awareness on the current TB testing, diagnosis, and treatment guidelines. Furthermore, it is evident that the CDHD TB clinic is an underutilized resource in the community. Idaho historically has a low-incidence of TB disease, which may be why demand for clinic services is low. However, it is also possible that local health care providers are not aware of the TB clinic services provided at CDHD. An increase in effort by CDHD to advertise its services to local general practitioners would likely benefit the community as whole by ensuring proper management of persons with TB infection. Both local physicians and public health officials recognize that TB control and prevention are the responsibility of the entire health care community. Raising awareness about current TB recommendations and local services will likely have a positive effect on the management of TB patients and the incidence of active disease.

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Appendix A

Table 1: Survey Questions

Questions	Response Options
1. Have you provided treatment and monitoring of latent tuberculosis infection (LTBI) in the past 24 months?	1. Yes, No
1a. If no, would you provide treatment and monitoring of LTBI for your patients if the need arose?	1a. Yes, No
2. Have you, in the past 24 months, referred a patient to the CDHD TB Clinic?	2. Yes, No
2a. If yes, were you satisfied with the service that was provided to your patient(s)?	2a. Yes, No
3. Have you provided any of the following TB services at <u>no cost</u> to the patient in the past 24 months? (<i>Select all that apply</i>)	3. Clinic Visits, Hepatotoxicity monitoring, Free medications supplied by Idaho Department of Health and Welfare
4. Does your clinic have the ability to provide TB clinical services (e.g., clinic visits, hepatotoxicity monitoring and treatment) to individuals who do not have an ability to pay (i.e., no insurance or cash)?	4. Yes, No
5. Do you or your clinic have the resources to manage active cases of TB? If no, please go to <i>Question 7</i> .	5. Yes, No
6. Do you have the capacity to provide directly observed therapy (DOT) to your patients diagnosed with active TB disease	6. Yes, No

for 6 months or longer? This would initially occur daily and then twice weekly until treatment is completed.	
7. Please rate your familiarity regarding current <u>treatment</u> guidelines for LTBI.	7. Not familiar, Somewhat familiar, Familiar, Very Familiar
8. Please rate your familiarity regarding the <u>diagnosis</u> of LTBI.	8. Not familiar, Somewhat familiar, Familiar, Very Familiar
9. Please rate your familiarity regarding the <u>diagnosis</u> of active TB disease.	9. Not familiar, Somewhat familiar, Familiar, Very Familiar
10. Please rate your knowledge regarding current <u>treatment</u> guidelines for active TB disease.	10. Not familiar, Somewhat familiar, Familiar, Very Familiar
11. Please rate your knowledge regarding the current <u>treatment</u> guidelines for multi-drug resistant (MDR) TB.	11. Not familiar, Somewhat familiar, Familiar, Very Familiar
12. Please rate your knowledge regarding the current <u>treatment</u> guidelines for extensively drug resistant (XDR) TB.	12. Not familiar, Somewhat familiar, Familiar, Very Familiar
13. Please identify your perceived role in TB detection and control (<i>Select all that apply</i>).	13. Diagnosis, Prescribing or providing treatment, Managing patients through treatment (e.g., regular follow-up for at least 6 months to monitor such things at hepatotoxicity), Other
14. Please rate your perception of Central District Health Department's role in TB detection and control (<i>Select all that apply</i>).	14. Diagnosis, Prescribing or providing treatment, Managing patients through treatment (e.g., regular follow-up for at least 6 months to monitor such things at hepatotoxicity), Other
15. Please identify which type of	15. Private practice (small clinic with < 10

organization you represent:	providers), Private practice (large clinic with ≥ 10 providers), Provider in a large group (e.g., St. Luke's Family Health, Saltzer, etc.), FQHC
16. Is your clinic currently accepting Medicaid clients?	16. Yes, No
17. Please identify how long you have been in practice.	17. 0-5 years, 6-10 years, 10 or more years
18. How could we improve TB detection and control services in our community (<i>Select all that apply</i>)?	18. Advertise our services to health care providers, Enhance our services in some way (please specify), Other (please specify)
19. Do you receive public health message from the Idaho Health Alert Network?	19. Yes, No