



ABSTRACT

Tuberculosis has re-emerged as an infectious threatening disease. Some challenges encountered with tuberculosis are predominantly due to the lack of understanding of the disease, the rapid mutating properties of the TB microorganism, and to the lack of standardized TB screening. While great progress was made in the early 1900's towards the development of the tuberculin skin test (TST) and successful development of an effective vaccine; the problem with standardizing accepted screening practices remain. **PURPOSE:** The purpose of this descriptive, cross-sectional study was to identify current TB screening practice preferences and commonalities among health care practitioners (HCPs) and to evaluate the length of time that takes HCPs to provide medical clearance to patients who tested positive for TB using a TST for screening. **METHODS:** There were 210 participants identified as HCPs actively involved in TB screening practices. They completed a sixteen questions questionnaire. **RESULTS:** Physicians were significantly more actively involved in TB screening than non-physician providers, (OR: 3.696 7 CI 1.047-13.047, p = 0.03). Non-physician providers were significantly more likely to use the two-step tuberculin skin test (TST) (OR: 3.57; CI: 1.35-9.38; p = 0.007) and single blood assay (OR: 2.86; CI: 1.80-7.48; p = 0.028) than physicians. **CONCLUSIONS:** The findings suggest that although much research has been done on TB screening, with the advent of numerous blood assays single TB screening test, most HCPs have been extremely cautious to adopt these new practices, and continue to rely on proven TB screening tests and practice methods that have been established for many decades. However, it does not indicate that there is a commonly accepted TB screening practice among practicing HCPs. On the contrary, the study supports the variation of TB screening styles currently in use.

BACKGROUND

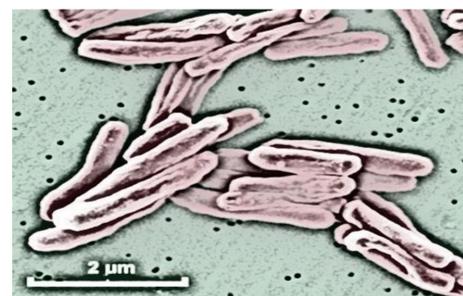
- ❖ New escalating trends of confirmed TB cases have resulted in TB claiming over 9 million lives each year (Weir and Fisman, 2003; Zhao, Mazlagic, Flynn, Hernandez, and Abbott, 2009).
- ❖ There are reports which state that roughly one-third of the world's population is infected with TB.
- ❖ Some challenges encountered with TB are lack of understanding of the disease, mutating properties of the microorganism, and the lack of standardized TB screening (Kim et al., 2010; Moller et al., 2010; Weir & Fisman, 2003).
- ❖ The understanding of how some of these concepts affect TB screening is further complicated by emergence of new diagnostic tests (Zhao, Mazlagic, Flynn, Hernandez, & Abbott, 2009).

PURPOSE

- ❖ The purpose of this descriptive, cross-sectional study was to identify current TB screening practice preferences and commonalities among health care practitioners (HCPs), and to evaluate the length takes HCPs to provide medical clearance to patients who tested positive for TB using a TST for screening.

METHODS

- ❖ The participants were healthcare practitioners' (HCPs) involved in TB screening.
- ❖ Recruitment was done through email, postal mail, and professional organizations' web pages and participants were asked to complete a 16-item survey utilizing SurveyMonkey™.
- ❖ A 16-item questionnaire was developed using questions adapted from another survey (Tapke, 2011). In addition, original questions were developed for this study. The questionnaire was tested among suitable healthcare practicing providers. These answers were not included in the study.
- ❖ This study reviewed some of the perceived HCPs concerns with TB screening tests, and practices, and factors that influenced HCP's ability to provide medical clearance to patients who tested positive for TB using a TST for screening (Alexander, Miller, & Gilligan, 2011).
- ❖ The IBM SPSS Statistics Premium Grad Pack (20, student version) was used for statistical analysis.
- ❖ To test that there was no difference in the preferred TB screening test methods and the providers' professional degree, the data was cross-tabulated and the Chi-Square test was performed.
- ❖ OR's were used as a measure of association between variables; CI's were calculated to determine whether or not the association was statistically significant; the statistical significance was set at p < .05.



Mycobacterium Germ

RESULTS

- ❖ Physicians (85%) were significantly more actively involved in TB screening than non-physician providers (60.5%), (OR: 3.696 CI 1.047-13.047, p = 0.03).
- ❖ Non-physician providers were significantly more likely to use the two-step tuberculin skin test (TST) (OR: 3.57; CI: 1.35-9.38; p = 0.007) and single blood assay (OR: 2.86; CI: 1.80-7.48; p = 0.028) than physicians.
- ❖ The single TST was the most widely employed (60%), followed by the two-step-TST (37%), single blood assay (21%), screening chest radiograph (39%), and annual chest radiographs (16%).
- ❖ The medical clearance of first-time-positive TB TST tests by provider's preference revealed that chest radiograph was the screening test method of choice (60 -56%) followed by the single blood assay (35-20%).

Percentage of Screening Tests Used for TB by Professional Degree (N = 210)

Degree	Tuberculin Skin Test (TST)		Blood Assay	Chest Radiographs	
	Single Step	Two Step		Screening	Annual
Physician (MD/DO)	45	30	25	30	10
Physician Assistant	40	10	10	29	17
Nurse Practitioner	50	38	25	38	13
Registered Nurse	48	48	20	30	7
††Other	17	17	17	22	11

Note. The number of responses was based on a percentage of the 210 participants per professional degrees who answered "Yes" under the corresponding screening test methods. There were 20 Physicians, 102 Physician Assistants, 8 Nurse Practitioners, 60 Registered Nurses, 1 Respiratory Therapist, and 27 in the "other" category. †Respiratory Therapy's participation was limited to only one respondent. ‡ This category encompasses other represented occupational specialties overseeing TB screening practice in the health care setting.

DISCUSSION

- ❖ Our findings revealed that differences exist among HCPs' reported confidence levels and knowledge on TB tests used.
- ❖ HCPs have continued to adopt a broad range of screening tests and practice methods for the initial and confirmatory TB screening process of individuals.
- ❖ There was not a single TB screening test or method capable of meeting all HCPs screening needs.
- ❖ TB screening tests used and practices employed were out of the HCPs' selection control, and was overwhelmingly imposed by their employers.
- ❖ Chest radiographs remain a valuable tool as part of the confirmatory process of active TB, attributed to the diagnostic obstacles posed by the latent tuberculosis.
- ❖ The research questions aimed at assessing whether a difference existed in the length of time required by HCPs to medically screen patients with a positive TST based on providers' training, experience, or professional degree were not answered.

CONCLUSIONS

- ❖ This study provided a succinct overview of current HCP's TB screening practice preferences, some of the commonalities screening practices, and observed distinctions.
- ❖ HCPs do not rely on a single diagnostic screening test or screening practice methods.
- ❖ There was a great variability on which test or screening methods were utilized for their primary and confirmatory TB screening practice among HCPs.
- ❖ HCPs have been extremely cautious to adopt new screening practices, and have continued to rely on proven TB screening tests and practice methods that have been established for many decades.

REFERENCES

- Alexander, T. S., Miller, M. B., & Gilligan, P. (2011). Should interferon gamma release assays become the standard method for screening patients for Mycobacterium tuberculosis Infections in the United States? *Journal of Clinical Microbiology*, 49(6), 2086-2092. doi: 10.1128/JCM.00589-11
- Kim, E. Y., Nahid, P., Hopewell, P. C., & Kato-Maeda, M. (2010). Novel Hot Spot of IS6110 insertion in Mycobacterium tuberculosis. *Journal of Clinical Microbiology*, 48(4), 1422-1424.
- Moller, M., de Wit, E., & Hoal, E. G. (2010). Past, present, and future directions in human genetic susceptibility to tuberculosis. *FEMS Immunology and Medical Microbiology*, 58(1), 3-26.
- Tapke, Jeanne-Marie. (2011). Influence of leader-follower coaching relationships of transformational transactional leaders on perceived work-related outcomes (Doctoral dissertation, College of Nursing, University of Cincinnati, 2011). *Dissertation Abstracts International*, 1678(1), 1-178.
- Weir, E., & Fisman, D. N. (2003). Latent tuberculosis: revised treatment guidelines. *Canadian Medical Association Journal*, 169(9), 937-938.
- Zhao, X. R., Mazlagic, D., Flynn, E. A., Hernandez, H., & Abbott, C. L. (2009). Is the QuantiFERON-TB Blood Assay a good replacement for the tuberculin skin test in tuberculosis screening? A pilot study at Berkshire Medical Center. *American Journal of Clinical Pathology*, 132(5), 678-686.