**ABSTRACT**

This dissertation will explore key characteristics of and interventions around the problem of tuberculosis (TB) in mobile populations. *Mycobacterium tuberculosis*, the causative agent of TB, is responsible for approximately two million deaths per year globally, making it the second deadliest infectious killer. Annually, there are about 10,000 active TB cases in the United States, with an additional 12 million people in the US living with TB infection (LTBI). Of those with LTBI, 63% were born outside of the US. US policy prioritizes two strategies for TB elimination: targeted treatment of people with TB infection, a form of primary and secondary prevention, and improved interventions among those most at risk for TB (e.g. migrant workers). The non-profit organization Migrant Clinicians Network (MCN) has developed a unique care coordination service, called bridge case management (BCM). MCN serves mobile populations at higher risk for disease and disparities, including TB and LTBI.

This dissertation will address three questions pertinent to understanding and forming US policy on TB elimination: 1) The magnitude of transnational TB, i.e. people that pass through more than one country while suffering from active TB, 2) Characteristics associated with changes in LTBI treatment completion rates among patients who are mobile during treatment, and 3) The cost-effectiveness of BCM for LTBI treatment. This will be a three-paper dissertation with data derived from MCN’s case management database and financial records, an extensive search of relevant literature and databases, and several semi-structured interviews. Economic theory and the Gelberg-Andersen Behavioral Model for Vulnerable Populations form the theoretical frameworks. Econometric and qualitative methods will be used to address the chosen research questions.

The first paper will focus on a difficult-to-treat group sharing the characteristics of being foreign-born and leaving the US (voluntarily or not) before TB treatment completion, i.e. transnational TB. To the author’s knowledge, this is the first attempt to calculate the size of this population, possibly because there are several at-risk subgroups involved, e.g., tourists, international students, and those working in the US without authorization, which are tracked to differing degrees. This paper will also explore the extent to which MCN is addressing transnational TB via BCM. The findings will provide public health officials and policymakers with new insight into TB prevention and control efforts, a particular health disparity, and potential cost savings.

The second paper will examine characteristics associated with changes in LTBI treatment completion rates among those receiving BCM (2005-2012). Data are available for 153 patients.
with LTBI managed by MCN, of which 47% completed treatment, 28% are unknown or censored, and 25% did not complete treatment. The Gelberg-Andersen Behavioral Model for Vulnerable Populations will be adapted to the specific vulnerabilities and medical condition involved. The adapted model will then facilitate the selection of predisposing, enabling, and need variables and the formulations of hypotheses. Hypotheses will be tested using logistic regression and survival analyses; adjustments for censoring will be made. Findings from this paper will aid providers seeking to improve the coordination of care and treatment outcomes.

The third paper will address the question of whether or not BCM is cost-effective for the same population examined in the second paper. Several interventions for LTBI have been found to be cost-effective in low-TB incidence areas, but it remains unknown whether an extra case management service, linking disparate health jurisdictions, is also cost-effective. Microeconomic theory will be the framework driving this analysis. The primary outcomes of interest will be TB cases averted and Quality Adjusted Life Years (QALYs) saved. The cost per TB case averted and the cost per QALY saved will then be calculated, thus providing decision makers additional data to consider in allocating public health and health infrastructure funding.

Public health officials and policy makers addressing immigration and health reform will benefit from the findings of this study by gaining insights into the magnitude of a concern that overlays these policy areas and ways to address it effectively. The analyses will also inform the appropriations process for public health infrastructure—critically important in the light of the prospect of sequestration cuts being made permanent.

Health- and public health services research journals, such as American Journal of Public Health, Health Affairs, and American Journal of Respiratory and Critical Care Medicine, will be the target journals for publication of all three papers.

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