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Short Communication

The impact of a public health department's expansion from a one-step to a two-step refugee screening process on the detection and initiation of treatment of latent tuberculosis

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ABSTRACT

Objectives: To determine, subsequent to the expansion of a county health department's refugee screening process from a one-step to a two-step process, the change in early loss to follow-up and time to initiation of treatment of new refugees with latent tuberculosis infection (LTBI).

Study design: Quasi-experimental, quantitative.

Methods: Review of patient medical records.

Results: Among 384 refugees who met the case definition of LTBI without prior tuberculosis (TB) classification, the number of cases lost to early follow-up fell from 12.5% to 0% after expansion to a two-step screening process. The average interval between in-country arrival and initiation of LTBI treatment was shortened by 41.4%.

Discussion: The addition of a second step to the refugee screening process was correlated with significant improvements in the county's success in tracking and treating cases of LTBI in refugees. Given the disproportionate importance of foreign-born cases of LTBI to the incidence of TB disease in low-incidence countries, these improvements could have a substantial impact on overall TB control, and the process described could serve as a model for other local health department refugee screening programs.

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All state departments of health in the United States have guidelines for providing new refugee health screenings. Most states devolve this function to county public health departments which either perform the screenings themselves or else enter into agreements with private healthcare facilities to do so. In all cases, although local protocols are generally based on the Centers for Disease Control and Prevention (CDC) Guidelines for the U.S. Domestic Medical Examination for

Newly Arriving Refugees, there are no federally mandated requirements for screening or follow-up, and each health department develops its own procedures based on local constraints and opportunities.¹

Tuberculosis (TB) is one of the critical diseases the refugee health screening is meant to detect. Refugees and other foreign-born individuals from countries with high TB incidence (≥ 20 cases per 100,000 population) constitute the

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majority of all new TB cases that occur in low-incidence countries, and more than 90% of these new TB cases are believed to be due to reactivation of a latent tuberculosis infection (LTBI).^{2,3} One emblematic measure of a refugee health program's effectiveness is its ability to detect LTBI among new refugees and to get the treatment process reliably underway.

Marion County Public Health Department, located in Indianapolis, Indiana, USA, handles the majority of refugees arriving in Indiana. The numbers processed in 2015 and 2016 were 1555 and 1700, respectively, with most coming from Asia, Africa, and the Middle East.

Refugees to Marion County are welcomed by one of the two resettlement agencies whose obligations include arrangement of each client's first health department visit, usually within the first 30 days of arrival in the United States. [Table 1](#) lists the activities and tests performed at this nurse-led clinic.

Before October 2016, this was the only visit made by refugees to the county health department. After their initial assessment, refugees were assigned to primary care providers (PCPs) in the community, and those PCPs were responsible for reviewing laboratory results, ordering x-rays of TB suspects, and diagnosing and treating medical problems, including LTBI. Class B-TB refugees, whose predeparture medical screening ruled out infectious TB but suggested possible latent or inactive TB, were seen by a TB physician usually within weeks of their U.S. arrival. Otherwise, the average wait time for a refugee to see a PCP after arrival was four months. The

result was that the health department often had difficulty tracking refugees with problems of potential public health importance, of which TB was the most common, and many unclassified but TB test-positive patients were lost to follow-up.

To improve this situation, the health department decided to institute a second, physician-led visit one month after the initial screening. The purpose of this second visit was to ensure consistent follow-up on tests the health department had ordered, continue vaccinations, more rapidly discover cases of potential public health importance, reduce the time patients waited to be seen by a physician, minimize the delay in diagnosing LTBI, shorten the interval between diagnosis of LTBI and prescription of treatment, and bring to zero the number of LTBI patients who were being lost to follow-up even before treatment could be ordered. This study focused on the last four of these goals.

The second health department refugee visit, whose elements are listed in [Table 1](#), was started in mid-October 2016. A refugee with LTBI was defined as one who had a positive purified protein derivative test (PPD) or interferon-gamma release assay (IGRA) but no clinical, microbiological, radiological, or historical evidence of active TB.

During the weeks between the refugee's first and second visits, the department's refugee clinic physician reviewed all laboratory results and ordered two-view chest x-rays for any non-class B-TB patient with a positive PPD or IGRA. X-ray results were received within hours of their taking. Class B-TB refugees were referred as soon as feasible to a TB physician,

Table 1 – Elements of initial and follow-up refugee screening clinics.

Initial screening clinic Payment: RMA grant, Medicaid	Interim period RMA grant, Medicaid	Follow-up clinic Medicaid
<ul style="list-style-type: none"> • Registration • Medical/social history • Vital signs • Immunizations • Emotional distress screen (Refugee Health Screener-15) • Point-of-care testing for: <ul style="list-style-type: none"> ◦ Urinalysis ◦ HIV (oral swab) ◦ Pregnancy • Blood draw for: <ul style="list-style-type: none"> ◦ Hepatitis A, B, C ◦ CMP ◦ CBC ◦ Lead level (<16 years) ◦ Syphilis serology (if no negative screen documented predeparture) • Gonorrhea and chlamydia urine screen • PPD (<2 years) or IGRA (≥2 years) • Class B-TB and all refugees with symptoms consistent with possible TB: 3 sputum containers given for acid-fast bacilli search, polymerase chain reaction if high index of suspicion of active disease, and culture • 2 containers given for stool ova and parasite tests 	<ul style="list-style-type: none"> • Chest x-ray if indicated • Review of all results 	<ul style="list-style-type: none"> • Comprehensive physical examination • Explanation of physical and laboratory findings • Discussion of proposed management of problems • Further laboratory testing if indicated • Prescriptions, including LTBI treatment, if needed • Hard copy medical report provided for transmission to the refugee's eventual PCP
<p>RMA, Refugee Medical Assistance; CMP, complete metabolic panel; CBC, complete blood count; PCP, primary care provider; LTBI, latent tuberculosis infection; PPD, purified protein derivative; IGRA, interferon-gamma release assay.</p>		

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