



# Informing Local Health Department and Health Center Partnerships: Creative Collaborations Strengthen Tuberculosis Care in Three Communities

October 2019



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This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number 6 UD30A22892-08-01, National Organizations for State and Local Officials. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

# Informing Local Health Department and Health Center Partnerships: Creative Collaborations Strengthen Tuberculosis Care in Three Communities

**T**uberculosis (TB) remains a leading cause of preventable infectious disease deaths worldwide, and in the United States, eliminating TB is a national public health goal. In 2018, a total of 9,029 new cases of TB were reported and the TB burden is higher among persons experiencing homelessness, persons with exposure to the correctional system, persons living with HIV, and foreign-born populations.<sup>1</sup> While the number of reported TB cases in the U.S. has been decreasing, the pace of decline has been slowing and our current strategies must evolve to achieve TB elimination in this century.

An unwavering approach built on a foundation of partnerships is needed to combat TB. And recent estimates indicate that around 80% of U.S. TB cases are a result of reactivation of latent disease, presenting a huge opportunity to act.<sup>2</sup> Local health departments are on the front lines and work closely with health centers in their jurisdictions to meet the needs of their communities.

NACCHO, through support from the Health Resources and Services Administration's Bureau of Primary Health Care, explored how community health centers and local health departments are collaborating to address TB. NACCHO conducted key informant interviews with health department and health center representatives to inform case studies highlighting innovative examples of health centers and health departments coordinating TB services and programs to improve screening, testing, treatment, and care.

<sup>1</sup> Talwar, A., Tsang, C. A., Price, S. F., et al. (2019). Tuberculosis – United States, 2018., *Morbidity and Mortality Weekly Report (MMWR)*. 68:257–262. Retrieved Aug. 23, 2019 from: <http://dx.doi.org/10.15585/mmwr.mm6811a2>.

<sup>2</sup> Yuen, C. M., Kammerer, J. S., Marks, K., Navin, T.R., France, A.M. (2016). Recent Transmission of Tuberculosis - United States, 2011-2014. *PLoS One*, 11.

# Orleans County and Oak Orchard Health: Creating a Partnership to Meet a Migrant Worker Community Where It Lives

## Background

Orleans County, NY experiences about one or two cases of active tuberculosis (TB) and around ten cases of latent TB infection (LTBI) per year, with a higher burden of these cases occurring in foreign-born communities. While the cities of Buffalo and Rochester are both within an hour of Orleans, the county itself is considered rural and has very low access to care, with an estimated one provider per every 14,000 individuals. Orleans County has developed a number of innovative strategic partnerships to overcome this challenge and ensure their community has access to TB screening and care. For example, in 2016, Orleans County embarked upon a shared service agreement with Monroe County Health Department to connect TB patients with pulmonology care, including telehealth-pulmonology visits for individuals who lack access to transportation.



Oak Orchard Health is a federal qualified health center (FQHC) based in Monroe County, NY, serving over 22,000 patients across six clinic locations in New York, including two in Orleans County. The Oak Orchard clinics in Orleans County operate as major primary care providers in the county, particularly for a large number of migrant

workers participating in the H2A program, a temporary agricultural worker visa category, and offer a broad range of services including primary care, pediatric care, behavioral health, and WIC.<sup>1</sup>

## Overview of Partnership

Orleans County Health Department and Oak Orchard Health provide an example of a longstanding, formalized collaboration. They have partnered for over 20 years on TB prevention and treatment in the community, particularly among migrant populations. This partnership is supported by grant funding from the New York State Department of Health, which enables Orleans County Health Department and Oak Orchard to provide a robust suite of services among residents in migrant camps, including education, immunizations, testing, and screening.

**“The success has been the help that we give for the guys; the positive relationship that we have with our farmers and the farming community; and seeing how grateful they are because we’re there to assist them and to keep them healthy.” — Oak Orchard**

There are over 60 migrant farmworker camps in Orleans County. During the growing season, Oak Orchard Health and Orleans County Health Department visit these camps twice a week to provide health services to the workers. Before Orleans County Health Department goes onsite to a migrant camp to provide services, Oak Orchard Health visits each camp in advance to conduct outreach, refer patients, and schedule appointments for the day of the health department visit to the camp. They also work with growers to ensure the workers’ schedules allow them to receive care in the evening. On the day-of the joint visit, the partners arrive onsite in the evenings after the workers have returned from the farm. Oak Orchard Health provides translation while the Orleans County Health Department conducts TB testing. In addition to TB screening, the health department provides rapid HIV testing, immunizations, and blood pressure screening, follow-up for referrals to their diabetes prevention program, and health education on topics such as skin cancer prevention and oral hygiene. The health department handles treatment for individuals who test positive for active TB or LTBI and administers directly observed therapy to individuals in the camps, usually in the evenings when they get back from the field.



To track and monitor services, Oak Orchard Health and Orleans County Health Department rely upon Oak Orchard's electronic medical records (EMR) system as well as a state vaccination registry. This prevents duplication and encourages continuity of care when workers return the next season.

## Successes

This partnership has been successful in enabling public health to build and maintain relationships with the farming community. These relationships have been critical as they laid the foundation for other successful outcomes, establishing Orleans County Health Department and Oak Orchard as credible and trustworthy within the migrant community. Leveraging these relationships with growers and farm workers, Orleans County and Oak Orchard Health have been able to prevent and treat active TB as well as screen for and treat LTBI in a population that is unlikely to visit the clinic location and can be difficult to reach. The ability to provide services to the community was noted by both partners as a success and highlight of the partnership. Another success and strength of the program is the transparency and ease of data sharing for patients. All of the screening and treatment information is tracked for each individual in the Oak Orchard electronic medical record system. The partners also use the New York State immunization registry for relevant non-TB services provided, allowing them to prevent service duplication. Prior to visiting a camp, Oak Orchard provides Orleans County Health Department with a patient list so the health department can develop a file for each patient to track and monitor services provided.

## Challenges

There are also a number of challenges for this partnership work, although, likely because the longstanding relationship has resulted in good communication and coordination, the challenges tend to be related to circumstances tied to service delivery rather than the partnership itself. For example, the migrant workers have schedules that can make it difficult for them to seek care. To address this challenge, Oak Orchard and Orleans County Health Department provide services onsite at the camps in the evening to work around the workers' schedule. Even with this accommodation, however, time with each patient is often limited, given their personal needs and competing priorities.



Based on the success of the program, ideally the partners would like to broaden its reach, but the current partnership is limited to Spanish-speaking migrant camps, primarily in Orleans County. Expansion of this program to additional farms is limited by language barriers, jurisdictional lines, and funding constraints. Specifically, the Orleans County Health Department also serves Genesee County, but Oak Orchard does not currently have a clinic in this area. The partners have gone out on a limited basis to a few camps in Genesee County; however, it takes more time and effort to develop relationships there since the clinic does not have the same foundation and relationships that can be leveraged. Additionally, while both partners are interested

in expanding their efforts to Genesee County, funding has not increased to support the growth. Further, Orleans County Health Department expressed that starting this work in any new camps (regardless of the county) can be difficult, requiring significant time up front to build relationships and establish trust with the community.

**“I think every year we try to figure out what didn’t go that well the prior year, and we are always trying to work better not just for us, but for them. And we’re trying to be as accommodating as we can for them, for the workers we serve. I think that having good communication with the Department of Health is what has made it so far and every year it just gets better, seeing how hard everybody is working together.” — Oak Orchard**

## **Implications for HC-LHD Partnerships**

The partnership between Orleans County Health Department and Oak Orchard Health provides a number of meaningful takeaways that can inform other health department and community health center activities.

First, having clear, defined roles and a common goal ensure that activities go smoothly. In this case, the shared grant from the New York State Health Department provides this structure to the partnership. Both partners communicate a clear understanding of each organization’s role in the relationship, meaning they are able to effectively direct their time and resources to those activities. They also understand and value the role of their partner organization and indicate that this helps them work seamlessly to advance their similar organizational missions.

Both partners also express a shared commitment for working with these communities; reducing barriers to care; and providing culturally competent, responsive, and accessible services with the goal of preventing and treating TB. This has helped to drive the work forward. The partners experienced many challenges and barriers which hindered their ability to provide services to the migrant worker community; however, their passion motivated both organizations to be flexible and creative in developing strategies to overcome these barriers and ensure their services were accessible.





Services must be highly tailored to the population's needs to encourage uptake and be accepted by the target community. Oak Orchard Health and Orleans County Health Department ensure that services are offered at locations convenient to their target population, during times when those individuals would be available, and in a language that is appropriate.

Developing relationships with community groups and relevant gatekeepers is an involved process, but is worth the time and effort. The relationships established with the farm workers, as well as the farm owners and growers, have been critical to ensure that workers are both willing and able to accept services from Orleans County Health Department and Oak Orchard Health. Their target population is one that may be reticent to seek care and fearful or distrustful of intuitions, but in several camps across the county, this project has allowed the partners to build trust within the migrant worker community. This trust is critical to getting community members screened and treated for TB.

<sup>1</sup> Oak Orchard Health. About Oak Orchard Health webpage. Retrieved August 23, 2019, from <https://www.oakorchardhealth.org/about>



## At a Glance

- **The context** – Orleans County, NY experiences about one or two cases of active tuberculosis (TB) and around ten cases of latent TB infection (LTBI) per year, with a higher burden of these cases occurring in foreign-born communities. There are over 60 migrant camps in the county.
- **The program** – Oak Orchard Health and Orleans County Health Department have partnered and established a unique health service delivery by providing health services to migrant camps, including TB/LTBI screening and treatment, in a culturally competent manner.
- **The partnership** – The partners visit migrant camps together twice a week in the evenings. Before their visits, Oak Orchard Health staff make connections with growers in the community to ensure services are accessible. They also visit camps in advance to schedule appointments and provide translation services. Orleans Health Department nursing staff provides health services such as TB screening.
- **The successes** – This partnership ensured access to health services like immunizations, health education, testing and screening for a population that otherwise has barriers to care.
- **Lessons for future partnership** – Common goals, clear roles and responsibilities, and a shared commitment for the work are keys to ensuring partnership activities run smoothly. Community partnerships can help increase access to hard-to-reach populations.



**“I think the primary success of this partnership has been identifying and serving the population of the migrant laborers. We probably would never see them at any of our stand-alone clinics.” — Genesee County**

# Houston Health Department and Hope Clinic: Partnering to Provide a Shorter Treatment for Latent TB

## Background

Texas is considered a high-incidence state for tuberculosis (TB) and for over 20 years, it has been one of four states that collectively contribute to over half of the TB cases in the United States.<sup>1</sup> The city of Houston is often one of the top three reporting areas in the state, with the majority of cases among foreign-born persons, as well as in persons experiencing homelessness, and medically underserved populations. There has also been an increase in TB and diabetes comorbidity and the available data is growing, because latent TB infection (LTBI) is reportable throughout the state. Despite an overall downward trend in the prevalence of TB, given this context, the City of Houston Health Department works to screen, identify, and treat individuals with TB and partners with TB providers to ensure optimal TB care.



Hope Clinic, also known as The Asian American Health Coalition (AAHC) of the Greater Houston Area, is a federally qualified health center (FQHC) based in Houston. Hope Clinic serves around 21,000 patients per year, with around 70,000 clinic visits across three different sites. The clinic provides services including family practice, OB-GYN, pediatrics, optometry, dental, behavioral health, psychiatry, and some support services. The clinic partners with local refugee resettlement agencies and the patient population served is very diverse, speaking around 30 different languages. The clinic staff speaks the primary 13 languages seen.

Hope Clinic screens patients for TB on a regular basis in family practice and pediatrics based on symptomology and risk factors. This screening in conjunction with partner agencies identified around 450 patients with LTBI in 2017 and 264 in 2018. The decrease was likely related to a general overall decrease in refugee and asylee populations seeking care, which the partners suspect could be tied to fear and confusion about changes to the public charge rule and other impacts of the political climate. Leading up to this project, Hope Clinic had been treating patients with LTBI using the rifampin four-month treatment regimen and the INH 6- or 9-month regimens.

## Overview of the Partnership

Houston Health Department and Hope Clinic's collaboration is an example of a formalized partnership, centered around a service-related arrangement. The two organizations have had an ongoing, good working relationship for years, partnering on services like immunizations, outreach, perinatal hepatitis B follow up, STDs, and mandatory disease reporting. Then, starting in the fall of 2017, they decided to collaborate to identify and treat patients with LTBI using a 3HP Directly Observed Therapy (DOT) program. A 3HP treatment regimen is a shorter course of treatment, making it more convenient for patients and more likely for treatment to be completed. As such, even with the time and resources needed to get a new program off the ground, the potential payoff made the endeavor worthwhile.



The project started with trainings for providers. The health department visited the clinic and provided two or three sessions to family practice and pediatrics providers, who would be doing the prescribing. The clinic then trained medical assistants on the necessary paperwork and administration of the medication to comply with the directly observed therapy requirements. With clear roles for each organization,

the partners began a pilot project with the goal of identifying 20 to 25 patients. The clinic identifies and recruits patients in addition to prescribing and administering the medication using the directly observed therapy protocol.

The health department, through a grant, provides the medications and transportation subsidies for patients, as well as incentives for attending DOT appointments. These roles are outlined in a scope of services agreement (**Appendix A**) which also includes screening criteria for patients to qualify for the 3HP regimen and references to the DOT log used (**Appendix B**) and the DOR order form used by the health department (**Appendix C**). If a patient with symptoms or a positive chest x-ray is identified, they are referred to the city for follow up, sputum testing, treatment of active disease as appropriate, and contact tracing. Because of the health department's grant requirements, there are clear eligibility, tracking, and reporting requirements for both parties, and data is shared through the patient chart and a simple spreadsheet to track completion of the 3HP regimen.

**“It’s become a stronger partnership with the city in general. We know their staff. We see them on a regular basis. I think it benefits the patients when we have a stronger working collaboration with the city. We’ve now started talking about how we can partner with the city for plain film x-rays and other lab items. So it’s expanded our partnership with the city and hopefully if things change for the city in terms of services they can also rely on us in different ways.” — Hope Clinic**

## **Successes**

The major success identified by both partners has been the completion of treatment by patients using the new regimen and leveraging DOT to confirm treatment completion. Specifically, of 19 patients enrolled in the pilot project, 11 patients have completed treatment with 3 still under directly observed therapy (of the remaining 5, 3 moved out of the area or were lost to follow up and 2 were switched to a different regimen due to reactions to/side effects of the medication). While a small number, this demonstrates scalability and the utilization of shorter course therapy and DOT to efficiently meet the needs of patients supports improved rates of treatment completion and allowed the partners to address the burden of LTBI in the community. In several

cases, patients who had completed treatment shared their experiences with a family member who then decided to undergo treatment as well. This positive patient experience helped to facilitate program recruitment and bolster awareness in target communities.

There have also been successes related to the program implementation. Specifically, the program required a lot of effort on the front end in two main areas: process and education. Creating and implementing systems and processes for screening, prescribing, and medication administration takes time, but establishing these systems and processes leads to the program running smoothly and being sustainable as it becomes part of the clinic's regular practice.

With this in mind, the clinic created a checklist to support an efficient system that could be maintained by staff. For an example of the 3HP LTBI DOT Check List used at the clinic, see **Appendix D**. The second area that required additional work was the educational activities for the providers to build comfort with the regimen. Providers needed to understand the safety and efficacy of the 3HP regimen, as well as the improved outcomes in terms of treatment completion to treat LTBI. Ensuring providers endorsed the program was critical to enrolling patients who qualified for it. The clinical staff development has been valuable across the board—the Hope Clinic medical assistants were even recognized with an award by the City of Houston.

**“We’ve really seen our medical assistants step up and they’ve enjoyed learning something new and taking on a large role in this kind of project. . . It’s really created some staff training and opportunities for staff in terms of retention.” — Hope Clinic**

The project also continues to grow. Future goals for the project include collaborating to extend the 3HP DOT program at three other clinic locations that are part of the Asian American Health Coalition. They also hope to expand and provide more targeted screening for patients within the risk categories and implement video DOT for a handful of patients.

## **Challenges**

The program experienced several challenges, but in many cases, the partners were able to be flexible and implement solutions to address them. For example, initial recruitment was a challenge because patients were required to come to the clinic for DOT, rather than doing

at-home medication administration. The health department's ability to provide both transportation subsidies and incentives for attending the appointments turned out to be key for patient engagement. In addition, originally the program was launched during core business hours, but the clinic eventually trained additional staff to expand project hours to evenings and weekends, making it easier and more likely for patients to attend. That said, the clinic patient population is one that is frequently mobile, so continuing treatment or ensuring connections to a new program for patients who move and leave the service area is an ongoing challenge.

Patient misinformation, particularly for those who received the Bacillus Calmette–Guérin (BCG) vaccine in their country of origin, was also a challenge, as providers needed to take extra time for patient education to clarify and explain why treatment is needed. Given the need for increased patient education at the clinic, staff are trained to provide comprehensive patient education and there are more available materials.

Billing for the health center, particularly through the lens of sustainability, is also a challenge. Currently, provider visits are billed as they normally would be, but since DOT visits are done through the nurse/lab schedule, that staff time is not billable. For the small pilot, the amount is fairly negligible, and administered similar to other incidental services (e.g., insulin teaching for diabetic patient), but if patient volume increased, it could be a barrier.



## Implications for HC-LHD Partnerships

There are several key lessons learned that can inform other health center and local health department partnerships. First, both organizations emphasized the value of having an ongoing, positive relationship based on frequent communication. This project was

launched in the context of the two organizations having a history of routine communication for consultations and reporting that was then strengthened as the partners worked more collaboratively on the pilot. Meeting in person, maintaining consistent communication, and knowing who to reach out to and how to get in touch are critical to an effective partnership. Ensuring that leadership within both organizations supports project goals and objectives, and establishes a relationship is critical when pursuing new opportunities or starting new projects. Administrative challenges that may delay establishing or starting a new project should be considered when developing partnerships and working strategically to identify the best points of contact can help ameliorate these challenges.

Within the context of an ongoing relationship, there were other elements that were valuable to this partnership, as well. Having a grant in place to support the work was important, for funding and logistical support as well as establishing shared measures and goals. These shared measures and goals helped to establish a systematic approach on how to collaborate; in this case it started with a pilot project, which made it easy to “sell” to both administrations.

**“Every local health TB program should look to these community centers and federally qualified health centers to partner. You see something like LTBI, a lot of doctors are not very comfortable even treating it, but they could be trained, we can build capacity in those health centers. The local health department can provide technical assistance and support, and have these people receive treatment in the community and then I think that it will be a win-win situation.” — Houston Health Department**

When considering a project or partnership like this, one takeaway is that the beginning stages may require additional work, staff time, and effort, but once the training is done and the process is in place, a new treatment regimen or program can become seamlessly added as part of regular service. Also, in this project, being able to provide incentives and support transportation was key for patient engagement, although the ability to do so is highly dependent on grant funding.

Addressing LTBI will be critical going forward to achieving TB elimination in the U.S., and partnerships like this one can advance that work. The health department noted that community health centers are key partners for reaching underserved populations, and in this



instance the Houston Health Department was able to offer logistical support to advance the goal. Both partners agreed that in the future, better treatment regimens will be crucial, so working to implement shorter treatments and getting provider buy-in to treat patients with LTBI is vital. Public education and increased advocacy will be necessary to communicate that this disease is still a threat to our communities.



<sup>1</sup> Talwar, A., Tsang, C. A., Price, S. F., et al. (2019). Tuberculosis – United States, 2018., *Morbidity and Mortality Weekly Report (MMWR)*. 68:257–262. Retrieved Aug. 23, 2019 from <http://dx.doi.org/10.15585/mmwr.mm6811a2>.

<sup>2</sup> Houston Health Department. Tuberculosis (TB) Control Webpage. Retrieved Aug. 23 from <https://www.houstontx.gov/health/tb/index.html>.

**“I think I underestimated the impact of the project. It was really something that we could all gather around. It’s definitely something we were doing already, but there’s been a really positive experience that we didn’t anticipate. The city of Houston invited us to an awards ceremony, and they recognized our medical assistants which — to have an outside agency do that — has been really special for our staff. Going into it, we were a little nervous and a little wary about doing it, but it was more positive than we anticipated.” — Hope Clinic**



## At a Glance

- **The context** – A state with a high incidence of TB looking to address the burden of LTBI.
- **The program** – Collaborating to identify and treat patients with LTBI using a 3HP regimen.
- **The partnership** – Supported by a grant from CDC and with clearly defined roles, the clinic identifies and recruits patients, prescribes, and observes medication administration. The health department provides the medications, transportation subsidies, and incentives for patients, and education for providers, as well as ad-hoc follow-up that is outside the scope of the clinic’s capabilities.
- **The successes** – Getting patients to complete a shorter treatment regimen, including reaching patient populations that otherwise the health department might not engage, staff development and education, and patient education.
- **Lessons for future partnership** – Relationship building is key for project success—meeting face-to-face, regularly being in touch, and knowing who to contact. Having clear shared measures and goals is valuable and a project may require more effort on the front end, but it will pay off in terms of sustainability and buy-in.



**“It has actually been the building of that process where they continue to provide the medical management, but they know that they can rely on us to provide the medication and many of the ancillary services that they may need related to the patient, being able to get to the clinic and providing incentives for the patients to keep their appointments.” — Houston Health Department**

## Denver Public Health and The Federico Peña Southwest Family Health Center: Leveraging Primary Care to Identify and Treat Latent TB

### Background

In 2018, Denver County reported 14 cases of active tuberculosis (TB) and 72% of all TB patients in the state were in the Denver-Metro area.<sup>1</sup> Denver Public Health (DPH) also cares for a large number of people at risk for TB, based on where they have lived previously or were born. Anecdotally, DPH notes that the individuals they see with TB are older than they used to see ten years ago, and nearly 1 in 5 have diabetes. The county has also seen a decrease in the number of TB patients that have HIV infection over the past 15-20 years.

“We share patients and an electronic health record. We are uniquely tied to them through a Denver Health Medical Center and I think has been really helpful... We can pull data and share that with primary care providers and say, ‘these are our patients and they are not being screened.’ And if we don’t do anything differently there will be a number of people that go on to develop active TB who don’t have to.” — Denver Public Health



“Southwest Peña was able to make it their own. We gave them some advice but, it really is their own protocol that they implemented. That can also lend itself to a more sustainable model because it’s not a sort of pushing an agenda, it’s their agenda.” — Denver Public Health



Denver Health is an integrated health system that provides comprehensive care to 33% of Denver’s population. The Federico Peña Southwest Family Health Center (Southwest Peña), is a federally qualified health center (FQHC) within Denver Health, located in Southwest Denver. Southwest Peña primarily sees patients of Hispanic, Vietnamese, and white ethnicities, those with Medicaid and Medicare insurance coverage, and indigent populations. The clinic offers access to a wide variety of primary care services and medical providers who specialize in internal medicine, family medicine, pediatrics, urgent care, behavioral health, and sports medicine. It is also the clinic site for the University of Colorado’s Internal Medicine-Pediatrics (Med-Peds) residency program. A total of 16 residents have their continuity clinic at the Southwest Peña clinic and provide primary care to children and adults under the supervision of internal medicine, pediatric, and Med-Peds trained providers.

## Overview of Partnership

Denver Health and Southwest Peña's collaboration to expand latent TB infection (LTBI) screening and treatment is an example of an informal partnership with a program led by the clinic receiving as-needed support from the TB program. In 2018, Denver Public Health conducted an analysis of TB risk among Denver Health patients and identified that an estimated 35,000 people in the Denver Health system were at risk for TB. Further, only about one third of at-risk patients were being screened. Based on this data, the Med-Peds residency program at Southwest Pena developed an aim statement and identified LTBI screening as the focus of their 2017-2018 Quality Improvement project. As part of the project, the health department visited the clinic and hosted a lunch lecture about the burden of TB and the importance of screening for LTBI, which garnered excitement among the residents. Clinic staff and residents took it upon themselves to develop a protocol, including a clinic-specific practice advisory and flow sheet, to identify patients at risk for TB and offer them screening and treatment within a primary care setting.



This collaboration between a TB program and health center represents a broad partnership to address the reservoir of latent TB infection (LTBI). The TB program prioritizes treating individuals with a high risk of progression, including newly arrived refugees who have had an abnormal x-ray overseas identified as part of their immigration process, contacts of active TB cases, and individuals with abnormal x-rays. The clinic is leading the charge on advancing screening and treatment for LTBI in the primary care setting and has championed a program to incorporate it into its regular processes (see **Appendix E** for the LTBI Tip Sheet Work Flow for the clinic). As these partners operate in

overlapping but independently vital lanes, they do have opportunities to consult, and leverage one another's strengths. For example, Denver Public Health can serve as subject matter experts for providers if there are questions about treating LTBI and best practices in TB and LTBI screening and treatment. Cases of active TB identified at the clinic are sent to public health for treatment and the TB program is also available for referrals of patients who do not have health insurance and cannot afford LTBI treatment. Southwest Peña has also begun looking to Denver Public Health for support related to outreach for individuals who are lost to follow-up, recognizing the process for this is well-established in public health. As a primary care clinic, Southwest Peña provides comprehensive services and providers and staff at Southwest Peña have broader expertise to manage patients with a variety of health issues. There is also an advantage to being able to screen and treat patients within their medical home. Throughout this process, data sharing is seamless, as both partners are part of the same healthcare system, Denver Health, and services are tracked in their electronic medical record system, EPIC.

**“I think that when we have reached out with questions or needs, in general, they have been very responsive. That has led us to want to work with them more. I think that is always key to any good relationship, communication.” — Southwest Pena**

## Successes

The ability to share expertise and best practices was recognized by both partners as one example of success resulting from this collaboration. Southwest Peña noted that having access to a group of TB experts to consult with at Denver Public Health has been one strength of the partnership. Denver Public Health expressed that the success lies in the providers at Southwest Peña who were responsive to the findings on the number of patients at-risk and importance of LTBI screening and were motivated to address TB and LTBI in their clinic. There is also a strengthened workforce through the Med-Peds residents, who gain a greater understanding of the importance of disease prevention and recognize that a small intervention to improve screening in a high risk population can decrease the prevalence of TB and improve health outcomes and in turn decrease healthcare costs.

“We feel more empowered to do this because we are collaborating with public health and this is one of their big initiatives.” — Southwest Peña

The success seen in Southwest Peña supports the expansion of this work to other clinics in Denver. Leveraging the EPIC EMR system, Denver is developing plans to implement a practice advisory in EPIC to alert providers to screen for LTBI. Additionally, recognizing the importance of sharing best practices, Denver Public Health plans to update a master LTBI clinical care guideline based on the protocol developed in Southwest Peña, which will support the expansion of these services in other clinics throughout Denver Health and possibly beyond. This partnership will also be leveraged for future work, informing a Tuberculosis Epidemiologic Studies Consortium (TBESC) grant to do both a qualitative and quantitative mixed-methods analysis of barriers to TB testing and care in primary care clinics.

Overall, these process and partnership level successes have led to measurable increases in screening and treatment of LTBI, as reported by the Southwest Peña clinic. Over 6,500 patients were identified as having high risk for LTBI (28% of the patients seen) and of those identified with LTBI (+IGRA, negative chest x-ray), 64% initiated treatment. More details on the results of the screening and treatment in the clinic can be seen in the cascade of care poster (**Appendix F**). The collaboration represents opportunities to expand TB screening throughout primary care and to increase the number of individuals treated for LTBI, ideally in their medical home as part of ongoing care.

## Challenges

Both partners indicated that, while there are challenges to the broader effort of screening for and treating LTBI, there are no significant challenges to the partnership. Staff turnover and a loss of institutional knowledge presents a challenge for both organizations, though this has not had an impact on the screening protocol. This suggests that ensuring a formal protocol is in place may support sustainability of clinical practices and organizational capacity to screen for LTBI, despite the challenge of staff changes.

The other significant challenge noted by Southwest Peña is high rates of patients lost to follow-up during LTBI care. Clinic staff

“Because of our overlap in goals, I feel strongly that there should be more collaboration between public health and primary care. I would also like to see more public health education included in medical school and residency training programs. This project was a great opportunity for our two centers to work together on a shared goal—disease prevention.” — Southwest Peña

hypothesize that this could be due to the latency of the disease and lack of physical symptoms. Follow-up for these patients is time consuming and staffing limitations compound this challenge. This challenge may represent an opportunity for further engagement with public health to improve patient outreach and off-site follow-up.

### Implications for HC-LHD Partnerships

This case study highlights several significant lessons for future partnerships. First, a willingness to collaborate is critical to the success of the partnership. Southwest Peña noted that, while they could have chosen to pursue this work without engaging Denver Public Health, this work opened the lines of communication and they were grateful to have the TB Program as a resource.



This partnership also illustrates that lending support while allowing partners to take ownership over the process may help ensure buy-in within the clinic and that the protocol developed is sustainable.



Denver Public Health provided Southwest Peña with TB-specific subject matter expertise, including up-to-date information on best practices and evidence-based recommendations. This helped to inform the development of Southwest Peña’s screening and treatment protocol while allowing the flexibility for the clinic to drive the process and ensure it would work in their specific setting.

At the core of this successful partnership is a shared goal of identifying high-risk patients with LTBI who would benefit from treatment, ultimately preventing the spread of TB in Denver. This shared goal drove champions within the clinic to develop and implement new processes while consulting with public health and bolstered Denver Public Health staff’s support of increased screening and treatment for LTBI within primary care and willingness to provide consultative expertise. The added benefit of training Med-Peds residents not only strengthens the workforce, but affords the residents to employ these skills throughout their career.

<sup>1</sup> Colorado Department of Public Health & Environment. (2019). Tuberculosis in Colorado 2018. Retrieved Aug 23 from: <https://www.colorado.gov/pacific/cdphe/colorado-tb-data>.



## At a Glance

- **The context** – Denver Public Health identified 35,000 patients in the Denver Health system as at-risk for developing TB and one third of these at-risk patients had not been screened for TB.
- **The program** – Denver Public Health informed local clinics, such as Southwest Peña, about this and provided education on the importance of screening for LTBI. In response, Southwest Peña implemented a workflow protocol to increase TB/LTBI screening among patients.
- **The partnership** – Denver Public Health provided data to show the need and consultative support while Southwest Peña developed and implemented the protocol.
- **The successes** – This initiative led to increased communication, access to TB subject matter experts, and screening among at-risk patients.
- **Lessons for future partnership** – This partnership illustrates that lending support while allowing partners to take ownership over the process may help to ensure buy-in and sustainability.

## Partnership Themes and Key Takeaways

Health department and health center collaborations to address TB are varied—they can be funded or unfunded, formal or informal, health center- or health-department led. While each example has unique lessons learned and successes that can serve to inform future similar partnerships, there are also themes that emerged across NACCHO's case studies. One resounding theme across all of the case studies was that from the health department perspective, working with community health centers is a critical way to reach underserved populations. From a program implementation standpoint, having clear, defined roles, measures, standards, and goals is essential for effective coordination and for managing expectations. This looked very different in each circumstance, sometimes driven or informed by a funding structure, sometimes laid out by a partner as they developed a protocol, but it was regularly cited as valuable for maintaining an effective partnership. Closely linked is the need for clear, consistent communication. Again, the frequency and formality varied across examples, but each partner felt it was important to know who the key point of contact was and how to reach them. Finally, it became clear during every key informant interview that the health center and health department representatives are all incredibly passionate about improving the health of the communities they serve. This shared commitment and focus on the human aspect of these programs meant that they were all able to adapt and respond to the challenges that arose in continuing to improve and expand screening, testing, treatment, and care.

## **APPENDIX A**

### **SCOPE OF SERVICES & ROLES**

#### **Hope Clinic will provide the following services:**

1. Screen LTBI patient candidates who meet the following criteria:
  - a. Foreign born patients who arrived at US within the last two years
  - b. Patients who reside within the City of Houston Jurisdiction
  - c. Patients not planning to relocate and can commit to stay in the City of Houston area during their 12-week treatment period
  - d. Patients who are willing and able to come to the Hope Clinic once a week utilizing their own transportation
  - e. Patients with medical high-risk factors that weaken the immune system, such as Diabetes
  - f. Patients in whom TB disease has been ruled out, who have a documented positive skin test or blood test (IGRA) and a normal chest X-ray (CXR)
2. Enroll 20-25 LTBI qualified patients every quarter
3. Provide medical evaluation and case management
4. Provide 3HP (LTBI treatment regimen) through Directly Observed Therapy (DOT)
5. Ensure patients enrolled in the 3HP project sign a consent form or authorization to share information with the Bureau of Tuberculosis and Hansen's Disease
6. Report and communicate to the Bureau whenever a patient misses their DOT appointment, is unable to contact by phone and/or have missed two (2) consecutive appointments
7. Submit all DOT logs to the Bureau monthly (Appendix B)
8. Submit DOT order forms (Redacted version: Appendix C)

#### **The Bureau will provide the following services:**

1. Provide and deliver 3HP medication: Isoniazid, Rifapentine, and Vitamin b
2. Provide training and education as it relates to the implementation of 3HP in the clinic
3. Locate patients who have missed their appointments and/or are non-compliant
4. Provide consultative and technical assistance as needed
5. Provide patient education materials

We hope that this partnership will strengthen our efforts to reduce, prevent and control the spread of TB within the City of Houston Community.



**APPENDIX C**

**PHYSICIANS DOT TREATMENT AND MEDICATION ORDER**

*FOR BUREAU OF TB USE ONLY*  
**Census Tract/Key Map Page**

*FOR BUREAU OF TB USE ONLY*  
**Type of Order\*: (Check One)**  
 INITIAL       CHANGE  
 REOPEN       RESTART  
 RESUME       VACATION

Patient Name: \_\_\_\_\_ DOB: \_\_\_\_\_ Age: \_\_\_\_\_  
PRINT Last First Middle Initial

Address: \_\_\_\_\_ Race: \_\_\_\_\_ Sex: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Work Phone: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

Emergency Contact (Name+Relation) \_\_\_\_\_ Phone: \_\_\_\_\_

Primary TB Diagnosis: **TB-II**

Secondary Diagnosis: \_\_\_\_\_

Clinic or SS #: \_\_\_\_\_ Weight: \_\_\_\_\_ lbs. \_\_\_\_\_ kgs. Date: \_\_\_\_\_

**TREATMENT AND MEDICATION ORDERS**

TBID# \_\_\_\_\_

Regimen # 1	Regimen # 2
INH _____ mg po weekly x 12 weeks under DOPT	
Rifapentine _____ mg po weekly x 12 weeks under DOPT	
Vitamin B6 _____ mg po weekly x 12 weeks under DOPT	
Regimen # 3	Regimen # 4
	<b>In some instances self-meds will</b>
	<b>be left with the patient</b>
	<b>at the discretion of the Bureau</b>
<ul style="list-style-type: none"> <li>Home isolation (including no work, no school, etc.) is generally recommended for patients with <b>positive</b> sputum smears (until 3 consecutive negative sputum smears have been obtained, have completed 10 days of meds, and show signs of clinical improvement).</li> <li>Home isolation for patients with <b>negative</b> smears must complete 5-7 days of meds and show signs of clinical improvement.</li> </ul>	
<p><b>*Type of Order: Initial:</b> 1<sup>st</sup> order for patient. <b>Change:</b> Order has different date, regimen, and/or Provider. <b>Reopen:</b> Less than 1 year since closure. <b>Restart:</b> More than 1 year since closure. <b>Resume:</b> Return from non-TB related hospital admission, without new order (keep previous regimen #). <b>Vacation:</b> Self-meds for patient travel.</p>	

\_\_\_\_\_ Collect Sputum      \_\_\_\_\_ Refer for follow-up to: \_\_\_\_\_  
Name of Physician or Clinic

\_\_\_\_\_ Physician Signature      \_\_\_\_\_ Print Physician Name

Phone: \_\_\_\_\_ Address: \_\_\_\_\_

FAX: \_\_\_\_\_ Clinic/Hospital: \_\_\_\_\_

Date: \_\_\_\_\_ Nurse's Name: \_\_\_\_\_

Bureau of TB Nurse Case Manager: \_\_\_\_\_

Date/Time received in DOT Nursing Office \_\_\_\_\_ By \_\_\_\_\_  
 Date/Time reviewed in DOT Nursing Office \_\_\_\_\_ By \_\_\_\_\_

## APPENDIX D

### 3HP Latent TB DOT Document Check List and Program Instructions

Pt. Name \_\_\_\_\_ DOB \_\_\_\_\_ Acct \_\_\_\_\_

Provider \_\_\_\_\_

Item	Date sent or filed/Initials
<input type="checkbox"/> Tspot or QF gold results	
<input type="checkbox"/> LFT, CBC, HIV results (then LFT and CBC monthly)	
<input type="checkbox"/> Chest Xray results	
<input type="checkbox"/> Medication order form (fax to [X] and keep copy in chart)	
<input type="checkbox"/> Pt. on treatment for prevention (do not exclude from work) letter	
<input type="checkbox"/> TB 3HP Commitment Form	
<input type="checkbox"/> Medical Records release for [City of X] (keep in pt. DOT file and scan to pt. chart)	
<input type="checkbox"/> 1115 waiver intake form	
<input type="checkbox"/> Patient given handout on side effect/day of week schedule (CDC "What you Need to Know About your Medicine..." page)	
<input type="checkbox"/> First month provider visit scheduled for _____	
<input type="checkbox"/> Second month provider visit scheduled for _____	
<input type="checkbox"/> Third month provider visit scheduled for _____	
<input type="checkbox"/> "Treatment completion" letter provided to pt.	

### 3HP Latent TB Program Instructions:

1. Make sure pt. meets **criteria for latent TB 3HP** (+ TB blood test, asymptomatic, negative chest xray, LFT stable/normal, HIV negative), [City X resident]
2. Pt. is able to come to clinic each week for DOT observed medication administration in the lab or receive video 3HP DOT.
3. Pt. will need appt. with a provider visit 1 time each month during treatment for labs (minimum CBC, CMP) and physical exam (3 provider appt. and rest on nurse lab for 3HP DOT). Book appts. at beginning of 3HP for all provider visits and nurse lab DOT visits.
4. **Complete Rx order form** for 3 HP. Most adults (based on weight and max dose) will get: Isoniazid 300mg: 3 tablets once per week, Rifapentine 150mg: 6 tablets once per week, Vitamin B-6 100mg: 1 tablet once a week- all for total of 3 months. See *MMWR for additional guidance*: [https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6048a3.htm?s\\_cid=mm6048a3\\_w](https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6048a3.htm?s_cid=mm6048a3_w)
5. Days are somewhat flexible within one to two days- minimum is 72 hours between doses if pt. misses a dose/day. Consult the City for any questions on schedule changes.
6. **Goal is to finish 12 doses in 12 weeks.**
7. For **side effects, lab abnormalities** during treatment consult: *NTCA Provider Guidance: Using the Isoniazid/Rifapentine Regimen to Treat LTBI* <https://www.tbcontrollers.org/resources/3HP>. You can also call Heartland National TB Center 800-839-5864 or contact [City of X] TB program staff.
8. **Fax** [City of X] Order form, pt. labs, pt. commitment forms and other forms to [X] and **call** [X] to make sure documents received and to find out medication delivery date to HOPE Clinic.

## APPENDIX E

# Latent TB Infection - Tip Sheet: Work Flow for Peña Clinic

### Screen all high-risk patients (> 2 y.o.) with a Quantiferon (QFT), <2 with a TB Skin Test (TST):

- Lived outside US (>2 months)
- From country with high TB incidence (Mexico, Central / South America, most of Asia, Africa etc).
- Close contact with someone with known active TB (Call TB Clinic for guidance)
- Current or planned immunosuppression

### Symptom Screen:

- Persistent cough 2-3 weeks
- Constitutional symptoms: fevers, chills, night sweats, unintentional weight loss, infertility/ UTI etc. no known cause
- If positive symptom screen, refer immediately to Denver Metro TB Clinic, even before QFT.

### If QFT is positive:

- Contact patient and discuss meaning of positive QFT. Do shared decision on treatment.
- Use Online risk calculator <http://www.tstin3d.com>. If risk of active TB >3% by 80 yrs, then offer treatment.
- Obtain CXR, notify patient of results.
- If concern for active TB, should be seen ASAP at Denver Metro TB Clinic– same day and FREE
- Add 'Latent Tuberculosis' or 'Positive Quantiferon' to problem list
- Open and populate the (TB) Tuberculosis – Latent Episode of Care (see page 2)

### If patient desires treatment:

- Treatment Options and Doses See (see clinical care guideline for pediatric dosing):
  - **Rifampin daily for 4 months** (10 mg/kg (max 600mg); **no PAR/NF**
  - **Isoniazid / Rifapentine/Pyridoxine (B6) once weekly for 12 doses** (INH 5 mg/kg max 900 mg /Rifapentine (max 900 mg /B6 100 mg) see CCG for dosing by weight; **may need PAR/NF**
  - **Isoniazid daily for 9 months** (5 mg/kg (max300mg) with optional pyridoxine 25mg; **no PAR/NF**
- Obtain Baseline LFTs if:
  - Rifampin: Patient > 50 yrs old
  - INH along or INH/Rifapentine: Patient > 35 yrs old
  - Alcoholic or viral hepatitis, cirrhosis, HIV infection, hepatotoxic drugs or within 2 months post-partum
- Discuss treatment plan with patient and prescribe first month of medication with zero refills.
- If cost is an issue – **Treatment billed to insurance and/or FREE at Denver Metro TB Clinic** – refer there
- Add Rx regimen and start date under 'Latent Tuberculosis' or 'Positive Quantiferon' on problem list
- Update Tuberculosis –Latent Episode of Care (see page 2)
- Refer patient to Clinical Pharmacist- see process below

### Referrals:

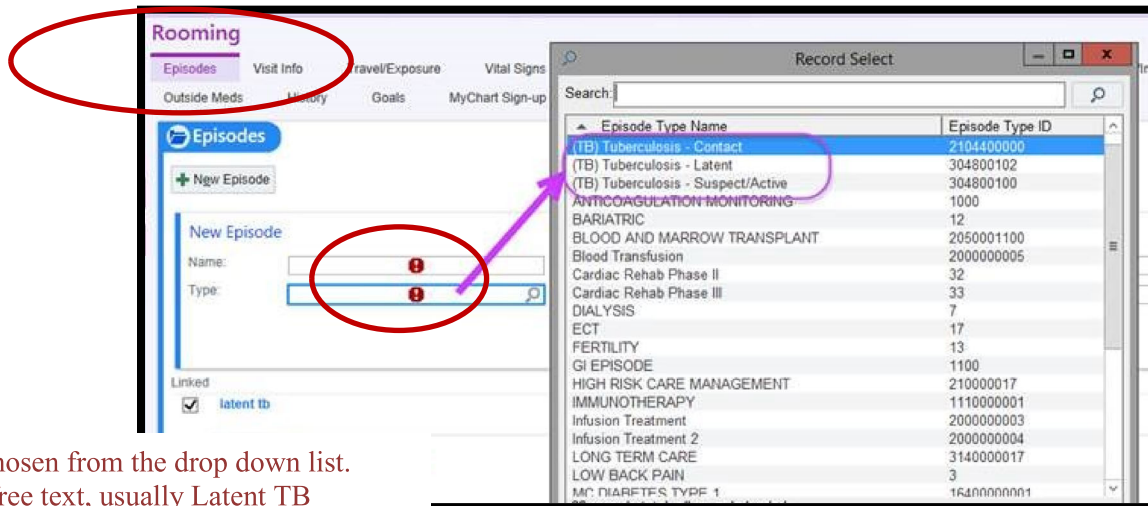
Create a telephone encounter or note to send to Pena Clerk Pod and CC Clinical Pharmacist.

Ask clerk to schedule patient with Clinical Pharmacist within 3-4 weeks for LTBI treatment follow-up.

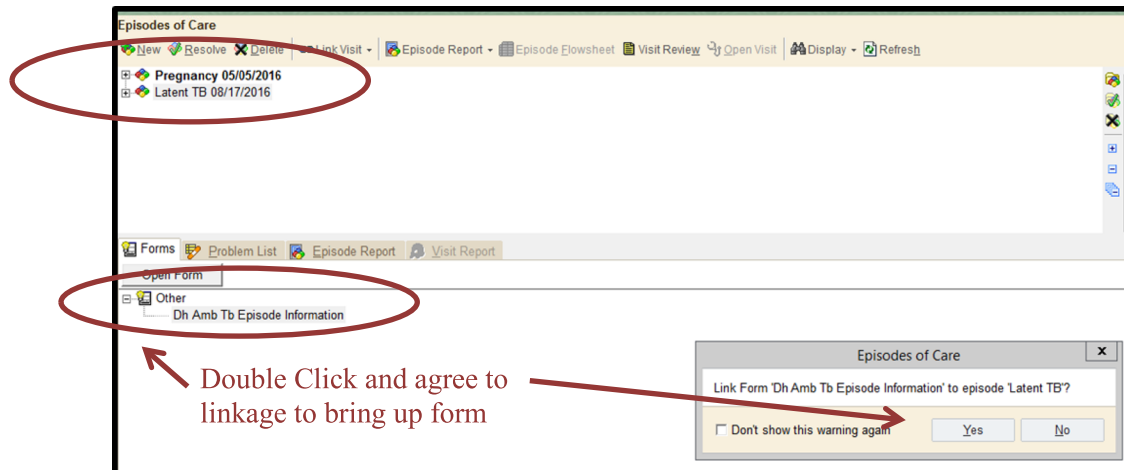
Clinical Pharmacist will provide all additional medication refills and complete episode of care

A Latent TB Episode should be opened for all patients, regardless of whether or not they are treated. The episode allows documentation of whether treatment was offered, accepted, and completed. The Latent TB Episode should be closed and resolved during the initial visit if treatment is not offered or not accepted.

Note – Clinical Pharmacist or RN will close the LTBI Episode of care when treatment is completed or permanently discontinued.



Type is chosen from the drop down list.  
Name is free text, usually Latent TB





**TB Latent Episode Information**

Current Classification:  Class 0  Class 1  Class 2  Class 3  Class 4  Class 5

Latent TB = Class 2

Clinic:  DH Pav H TB  TCHD  MPCN  Eastside Adult  Eastside Peds

Eastside Women's Care  Lowry Fam Med  Le...

Southwest Prim Care  DH Pav G Adult  Di...

Westside Women's Care  Westwood Fam Med  SE

SBHC Kunsmiller  SBHC Lake  SE

SBHC Manual  SBHC Kepner  SE

SBHC F Crittenton  SBHC JFK  SE

Other Clinic:

Treatment

LTBI Treatment offered:  Yes  No

Reason treatment not offered:

No show  Previously treated  Pregnancy

Age  Risk of toxicity (short-term)  Risk of toxicity (long-term)

Medication interaction (short-term)  Medication interaction (long-term)  Receiving treatment elsewhere

Concern for medication non-adherence  Relocating  Death

Other (specify):

Other reason treatment not offered:

Accepted treatment:  Yes  No

Reason for declining treatment (Select all that apply):

Concern for side effects  Breastfeeding  Pregnancy  Transportation difficulties

Relocating  Perceived low risk  Need for regular follow-up  Cost of care

Other patient preference  Other:

Other reason for declining treatment:

Treatment initiated date:

Treatment stop date:

Reason treatment stopped:

Treatment completed  Lost to care/Mc...

Pregnancy  Transferred care  INCL LTBI  Death  Other:

Other reason treatment stopped:

The Clinic where the patient is first started on treatment will be marked as Clinic. If patient decides to change clinics and get refills at another location then new TB Case Manager will change the clinic to their own.

Complete treatment offered and declined or not and why.

Date the first bottle (or packet) of LTBI medication is given to the patient and last dose taken by the patient and why stopped

At the last visit when patient given the last bottle of medication or last packets the Treatment stop date will be the date they should complete those last doses.



# Evaluating the Cascade of Care for Latent Tuberculosis Infection at an Urban Primary Care Clinic

Timothy Newton<sup>1,2</sup>, Amy Beeson<sup>1,2</sup>, Jonathan Schultz<sup>1,2</sup>, Josh Gannon<sup>2</sup>, Kaylynn Aiona<sup>3</sup>, Michelle Haas<sup>3,4</sup>, Anne Frank<sup>1,2,5</sup>, Julie Venci<sup>1,2,5</sup>

1. Departments of Internal Medicine and Pediatrics, University of Colorado School of Medicine
2. Federico F. Peña Southwest Family Health Center, Denver Health
3. Denver Metro Tuberculosis Program, Denver Public Health
4. Division of Infectious Diseases, Department of Medicine, University of Colorado School of Medicine
5. Departments of Internal Medicine and Pediatrics, Denver Health Hospital/Authority, Denver, Colorado, USA.



## I. Background

- Screening and treatment of latent tuberculosis infection (LTBI) is a key strategy for elimination of TB in the US<sup>1</sup>.
- Adherence to LTBI treatment is low at 40-80%<sup>2</sup>.
- Screening and treatment based in primary care clinics may be beneficial for patients and allow for increased access than TB clinics, however the optimal strategy is uncertain in primary care.
- In 2017, there were 84 patients with active tuberculosis reported in Colorado, reflecting a case incidence rate of 1.5 per 100,000.<sup>3</sup>
- From 2016-2018, providers at Denver Health's Federico F. Peña Family Health Center, a Federally Qualified Health Center in Southwest Denver, developed a protocol for clinic-based LTBI screening and treatment.

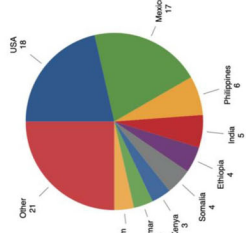


Fig 1: Country of origin for 84 patients in CO with active TB in 2017

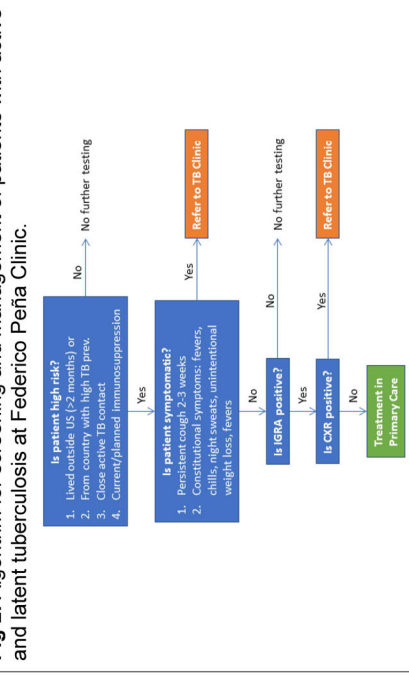
## II. Methods

- Retrospective review of charts from April 11, 2016 to Dec 18, 2018
- Patients were identified as at risk for LTBI based on birth country, defined as a country with active TB incidence of >20 cases per 100,000
- Chart was assessed for presence of interferon-gamma release assay (IGRA)
- Reviewed individual charts of patients with a positive IGRA result for:
  - Chest X-ray for evaluation of active TB
  - Documentation of decision to treat and reasoning
  - Initiation and/or completion of treatment
- Patients were "lost to follow up" (LTFU) if they did not start or discontinued treatment without documentation (such as pregnancy or low risk of progression to active TB)

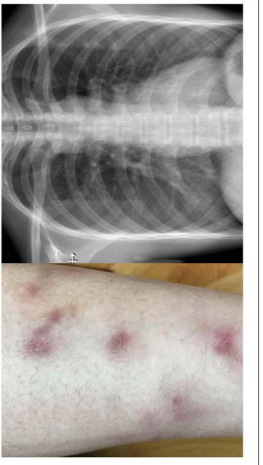
## III. Protocol for LTBI Treatment in Primary Care:

- Provider:
- Recommends treatment if risk for developing active TB is >3% by 80 years old (<http://tstin3d.com>)
  - Orders first month of treatment without refills
  - Orders LFTs if indicated
  - Refers patient to PharmD to be seen within 1 month
- PharmD:
- Sees patient monthly and refills medication
  - Ensures completion of therapy
  - Documents treatment in medical record

## Fig 2: Algorithm for screening and management of patients with active and latent tuberculosis at Federico Peña Clinic.



## Fig 4: A 30 year-old woman presented with erythematous tender nodules on her bilateral lower extremities. Because she was identified as a high risk patient for LTBI, IGRA was ordered and tested positive. A chest x-ray demonstrated faint linear and nodular opacities in her upper lobes. Ultimately her rash was thought to be erythema nodosum triggered by an active tuberculosis infection and she underwent treatment for active TB.



## IV. Results

- 6,566 (28%) of 23,102 total patients had high risk for LTBI
- 1,526 (23%) of high risk patients were screened for TB with IGRA, resulting in 172 positive tests (11%)
- Among patients with +IGRA, 153 (89%) had a chest x-ray:
  - 145 (95%) were negative (showed no evidence of active TB)
  - 6 (4%) were indeterminate (abnormal, requiring further workup)
  - 2 (1%) patients had active TB. For one, IGRA was for evaluation of pneumonia (i.e. not as a screening test), and another had cutaneous/disseminated TB rather than active pulmonary TB
- Of those with LTBI (+IGRA, negative chest x-ray), 52 (36%) did not initiate treatment and 93 (64%) initiated treatment
  - 33 (23%) were lost to follow up
  - 36 (25%) had a clinical decision not to treat
  - 76 (52%) either completed treatment or were continuing treatment.
- Of 21 women had a +IGRA during pregnancy, 1 planned to initiate treatment, 6 remained pregnant, 14 (66%) were lost to follow up.

## V. Conclusions

- Urban primary care clinics may contribute to meaningfully, large-scale LTBI screening and treatment efforts.
- We noted significant gaps in both screening and treatment at the Peña clinic; the largest gap was identifying and testing individuals at high risk
- Improvement efforts should include standardized screening, strengthening of the clinic-wide protocol to increase treatment, and targeted efforts to increase post-partum follow-up for women who were pregnant with +IGRA

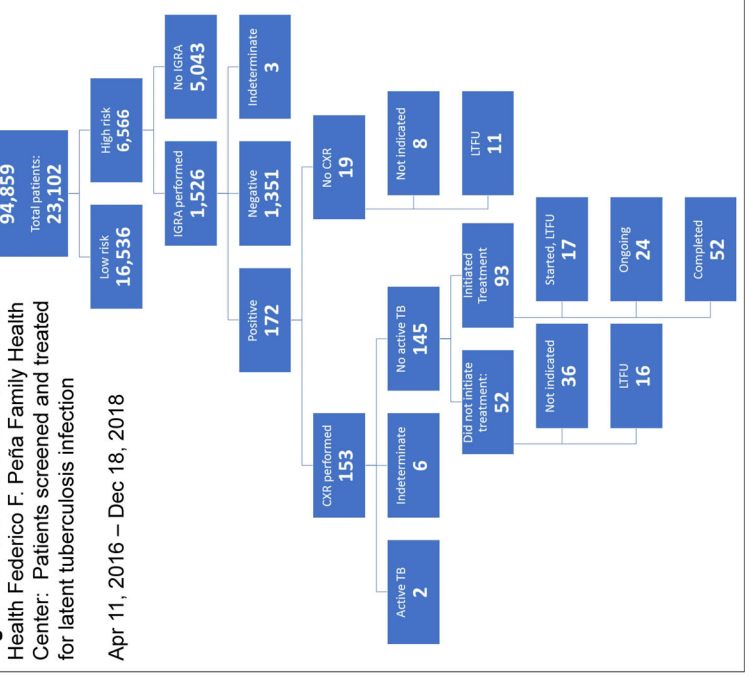
## References:

1. Screening for Latent TB Infection in Adults. USPSTF. JAMA 2016.
2. Adherence to treatment for latent tuberculosis infection: systematic review of studies in the US and Canada. Int J Tuberc Lung Dis. 2008 Nov;12(11):1235-54.
3. Tuberculosis in Colorado 2017. 2018.

## Acknowledgments:

All patients, staff and Med-Peds residents at the Federico F. Peña Southwest Family Health Center

## Fig 3: LTBI cascade of care at Denver Health Federico F. Peña Family Health Center: Patients screened and treated for latent tuberculosis infection



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