Report to the Boards of Health

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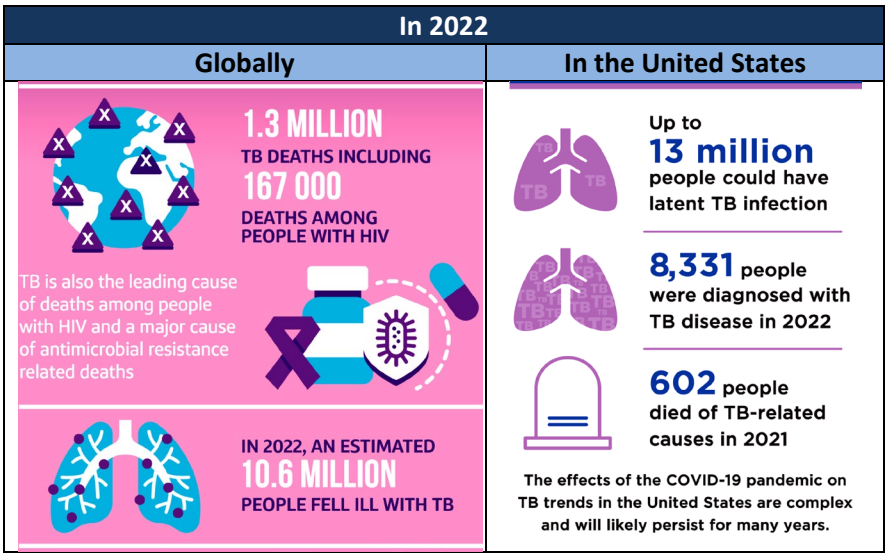
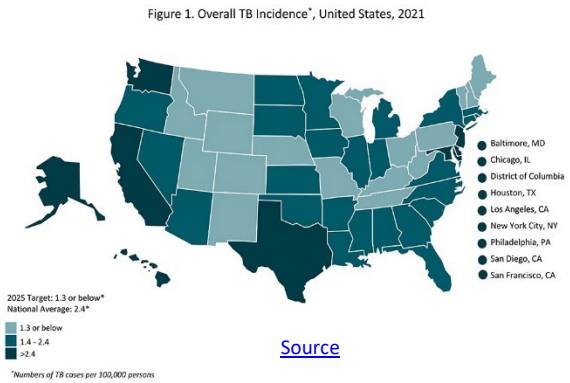
Mid-Michigan District Health Department, Wednesday, September 25, 2024
Central Michigan District Health Department, Wednesday, September 25, 2024
District Health Department 10, September Friday, 27, 2024

TB Program

Tuberculosis (TB) is often thought of as a disease of the past, found only in other countries, or only in urban areas. However, TB disease still causes illness and death around the world.



TB disease rates in Michigan are mid-range compared to other parts of the United States. In 2023, rate of TB disease increase in the US as well as Michigan, felt to be due in part to health care disruptions and other factors caused by the COVID-19 pandemic. As elsewhere in the US, the majority of TB disease case in Michigan are concentrated around more urban areas, as seen in the map of TB cases and rates by county in 2021.



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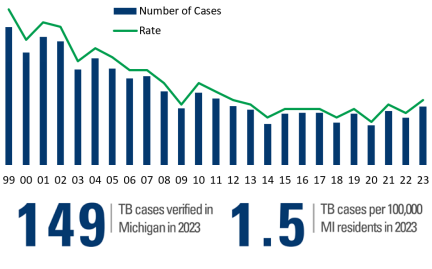
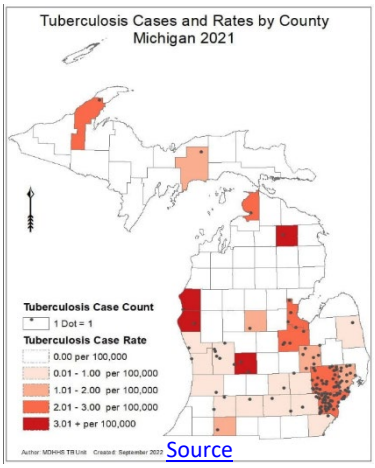


Tuberculosis Disease in Michigan, Source



Source

Most of the time after becoming infected with TB, a person's immune system controls the bacteria and contain it within the body. The bacteria become "latent", and the person is said to have latent TB infection (LTBI). If LTBI is not treated, it can reactivate and become TB disease. Over a lifetime, this will happen to about 5% to 10% of people with LTBI, and the risk is higher in people as they get older, if they have diabetes, a weakened immune system, poor nutrition, or kidney failure.

Mathematical modeling using TB data from 2013–2017 estimated that about 1.3%, or 130,823 people, living in Michigan are infected with latent tuberculosis and about 41% of those with LTBI in Michigan were born in the United States.

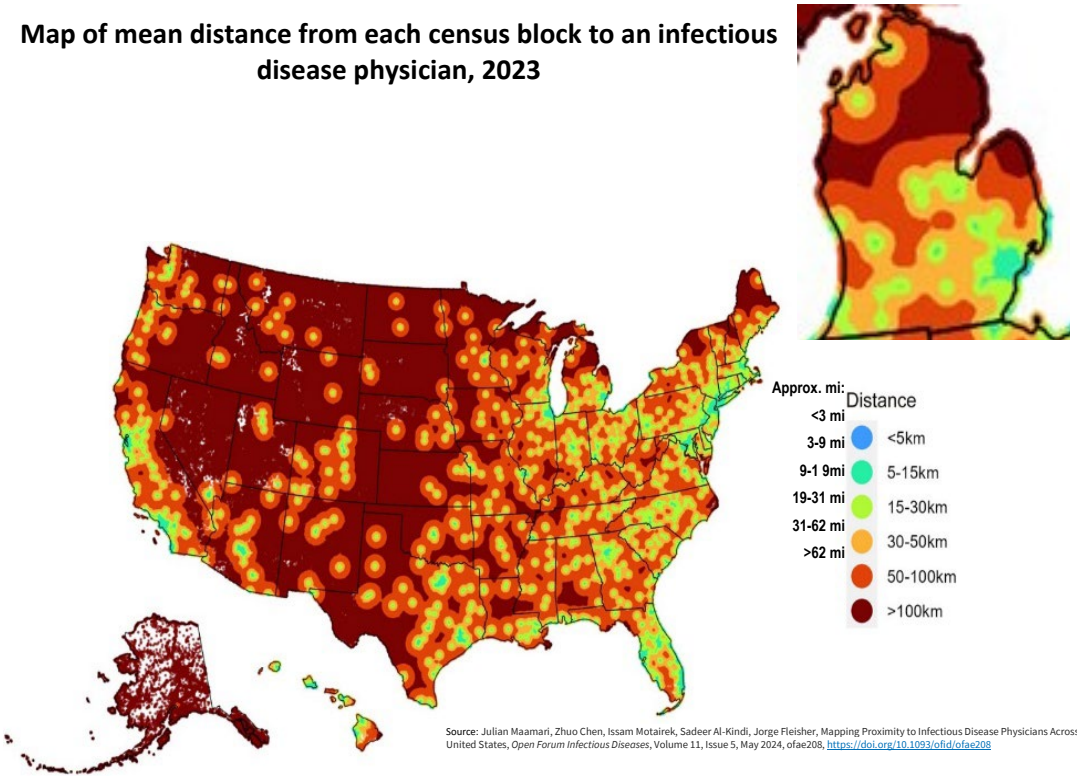
To eliminate TB disease, LTBI needs be diagnosed and treated so it does not become a contagious illness that can spread to others. Unfortunately, we cannot be certain of the burdens of LTBI. This is partly because it is not required nationally to report or track LTBI cases. Many states require reporting, but Michigan is currently one of 28 states that does not. Many people at risk for LTBI are not screened, which is another reason we cannot be certain of the true burdens.

In Michigan, the local health departments (LHD) are responsible for tuberculosis prevention and control for their jurisdiction. This includes assisting with the cost of treatment as needed. LHD are also responsible for assuring the appropriate treatment and case management of patients with TB disease. Many larger and more urban health department have TB clinics based within their health department or have contracted care with a local infectious disease provider, ensuring stable consistent care for patients with TB disease or latent TB infection.

Private healthcare providers can also diagnose and treat persons with TB and LTBI, but given these are relatively rare illnesses, most providers do not have comfort doing so. There is a lack of infectious disease (ID) physician in the United States, and over the past several years only one-quarter to one-half of the training positions for this specialty have been filled. Rural areas are hardest hit by a lack of ID physician, with many patients needing to travel over 60 miles to reach the closest. Even then, many ID physicians trained in the United States have very little to no experience treating TB.

Because of lack of access to treatment, CMDHD, MMDHD, and DHD10 have provided treatment for LTBI for many years and is increasingly serving as the treating provider for TB disease. Over the past 5 years, 16 cases of TB disease have occurred in the three districts. Of those that received outpatient care, 8 out of 14 (57%) of patients were treated by the health department medical director as there was no other provider option.

Map of mean distance from each census block to an infectious disease physician, 2023

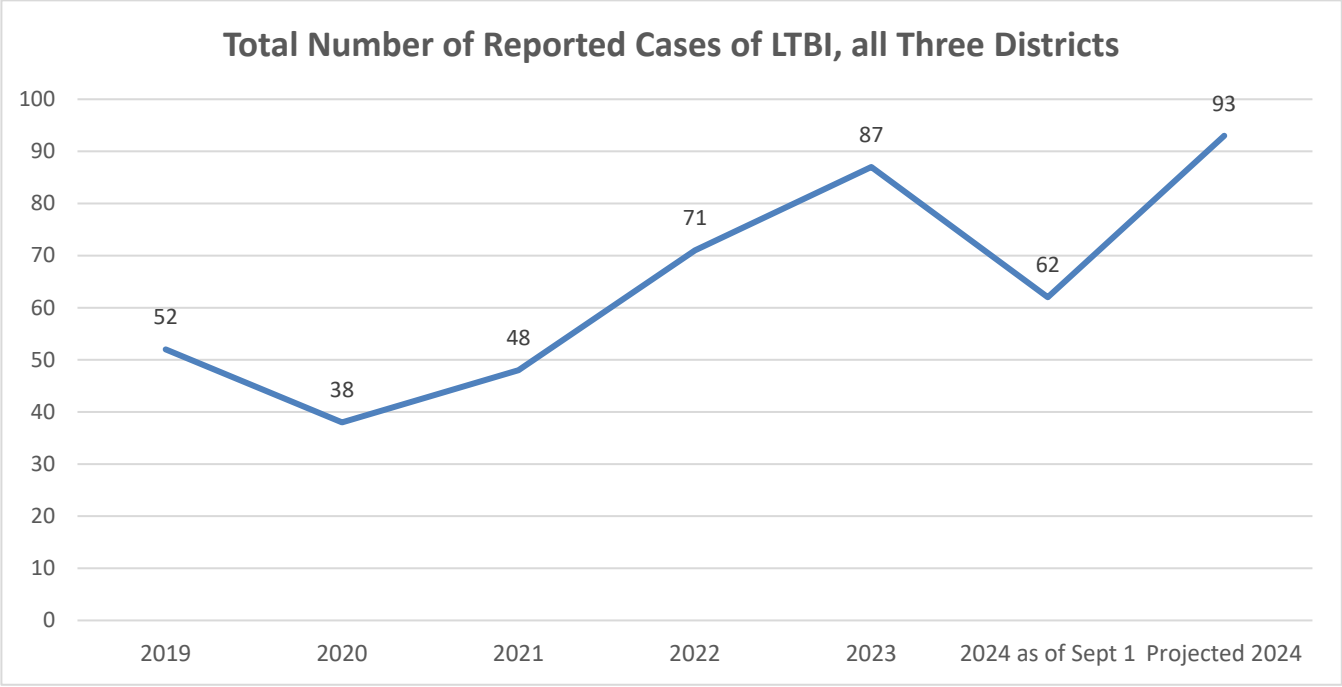


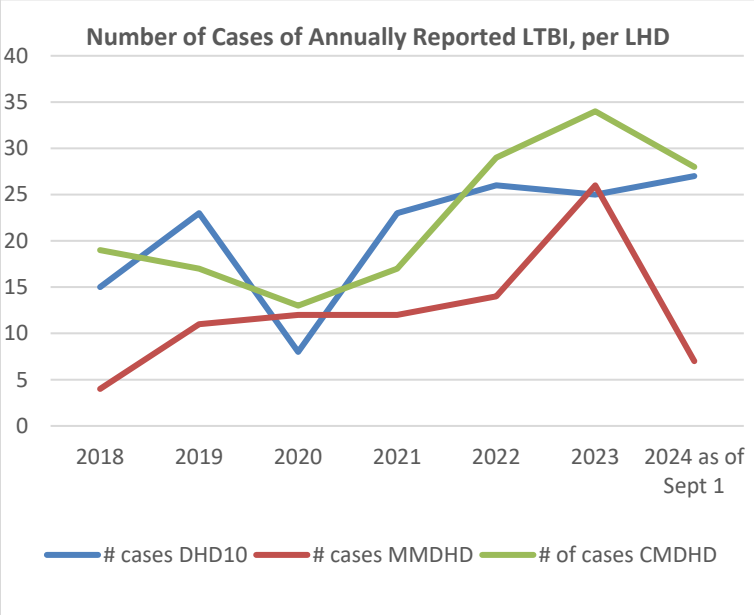
Source: Julian Maamari, Zhuo Chen, Issam Motairek, Sadeer Al-Kindi, Jorge Fleisher, Mapping Proximity to Infectious Disease Physicians Across the United States, *Open Forum Infectious Diseases*, Volume 11, Issue 5, May 2024, ofae208, https://doi.org/10.1093/ofid/ofae208

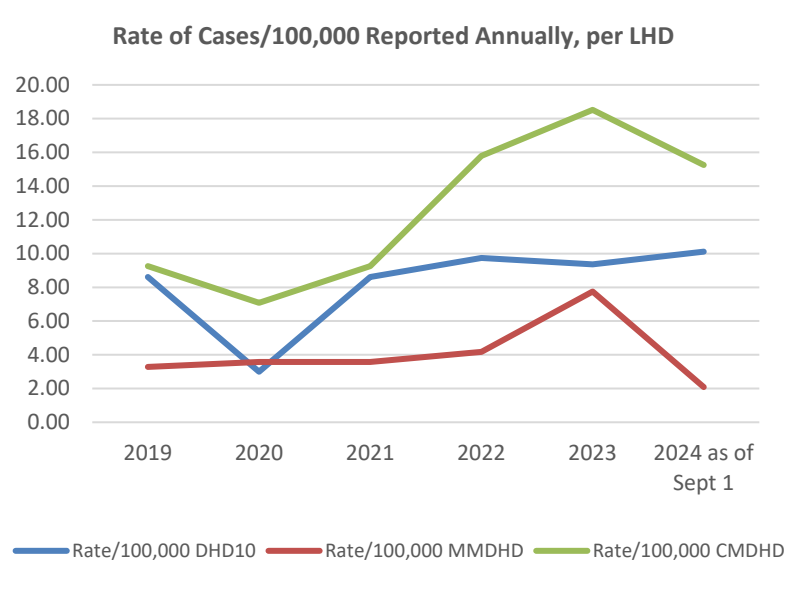
TB Disease Cases and Treatment Provider, 5 years, MMDHD/CMDHD/DHD10			
Year	**Health Department**	**County**	**Treatment Provider**
2019	District 10	Lake	ID Traverse City
2019	District 10	Newaygo	ID Traverse City
2020	Mid-Michigan District	Montcalm	**Health Department**
2020	District 10	Wexford	ID Traverse City
2020	District 10	Oceana	NA (Reported after death)
2021	District 10	Mason	PCP with ID guidance
2021	District 10	Oceana	**Health Department**
2021	Central Michigan District	Isabella	ID Saginaw
2022	Mid-Michigan District	Montcalm	**Health Department**
2023	District 10	Wexford	U of M hospital (death)
2023	Mid-Michigan District	Gratiot	**Health Department**
2023	Mid-Michigan District	Montcalm	**Health Department**
2023	Mid-Michigan District	Montcalm	**Health Department**
2023	Mid-Michigan District	Clinton	**Health Department**
2024	Mid-Michigan District	Clinton	ID Lansing
2024	District 10	Mason	**Health Department**
Totals			

- In total, all 3 districts had 16 cases in 5 years, for average of 3.2 cases/year.
- In total, all 3 districts have a 5-year average case rate of 0.41 cases/100,000 people per year.
- DHD10 has a 5-year average case rate of 1.6 cases/100,000 people per year.
- MMDHD has a 5-year average case rate of 1.4 cases/100,000 people per year.
- CMDHD has a 5-year average case rate of 0.2 cases/100,000 people per year.

The three health departments have been getting increasing numbers of LTBI cases reported and at least two-thirds are treated by the health department nursing staff and medical director.







Current Model of Care for TB at MMDHD/CMDHD/DHD10:
TB and LTBI cases are typically referred to our health departments by electronic lab reports, which is a process where labs have set their systems to automatically report sputum tests and blood tests positive for TB to the Michigan Disease Surveillance System (MDSS) and then routed to the health department of the patient's county of residence. Less commonly, cases are reported by health care providers, hospital infection control, occupational health, and universities. County communicable disease (CD) nurses integrate these cases into their other workload. For LTBI cases, they interview the patient to ensure they have no symptoms of TB, as well as to get their medical history, determine their risks for TB, and order labs and chest Xray as appropriate. This information is forwarded to the health department medical director for review and medication recommendations. Medications are either given to the patient or prescribed to a local pharmacy. The nurse follows the patient monthly throughout their course of treatment, which is three to six months. Additional follow-up may occur if the patient is having any side effects or problems, and the CD nurse confers with the medical director via email or phone as needed. Some cases are more time intensive due to need for education, translation services, other health issues, or problems with compliance.

There are two major components to TB disease management, disease management and case management. Disease management is defined as the strategies followed based on guidelines to treat a disease. Case management is defined as evidence-based comprehensive care of the individual including expectations regarding patient behavior and a deeper understanding of the environment into which a patient returns during treatment. Regardless of who is providing disease management to a patient with TB disease, the health department nurse always provides case management to patients with TB disease. This includes but is not limited to: education of patient and family; ensuring contagious patients are in isolation and have all their needs met; ensuring compliance with medication through directly observed therapy; facilitating medical care; identifying all close contacts, testing, and treating for LTBI as needed, and; providing other assistance as needed to ensure TB care is competed successfully.

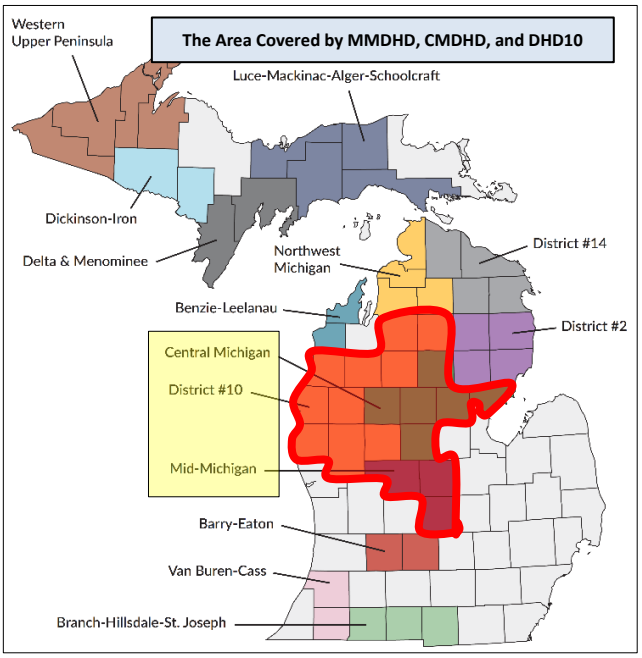
As previously mentioned, it has become increasingly difficult to secure TB disease management from community providers. If a patient needs hospitalization for TB, they are transferred to a large tertiary center. On discharge, or for those that do not need inpatient care, many are referred to the health department for continued treatment despite our lack of a formal TB clinic. Due to the need to ensure these patients are treated, the medical director has been assuming their care. A home visit is made to the patient by both the medical director and the CD nurse providing their case management. Clinical care is established, and education given about their medical care. Continued care and orders for labs and x-rays are coordinated between the physician and nurse, with further

visits only if needed. Some patients are also awaiting access to primary care providers and the health department medical director has needed to provide essential ongoing medical care for other issues until that is established.

To date, this provision of TB care has been necessary as well as rewarding. However, is it not sufficiently structured, can be very time intensive, and is disruptive to the other obligations of the nurses and medical director. There are also lacks to the care quality, lack of medical billing, and improvements that could be made in documentation and other areas. The medical director had tried to find different ways to improve the existing structure and has developed ideas but lacked time and resources to further explore them.

Developing a New TB Care Model For MMDHD, CMDHD, and DHD10:
Early in 2024, MMDHD, CMDHD, and DHD10 asked for and received a Cross Jurisdictional Sharing (CJS) Grant From Michigan Department of Health and Human Services (MDHHS) to support planning and development of a combined three district TB clinic. This allowed for a consultant to be hired to further explore and develop ideas and plans. Based on these plans and developments, the three districts were able to secure additional funding from MDHHS Infectious Disease Prevention as well as an additional CJS grant sufficient to support the clinic for 2025, with likely refunding in 2026. This funding is being managed by CMDHD. Plans for continued funding are being evaluated.

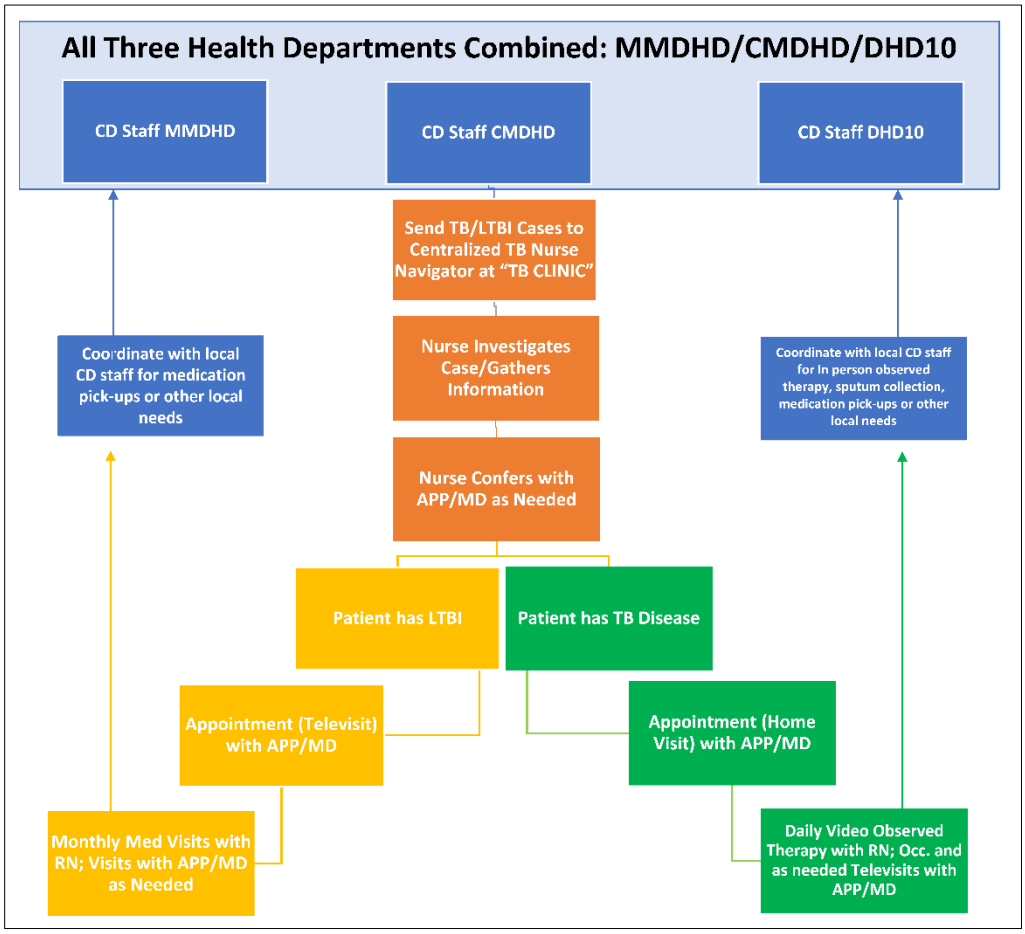
The TB clinic will be a collaboration of all three health departments and overseen by the medical director and the personal and family health division director at CMDHD. A full-time public health nurse will be hired to serve as a TB nurse, as well a part-time advanced practice provider (APP), such as a nurse practitioner (NP) or physician assistant (PA). These staff will be in a county most convenient to them, as most services will be provided remotely. The proposed clinic flow is illustrated below.



All reported TB results and reports will be assigned to the TB nurse through the MDSS. They will investigate the case, gathering further information and conferring with the medical director or APP as needed. If it is felt the patient most likely has LTBI, a telehealth visit will be scheduled for the patient with the APP or medical director. It is felt it will improve the quality of care by having the LTBI patients seen by a clinician, as well as allow for billing insurance for clinical services rendered.

Once the provider and patient determine the most appropriate treatment, it can be prescribed if the patient has insurance. If the patient does not have insurance, it can be provided by the health department and the TB nurse can arrange for the patient to pick up the medication with the health department office where they reside. If they need other in-person services, such as providing sputum samples, picking up printed materials, or receiving needed vaccinations, those can also be arranged with their local county office.

If the case is TB disease, the TB nurse can provide most of the case management, relying on the local county CD nurse to assist with in-person directly observed therapy for the first two weeks, collecting sputum samples, helping with contact tracing if needed, and other services that may be needed quickly or in persons. Otherwise, there will be some travel required of the TB nurse, initially soon after notification of the case to do education, do a home and needs assessment, interview the patient and family, ensure medications are being taken properly,



and start contact tracing. A second visit will be made with the APP or medical director to allow the clinician to fully assess the patient and allow for appropriate continued medical treatment and education. The TB nurse can continue daily observed therapy by video calls if the patient is doing well starting at two weeks and can do contact tracing by phone in most cases. They can follow up with the patient for nearly all needs by phone, and the APP or medical director can do follow up visits by telehealth.

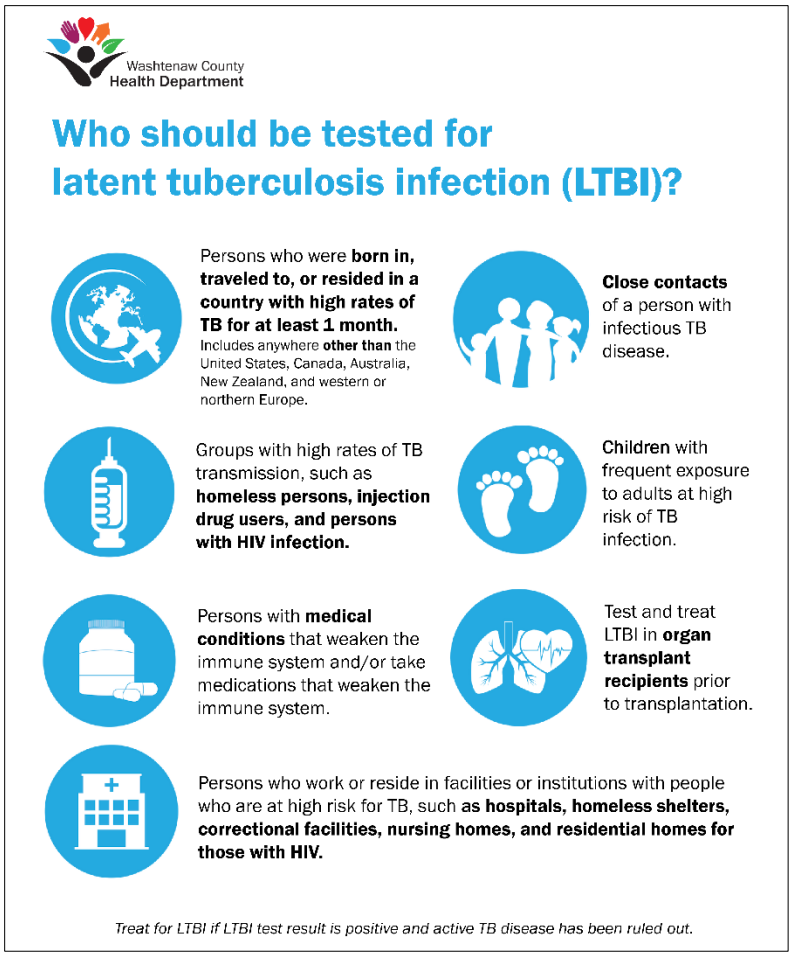
It is hoped that the TB nurse will have time for outreach and education to community providers to encourage appropriate TB screening and improved identification of TB disease. In addition, certain vulnerable and hard to reach populations are at risk for TB infection and outbreaks of TB disease. These include incarceration, drug use, and homelessness. The TB nurse could work with partners serving these populations to ensure they are receiving appropriate screening, follow up, and treatment.

It is planned to track the amount of work time and money saved from our CD program by shifting the LTBI and TB work in this way. It is also planned to follow metrics, such as time from referral to treatment, treatment completion, and others with the new treatment model. It is hoped that this may provide a viable TB treatment model for other rural low incidence areas. Reports and reviews of different practice models for TB treatment in rural areas of low incident countries have been challenging to find. One article from Canada looked at alternatives to delivering care over large distances in low-incidence tuberculosis (TB) settings. They implemented both outpatient and virtual TB clinics and reviewed outcomes over a 5-year time span and found both clinics comparable and neither was superior to the other.

Recommendations:

1. If you have risks for TB, get screened either by your provider or the health department.

2. If you test positive for TB, or are diagnosed with TB disease, be sure you see someone experience in treating people with this infection. If you have questions or concerns, contact your local health department or MDHHS TB Control program www.mi.gpv/tb
3. Rural areas lack access to care for many things, including TB. Support efforts to improve access to experienced care.



Sources

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