

Video Directly Observed Therapy (VDOT)

A MINNESOTA PERSPECTIVE

Disclaimer: The information provided here is for information purposes only and is not medical or legal advice.

Tuberculosis

On average, there are 150 active cases of tuberculosis (TB) in Minnesota per year.¹ In recent years, the majority of TB cases in Minnesota have been foreign-born individuals (82%), which is higher than the national average (59%).²

Treatment for active tuberculosis is very effective when completed as prescribed. However, not completing treatment can be very dangerous because cases may continue to be infectious and pose a public health risk. Not following treatment also contributes to the more deadly and expensive multi-drug resistant (MDR) TB and extensively drug resistant (XDR) TB (Figure 1).³

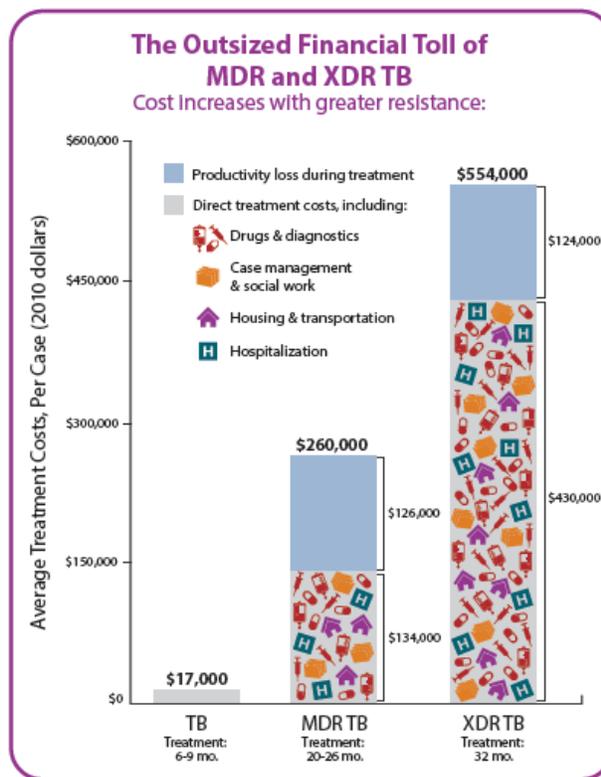


Figure 1: The Economic Toll of TB
Source: Centers for Disease Control and Prevention

Directly Observed Therapy

The gold standard for TB treatment is directly observed therapy (DOT). DOT means that a trained healthcare worker or another trained person watches a patient swallow each dose of medication.⁴ DOT ensures that patients successfully complete treatment, taking all medications at the prescribed time.

The Challenges of Traditional DOT

The implementation of a comprehensive TB program using traditional DOT still has challenges. First, for the population of patients that do receive DOT, there are complex interpersonal, cultural and ethical issues.⁵ Second, it is very difficult to reach 100% of cases using DOT. This may be due to patient-side factors (e.g. work schedule, transitory living situation, or lack of trust in the public health system) or provider-side factors (e.g. schedule availability, lack of

VIDEO DIRECTLY OBSERVED THERAPY (VDOT)

personnel or funding). Finally, traditional DOT is expensive for the public health system due to personnel and travel costs.

The role of local public health agency staff in TB is to investigate, isolate if necessary, start and manage treatment, and conduct contact investigations.⁶ The process of identification, isolation and initiation of treatment can be overwhelming and confusing to individuals with TB and public health professionals and can be further complicated by cultural and language differences. This is especially true in Minnesota, where the vast majority of TB cases are foreign-born and persons of color (Figure 2).¹ Often, treatment is started before trust has been established between the individual and public health professionals.

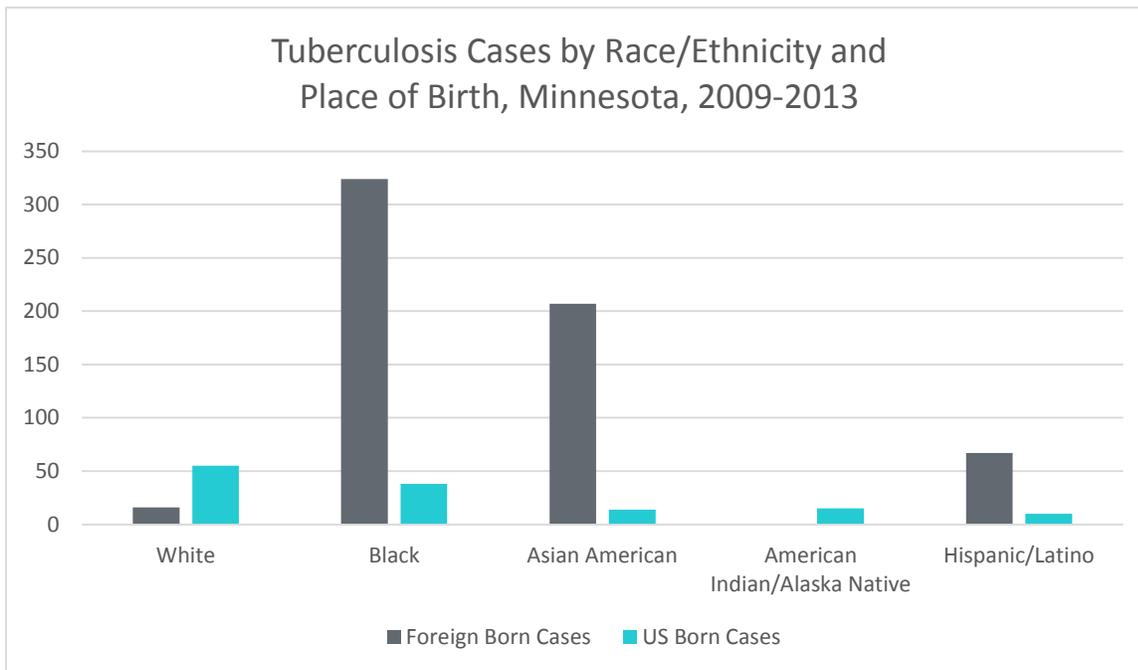


Figure 2: Tuberculosis Cases by Race/Ethnicity and Place of Birth, Minnesota, 2009-2013
Note: Race categories do not include persons of Hispanic/Latino origin.

From 2009-2013, a yearly average of 86% of cases received treatment entirely by DOT in Minnesota.¹ For DOT to be effective, the individual receiving traditional DOT must be available daily (either at work, a clinic, or frequently at home) for a worker to observe medication ingestion. This may impact the independence of the individual in treatment. In other cases, due to schedules, locations or other personal challenges, traditional DOT may not be possible.

Current TB treatment and control practices in Minnesota:

- Do not reach 100% of cases with the standard of care (DOT).
- Are provided at a high cost to public health systems.
- Can infringe on individual autonomy in an ethically complex way, especially with vulnerable populations.

A Complementary Practice Option: Video Directly Observed Therapy

While most individuals in Minnesota are receiving DOT, not all people with active TB are reached with this practice. There is no disagreement about the importance of DOT. However, relying solely on traditional DOT may not be the most successful way to control and treat TB comprehensively. Public health systems must be thoughtful about the structure of DOT in order to reach the culturally diverse populations being treated for TB in Minnesota.

Minnesota has long been a pioneer in public health programs, policies, and interventions. This innovative spirit has improved public health practices here in Minnesota and can improve the treatment and control of TB. Other states have begun to explore and implement non-traditional mechanisms to deliver DOT that may be applicable in Minnesota.

Video Directly Observed Therapy (VDOT) is the use of a videophone or other video/computer equipment to observe TB patients taking their medications remotely. Local public health agencies who have implemented VDOT have all done it slightly differently. Practices vary from using widely available applications on a client's phone or computer to implementing software applications to complete DOT. Depending on the technological infrastructure and the resources of the implementing agency, VDOT may be completed by connecting the individual receiving treatment and a public health professional either via live video (synchronous) or via recorded video (asynchronous or store-and-forward).

- **Financial Considerations:** Though there are technological and start-up costs, this alternative is likely to produce cost savings as it decreases the high costs of personnel and travel associated with traditional DOT. One cost analysis in Washington state estimated an average yearly savings of \$2,448 per patient.⁷
- **Evidence of Effectiveness:** While there has not been comprehensive research yet in this area, the evidence-to-date is promising. A 2001 pilot study in a local health department in Washington State showed high rates of acceptance by patients and demonstrated significant cost savings.⁸ Additionally, a bi-national study in 2012 reported that 92% of patients preferred VDOT to traditional DOT.⁹
- **Administrative Considerations:** The administrative challenge of the application of VDOT is related to technology and maintaining privacy. VDOT requires staff time and energy to address legal concerns and to set up a secure technological framework that assures privacy.
- **Ethical Considerations:** VDOT provides significant flexibility, both for public health professionals and for individuals being treated, especially those who may be transitory: either travelling for work or living in an unstable housing environment. Additionally, VDOT is much less invasive for the individuals receiving treatment, as it empowers the individual by providing flexibility and removing the burden of daily home visits.⁵

Summary

Minnesota public health professionals are hardworking and committed to excellence. While current traditional DOT practices have been well-implemented, they do not reach all TB cases and some of those who are currently reached with traditional DOT may be served better with VDOT. This option provides flexibility, cost-effectiveness and is a culturally competent alternative to DOT. Establishing VDOT in Minnesota would not be fast or simple, but it appears to be feasible and provides an ethical, culturally competent practice option.

References

1. Minnesota Department of Health (MDH): Tuberculosis Prevention and Control Program (2014). The Epidemiology of Tuberculosis, 2009-2013. Accessed online at: <http://www.health.state.mn.us/divs/idepc/diseases/tb/stats/tbepislidesnotes.pdf>
2. Centers for Disease Control and Prevention (2012). Fact Sheet: Multidrug Resistant Tuberculosis (MDR TB). Accessed online at: <http://www.cdc.gov/tb/publications/factsheets/drtb/mdrtb.htm>
3. Centers for Disease Control and Prevention (2014). The Costly Burden of Drug Resistant TB in the US. Infographic. Accessed online at: http://www.cdc.gov/nchstp/newsroom/2014/TB-Infographic2014.html?s_cid=nchstp-nr-wtbd-004
4. Centers for Disease Control and Prevention (2013). Core Curriculum on Tuberculosis: What the Clinician Should Know, Sixth Edition. Accessed online at: http://www.cdc.gov/TB/education/corecurr/pdf/corecurr_all.pdf
5. Sagbakken, M., Bjune, G., Frich, J. (2012). Humiliation or care? A qualitative study of the patients' and health professionals' experiences with tuberculosis treatment in Norway. *Scandinavian Journal of Caring Sciences*, 26(2), 313-323.
6. Minnesota Statutes, 144.4801-144.4813. Tuberculosis Health Threat Act. Accessed online at: <https://www.revisor.mn.gov/statutes/?id=144>
7. Krueger, K., Ruby, D., Cooley, P., Montoya, B., Exarchos, A., Djojonegoro, B. M., et al. (2010). Videophone utilization as an alternative to directly observed therapy for tuberculosis. *The International Journal of Tuberculosis and Lung Disease*, 14(6), 779-781.
8. DeMaio, J., Schwartz, L., Cooley, P., & Tice, A. (2001). The application of telemedicine technology to a directly observed therapy program for tuberculosis: A pilot project. *Clinical Infectious Diseases*, 33(12), 2082-2084.
9. Garfein, R., et al (2012). High tuberculosis treatment adherence obtained using mobile phones for video directly observed therapy: Results of a binational pilot study, Abstract. *Journal of Mobile Technology in Medicine* 1(45).

Minnesota Department of Health
Tuberculosis Prevention and Control Program
PO Box 64975, St. Paul, MN 55164-0975
651-201-5414, 1-877-676-5414
www.health.state.mn.us