



TB and HIV Co-Infection

Tuberculosis (TB) is a disease caused by the bacterium *Mycobacterium tuberculosis*. Although the bacterium primarily attacks the lungs, it can reside in any part of the body, such as the brain, kidney, or spine. TB is an airborne, communicable disease that is spread when people infected with TB in the lungs or throat sneeze, cough, or speak, placing TB bacteria in the air that is then ingested by surrounding people ¹.

Worldwide, TB is one of the leading causes of death in those living with HIV, with the risk of developing TB being approximately 26 to 31 times greater in persons living with HIV (PLWH) compared to those without HIV infection. Among those who have latent TB infection, HIV infection is the biggest risk factor for progressing to active TB disease ^{2,3}.

The Three I's of TB/HIV

The WHO's Three I's Strategy was developed to address the impact of TB on PLWH.

- **Intensified case finding** — all PLWH that come in for clinical care should be screened for TB and offered isoniazid preventive therapy if they do not have active TB ⁴.
- **Isoniazid preventive therapy** — all PLWH that do not have active TB should receive at least 6 months of isoniazid treatment ⁵.
- **Infection control for tuberculosis** - TB infection control practices should be implemented in all settings providing HIV care ⁶.

Latent TB infection and TB disease

- **Latent TB infection** — most people infected with TB are able to fight the bacteria and prevent them from multiplying. People with latent TB infection are not infectious and do not display any symptoms ¹.
- **TB disease** — if the immune system cannot stop the bacteria from multiplying, latent TB infection becomes active TB disease. People with TB disease are infectious ¹.
- Those with compromised immune systems, such as PLWH, have a higher risk of developing TB disease compared to those with normal immune systems ¹.

TREATMENT OF TB

Persons with latent TB infection are prescribed one or more of these medications to prevent TB disease: isoniazid, rifampin, and rifapentine. Treatment regimens last anywhere from three to nine months ⁷.

The treatment regimen for TB disease includes the first-line anti-TB agents isoniazid, rifampin, ethambutol, and pyrazinamide. The initial phase of the treatment last two months, and the continuation phase lasts anywhere from four to seven months ⁷.

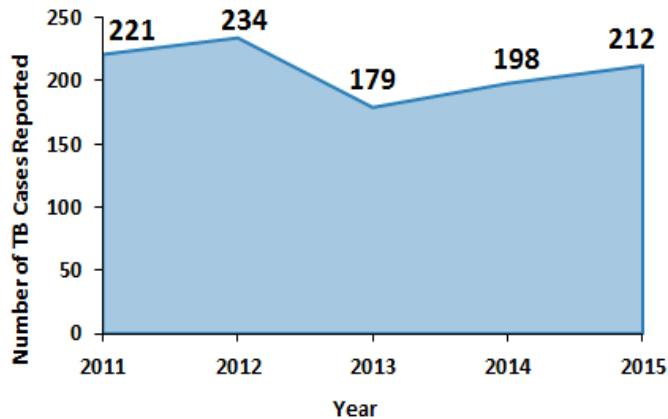
TB IN THE UNITED STATES

In 2014, 9,421 cases of TB were reported in the United States (US), at a rate of 2.96 cases per 100,000. 66% of the reported cases were foreign-born. The Asian populations had the highest rate of TB cases, at 17.8 cases per 100,000 ⁸. In the US, 429 TB cases in 2014 were co-infected with HIV ⁹.

TB IN VIRGINIA

From 2011 to 2015, Virginia reported 1,044 cases of TB. Figure 1 displays the trend of TB cases (including those with HIV co-infection) reported from 2011 to 2015.

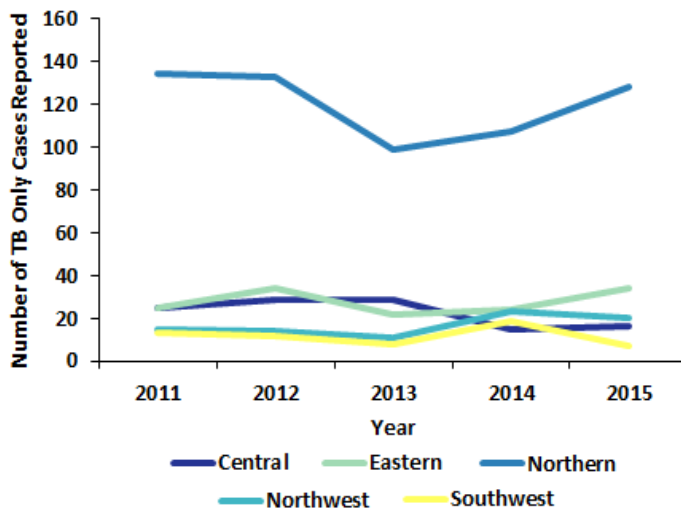
Figure 1: Number of TB Cases Reported in Virginia, 2011-2015



Of the TB only cases, 55% of the cases were male. The cases were most commonly Asian, non-Hispanic (43%), foreign-born (78%), aged 55 or older (36%), and from the Northern health region of Virginia (60%). Among those who were born in the US, most (47%) were White, non-Hispanic.

From 2011 to 2015, the number of cases in the Northern and Central regions are decreasing (Figure 2).

Figure 2: Number of TB Cases Reported in Virginia by Region, 2011-2015



TB-HIV CO-INFECTION

Of the 1,044 TB cases reported in Virginia from 2011 to 2015, 48 (5%) are co-infected with HIV. Similar to the demographic profile of the TB cases in Virginia, the majority of the co-infection cases were male (63%), located in the Northern region of Virginia (54%), and were foreign-born (67%). However, in contrast to the TB demographic, the majority of the co-infection cases were Black, non-Hispanic (65%) and between the ages of 35-44 (35%), mirroring the demographics of PLWH in Virginia.

In 2015, 1 in 3,550 PLWH in Virginia were co-infected with TB

REFERENCES

1. CDC (2016). "Basic TB Facts." Accessed April 15, 2016: <http://www.cdc.gov/tb/topic/basics/default.htm>.
2. CDC (2012). "TB and HIV co-infection." Accessed April 15, 2016: <http://www.cdc.gov/tb/topic/tbhivcoinfection/default.htm>.
3. WHO (2016). "Tuberculosis and HIV." Accessed April 15, 2016: http://www.who.int/hiv/topics/tb/about_tb/en/.
4. WHO (2016). "The Three I's for TB/HIV: Intensified Case Finding (ICF)." Accessed April 15, 2016: http://www.who.int/hiv/topics/tb/3is_icf/en/.
5. WHO (2016). "The Three I's for TB/HIV: Isoniazid preventive therapy (IPT)." Accessed April 15, 2016: http://www.who.int/hiv/topics/tb/3is_ipt/en/.
6. WHO (2016). "The Three I's for TB/HIV: Infection Control for TB (ICT)." Accessed April 15, 2016: http://www.who.int/hiv/topics/tb/3is_ic/en/.
7. CDC (2011). "Treatment." Accessed April 19, 2016: <http://www.cdc.gov/tb/topic/treatment/>.
8. CDC (2014). "Fact Sheet." Accessed April 21, 2016: <http://www.cdc.gov/tb/publications/factsheets/statistics/tbtrends.htm>.
9. CDC (2014). "Reported Tuberculosis in the United States, 2014 - Table 51. Tuberculosis Cases and Percentages by HIV Status: Reporting Areas, 2014." Accessed 21, 2016: http://www.cdc.gov/tb/statistics/reports/2014/pdfs/2014-surveillance-report_table51.pdf.