OCCUPATIONAL EXPOSURE TO TB
WHAT NURSES NEED TO KNOW

TB infection, caused by the bacteria *Mycobacterium tuberculosis* (*M. tuberculosis*), is one of the oldest infectious pathogens known to humankind. Cases in the U.S. had been decreasing for many years but are now making a comeback. TB cases in the U.S. have been rising since 2020, and 2023 saw increases among all age groups in both U.S.-born and non-U.S. born persons. While TB cases in the U.S. are far lower than in many other countries, it remains a growing occupational risk to nurses.

**Latent Infection vs Active TB Disease**
TB bacteria can live in the body without making a person sick. The body can often fight the bacteria and stop it from growing and spreading. However, the bacteria has not disappeared from the body. This is considered a latent TB infection. A latent TB infection causes no symptoms and cannot be transmitted to others. However, it will typically cause a positive reading on a TB skin test or blood test. Of those infected with *M. tuberculosis*, approximately 90% develop latent infection.

Many people with a latent TB infection never develop active TB disease. However, at a later date, the bacteria may begin to multiply and spread, leading to active TB disease. This can happen years after the initial infection. Those with compromised immune systems are more likely to convert from latent to active TB. Diabetes also increases the likelihood that latent TB will progress to active TB. Active TB disease does make people ill and can be transmitted to others. Therefore, antibiotic treatment is recommended for those with latent TB disease.

**Parts of the Body Affected**
Tuberculosis predominantly affects the lungs. However, TB bacteria can also spread to the bones, brain, kidneys and other parts of the body.

**Symptoms**
Symptoms may vary depending on the severity of infection and the body part(s) affected. Common symptoms of TB infection of the lungs include:

- Cough (with or without blood)
- Chest pain
- Fever
- Chills
- Night sweats
- Weight loss
- Loss of appetite

1 Morbidity and Mortality Weekly Report. Centers for Disease Control and Prevention. 2024. 73(12);265-270.
Fatigue

Testing
TB can be detected via a skin test, also referred to as a Mantoux tuberculin skin test (TST), which requires a small amount of tuberculin fluid to be injected into the skin of the lower arm. A return visit 48-72 hours later is usually required so the response can be “read.” If the area where the tuberculin was injected becomes raised, or “indurated,” the area will be measured and further testing, including a chest x-ray and sputum test, may be required.

Those who have received a Bacille Calmette-Guérin (BCG) vaccine for TB in the past may test positive on a TST, even if they are not infected with TB. A QuantiFERON Gold blood test or a T-SPOT blood test is recommended in this circumstance. These tests will not result in a false positive reading if someone has received a BCG vaccine in the past.

Healthcare employees are required to be tested for TB upon hire. Until 2020 the CDC recommended that all healthcare workers be tested annually for TB. This recommendation was rescinded in 2020 and replaced with an individual risk assessment as the primary screening tool, with repeat only when indicated. This risk assessment includes:

1) history of temporary or permanent residence (for >1 month) in a country with a high TB rate (i.e. any country other than Australia, Canada, New Zealand, the United States, and those in western or northern Europe)
2) current or planned immunosuppression, including human immunodeficiency virus infection, receipt of an organ transplant, treatment with an TNF-alpha antagonist (e.g., infliximab, etanercept, or other), chronic steroids (equivalent of prednisone >15mg/day for >1 month) or other immunosuppressive medication
3) close contact with someone who has had TB disease

If the screening tool indicates an elevated risk of TB, testing is then recommended.

The NYS Department of Health requirements, based on this guidance, can be found at https://www.health.ny.gov/professionals/nursing_home_administrator/dal/docs/dal_nh_20-14.pdf.

Dropping the annual TB test requirement occurred at a time when TB rates were falling. Rates are now increasing; therefore, the CDC and NYS Department of Health should consider a return to mandatory annual testing.

Treatment
Older antibiotics, which many strains of TB had become resistant to, have been replaced with newer, more effective drugs. These newer treatments when taken in combination, have proven successful when taken for a shorter period than the 9-month protocol that used to be required. Multidrug-resistant TB (MDR TB) is more difficult to treat, but new treatment protocols have been effective for many patients. Extensively drug resistant TB (XDR TB) is far harder to treat.

Although medication must be taken for several months, an infected person typically can no longer transmit TB after 2-3 weeks of treatment. More information on TB treatment can be found at https://www.cdc.gov/tb/topic/treatment/default.htm.
**Transmission**

TB is typically transmitted from person to person by respiratory aerosols. The portal of entry is the respiratory tract, and the initial site of infection is the lung. Certain medical procedures may increase the risk of transmission such as sputum induction, suctioning, bronchoscopy, CPR, intubation/extubation and any cough-inducing procedures.

**Protections**

Healthcare workers are at greatest risk of occupational exposure to TB when they perform certain medical procedures (see above) and when they come in contact with patients who have unsuspected TB cases. For this reason, rapid identification, isolation and treatment is key to preventing transmission.

OSHA recommends that employers should take the following steps to protection healthcare workers from TB:

1. **Install and properly maintain appropriate air-handling systems in healthcare facilities.** Air from areas that are at high risk of containing airborne TB particulates should be directly exhausted from the building, preferably after passing through a HEPA-level filter.
2. **Local exhaust** such as hoods, booths, or tents remove airborne contaminants at or near their source of generation. For example, booths may be required for sputum induction or other high-risk procedures that generate airborne particulates. Booths used for source control should be instantaneously exhausted so that 100% of airborne particles are removed.
3. **Place patients with suspected active TB infection in an Airborne Infection Isolation Room (AIIR).** If an AIIR is not available, place a facemask on the patient (if the patient can tolerate wearing one) and isolate the patient in an examination room with the door closed. Transfer the patient as soon as possible to a facility where an AIIR is available. Negative pressure must be maintained in isolation rooms. Negative pressurization can be created in any room when exhausted air is approximately 20% greater than the rooms supplied air. Provide at least six (existing facility) or 12 (new construction/renovation) air changes per hour.
4. **Supplemental Controls.** HEPA filters may be used in general-use areas, e.g., waiting rooms and emergency rooms, when recirculating indoor air. The HEPA filter can be a portable unit or part of the centralized air-handling unit or even a whole-wall HEPA filtration unit with laminar air flow. HEPA filtration units must be of adequate capacity for the size of the space in which they are placed. In isolation rooms these filters can only be used as a supplemental control and are not a replacement for negative pressure ventilation.
5. **UV Irradiation.** These systems are optional as an additional control where exposure to TB bacilli risk is particularly high. UV radiation cannot be considered a substitute for ventilation requirements due to the low efficacy of these systems. UV may be used on recirculating air in general-use areas.
6. **Implement policies and practices to minimize potential exposures.** When patients with active TB are known to be admitted, airborne precautions should be implemented before arrival, upon arrival, and throughout an affected patient's presence in the healthcare setting. These patients should be placed in an isolation room with hazard
signage on the door. Avoid transporting patients outside of the isolation room unless necessary, and limit the numbers of healthcare workers caring for patients and visitors allowed to see the patients. Special considerations should be employed for high-risk procedures such as cough-inducing and aerosol-generation procedures, intubation, and bronchoscopy.

7. **Track all healthcare workers and support staff** who care for or enter the rooms of confirmed or suspected active TB patients. Implement a policy for healthcare workers who develop respiratory symptoms after an exposure to active TB. Workers should notify their supervisor, receive prompt medical evaluation, and comply with work exclusion (i.e., stay home) until they are no longer contagious.

8. All healthcare staff who come in contact with patients who are confirmed to have, or are suspected of having, active TB disease must wear a **NIOSH-approved fit-tested N95, elastomeric respirator or powered air purifying respirator (PAPR)**.

Every healthcare facility should have a **TB infection control plan**. A TB infection control plan is part of a general infection control program designed to ensure the following:

- prompt detection of infectious TB patients
- airborne precautions
- treatment of people who have suspected or confirmed TB disease

More specific information on the components of a TB infection control plan can be found at:

Specific recommendations environment controls, administrative measures and use of respiratory protection can be found at:
[https://www.osha.gov/tuberculosis/control-prevention](https://www.osha.gov/tuberculosis/control-prevention)
[https://www.cdc.gov/tb/topic/infectioncontrol/TBhealthCareSettings.htm](https://www.cdc.gov/tb/topic/infectioncontrol/TBhealthCareSettings.htm)

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**What to do if You’ve Been Exposed to TB at Work**

- Fill out your facility’s incident report form and notify employee health services.
- File all workers’ compensation paperwork.
- See a NYS Workers’ Compensation Board medical provider familiar with TB for medical care and follow up.
- Notify your NYSNA Representative and the NYSNA Occupational Health and Safety Representatives so that they can assist you and address any unsafe conditions that may have led to your exposure.

For more information or assistance, please contact the NYSNA Occupational Health and Safety Representatives at healthandsafety@nysna.org.