

N-05 Tuberculosis (TB) Infection Control and PPD (purified protein derivative) Skin Test Evaluation

Purpose: To inform about TB infection, the appearance of PPD skin test results, and actions to take. PPD also called TST (tuberculin skin test).

TB is spread by airborne droplets. Most exposed persons do not become infected.

TB transmission is affected by infection status of the person, environmental conditions, and duration of exposure to TB.

Once inhaled, the TB bacteria travel to the lungs where infection is established. Usually bacteria survive and remain dormant and viable for years; this is *latent TB* infection. Persons with latent TB are not infectious and have no symptoms, but show a positive skin test. If untreated, latent TB progresses to active TB disease in 5% during a lifetime.

Active TB occurs when the body's immune system is unable to fight off the TB bacteria, causing symptoms of infection in the lungs or other parts of the body. Persons with active TB are infectious and have symptoms that include fatigue, weight loss, anorexia, fever, purulent sputum, night sweats, dyspnea, chest pain, and bloody sputum.

PPD (TB skin test) determines if the person has developed an immune response to the TB bacterium. The tuberculin in the skin test contains core proteins similar to the proteins in the TB bacterium. If the body's immune cells have been sensitized by prior TB infection, there is a reaction to the PPD which is an *induration* of the skin at the test site. Induration is a hard, raised, palpable area with clearly defined margins around the injection site.

Annual PPD test is given by injecting a 0.1 mL volume containing 5 TU (tuberculin units) of PPD into the top layers of forearm skin, immediately under the surface of the skin. Choose a skin area that is free of abnormalities and away from veins. Use a ¼ - ½ inch, 27 gauge needle and a tuberculin syringe to inject. A wheal or bleb (pale elevation of skin) is produced that is quickly absorbed.

Reading the PPD skin test means palpating a hardened, raised local area of skin reaction called induration. Induration is the key item to detect, not redness or bruising. Skin tests are read by a nurse 48-72 hours (2-3 days) after the injection when the size of the induration is largest. The results are interpreted according to the presence, absence, and amount of induration.

Interpreting the PPD skin test is recording the induration, not the redness, in millimeters (mm). Mark the outer edges of the induration with a pen and measure crosswise to the long axis of the forearm.

- Redness without induration is recorded as 0.
- Induration of 0-4 mm is negative.

- Induration of 5-10 mm is referred to a nurse practitioner or physician for interpretation. 5-10 mm is considered positive when the person is HIV positive, is in close contact with a person who is newly infected with TB, or has an abnormal chest x-ray.
- Induration > 10 mm is positive.

Reporting positive PPD skin test results. The AKPH nurse reports positive resident test results to the resident's physician and the Alaska Division of Public Health. A positive read *without* symptoms indicates a latent infection which is not communicable.

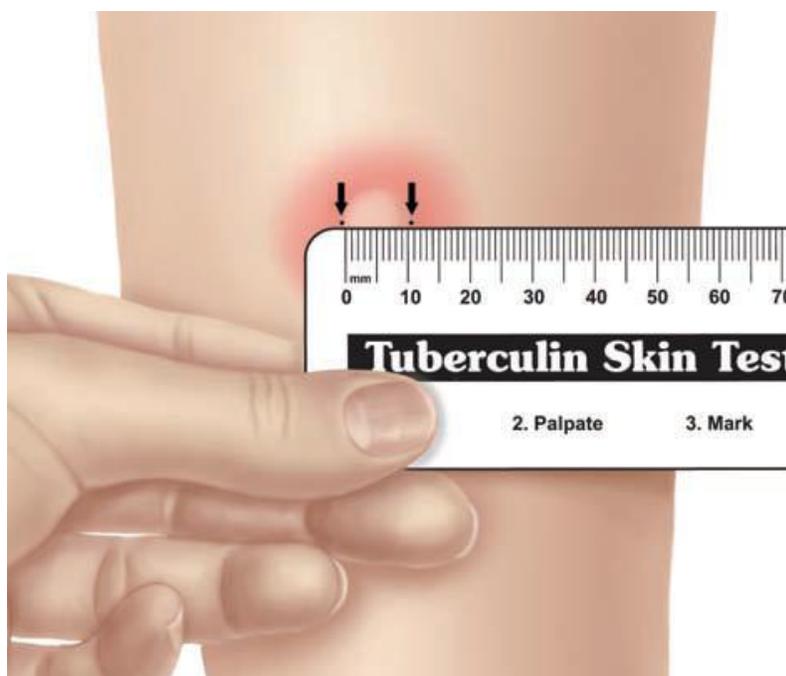
A positive read *with* symptoms indicates an active infection which is communicable. The resident is transferred immediately to a hospital ER for isolation and treatment. After the resident leaves their room, shut the door for a couple hours. When the physician determines that the TB is no longer communicable, the resident may return to the Home.

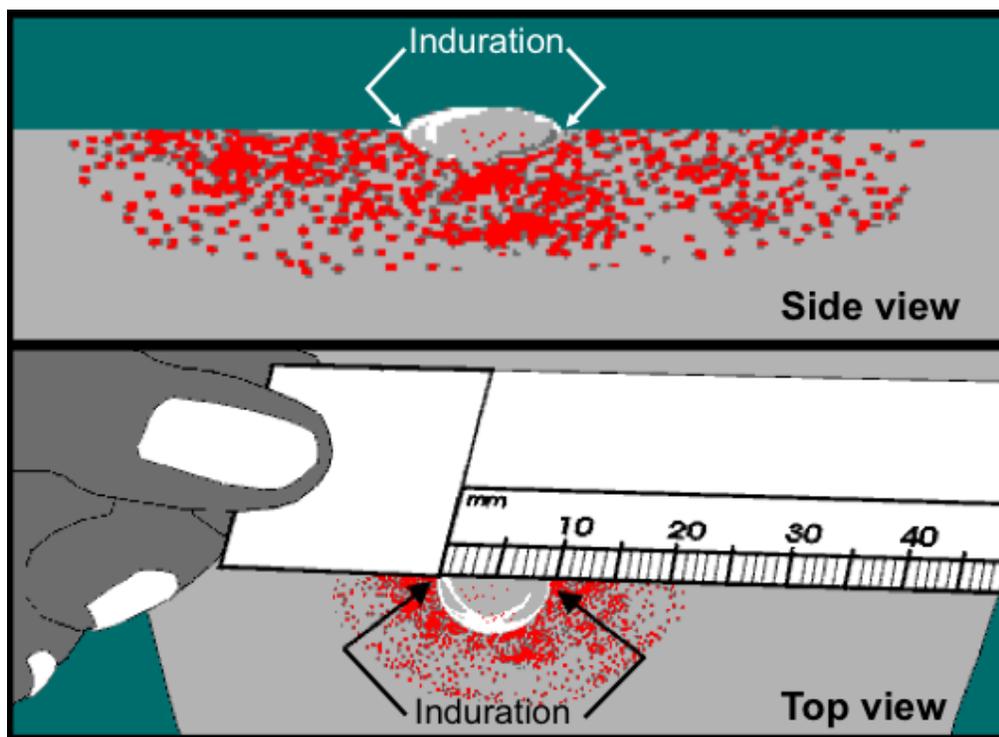
The AKPH nurse notifies an employee with new positive test results to contact their health care provider or public health for further testing. The employee does not return to work until a note is provided from the provider that there is no active TB.

TB evaluation by a provider or a clinic may include a PPD skin test, questionnaire, laboratory sputum testing, and chest x-ray.

Once latent TB has been established, an annual screening questionnaire is completed which asks about signs and symptoms of TB within the past year.

N-05 Approved 2/29/2012





How TB disguises itself

A person may contract pulmonary tuberculosis from inhaling infected droplets from a cough or sneeze by an infected person.

TB has two phases: one latent, where the immune system keeps it in check, and one active, characterized by weeks of coughing, fever, weakness and loss of appetite. It's only contagious while active.

Latent TB hides within the lungs by forming balls of fibrous material and living immune cells. These balls develop their own blood supply. Referred to as granulomas, they can persist for many years without causing sickness.

Eventually though, the blood supply to these granulomas disintegrates. The granulomas collapse into the lungs, and the infectious bacilli are released into the airways, causing active disease.

Source: *Science Magazine*, May 14, 2010 'Tuberculosis: What we don't know can and does hurt us,' by David G. Russell, Clifton E. Barry III, and JoAnne L. Flynn

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