Section: Medical Exposure Control Plan – Information Fact Sheets 
Subject: TUBERCULOSIS
Section #: 383.10
Issue Date: March 21, 2011
Revision Date:
Approved By: Michael Lozano, Jr., M.D., HCFR Medical Director

1. Identification
    a. A mycobacterial disease that is an important cause of disability and death in many parts of the world. The initial infection usually goes unnoticed. Tuberculin skin test sensitivity appears within a few weeks.

2. Infectious Agents
    a. The Mycobacterium tuberculosis complex includes *M. tuberculosis* and *M. africanum* primarily from humans, and *M. bovis* primarily from cattle. Other mycobacteria occasionally produce disease clinically indistinguishable from tuberculosis; the etiologic agents can be identified only by culture of the organisms.

3. Susceptibility
    a. The risk of infection with the tubercle bacillus is directly related to the degree of exposure and does not appear to be related to genetic or other host factors. The most hazardous period for development of clinical disease is the first 6 – 12 months after infection. The risk of developing disease highest in children under 3 years old, lowest in later childhood, and higher among adolescents, young adults, the very old, and the immunosuppressed. Reactivation of latent infections accounts for a large portion of cases of cases in the elderly. Susceptibility to disease is markedly increased in those with HIV infection and other forms of immunosuppression. It is also increased among the underweight and undernourished; people with debilitating diseases such as chronic renal failure, cancer, silicosis, diabetes, post gastrectomy; and substance abusers.

4. Mode of Transmission
    a. Exposure to airborne droplet nuclei produced by humans with pulmonary or laryngeal tuberculosis during expiratory efforts; such as coughing, singing, or sneezing. Laryngeal tuberculosis is highly contagious. Prolonged close exposure to an infectious case may lead to infection of contacts. Direct invasion through mucous membranes or breaks in the skin may occur but is extremely rare.

5. Incubation Period
    a. From infection to demonstrable primary lesion or significant tuberculin reaction, about 4 – 12 weeks. While the subsequent risk of progressive pulmonary or extra-pulmonary tuberculosis is greatest within the first year or two after infection, latent infection may persist for a lifetime. Of the population that is exposed to tuberculosis, 95% cause a latent infection to occur. The patient's immune system usually controls the tubercle bacillus by destroying it or walling it up in a nodule (tubercle). This bacillus may lie dormant within the tubercle for years and later reactivate and spread. HIV infection appears to greatly increase the risk and shorten the interval for the development of clinical tuberculosis.

6. Period of Communicability
    a. The patient is infectious as long as viable tubercle bacilli are present in the sputum. Some untreated or inadequately treated patients may be sputum-positive intermittently for years. The degree of communicability depends on a number of factors. Effective chemotherapy usually eliminates communicability with a few days to weeks.

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7. Isolation
    a. In hospitals, respiratory isolation is warranted for all patients with positive sputum tubercle bacilli in the sputum. The infectious patient is confined to a well-ventilated room until they are no longer contagious. Respiratory isolation in the pre-hospital setting will include PFR-95 facemask to all providers exposed to the patient. Droplet precautions should also be taken. The patient may have need for a non-rebreather mask that will assist in isolating the secretions from being spread during a cough or sneeze.

8. Exposure Management
    a. Tuberculosis exposure is determined by the PPD skin test. This does not confirm active disease, just exposure that caused an antibody response in the body. Once a response to the PPD is positive, it will remain positive and no further skin testing should be performed. The next step of identification of disease is to have a chest x-ray. A stained smear or sputum for acid-fast bacilli completes the evaluation of active disease. Treatment of active mycobacterium tuberculosis can consist of multiple drug therapies. They may include isoniazid (INH), Rifampin (RIF), pyrazinamide (PZA), and ethambutol (EMB) or streptomycin (SM).

9. Vaccination
    a. The BCG vaccine was developed to assist in high risk areas to prevent tuberculosis spread in communities with poor access to prevention treatment and drug therapy. Because the risk of infection is very low in the USA, the vaccine of BCG is not recommended. Individuals who have received BCG will be PPD positive.

10. References
    a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
    b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
    c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metroke.gov/health/prevent/hepa.htm
    d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.