

## TB Transmission

### Effect of Index Patient Characteristics and Behaviors

Characteristics That Increase Infectiousness
Pulmonary, laryngeal or pleural TB
AFB + sputum smear
Cavitation on chest radiograph
Adolescents or adult patient
No or ineffective treatment of TB Disease

Behaviors That Increase Infectiousness
Coughing
Sneezing
Singing
Laughing
Close social network

### Additional Points

1. Pleural & laryngeal disease sites are grouped with respiratory disease.
2. Sputum cultures can yield *M.tb* even when no lung abnormalities are apparent on a radiograph.
3. The significance for infectiousness of results from respiratory specimens other than expectorated sputum is undetermined. Experts recommend that these specimens be regarded as equivalent to sputum for determining infectiousness only if sputa cannot be obtained.
4. Patients with lung cavities typically are more infectious than patients with non-cavitary pulmonary disease.
5. Cough frequency and severity are not predictive of contagiousness.
6. Transmission from children aged <10 years is unusual. When transmission occurs, it is generally associated with the presence of pulmonary forms of disease typically seen in adults.
7. HIV infection has no affect on potential infectiousness. Each case must be evaluated individually.
8. When drug resistance is NOT present, TB patients rapidly become less contagious after starting effective treatment. However, the exact rate of decrease cannot be predicted.
9. Environmental conditions such as the size of the space and ventilation as well as the length of exposure must be considered when determining potential transmission.

### **Criteria for determining when a patient with pulmonary TB becomes non-infectious during treatment\***

- Patient has negligible likelihood of multidrug-resistant TB (no known exposure to multi-drug resistant TB, no history of prior episode of TB with poor compliance during treatment and not from a country with a high incidence of resistance)
- Patient has received standard multidrug anti-TB therapy for 2-3 weeks. (For patients with sputum acid-fast smear results that are negative the threshold for treatment is 5-7 days).
- Patient has demonstrated complete adherence to treatment (e.g. is receiving directly observed therapy).
- Patient has demonstrated evidence of clinical improvement (e.g. reduction in the frequency of cough or reduction of the grade of the sputum AFB smear result).
- All close contacts of patients have been identified, evaluated, advised and, if indicated, started on treatment for latent TB infection. This criterion is critical especially for children aged <4 years and persons of any age with immune-compromising health conditions (e.g. HIV infection)
- While in hospital for any reason, patients with pulmonary TB should remain in airborne infection isolation until they 1) are receiving standard multidrug anti-TB therapy; 2) have demonstrated clinical improvement, and 3) have three consecutive AFB-negative smear results of sputum specimens collected 8-24 hours apart, with at least one being an early morning specimen.
- Hospitalized patients returning to a congregate setting (e.g. a homeless shelter, detention facility or nursing home) should have three consecutive sputum AFB-negative smear results collected >8 hours apart before being considered noninfectious.

\*Adapted from Controlling Tuberculosis in the United States, MMWR 2005; 54(RR-12), page 9