

moving from geographic areas with a high incidence of TB disease (e.g., Africa, Asia, Eastern Europe, Latin America, and Russia) or who frequently travel to countries with a high prevalence of TB disease.

- Residents and employees of congregate settings that are high risk (e.g., correctional facilities, long-term-care facilities [LTCFs], and homeless shelters).
- HCWs who serve patients who are at high risk.
- HCWs with unprotected exposure to a patient with TB disease before the identification and correct airborne precautions of the patient.
- Certain populations who are medically underserved and who have low income, as defined locally.
- Populations at high risk who are defined locally as having an increased incidence of TB disease.
- Infants, children, and adolescents exposed to adults in high-risk categories.

Persons Whose Condition is at High Risk for Progression From LTBI to TB Disease

The following persons are at high risk for progressing from LTBI to TB disease:

- persons infected with HIV;
- persons infected with *M. tuberculosis* within the previous 2 years;
- infants and children aged <4 years;
- persons with any of the following clinical conditions or other immunocompromising conditions
 - silicosis,
 - diabetes mellitus,
 - chronic renal failure,
 - certain hematologic disorders (leukemias and lymphomas),
 - other specific malignancies (e.g., carcinoma of the head, neck, or lung),
 - body weight $\geq 10\%$ below ideal body weight,
 - prolonged corticosteroid use,
 - other immunosuppressive treatments (including tumor necrosis factor-alpha [TNF- α] antagonists),
 - organ transplant,
 - end-stage renal disease (ESRD), and
 - intestinal bypass or gastrectomy; and
- persons with a history of untreated or inadequately treated TB disease, including persons with chest radiograph findings consistent with previous TB disease.

Persons who use tobacco or alcohol (40,41), illegal drugs, including injection drugs and crack cocaine (42–47), might also be at increased risk for infection and disease. However, because of multiple other potential risk factors that commonly occur among such persons, use of these substances has been difficult to identify as separate risk factors.

HIV infection is the greatest risk factor for progression from LTBI to TB disease (22,39,48,49). Therefore, voluntary HIV counseling, testing, and referral should be routinely offered to all persons at risk for LTBI (1,50,51). Health-care settings should be particularly aware of the need for preventing transmission of *M. tuberculosis* in settings in which persons infected with HIV might be encountered or might work (52).

All HCWs should be informed regarding the risk for developing TB disease after being infected with *M. tuberculosis* (1). However, the rate of TB disease among persons who are HIV-infected and untreated for LTBI in the United States is substantially higher, ranging from 1.7–7.9 TB cases per 100 person-years (53). Persons infected with HIV who are already severely immunocompromised and who become newly infected with *M. tuberculosis* have a greater risk for developing TB disease, compared with newly infected persons without HIV infection (39,53–57).

The percentage of patients with TB disease who are HIV-infected is decreasing in the United States because of improved infection-control practices and better diagnosis and treatment of both HIV infection and TB. With increased voluntary HIV counseling and testing and the increasing use of treatment for LTBI, TB disease will probably continue to decrease among HIV-infected persons in the United States (58). Because the risk for disease is particularly high among HIV-infected persons with *M. tuberculosis* infection, HIV-infected contacts of persons with infectious pulmonary or laryngeal TB disease must be evaluated for *M. tuberculosis* infection, including the exclusion of TB disease, as soon as possible after learning of exposure (39,49,53).

Vaccination with BCG probably does not affect the risk for infection after exposure, but it might decrease the risk for progression from infection with *M. tuberculosis* to TB disease, preventing the development of miliary and meningeal disease in infants and young children (59,60). Although HIV infection increases the likelihood of progression from LTBI to TB disease (39,49), whether HIV infection increases the risk for becoming infected if exposed to *M. tuberculosis* is not known.

Characteristics of a Patient with TB Disease That Increase the Risk for Infectiousness

The following characteristics exist in a patient with TB disease that increases the risk for infectiousness:

- presence of cough;
- cavitation on chest radiograph;
- positive acid-fast bacilli (AFB) sputum smear result;
- respiratory tract disease with involvement of the larynx (substantially infectious);
- respiratory tract disease with involvement of the lung or pleura (exclusively pleural involvement is less infectious);