that is persistent and often productive of sputum, chest pain, chills, fever, hemoptysis, night sweats, weight loss, weakness, lack of appetite, a positive skin test, abnormal chest radiograph, and/or positive sputum smear or culture) are estimated to develop in 5% within 2 years and in another 5% after 2 years. Among people with both LTBI and HIV infection, LTBI progresses to active disease more rapidly (approximately 10% each year), is more severe, and often involves extrapulmonary sites.

DRUG-RESISTANT TUBERCULOSIS

In addition to LTBI, a major concern among public health and infectious disease experts is an increase in drug-resistant infections. A major factor in drug-resistant infections is poor patient adherence to prescribed antitubercular drug therapy.

Drug-resistant mutants of *M. tuberculosis* microorganisms are present in any infected person. When infected people receive antitubercular drugs, drug-resistant mutants continue to appear and reproduce in the presence of the drugs. These strains may become predominant as the drugs eliminate susceptible strains and provide more space and nutrients for resistant strains. Most drug-resistant strains develop when previously infected clients do not take the drugs and doses prescribed for the length of time prescribed. However, drug-resistant strains can also be spread from one person to another and cause new infections, especially in people whose immune systems are suppressed.

Multidrug-resistant tuberculosis (MDR-TB) indicates organisms that are resistant to both isoniazid (INH) and rifampin, the most effective drugs available, with or without resistance to other antitubercular drugs. MDR-TB is associated with rapid progression, with 4 to 16 weeks from diagnosis to death, and high death rates (50% to 80%). It is also difficult and expensive to treat.

PREVENTING THE DEVELOPMENT AND SPREAD OF TUBERCULOSIS

Recommendations for tuberculosis control have changed considerably in recent years. Current recommendations from the Centers for Disease Control and Prevention (CDC), the American Thoracic Society (ATS), and the Infectious Diseases Society of America (IDSA) emphasize continued treatment of active disease and expanded efforts to identify and treat latent infection (LTBI). For identification, tuberculin skin testing is recommended only for high-risk groups (Box 38–1). When LTBI is found in these groups, it should be treated to eradicate this reservoir of infection (Box 38–2).

Recommendations for treatment are also changing, as authorities strive to design more effective regimens and overcome barriers to their effective implementation. One major change is increasing use of short-course regimens. Numerous studies indicate that these regimens are effective for many people. In addition, patients are more likely to complete a shorter course of therapy, which reduces the occurrence of drug-resistant TB.

Although local health departments are largely responsible for TB control programs, some authorities urge increased testing and treatment in primary care settings and settings where high-risk groups are found (eg, homeless shelters). In addition, they urge recognition and effective management of language, social, economic, transportation, and other barriers that limit access to health care and inhibit diagnosis and treatment.

Nurses have important roles to play in TB control. Some of the roles include performing and reading tuberculin skin tests; managing TB clinics; tracking contacts of patients with active disease; assessing clients, homes, and other settings for risk factors; educating patients and families about the tuberculosis infection and its treatment; administering or directing the administration of antitubercular drugs (eg, directly observed therapy [DOT]); and maintaining records (eg, skin tests performed, positive results, patients starting or completing drug therapy, and adherence or lack of adherence to prescribed treatment regimens).

ANTITUBERCULAR DRUGS

Antitubercular drugs are divided into primary and secondary agents. The main primary drugs (eg, isoniazid, rifampin, and pyrazinamide) are used to treat latent, active, and drug-resistant TB infection when possible. Ethambutol and streptomycin are also considered primary drugs. Because of their varied characteristics, the primary drugs are described individually below and their dosages are listed in Drugs at a Glance: Primary Antitubercular Drugs.

Secondary drugs are used only for clients who are unable to tolerate primary drugs or clients who are infected with organisms that are resistant to primary drugs. In general, they are less effective, more toxic, or both.

Primary Antitubercular Drugs

Isoniazid (INH), the most commonly used antitubercular drug, is bactericidal, relatively inexpensive and nontoxic, and can be given orally or by injection, Although it can be used alone for treatment of LTBI, it must be used with other antitubercular drugs for treatment of active disease.

INH penetrates body cells and mycobacteria, kills actively growing intracellular and extracellular organisms, and inhibits the growth of dormant organisms in macrophages and tuberculous lesions. Its mechanism of action is inhibiting formation of cell walls in mycobacteria.

INH is well absorbed from the GI tract, with peak serum concentrations occurring 1 to 2 hours after a 300-mg dose. It

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