Medical News

EDITED BY GINA PUGLIESE, RN, MS; MARTIN S. FAVERO, PHD

OSHA Proposes Standard for Occupational Exposure to TB

On October 21, 1997, OSHA issued a proposed standard for "Occupational Exposure to Tuberculosis."[1] OSHA estimates that the TB standard will cost $245 million to implement: $2,408 per establishment, and $46 per worker.

The standard applies to all workers with occupational exposure to TB in hospitals, long-term-care facilities for the elderly, correctional facilities, hospices, shelters for the homeless, drug abuse treatment facilities, facilities where high-hazard procedures are performed, and laboratories handling, processing, or maintaining *Mycobacterium tuberculosis* specimens or cultures. Also, the standard also applies to workers providing social work, social welfare, teaching, law enforcement, or legal services in the above settings or in settings with individuals in insolation or otherwise confirmed due to suspect or confirmed TB. In addition, the standard covers workers providing emergency medical services, home health care, and home hospice care who may be exposed to TB, as well as temporary or contract employees or personnel who service or repair air systems or equipment that reasonably may be anticipated to contain aerosolized TB.

OSHA is proposing two levels of risk: work sites with workers who may be exposed and those in areas at low risk, that is, few or no cases of TB. For the low-risk worksites, OSHA has proposed an exemption for certain portions of the standard. These low-risk worksites must meet the following criteria: (1) they have determined that they will not admit or provide medical services to individuals with suspected or confirmed infectious TB, (2) they have no cases of confirmed TB in the past 12 months, and (3) they are located in a county that, in the past 2 years, has had either no cases of TB in 1 year and fewer than 6 cases in the other year. This would apply to facilities that have not admitted TB cases in the past year and will not admit TB patients but will transfer them to another facility and are located in a county with few or no TB cases in the past 2 years. OSHA has explained that the third criteria for frequency of cases in the county will allow those facilities that may have seen a few TB cases 1 year and then none in the next year (eg, a few cases every other year) still to be considered at low risk and thus exempt from certain portions of the standard.

A written exposure control plan, similar to the requirements for the Bloodborne Pathogens Standard, will be required. The proposal outlines specific work practices that must be followed, including the following: identification and isolation of TB patients in isolation rooms, with either negativepressure air exhausted directly to the outside or high-efficiency particulate air (HEPA) filtered air supply; the use of N-95 respirators for TB control, with initial fit testing and repeat annual fit testing unless determined to be unnecessary after medical evaluation; medical evaluations, including medical history, baseline TB skin test, and physical exam, if indicated, prior to initial assignment to job at least annually and after exposures or skin-test conversions.

Two-step baseline skin testing is required, and follow-up skin testing is required every 6 months for all in facilities with TB cases, after an exposure incident, and 30 days after termination of employment.

Hazard labeling is required of ventilation systems, laboratory waste, and isolation rooms and areas, and a "stop" sign is proposed as the labeling sign for acid-fast bacilli (AFB) isolation rooms. Initial training and annual retraining also are required, unless the employer can demonstrate that the worker has specific knowledge and skills.

OSHA did incorporate many of the basic elements of the CDC's revised guidelines for preventing transmission of TB in healthcare facilities. However, there are differences in the requirements for the frequency of skin testing, the need for a risk assessment, signage for AFB isolation rooms, and the specific definition for a "suspect" TB case to be isolated. OSHA suggests it should be any patient with persistent cough and two or more symptoms of active TB (eg, bloody sputum, night sweats, weight loss, fever, loss of appetite).

A number of professional associations are opposing the standard, citing the third year of steady decline in the number of TB cases, and suggesting that the CDC guidelines are adequate to control TB in healthcare facilities.

Until the TB standard is finalized, OSHA will continue to inspect facilities for TB control under its authority from the General Duty Clause of the Occupational Safety and Health Act and in accordance with their Enforcement Procedures for Occupational Exposure to TB.[2] Under the general duty clause, there must be a hazard present (eg, a case of suspected or confirmed TB in the past 6 months) in the worksite for OSHA to conduct an inspection and cite an employer for lack of a TB control program.

If a healthcare facility is in one of the 25 states with a state-run OSHA plan, the TB requirements may be more stringent than required under the federal OSHA Enforcement Procedures (eg, New York and California).

Informal public hearings were scheduled to begin on February 3, 1998, in Washington, DC. Written comments on the proposed standard and notices of intention to appear at hearings were to have been postmarked on or before December 16, 1997. Parties requesting more than 10 minutes at the hearings must submit full text of their testimony. In late November, OSHA indicated that they planned to extend the comment period for the Proposed Standard on Occupational Exposure to TB by 60 days. This means the new deadline for written comments and notices of intent to appear at the hearings would be February 17, 1998, with deadline for testimony and documentary evidence due February 27, 1998. Public hearings are to begin in Washington, DC, on April 7, 1998, and plans are underway for adding three additional hearing sites, tentatively scheduled for Los Angeles, May 5; Chicago, May 19; and New York City, June 2. The notice of these changes in deadline and hearing schedules will be published in the *Federal*

Register. A copy of the October 17, 1997, *Federal Register* may be obtained, via mail by calling 202-512-1530 or accessed on-line through the US Government Printing Office at their web site: http://www.access.gpo.gov.

FROM: 1. Occupational Safety and Health Administration. Occupational exposures to tuberculosis. *Federal Register* October 17, 1997;201:54159-54308.

2. Occupational Safety and Health Administration. Instruction CPL2-106. February 9, 1996.

Mycobacterium tuberculosis Transmission From Bronchoscope

Two recent reports of *Mycobacterium tuberculosis* transmission from contaminated bronchoscopes underscore the importance of cleaning of lensed instruments, such as bronchoscopes, prior to disinfection or sterilization. Failure to clean, coupled with grossly inadequate disinfection practices, can result in infection transmission.

In one report, investigators from Johns Hopkins University School of Medicine identified two isolates with identical restriction fragment-length polymorphism (RFLP) patterns as part of an ongoing laboratory-based study of TB isolates.[1]

The isolates were found to be from two patients diagnosed 6 months apart as having TB. Both isolates had a unique and identical l0-banded IS6110 RFLP pattern. Their only identifiable link was care at the same hospital.

An investigation was initiated, medical charts and bronchoscopic records were reviewed, and cleaning and disinfection of bronchoscopes was observed. It was determined that the first patient underwent bronchoscopy and was diagnosed as having TB. The second patient underwent bronchoscopy 2 days later and was diagnosed as having small cell carcinoma. Following 6 months of chemotherapy and radiation therapy, the second patient developed fever and an infiltrate of the right upper lobe of the lung. Bronchoscopic washings revealed acid-fast bacilli and grew *M tuberculosis.* Both patients had undergone bronchoscopy with the same instrument in the same operating room with no intervening bronchoscopies. Bronchoscope cleaning and disinfection procedures were inconsistent with national guidelines. The authors concluded that a contaminated bronchoscope was the most likely source of *M tuberculosis* transmission between these two patients.

In a second report, investigators from the CDC described an epidemiological investigation of nosocomial transmission of multidrug-resistant (MDR) TB.[2] Eight patients with MDR TB were identified in South Carolina; all isolates were resistant to seven drugs and had matching DNA fingerprints (strain W1). Community links were identified for five patients (l-5). However, no links were identified for the other three patients (6-8) except being hospitalized at the same hospital as one community patient.

An outbreak investigation revealed that patient 5 (community-link patient) and patient 8, diagnosed April 1995 and November 1995, respectively, had clinical courses consistent with MDR TB, with smear-positive and culture-positive specimens and cavitary lesions on chest radiographs. Both died of MDR TB less than 1 month after diagnosis. Patients 6 and 7 (diagnosed in May 1995) each had one positive culture for MDR TB (specimens were collected during bronchoscopy). Patient 6 had a skin-test conversion after bronchoscopy. Neither patient 6 nor patient 7 had a clinical course consistent with MDR TB, neither was treated for MDR TB, and both are alive and well. No evidence of laboratory contamination of specimens, transmission on inpatient wards, or contact among patients was found. All four received bronchoscopies in May 1995; patients 6, 7, and 8 had bronchoscopies 1, 12, and 17 days, respectively, after patient 5. Observations revealed that bronchoscope cleaning was inadequate, and the bronchoscope was never immersed in disinfectant

The authors concluded that inadequate cleaning and disinfection of the bronchoscope after the procedure performed on patient 5 led to subsequent false-positive cultures in patients 6 and 7, transmission of infection to patient 6, and active MDR TB in patient 8.

In both reports, direct observation of cleaning and disinfection of bronchoscopes revealed variation from institutional policy and national recommendations, including the "APIC Guideline for Infection Prevention and Control in Flexible Endoscopy" of the Association for Professionals in Infection Control and Epidemiology, Inc (APIC).[3] As highlighted in the APIC guideline, disinfection cannot be achieved reliably without first accomplishing thorough mechanical cleaning. Even so, complex devices such as bronchoscopes remain a challenging device for reprocessing between patient use. Thorough cleaning of endoscopes can itself achieve a mean 4-log reduction in microbial load, and use of an appropriate germicide and good quality-control monitoring can offer additional patient safety.[4]

FROM: 1. Michele TM, Cronin WA, Graham NM, Dwyer DM, Pope DS, Harrington S, et al. Transmission of *Mycobacterium tuberculosis* by a fiberoptic bronchoscope. Identification by DNA fingerprinting. *JAMA* 1997; 278(13):1093-1095.

2. Agerton T, Valway S, Gore B, Pozsik C, Plikaytis B, Woodley C, et al. Transmission of a highly drug-resistant *strain (strain* W1) of *Mycobacterium tuberculosis:* community outbreak and nosocomial transmission via a contaminated bronchoscope. *JAMA* 1997;278(13):1073-1077.

3. Martin MA, Reicheldorfer M, APIC Guideline Committees. APIC guideline for infection prevention and control in flexible endoscopy. *Am J Infect Control* 1994;22:19-38.

4. Rutala WA, Weber D. FDA labeling requirements for disinfection of endoscopes: a counterpoint. *Infect Control Hosp Epidemiol* 1995;16:231-235.

MRSA in Australia

Despite vigorous attempts at eradication over the last 20 years, methicillin-resistant *Staphylococcus aureus* (MRSA) continues to be a major nosocomial pathogen in Australian acute-care institutions, reports Dr. McDonald from the Geelong Hospital in Victoria, Australia. The epidemiology of hospital spread is now well-characterized; infected and colonized patients provide the primary reservoirs, and transmis-