

TABLE 2

CHARACTERISTICS OF THE HEALTHCARE WORKERS WHO PARTICIPATED IN THE STUDY

Total number	55
Nurses	29
Physicians	15
Other	9
Unknown	2
Age, years, mean (SD)	35.5 (11.2)
Patient contact, years, mean (SD)	13.3 (9.4)
Antibiotic treatment within last year	2 (47%)
Within 1 mo	5 (9%)
1-6 mo	12 (22%)
7-12 mo	9 (16%)
Antacids or H <sub>2</sub> blocker treatment	18 (33%)
Often	14 (26%)
Occasional	4 (7%)

Abbreviation: SD, standard deviation.

these resistant organisms. Similar studies in other institutions are needed.

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## Costly Consequences of Multiple Misdiagnoses of TB

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In 1996, the Division of Health, Wisconsin Department of Health and Family Services, became aware of five possible incidents of laboratory error associated with the processing of *Mycobacterium tuberculosis* cultures. These errors resulted in the misdiagnosis of tuberculosis (TB) in 11 persons.

Before recognition that these cultures were false-positive, 10 patients or their families had been informed of the diagnosis of TB, and 8 received unnecessary treatments, including hospitalization in respiratory isolation (1), bronchoscopy (2), and anti-TB medication (7). Ten of these false-positive cases were reported to the local health department. As a result, 108 family and social contacts received tuberculin skin tests (TSTs); all were negative. The case management and contact investigation of these cases accounted

for approximately 240 person-hours of labor by the local and state health department staff. In addition, 328 hospital employees and patients received TSTs, and 9 had chest radiographs; no evidence of transmission was found. Hospital infection control and employee health staff expended an additional estimated 330 person-hours as a result of these episodes.

These findings in Wisconsin are similar to those in other recent reports that have documented the occurrence of false-positive *M. tuberculosis* cultures. The percentage of false positives in these reports ranged from 1% to 4%. False-positive results may be even more common in outbreak situations; based on a review of records for 223 multidrug-resistant, culture-positive TB patients in outbreaks in five states, the clinical course was inconsistent with TB in 16% of patients.

Potential mechanisms resulting in contamination and laboratory error include mislabeling or switching spec-

imens during handling and instrument or reagent contamination resulting in carryover of mycobacteria from one sample to another during initial processing, processing for susceptibility testing, or sampling of sequential vials of the BACTEC 240 system. Primary prevention of laboratory errors requires the use of standardized laboratory procedures that minimize the potential for errors. TB control program staff routinely should analyze surveillance data for clusters of positive cultures from a laboratory and for case-patients associated with predictors for false-positive cultures (eg, all specimens from a patient are acid-fast bacilli smear-negative, only one is *M. tuberculosis*-positive, and the patient's signs, symptoms, and clinical course are inconsistent with TB).

FROM: Centers for Disease Control and Prevention. Multiple misdiagnoses of tuberculosis resulting from laboratory error—Wisconsin, 1996. *MMWR* 1997;46:797-801.