

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 ₂ blocker treatment | 18 (33%) |
| Often | 14 (26%) |
| Occasional | 4 (7%) |

Abbreviation: SD, standard deviation.

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

Parts of this work were presented at the 36th ICAAC, New Orleans, Louisiana, September 1997.

97-CC-024. Address reprint requests to Yehuda Carmeli, MD, Division of Infectious Diseases, Beth Israel Deaconess Medical Center, 1 Deaconess Rd, Boston, MA 02215.

REFERENCES

- Knittle MA, Eitzman DV, Baer H. Role of hand contamination of personnel in the epidemiology of gram-negative nosocomial infections. *J Pediatr* 1975;86:433-437.
- Bruun J, Solberg C. Hand carriage of gram negative bacilli and *Staphylococcus aureus*. *BMJ* 1973;2:580-582.
- Rimland D, Roberson B. Gastrointestinal carriage of methicillin resistant *Staphylococcus aureus*. *J Clin Microbiol* 1986;24:137,138.
- Henning KJ, Delencastere H, Eagan J, Boone N, Brown A, Chung M, Wollner N, Armstrong D. Vancomycin-resistant *Enterococcus faecium* on a pediatric oncology ward: duration of stool shedding and incidence of clinical infection. *Pediatr Infect Dis J* 1996;15:848-854.
- Samore MH, Bettin KM, DeGirolami PC, Clabots CR, Gerding DN, Karchmer AW. Wide diversity of *Clostridium difficile* types at a tertiary referral hospital. *J Infect Dis* 1994;170:615-621.
- Samore M, Gold H, Eichelberger K, Venkataraman L, Lichtenberg D, Karchmer A, Eliopoulos G. Increase incidence of vancomycin-resistant enterococci associated with diverse strains and parenteral antibiotic exposure. 95th General Meeting of the American Society for Microbiology; May 1995; Washington, DC. Abstract.
- Preston GA, Larson EL, Stamm WE. The effect of private isolation rooms on patients care practices, colonization and infection in an intensive care unit. *Am J Med* 1980;70:641-645.
- Albert RK, Condie F. Hand-washing patterns in medical intensive care units. *N Engl J Med* 1981;304:1465, 1466.
- Doebbeling BN, Stanley GL, Sheetz CT, Pfaller MA, Houston AK, Annis L, et al. Comparative efficacy of alternative hand washing agents in reducing nosocomial infections in intensive care units. *N Engl J Med* 1992;327:88-93.
- Vollaard EJ, Clasener HAL. Colonization resistance. *Antimicrob Agents Chemother* 1994;38:409-414.

Costly Consequences of Multiple Misdiagnoses of TB

Gina Pugliese, RN, MS
Martin S. Favero, PhD

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.