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*Blood strikethrough data available upon request.

2. Rutala WA, Weber DJ. Infectious waste—mismatch between science and policy. *N Engl J Med.* 1991;325:578-582.
3. Rutala WA, Mayhall GC. Society for Hospital Epidemiology of America. Medical waste. *Infect Control Hosp Epidemiol.* 1992;13:38-48.

Tuberculin Skin Testing of Hospital Employees During an Outbreak of Multidrug-Resistant Tuberculosis in Human Immunodeficiency Virus (HIV)-Infected Patients

To the Editor:

Several outbreaks of multidrug-resistant tuberculosis among persons with human immunodeficiency

virus (HIV) infection have been reported recently.¹ During such an outbreak, which occurred at a hospital in New York City in 1989 through 1990,² we studied the tuberculin skin test (TST) results of nursing and clerical workers on five inpatient units: three medical units where patients with HIV infection or tuberculosis were routinely hospitalized and two nonmedical (general surgery and neurology) units where patients with known HIV infection or tuberculosis were not hospitalized. During May through September 1990, employee health records and a questionnaire self-administered by workers were used to determine nonoccupational exposures to tuberculosis, symptomatology, and the results of a baseline and followup TST. Workers without a TST after January 31, 1990, were offered testing using the Mantoux technique (intradermal injection of 0.1 ml of purified protein derivative

[PPD]); induration of 10 mm or more at two to three days was read as reactive.

Of 165 workers employed on the five units, baseline TST was recorded as reactive in 85 (51.5%), nonreactive in 68 (41.2%), and not recorded in 12 (7.3%). A followup TST was available for 60 workers with a negative baseline TST. Among 31 of the 60 workers for whom duration from baseline to followup TST was more than two years (median = 4.4 years, range = 2.2-21.0 years), nine (29.0%) had a positive followup TST. Among 29 of the 60 workers for whom duration from baseline to followup TST was two years or less (median = 1.1 years), two (6.9%) had a positive followup TST and were defined as TST converters. TST conversion was not significantly more common among workers on medical units (2/22) than among workers on nonmedical units (0/7,

$p = 1.0$). None of the TST-positive workers had evidence of active tuberculosis.

Previously unrecognized TST reactivity was frequent among workers on these units. However, determining whether an outbreak of multidrug-resistant tuberculosis among patients increased the risk of TST conversion among these workers was difficult because of the small number of workers who had a recent negative baseline TST. Additionally, many workers who had received Bacille Calmette-Guerin (BCG) vaccine were unvaluable because they had been listed as TST reactive in employee health records, but the records were insufficient to determine whether PPD reactivity had been documented. Subsequent to the outbreak, increased efforts are being made to perform TST on employees on a routine basis.

The increasing incidence of tuberculosis in the United States coupled with reports of nosocomial outbreaks emphasizes the importance of tuberculous infection for healthcare workers.⁴ All workers should have TST at the time of employment and following unprotected exposures to persons with infective tuberculosis; TST should be repeated regularly for those who work in patient care areas, including nonpatient care workers (e.g., dietary and housekeeping personnel and volunteers). Such testing may have been de-emphasized at some institutions⁵ because, until 1987, the incidence of tuberculosis had been decreasing.³ Among workers who have received BCG, many will be TST-negative; among those who have received BCG and are TST-positive, many may be infected with *Mycobacterium tuberculosis* and should be evaluated for preventive therapy.⁶ Additionally, recommended measures for diagnosis, treatment, and appropriate isolation of patients with known or

suspected active tuberculosis should be taken to reduce the risk of transmission of tuberculosis within healthcare facilities.⁴

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REFERENCES

- Centers for Disease Control. Nosocomial transmission of multidrug-resistant tuberculosis among HIV-infected persons-Florida and New York, 1988-1991. *MMWR*. 1991;40:587-591.
- Edlin BR, Tokars JI, Grieco MH, et al. Nosocomial transmission of multidrug-resistant tuberculosis among AIDS patients: epidemiological studies and restriction fragment length polymorphism analysis. *N Engl J Med*. In press.
- Centers for Disease Control. CDC surveillance summaries. *MMWR*. 1991;40(SS-3).
- Centers for Disease Control. Guidelines for preventing the transmission of tuberculosis in health-care settings, with special focus on HIV-related issues. *MMWR*. 1990;39(RR-17):1-29.
- Aitken ML, Anderson MK, Albert RK. *Am Rev Respir Dis*. 1987;136:805-807.
- Centers for Disease Control. The use of preventive therapy for tuberculosis infection in the United States. *MMWR*. 1990;39(RR-8):6-8.

Reduction of *C difficile*-Associated Diarrhea

To the Editor:

I read with interest the article by Brooks et al on reduction in the incidence of *Clostridium difficile*-associated diarrhea in an acute care hospital and a skilled nursing facility following replacement of electronic thermometers with single-use disposables in the February 1992 issue of *Infection Control*

and Hospital Epidemiology. I am curious and concerned about several issues not addressed in the article. Did the authors verify that the Tempa-dot thermometers meet accuracy standards promulgated by ECRI and/or AAMI? Were patients diagnosed as having *C difficile*-associated diarrhea placed in private rooms? What agents were used for environmental disinfection? What is the authors' definition of "proper use of gloves"?

While the reduction in *C difficile* cases shows statistical significance when comparing the pre- and postintervention time periods, there seem to be a number of confounding variables that were not controlled for and that may have had a significant impact on the reduction of cases. Although the reduction in cases "began immediately following the intervention with single use thermometers," the attention being given to the outbreak and re-education of personnel surely must have played a role. A bar histogram showing dates of infection onset, dates of stool cultures, and dates of specific intervention strategies would be helpful.

The change in thermometer protocols appears to have had an impact; however, the role of other intervention strategies should not be dismissed. The accuracy of the disposable thermometers should also be verified.

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The authors reply.

The disposable clinical thermometers (Tempa-dot) that were employed in our intervention study are used in many hospitals throughout the country. They conform to ASTM standard E825-81 for performance ($\pm 0.2^\circ\text{F}$). Before