

magnitude of healthcare worker and patient risk of uncontrolled exposure to *M tuberculosis* aerosol.

Implementation of the hospitals' TB-control plan may have been influenced by the ongoing presence of CDHS project staff. For 35 individual TB patients who were observed more than once, work practices may have improved after the first observation. In addition, no observations were made during winter months (November-March). As the symptoms of TB are consistent with other respiratory infections that have a variable incidence throughout the year, a study conducted in summer months may not be generalizable to isolation procedures during winter months.²¹ For all of these reasons, this study may have underestimated the routine potential for healthcare worker exposure to *M tuberculosis* aerosol.

The findings suggest that healthcare workers, including those who have no direct patient contact, may incur unrecognized exposures to *M tuberculosis* aerosol during routine hospital operations (ie, not an outbreak setting involving a massive failure of TB control measures). As the hospitals in this study treat many TB patients, over time, a greater than 10% failure rate of TB-patient-isolation control measures may pose a substantial cumulative infection risk among healthcare workers.^{22,23} Many inadequacies in policy, procedures, and training were remedied as they were identified, thereby minimizing the potential for prolonged exposures. Prospectively quantifying the implementation of a hospital's TB isolation policy may lead to more accurate estimates of risk and may help to identify and thereby prevent avoidable healthcare worker exposures to *M tuberculosis* aerosol.

REFERENCES

- Bowden KM, McDiarmid M. Occupationally acquired tuberculosis: what's known. *J Occup Med* 1994;36:320-325.
- Sepkowitz KA. Tuberculosis and the healthcare worker: a historical perspective. *Ann Intern Med* 1994;120:71-79.
- Behrman AJ, Shofer FS. Tuberculosis exposure and control in an urban emergency department. *Ann Emerg Med* 1998;31:370-375.
- Sepkowitz KA, Friedman CR, Hafner A, Kwok D, Manoach S, Floris M, et al. Tuberculosis among urban healthcare workers: a study using restriction fragment length polymorphism typing. *Clin Infect Dis* 1995;21:1098-1102.
- Boudreau AY, Baron SL, Steenland NK, Van Gilder TJ, Decker JA, Galson SK, et al. Occupational risk of *Mycobacterium tuberculosis* infection in hospital workers. *Am J Ind Med* 1997;32:528-534.
- Pearson ML, Jereb JA, Freiden TR, Crawford JT, Davis BJ, Dooley SW, et al. Nosocomial transmission of multidrug-resistant *Mycobacterium tuberculosis*. A risk to patients and health care workers. *Ann Intern Med* 1992;117:191-196.
- Occupational exposure to tuberculosis—OSHA. Proposed rule and notice of public hearing. *Fed Regist* 1997;62:54160-54308.
- Centers for Disease Control and Prevention. Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care facilities. *MMWR* 1994;43(RR-13):8-55.
- Sutton PM, Nicas M, Reinisch F, Harrison R. Evaluating the control of tuberculosis among healthcare workers: adherence of three urban hospitals in California to CDC guidelines. *Infect Control Hosp Epidemiol* 1998;19:487-493.
- Manangon LP, Perrotta DM, Banerjee SN, Hack D, Simonds D, Jarvis WR. Status of tuberculosis infection control programs at Texas hospitals, 1989 through 1991. *Am J Infect Control* 1997;25:229-235.
- Sutton PM, Nicas M, Harrison R. Implementing a quality assurance program for tuberculosis control. In: Charney W, ed. *Handbook of Modern Hospital Safety*. Boca Raton, FL: CRC Press LLC; 1999:246-252.
- Blumberg HM, Watkins DL, Berschling JD, Antle A, Moore P, White N, et al. Preventing nosocomial transmission of tuberculosis. *Ann Intern Med* 1995;122:658-663.
- Dahl KM, L'Ecuyer PB, Jones M, Fraser VJ. Follow-up evaluation of respiratory isolation rooms in 10 midwestern hospitals. *Infect Control Hosp Epidemiol* 1996;17:816-818.
- Woeltje KF, L'Ecuyer PB, Seiler S, Fraser VJ. Varied approaches to tuberculosis control in a multihospital system. *Infect Control Hosp Epidemiol* 1997;18:548-553.
- La Rochelle DR, Carlson EV. Protecting the provider from tuberculosis exposure. *Nurs Clin North Am* 1995;30:13-22.
- Beck-Sagué C, Dooley SW, Hutton MD, Otten J, Breeden A, Crawford JT, et al. Hospital outbreak of multidrug-resistant *Mycobacterium tuberculosis* infections: factors in transmission to staff and HIV-infected patients. *JAMA* 1992;268:1280-1286.
- Jereb JA, Kelvens RM, Privett TD, Smith PJ, Crawford JT, Sharp VL, et al. Tuberculosis in health care workers at a hospital with an outbreak of multidrug-resistant *Mycobacterium tuberculosis*. *Arch Intern Med* 1995;155:854-859.
- Luby S, Carmichael S, Shaw G, Horan J, Gamble W, Jones J. A nosocomial outbreak of *Mycobacterium tuberculosis*. *J Fam Pract* 1994;39:21-25.
- Watson LH, Rosen JD. Educating workers about tuberculosis. *Occupational Medicine: State of the Art Reviews* 1994;9:681-693.
- Stricof RL, Delles LP, Difernando G Jr. Mask/particulate respirator use by employees at risk for exposure to multidrug-resistant tuberculosis. *Am J Respir Crit Care Med* 1994;149(suppl):A855.
- Schuchat A. Hospital, heal thyself. *Am J Public Health* 1997;87:1413-1414.
- Nicas M. Refining a risk model for occupational tuberculosis transmission. *Am Ind Hyg Assoc J* 1996;57:16-22.
- Barnhardt S, Sheppard L, Beaudet N, Stover B, Balmes J. Tuberculosis in healthcare settings and the estimated benefits of engineering controls and respiratory protection. *JOEM* 1997;39:849-854.

Skin Hygiene and Infection Prevention: More of the Same or Different Approaches?

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Elaine Larson, RN, PhD, from Columbia University School of Nursing in New York City, reviewed a number of published research studies that indicate a link between hand hygiene and nosocomial infections and the effects of hand care practices on skin integrity. In addition, she made recommendations for potential changes in clinical practice and for

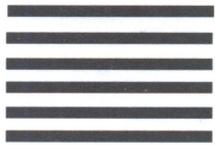
further research regarding hand hygiene practices. Despite some methodological flaws and data gaps, evidence for a causal relationship between hand hygiene and reduced transmission of infections is convincing. However, frequent hand washing causes skin damage, with resultant changes in microbial flora, increased skin shedding, and risk of transmission of microorganisms, suggesting that some traditional hand hygiene practices warrant reexamination.

Some recommended changes in practice included use of waterless alcohol-based products rather than detergent-based antiseptics, modifications in lengthy surgical-scrub protocols, and incorporation of moisturizers into skin-care regimens of healthcare professionals.

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