

Education of medical students and house staff to prevent hazardous occupational exposure

Christopher Doig

The recent report in *CMAJ* by Sarah Thompson¹ is a poignant reminder to medical students and physicians of the risks of exposure to occupational hazards that are inherent to our profession. The risks of occupational exposure to potential hazards are high in the health care industry; it is an industry with a poor health and safety record, in which little attention has been paid to training its members in minimizing risks.²

The risk of exposure to occupational hazards is potentially the greatest for an inexperienced, tired individual in a new work environment — medical students and house officers during clinical training rotations, for example.^{3,4} A recent survey completed by 385 medical students and junior house staff at a New York City medical centre on occupational exposure to patients' blood and body fluids found that 32% (122/385) of the respondents experienced hazardous exposures during the 6 months preceding the survey. Only 29% (35/122) of those respondents reported the exposure to the medical centre's occupational health office, in accordance with the institution's policy. Similar surveys conducted in American teaching hospitals of medical house staff, residents and medical students report exposure rates to patients' blood and body fluids anywhere between 19%⁵ and 71%.⁶

Although the reports on occupational exposure to blood and body fluids often focus on HIV, the risk of infection from exposure to other organisms is higher. The risk of infection for health care workers in a dialysis setting was reported to be 4000 times higher for hepatitis B and 8000 times higher for hepatitis C than it was for HIV.⁷ Exposure to pathogens from routes other than blood and body fluids is also a concern; 46% (12/26) of internal medicine residents at a public hospital in the United States who had self-reported a negative tuberculin skin test received positive results on a repeat tuberculin test before they graduated.⁸ Many of the risk factors associated with tuberculosis exposure could have been avoided if the appropriate educational intervention pro-

grams had been offered. Unfortunately, there is little comparative data available from Canadian training centres on rates of exposure to occupational hazards.

The rates of reporting occupational exposures to institutional or personal health providers have been reported to be between 9% and 30%.^{4,6} Reasons for not reporting an exposure included lack of formal reporting mechanisms, perceptions that the injuries did not pose a major risk (i.e., that the patient was not infectious), the outcome of the exposure would not be changed by making a report, and fears about confidentiality and professional discrimination. By not reporting their exposure these individuals potentially relinquished the chance to receive risk assessment, counselling, valuable information and worker's compensation.

Education in occupational exposure has been identified by students at the University of Calgary as an important topic that, although addressed in the curriculum, is perhaps lacking in necessary scope, breadth and practical grounding. At present, occupational exposure to infectious pathogens is covered in three 1-hour sessions (lectures or small groups) as part of the curriculum in clinical systems courses. For example, occupational exposure to blood-borne pathogens is included in lectures on the hepatitises and HIV, and the management of patients with suspected tuberculosis is discussed in small-group sessions. However, these sessions do not specifically cover techniques to prevent personal nosocomial exposure or the proper procedures to follow if exposure occurs. There is a session during clerkship orientation on the reporting of needle-stick injuries, but students have said that because they are so overwhelmed with the other information provided on their first day of clerkship, they may marginalize this information, not understanding its practical importance.

Descriptions of coordinated programs at other universities are scarce in the literature. Educational programs on minimizing risk exposure in health care facilities are dis-

cussed,⁹⁻¹⁰ but many of these programs focus on specific infection-control practices and were not developed specifically for medical students and house staff. To develop a comprehensive educational program, data on the knowledge base of students and house staff, the incidence and types of exposures, and the risk factors associated with occupational exposure are required. Moreover, to be successful the program should provide general training in minimizing risk, focus on the specific risks inherent to different specialties and provide ongoing follow-up and training; the development, reporting and dissemination of such a program should definitely be encouraged. Locally, the necessity for increasing curriculum time, consolidating sessions and providing both theory and practical training has been identified, and attempts at developing a comprehensive program are currently under way.

Members of the medical profession, and particularly those who participate in the education of medical students and residents, have a moral and ethical obligation to ensure adequate training is provided in risk recognition and the prevention of injuries and illnesses associated with employment in the health care industry. The report by Sarah Thompson¹ reminds us of the risk that all members of our profession may face at some time during their career. We must teach our future colleagues how to minimize these risks and how to deal with hazardous exposures when they occur, rather than have them learn only through harrowing personal experience.

Dr. Doig is an Assistant Professor in the Division of Critical Care, University of Calgary, Calgary, Alta.

Competing interests: None declared.

References

1. Thompson SK. The impact of a split-second error. *CMAJ* 1999;160(9):1351.
2. DiBenedetto DV. Occupational hazards of the health care industry: protecting health care workers. *AAOHN J* 1995;43(3):131-7.
3. Aiken LH, Sloane DM, Klocinski JL. Hospital nurses' occupational exposure to blood: prospective, retrospective, and institutional reports. *Am J Public Health* 1997;87(1):103-7.
4. Resnic FS, Noerdlinger MA. Occupational exposure among medical students and house staff at a New York City Medical Center. *Arch Intern Med* 1995;155(1):75-80.
5. Mangione CM, Gerberding JL, Cummings SR. Occupational exposure to HIV: frequency and rates of underreporting of percutaneous and mucocutaneous exposures by medical housestaff. *Am J Med* 1991;90(1):85-90.
6. O'Neill TM, Abbott AV, Radecki SE. Risk of needlesticks and occupational exposures among residents and medical students. *Arch Intern Med* 1992;152(7):1451-6.
7. Petrosillo N, Puro V, Jagger J, Ippolito G. The risks of occupational exposure and infection by human immunodeficiency virus, hepatitis B virus, and hepatitis C virus in the dialysis setting. Italian Multicenter Study on Nosocomial and Occupational Risk of Infections in Dialysis. *Am J Infect Control* 1995;23(5):278-85.
8. Cocchiarella LA, Cohen RA, Conroy L, Wurtz R. Positive tuberculin skin test reactions among house staff at a public hospital in the era of resurgent tuberculosis. *Am J Infect Control* 1996;24(1):7-12.
9. Trovillion E, Murphy D, Mayfield J, Dorris J, Traynor P, Fraser V. Costs of implementing a tuberculosis control plan: a complete education module that uses a train-the-trainer concept. *Am J Infect Control* 1998;26(3):258-62.
10. Gould D, Chamberlain A. The use of a ward-based educational teaching package to enhance nurses' compliance with infection control procedures. *J Clin Nurs* 1997;6(1):55-67.

Correspondence to: Dr. Christopher Doig, Calgary Regional Health Authority, Division of Critical Care, Foothills Medical Centre, 1403 29th St. NW, Calgary AB T2N 2T9; fax 403 283-9994; cdoig@ucalgary.ca