

Editorial

Raising the Bar: The Need for Standardizing the Use of "Standard Precautions" as a Primary Intervention to Prevent Occupational Exposures to Bloodborne Pathogens

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Since 1987, healthcare institutions have invested substantial resources in implementing "Universal" or "Standard" Precautions. The publication of the Occupational Safety and Health Administration (OSHA) "Bloodborne Pathogen Standard" in 1991 mandated not only the use of these precautions in healthcare facilities but also annual training of all staff at risk for occupational exposures to bloodborne pathogens.¹ Reducing occupational risks for bloodborne pathogen infection remains a focus of occupational medicine and hospital epidemiology programs throughout the United States and around the world. The apparent efficacy of postexposure antiretroviral chemoprophylaxis for occupational exposures to human immunodeficiency virus has added an additional "secondary prevention" arrow in the quiver of the team involved in postexposure management^{2,3}; however, the antiretroviral agents used for postexposure prophylaxis are toxic, poorly tolerated, and less than 100% effective. Preventing exposures—primary prevention—offers the best, and by far the safest, opportunity to reduce occupational infections with bloodborne pathogens. Despite the fact that the implementation of Universal or Standard Precautions has been shown to be associated with a reduction in cutaneous⁴ and, in some settings, percutaneous^{5,6} exposures to blood, adherence to these precautions remains less than optimal.

In this issue of the Journal, Beekmann and coworkers demonstrate in a large cross-sectional study of (primarily community) hospitals in Iowa and Virginia that training of at-risk personnel is uneven and that adherence to these

precautions—despite the OSHA rule—is far from optimal.⁷ These authors provide insight into the following: (1) the occupational exposure rates in these community hospitals, giving the reader useful benchmarking data for similar institutions across the country; (2) the extent to which these institutions are investing in infection control programs as part of a comprehensive exposure-prevention strategy; (3) how these institutions are training their staff about exposure prevention; and (4) the unevenness of training for various categories of staff in many of these institutions.

The article does provide some good news: the occupational exposure rates in these institutions appear to be slightly lower than those reported from larger centers over the past decade. A variety of factors, ranging from differences between community and academic centers, effective education of at-risk staff, and the use of safer devices, all may have contributed to this apparent reduction in exposure rates. One may postulate, however, that, with a minimum investment in aggressive exposure-prevention programs, these institutions could reduce their rates much further.

In my own opinion, several of the findings in this manuscript are disquieting. Most of us working in the field of hospital epidemiology have been concerned with the "brain" and personnel drain that has occurred in our profession over the past 5 years. With hospitals scurrying to meet the challenges of leaner, meaner health-maintenance organizations and purchasers who have a careful eye on costs, hospital epidemiology programs have been vulnerable to what might be termed "creative downsizing." The article by Beekmann et al demonstrates that the majority of

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00-ED-265. Henderson DK. Raising the bar: the need for standardizing the use of "Standard Precautions" as a primary intervention to prevent occupational exposures to bloodborne pathogens. Infect Control Hosp Epidemiol 2001;22:70-72.

the institutions responding to their survey are, at best, minimally staffed for hospital epidemiology at a time when the demands on the hospital epidemiology programs are increasing. That several of these institutions invest little or nothing in training for staff with respect to occupational risks and postexposure management is disturbing, perhaps even frightening. The fact that that one of every eight of the responding hospitals does not offer continuous occupational medicine support for employees sustaining occupational exposures is even more problematic.

A major finding from the article by Beekmann et al is that physicians do not receive recurring training in bloodborne pathogen-exposure prevention. Whereas the physician staff in these smaller hospitals may not be considered "employees of the hospital," these physicians do need this training, if for no other reason than as a recurring reminder of the extent to which they are at risk for occupational infection with bloodborne pathogens. One easily could (and I believe that regulators likely would) argue that provision of this training to all staff at risk for occupational exposure to bloodborne pathogens is a clear institutional responsibility. One approach to this dilemma is to link credentialing and privileging of medical staff to the completion of this training annually. We take this approach in my own institution.

Because Beekmann et al present data from several different institutions that likely have vastly differing emphases on the management of bloodborne pathogen exposures (and therefore likely different occupational-exposure-reporting mechanisms, different levels of emphasis on reporting these exposures, and different compliance rates with exposure reporting), these data may not be entirely comparable. The authors do, in fact, present some data indirectly addressing institutional support for these programs, and one might suggest that these data may well serve as a barometer for the extent to which exposure-management issues are emphasized at these institutions. Thus, the quality and reliability of data from these institutions may be strikingly different. Second, the authors rely on reported injury rates and assume (out of necessity for a study of this design) that reporting of injuries is homogeneous over the population of responding institutions, that reporting trends are reasonably stable over time, that reporting by occupation is equivalent across institutions, and that reported injuries are an accurate reflection of true exposures. These assumptions likely are not entirely accurate, but these issues cannot be addressed in a study of this design. The authors acknowledge these limitations of the study design in their discussion.

In the introduction to their article, Beekmann and colleagues briefly discuss a few factors from the literature that have been associated with healthcare practitioners' adherence to Universal or Standard Precautions. A substantial body of evidence suggests that these precautions are reasonably efficacious in preventing occupational exposures to (and therefore infections with) bloodborne pathogens.

Nonetheless, one of the interesting conundrums associated with Universal or Standard Precautions in the year 2001 and beyond is that a similarly impressive body of evidence suggests that these precautions are followed far

less well than one might hope.^{8,22} My own view is that we know far too little about what drives "safe behavior" in the healthcare workplace. Because secondary prevention strategies (eg, postexposure prophylaxis) are not benign interventions, primary prevention is crucial to the establishment and maintenance of a safer workplace.

To make certain that primary prevention strategies are effective, we simply must learn how to effect adherence to these precautions. Several studies have suggested that knowledge about the epidemiology, pathogenesis, and risks associated with workplace exposures to bloodborne pathogens is necessary, but not sufficient, to effect adherence behaviors. Other factors that have been linked to adherence include assessment of compliance with precautions in annual performance evaluations, and an overall organizational commitment to safety.

In their article, Beekmann et al do not address "risk perception" as a variable for adherence to universal or standard guidelines. My own bias (supported at least in part by data from the literature)^{23,24} is that staff who perceive themselves to be at risk for exposure and infection are more likely to comply with guidelines and precautions. Transmitting the "risk perception" message requires the trainer or practitioner to walk the thin line between firing the flames of anxiety and understating the risk. Clearly, some individuals are more likely than others to take risks, and such individuals may be more likely to take unnecessary risks in the workplace.²⁵ In any event, gaining additional insight into the factors that drive adherence to these precautions should be a primary focus of scientific interest in the next several years.

The fact that one eighth of the hospitals responding to the Iowa survey do not offer continuous occupational medicine support for exposure management is equally disturbing. Provision of a reasonable quality exposure-prevention program requires dedicated, invested hospital epidemiology staff. Provision of an effective postexposure management program requires access to practitioners who are knowledgeable about exposure epidemiology, exposure management, the agents and regimens to be prescribed, the potential toxicities associated with these antiretroviral agents, and counseling exposed workers.

In many academic centers, robust programs are in place to assist with the management of occupational exposures; however, in many settings, management falls to the emergency room staff, who often are unfamiliar with the circumstances of exposure and unfamiliar with the agents to be used for prophylaxis. In fact, the only settings in which emergency room staff are likely to prescribe these agents are in the circumstances of occupational exposure or rape.

The national postexposure hotline (which can be reached at 1-888-448-4911), managed from the University of California at San Francisco and funded by the US Public Health Service, offers a ready source of counsel and expertise. One cannot overstate the importance of providing access to (and assuring the use of) (1) consultants who have expertise in the management of occupational exposures and antiretroviral; (2) expert advice when a "tailored regimen" is needed because the source patient is known to

harbor resistant isolates; and (3) expert advice about the counseling of exposed healthcare workers.²

One approach that has been successful in helping some institutions lower occupational exposure rates is the use of newer, safer devices. As Beekmann and coworkers note, use of certain of these devices has been associated with reductions in exposures due to certain specific circumstances. Consequently, some states have passed legislation requiring the use of some of these safer devices. The US Congress recently passed similar legislation [P.L. #106-430], which revised the Bloodborne Pathogen Standard to include the mandated use of some newer, safer medical devices. Further, this legislation requires employers to maintain a log of all exposures, including the type and brand of device responsible for the exposure, and to seek insight from the exposed worker into the manner in which the device may have contributed to the exposure.

In an era in which healthcare institutions increasingly are relying on performance measurement and performance improvement, occupational exposures offer excellent fodder for a comprehensive approach to performance improvement. At our own institution, we record data about every occupational exposure; analyze these data for unique characteristics and trends; and propose, implement, and measure the efficacy of interventions designed to address common circumstances of exposure. This approach provides a systematic evaluation of exposures and reasons for exposure and has resulted in a substantial reduction in occupational exposures in our institution.²⁶ This approach requires commitment and investment on the part of the team members but has yielded superb results in our own institution.

The article by Beekmann and colleagues underscores the need for further interventions to attempt to reduce occupational exposures. Such interventions invariably will require investment from both hospital epidemiology and occupational medicine staffs. Further, their article underscores the importance of having the institutional administration to be cognizant of, intimately involved with, and aggressively supportive of organizational programs designed to reduce occupational exposures. This support will, of necessity, include the commitment of institutional resources.

If we are to succeed in making the healthcare workplace safer for our coworkers in the next decade, we need to develop a better understanding of what drives healthcare workers' behaviors. Institutions must invest ample resources in comprehensive programs that apply the principles of continuous improvement to the processes of care that place healthcare workers at risk for these exposures. Maintaining a safe workplace is a cornerstone of clinical quality.

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