

Worker Exposure to Hazardous Drugs Subject of NIOSH Alert and Guidelines

The Joint Commission and OSHA Lend Support to National Effort to Curb Hazards

A pharmacist was found to have grade II papillary transitional cell carcinoma.

An oncology nurse experienced projectile vomiting.

An oncology patient care assistant developed a skin reaction 30 minutes after emptying a urine-filled bedpan into a toilet.

Cases such as these illustrate the adverse health effects suffered by health care workers due to even low-level exposures to hazardous drugs. The five case reports included in a hazardous drugs alert from the National Institute for

Occupational Safety and Health (NIOSH) also describe workers afflicted by allergic asthma and elevated biomarkers after exposure. These are only some of the conditions affecting workers exposed to powerful drugs used for cancer chemotherapy, antiviral treatments, hormone regimens, and other therapies. Infertility, miscarriage, and birth defects are others, the alert says.

NIOSH, the Occupational Safety and Health Administration (OSHA), and The Joint Commission distributed a letter¹ to stakeholders nationwide in April 2011, calling attention to an

update of a hazardous drugs list and guidelines previously published in 2004. The letter links to NIOSH's "List of Antineoplastic and Other Hazardous Drugs in Healthcare Settings, 2010" (<http://www.cdc.gov/niosh/docs/2010-167/pdfs/2010-167.pdf>) and the NIOSH alert, "Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings" (<http://www.cdc.gov/niosh/docs/2004-165/pdfs/2004-165.pdf>), which includes the five case reports.

Harmonizing the Efforts of Many Stakeholders

The NIOSH guidelines harmonize hazardous drug standards and recommendations developed over the years by OSHA, The Joint Commission (see the sidebar on page 7), the Environmental Protection Agency (EPA), the American Society of Health-System Pharmacists (ASHP), the Oncology Nurses Society (ONS), and other organizations, says Melissa McDiarmid, M.D., M.P.H., D.A.B.T., professor of medicine, epidemiology, and public health at the University of Maryland School of Medicine and director of its occupational health program.

"Everyone is working together now to abide by the recommendations in the NIOSH alert," McDiarmid observes. "I

Joint Commission Standards Related to Hazardous Drug Management

Standard EC.02.02.01

The hospital manages risks related to hazardous materials and waste.

EP 5. The hospital minimizes risks associated with selecting, handling, storing, transporting, using, and disposing of hazardous chemicals.

EP 8. The hospital minimizes risks associated with disposing of hazardous medications. (See also MM.01.01.03, EPs 1–3)

EP 11. For managing hazardous materials and waste, the hospital has the permits, licenses, manifests, and material safety data sheets required by law and regulation.

EP 12. The hospital labels hazardous materials and waste. Labels identify the contents and hazard warnings.*

Standard: MM.01.01.03

The hospital safely manages high-alert and hazardous medications.

* The Occupational Safety and Health Administration's (OSHA's) "Bloodborne Pathogens and Hazard Communications Standards" and the National Fire Protection Association (NFPA) provide details on labeling requirements.

NIOSH Hazardous Drug Protection Recommendations

Specific NIOSH recommendations for protecting workers from hazardous drug exposure include the following:

1. Identify and assess workplace hazards before anyone begins working with hazardous drugs.
 - Regularly review the hazardous drug inventory, equipment, and practices; seek input from affected workers.
 - Conduct regular training reviews with workers who could potentially be exposed to hazardous drugs.
2. Implement a program to handle drugs safely and review it annually.
 - Establish procedures and provide training for handling hazardous drugs and cleaning up spills.
 - Establish general hygiene practices—such as not eating or drinking in areas where drugs are handled.
3. Develop procedures for properly using and maintaining equipment designed to reduce exposure.
 - Equipment may include ventilated cabinets, closed-system drug-transfer devices, needle-less systems, and personal protective equipment.

hope we're at a tipping point." Studies identifying these hazards to workers go back as far as the 1970s.² The most recent studies are posted on the Web site of the Centers for Disease Control and Prevention (CDC).³ "We need everyone back on the same page. When you have to remain vigilant over the long term, fatigue can set in," she states.

McDiarmid said that The Joint Commission's involvement in supporting and communicating the NIOSH guidelines is especially important, pointing out that The Joint Commission "has more of a footprint in health care than OSHA or NIOSH does." The NIOSH guidelines "dovetail very nicely with the patient safety movement and the system of safety that The Joint Commission has promoted," McDiarmid emphasizes. "We're trying to surmount the historical notion of silos of safety in health care and move to a more mature vision of a system of safety" that protects patients, workers, and anyone else entering the environment, she explains.

Contamination Is Widespread

McDiarmid says the overarching theme of the NIOSH guidelines is that hazardous drugs "need to be treated with respect." She says the contamination is quite widespread, despite the implementation of practices and equipment designed to mitigate the risks of hazardous drugs. Traces of these drugs can be found on work surfaces, on clothing or medical equipment, and in patient urine.²

Workers often unwittingly expose themselves to danger while performing tasks in workspaces or with materials they don't realize are contaminated. According to the CDC, each year about 5.5 million U.S. health care workers are potentially exposed to hazardous drugs, including pharmacy and nursing personnel, physicians, workers in research laboratories, veterinary care workers, environmental services workers, and shipping and receiving personnel.⁴ The hazards exist in traditional health care and research settings, as well as in home care settings and retail pharmacies.

McDiarmid says special care must be taken to prevent exposure to hazardous drugs any time a barrier is broken—for example, when opening boxes, priming and spiking IV bags, or puncturing a rubber stopper with a needle to add liquid to dilute powdered drugs.

The outside of containers holding hazardous drugs may also be contaminated, from pharmaceutical distributor boxes received on the loading dock to IV bags prepared in a hospital pharmacy. "Fugitive" aerosols or powders can travel from where one kind of drug is being prepared and land on the container of another, McDiarmid says. "You need to look at the 'cradle to grave' pathway a drug takes in an organization—because anyone along that pathway is at risk of exposure," she explains. "The solution is to ensure a system of safety in health care that benefits both patients and workers."

Health Care Organizations Responsible for Enforcing Standards

To ensure worker safety, OSHA standards require employers to identify hazardous drugs and post lists of them.⁵ Employees must also receive information and training about hazards in their work areas.⁵ The NIOSH guidelines advise that health care organizations must enforce these standards for the benefit of their workers. Each organization must be alert to drugs named on the list, as well as to new pharmaceuticals and other drugs unique to its setting.

The guidelines encourage management staff to take a leadership role in worker safety and health and to develop and offer training, evaluate injury and illness prevention programs for continuous improvement, and offer employees opportunities to participate in efforts to identify and remediate hazards.

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Worker Exposure to Hazardous Drugs

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NIOSH Emphasizes Engineering and Administrative Controls, Proper Protective Equipment

Workers can be protected from exposures to hazardous drugs through engineering controls (such as ventilated cabinets), administrative controls, and proper protective equipment, the NIOSH guidelines say. See the box on page 7 for specific recommendations.

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The NIOSH guidelines also provide summaries of OSHA and EPA standards and recommendations, as well as detailed recommendations pertaining to receiving and storage; drug preparation and administration, ventilated cabinets; and cleaning, decontaminating, housekeeping, and waste disposal.

While the guidelines are a start, McDiarmid says a great deal of vigilance must be applied to them. “Breakdowns occur when [workers] are rushed and when they have to do more with less. People know what they’re supposed to do in an ideal circumstance, but in health care it’s often not

an ideal circumstance,” she says. “People have to hurry, and patients are waiting for drugs. There are a lot of timing issues that add to the chaos, and in such situations, shortcuts take place.”

Washington State to Enforce NIOSH Standards

In Washington State, two bills were recently passed that go beyond the NIOSH recommendations. The first new law directs the state to enforce the NIOSH guidelines. The second requires that a cancer patient’s occupation be reported to a registry,

and if the patient is retired, his or her primary occupation before retirement must be reported. This law will enable officials to track cancer cases to occupations.

The laws were sparked by articles that appeared in *The Seattle Times* in July 2010. The stories linked the lack of regulation with workplace contamination. Proponents of the new laws hope they serve as a model for similar legislation in other states.

Future Stakes Will Be Higher

McDiarmid says reducing the risks of hazardous drugs is imperative

because the World Health Organization expects a 50% increase in cancer cases within the next 15 to 20 years. More patients means more workers will be needed, which “translates into a greater opportunity for health care workers to be exposed to these drugs,” says McDiarmid. Also, some chemotherapy drugs have begun to be used for the treatment of arthritis, multiple sclerosis, and other diseases, spreading potential hazards due to exposure even further.

To learn more, go to NIOSH’s Hazardous Drug Exposures in Health Care Workplace Safety and Health Topics Web page, at <http://www.cdc.gov/niosh/topics/hazdrug>, and OSHA’s Hazardous Drugs Safety and Health Topics Web page, at <http://www.osha.gov/SLTC/hazardousdrugs/index.html>. 

References

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