

Ensuring Healthcare Worker Safety When Handling Hazardous Drugs

Hazardous drugs (HDs) are chemicals that demonstrate one or more of the following characteristics: carcinogenicity, genotoxicity, teratogenicity, reproductive toxicity, or organ toxicity (National Institute for Occupational Safety and Health [NIOSH], 2004). Healthcare workers (HCWs) potentially are exposed to HDs in the workplace during drug preparation, administration, and disposal and when handling patients' excreta following treatment with these drugs. More than 100 studies since 1994 have documented evidence of contamination of the work environment with HDs, which increases the potential for exposure of nurses, pharmacists, and other HCWs when these agents are handled without appropriate precautions. More than 50 studies have demonstrated the presence of HDs in the urine of HCWs, indicating actual exposure. Occupational exposure to HDs has been associated with acute symptoms (e.g., nasal sores, hair loss), adverse reproductive outcomes (e.g., infertility, miscarriages), genetic changes (e.g., DNA damage), and an increased occurrence of cancer (Centers for Disease Control and Prevention, 2014).

The Occupational Safety and Health Administration (1986) acknowledged the occupational risks of HDs and issued recommendations for their safe handling about 30 years ago. Updated guidelines from NIOSH and professional societies subsequently have been published (American Society of Health-System Pharmacists, 2006; NIOSH, 2012; Polovich, Olsen, & LeFebvre, 2014). All guidelines address the need for HD-related policies and procedures, education and training, and safe-handling precautions in organizations in which HDs are present. Safe-handling precautions include the use of safety equipment, safe work practices, and personal protective equipment (PPE). When used consistently, recommended precautions can reduce occupational HD exposure (NIOSH, 2004).

Occupational HD exposure can be minimized by a comprehensive HD safe-handling program based on a hierarchy of controls (Connor & McDiarmid, 2006). When a hazard cannot be eliminated, engineering controls are recommended to control exposure. Biologic safety cabinets and compounding aseptic containment isolators are primary engineering controls, and closed-system transfer devices are supplemental engineering controls, both of which reduce HD exposure. Administrative controls are the next level of protection and include safe-handling policies and procedures, hazard communication, education, and medical surveillance of those who are potentially exposed. Finally, PPE that has been tested for use with HDs provides barrier protection for workers. PPE includes gowns, gloves, eye and face shields, and respirator protection, depending on the HD handling activities.

Nurses and pharmacists usually work as employees rather than independent practitioners in hospitals, clinics, and offices; therefore, employers and employees share the responsibility for HD safe handling.

It Is the Position of ONS, the American Society of Clinical Oncology, and the Hematology/Oncology Pharmacy Association That

- Organizations in which HDs are present will establish evidence-based policies and procedures for safe handling that comply with regulatory requirements.
- Organizations in which HDs are prepared and administered will provide and maintain primary engineering controls and evaluate the utility of supplemental engineering controls, such as closed-system transfer devices, to reduce worker exposure.
- Organizations in which HDs are present will ensure that appropriate PPE is available to all staff to minimize exposure.
- Organizations in which HDs are present will provide education and training specific to each worker's role for staff who are potentially exposed. Education and training will include the risks of exposure, such as the reproductive and developmental effects, the recommended precautions for specific handling activities, safe handling of contaminated patient excreta, proper disposal of contaminated waste, and how to handle acute exposure.
- Organizations in which HDs are present will protect the rights of staff members who are trying to conceive, who are pregnant, or who are breast feeding to engage in alternate duties that do not require HD handling.
- Organizations in which HDs are present will ensure that patients who receive these drugs and their caregivers receive education about safe handling to minimize unintended exposure.
- Organizations will ensure that HD waste is disposed of according to regulatory guidelines and in a manner that protects staff and the environment.
- Our professional societies will continue to explore evidence-based strategies for mitigation of risk associated with handling HDs and share recommendations with our respective members.

Approved by the ONS Board of Directors,
January 2015.



References

- American Society of Health-System Pharmacists. (2006). ASHP guidelines on handling hazardous drugs. Retrieved from <http://ashp.org/DocLibrary/CE/AJHP06002.aspx>
- Centers for Disease Control and Prevention. (2014). Occupational exposure to antineoplastic agents: Recent publications, guidelines, review articles, and surveys. Retrieved from <http://cdc.gov/niosh/topics/antineoplastic/pubs.html>
- Connor, T.H., & McDiarmid, M.A. (2006). Preventing occupational exposures to antineoplastic drugs in health care settings. *CA: A Cancer Journal for Clinicians*, 56, 354–365. doi:10.3322/canjclin.56.6.354
- National Institute for Occupational Safety and Health. (2004). Preventing occupational exposure to antineoplastic and other hazardous drugs in health care settings. Retrieved from <http://cdc.gov/niosh/docs/2004-165>
- National Institute for Occupational Safety and Health. (2012). *NIOSH list of antineoplastic and other hazardous drugs in healthcare settings 2012*. Retrieved from <http://cdc.gov/niosh/docs/2012-150/pdfs/2012-150.pdf>
- Occupational Safety and Health Administration. (1986). Guidelines for cytotoxic (antineoplastic) drugs. Retrieved from https://osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=1702
- Polovich, M., Olsen, M., & LeFebvre, K.B. (Eds.). (2014). *Chemotherapy and biotherapy guidelines and recommendations for practice* (4th ed.). Pittsburgh, PA: Oncology Nursing Society.