Personal Protective Equipment

Evaluating usage among inpatient and outpatient oncology nurses

Denise Menonna-Quinn, RN-BC, DNP, AOCNS®, BMTCN®, Martha Polovich, PhD, RN, AOCN®, and Brenda Marshall, EdD, MSN, APRN-BC

BACKGROUND: Chemotherapy agents have long been considered hazardous, and safety for healthcare providers when administering these drugs is a primary concern. Personal protective equipment (PPE) is known to decrease exposure to hazardous drugs. Studies report that PPE is underused among healthcare providers in inpatient and outpatient settings.

OBJECTIVES: The purpose of this study was to examine the use of PPE among inpatient and outpatient nurses while administering hazardous chemotherapy agents.

METHODS: This cross-sectional, descriptive study used the Hazardous Drug Handling Questionnaire (HDHQ) to measure nurses' self-reported use of PPE.

FINDINGS: Results of the HDHQ indicated that nurses are not using PPE as recommended by hazardous drug administration guidelines. Interventions for proper PPE usage include interprofessional collaboration among oncology nurses, administrators, organizations, and healthcare systems to ensure the safety of healthcare providers, patients, and family caregivers.

KEYWORDS
hazardous agents; safe handling practices; chemotherapy exposure; drug toxicity

DIGITAL OBJECT IDENTIFIER
10.1188/19.CJON.260-265

DRUGS ARE CONSIDERED HAZARDOUS IF STUDIES in humans or animals indicate that the drugs have the potential to cause cancer, reproductive toxicity, birth defects, or damage to organs at low doses (Couch & West, 2012; U.S. Department of Health and Human Services [USDHHS], 2004). According to the National Institute for Occupational Safety and Health (NIOSH), hazardous drugs typically exhibit one or more of the following characteristics in humans or animals: carcinogenicity, teratogenicity, reproductive toxicity, organ toxicity, and genotoxicity (USDHHS, 2016). Slightly more than half of the drugs meeting the NIOSH criteria for hazardous designation are antineoplastic agents used in the treatment of cancer (USDHHS, 2014).

Administration of chemotherapy has increased in various settings, including free-standing infusion centers; subspecialty physician offices, such as urology and neurology; long-term care facilities; emergency departments; operating rooms; and patients' homes. In addition, the use of antineoplastic agents for non-oncologic indications increases the risk and concern for occupational exposure. Therefore, these medications are deemed hazardous materials and can put nurses and other healthcare providers at risk for serious health complications regardless of area of expertise (USDHHS, 2014).

Chemotherapy Exposure Side Effects

Chemotherapy exposure can potentially harm healthcare providers, particularly nurses, pharmacists, physicians, and ancillary staff (Washington State Department of Labor and Industries, 2015). Negative side effects of exposure to hazardous chemotherapy agents are classified as acute or chronic. According to NIOSH (2019), acute or short-term effects from chemotherapy exposure have been observed in patients treated with antineoplastic agents, as well as in healthcare providers who administered these drugs. Acute effects associated with exposure to antineoplastic agents include skin rashes, allergic reactions, alopecia, nausea and vomiting, and cardiac and hematopoietic toxicities. The Centers for Disease Control and Prevention (CDC) documented numerous studies that identified urine mutagenicity, chromosomal damage, sister chromatid exchange, and DNA damage as biological markers of exposure in healthcare providers exposed to antineoplastic agents. These biomarkers can potentially lead to long-term adverse effects (NIOSH, 2019). In addition, reproductive issues, such as temporary or permanent infertility