

Personal Protective Equipment Use and Hazardous Drug Spills Among Ambulatory Oncology Nurses

Bei Y. He, MPH, Kari Mendelsohn-Victor, MPH, Marjorie C. McCullagh, PhD, RN, FAAOHN, FAAN, and Christopher R. Friese, PhD, RN, AOCN®, FAAN

He is a research assistant in the School of Public Health; and Mendelsohn-Victor is a clinical research coordinator, McCullagh is a professor, and Friese is a professor, all in the School of Nursing at the University of Michigan in Ann Arbor.

Friese's research was funded by the University of Michigan Comprehensive Cancer Center Discovery Fund through support from the University of Michigan Center for Occupational Health and Safety Engineering (T420H008455) and by a grant (R01OH010582) from the National Institute for Occupational Safety and Health. The contents of this article are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

Friese contributed to the conceptualization and design. Mendelsohn-Victor and Friese completed the data collection. He, Mendelsohn-Victor, and Friese provided statistical support. He, McCullagh, and Friese provided the analysis and contributed to the manuscript preparation.

Friese can be reached at cfriese@umich.edu, with copy to editor at ONFEditor@ons.org.

Submitted January 2016. Accepted for publication March 28, 2016.

Keywords: antineoplastic agents; nursing staff; workload; occupational exposure; oncology nursing

ONF, 44(1), 60–65.

doi: 10.1188/17.ONF.60-65

Purpose/Objectives: To examine patterns and organizational correlates of personal protective equipment (PPE) use and hazardous drug spills.

Design: Cross-sectional mailed survey.

Setting: Ambulatory practices in California, Georgia, and Michigan.

Sample: 252 Oncology Nursing Society members who administer hazardous drugs.

Methods: Bivariate and multivariable regression analyses.

Main Research Variables: Outcomes were PPE use and hazardous drug spills. Covariates included nursing workloads, nurses' practice environments, and barriers to PPE use.

Findings: Twenty-six percent reported a recent drug spill, and 90% wore only one pair of chemotherapy-tested gloves. Increased PPE use was associated with increased nurse participation in practice affairs, nonprivate ownership, increased nursing workloads, and fewer barriers to PPE use. Spills were associated with significantly less favorable manager leadership and support and higher workloads.

Conclusions: Drug spills occur often in ambulatory settings. PPE use remains low, and barriers to PPE use persist. Higher workloads are associated with more drug spills.

Implications for Nursing: Managers should monitor and correct aberrant workloads and ensure that PPE is available and that staff are trained.

About 8 million healthcare workers are potentially exposed to hazardous drugs each year in the United States (Connor & McDiarmid, 2006; Randolph, 2012). Oncology nurses prepare and administer substantial volumes of antineoplastic drugs; roughly 18 million doses are administered to adults annually in the United States (Cherry, Woodwell, & Rechtsteiner, 2007). Potentially harmful urinary and blood metabolites have been detected in nurses who handle these drugs (Connor et al., 2010). Adverse health effects from exposures include acute issues (skin rashes, eye irritation, nausea), long-term reproductive issues (infertility, spontaneous abortions, congenital anomalies), and possible cancers (National Institute for Occupational Safety and Health [NIOSH], 2004; Occupational Safety and Health Administration, 1999).

Despite more than 30 years of efforts to improve personal protective equipment (PPE) use and safe-handling guidelines, recent studies have documented work surface contamination and dermal, eye, and inhalation exposure among oncology nurses who report hazardous drug spills (Friese, Himes-Ferris, Frasier, McCullagh, & Griggs, 2011; Kopp, Schierl, & Nowak, 2012). NIOSH (2004) reported workplace hazardous drug exposure as a persistent problem among healthcare workers. The use of chemotherapy-tested gloves, single-use disposable gowns, respirators or masks, eye protection, and closed-system transfer