

# Factors Influencing Nurses' Use of Hazardous Drug Safe-Handling Precautions

Amy Callahan, DNP, RN, CRNP, AOCNS®, Nancy J. Ames, RN, PhD,  
Mary Lou Manning, PhD, CRNP, CIC, FAAN, Kate Touchton-Leonard, MA, Li Yang, MS,  
and Gwenth R. Wallen, RN, PhD

Callahan is a nurse manager in the Sidney Kimmel Cancer Center at the Thomas Jefferson University Hospital in Philadelphia, PA; Ames is a research specialist in the Nursing Department at the National Institutes of Health Clinical Center in Bethesda, MD; Manning is an associate professor in the School of Nursing at Thomas Jefferson University in Philadelphia; and Touchton-Leonard is a research assistant, Yang is a biostatistician, and Wallen is deputy chief nurse, all in the Nursing Department at the National Institutes of Health Clinical Center.

This research was funded by the Intramural Research Program of the National Institutes of Health Clinical Center.

Callahan, Ames, Manning, and Wallen contributed to the conceptualization and design. Callahan completed the data collection. Callahan and Yang provided statistical support and contributed to the analysis. Callahan and Touchton-Leonard contributed to the manuscript preparation.

Callahan can be reached at amy.callahan@jefferson.edu, with copy to editor at ONFEditor@ons.org.

Submitted September 2015. Accepted for publication November 10, 2015.

**Key words:** oncology nurses; hazardous drugs; safe handling; occupational exposure

ONF, 43(3), 342–349.

doi: 10.1188/16.ONF.43-03AP

**Purpose/Objectives:** To identify factors associated with oncology nurses' use of hazardous drug (HD) safe-handling precautions in inpatient clinical research units.

**Design:** Descriptive, cross-sectional.

**Setting:** The National Institutes of Health Clinical Center in Bethesda, Maryland.

**Sample:** 115 RNs working on high-volume HD administration units.

**Methods:** Survey data were collected online using the Hazardous Drug Handling Questionnaire. Data were analyzed using descriptive statistics and multiple regression analysis.

**Main Research Variables:** Exposure knowledge, self-efficacy, barriers to personal protective equipment use, perceived risk, conflict of interest, interpersonal influences, workplace safety climate, and total mean HD precaution use.

**Findings:** Participants demonstrated high exposure knowledge, self-efficacy, perceived risk, interpersonal influences, and workplace safety climate. Participants demonstrated moderate barriers and conflict of interest. Total mean HD precaution use proved highest during HD administration and lowest for handling excreta at 48 hours. Average patients per day significantly influenced total HD precaution: nurses exhibited more HD precaution use when assigned fewer patients.

**Conclusions:** Despite high exposure knowledge, barriers to personal protective equipment use and conflict of interest may contribute to reduced adoption of personal protective practices among oncology nurses.

**Implications for Nursing:** Hospital and unit-specific factors captured by the predictor variables could contribute to institutional HD policy.

**H**azardous drugs (HDs) are defined by the National Institute for Occupational Safety and Health ([NIOSH], 2004) using one or more of the following criteria: carcinogenicity, teratogenicity, reproductive toxicity, genotoxicity, organ toxicity at low doses, and drugs that mimic existing HDs in structure or toxicity. Most of the drugs that match the HD description are cytotoxic antineoplastic agents; however, other classes of drugs are included in this category, such as antivirals, antibiotics, and hormones (NIOSH, 2004).

According to the Centers for Disease Control and Prevention ([CDC], 2012), about 8 million healthcare providers in the United States work in environments that could increase their risk of HD exposure. Exposure occurs via inhalation, dermal absorption, ingestion, or contact with conjunctiva (NIOSH, 2004). HD exposure risk occurs during drug-handling activities, such as administration, preparation, and disposal of the drug and patient excreta (Polovich & Martin, 2011). Nurses working in oncology settings frequently handle chemotherapeutic agents, making the nurses particularly vulnerable to exposure.