Nurses’ Use of Hazardous Drug-Handling Precautions and Awareness of National Safety Guidelines

Martha Polovich, PhD, RN, AOCN®, and Susan Martin, RN, DNSc, AOCN®

Hazardous drugs (HDs) are pharmacologic agents exhibiting one or more of the following characteristics: carcinogenicity, teratogenicity, genotoxicity, reproductive toxicity, or organ toxicity at low doses (American Society of Health-System Pharmacists, 2006). Most HDs are chemotherapy drugs used in the treatment of cancer, making occupational HD exposure a significant problem for oncology nurses. Nurses may be exposed to HDs during preparation, administration, or handling of patient excreta following their use. Such exposure has been linked to acute and long-term health effects, including acute symptoms, adverse reproductive outcomes, and an increased risk of cancer.

Occupational exposure to HDs may result in adverse health outcomes. Those effects are based on the inherent toxicities of the agents. Several published studies have demonstrated health risks for healthcare workers who were exposed to chemotherapy. The first was a small, controlled study in which the authors reported mutagenic activity in the urine of patients who received chemotherapy, as well as the nurses who administered it (Falck et al., 1979). The Ames test was used, which measures genetic mutations in bacteria following exposure to chemicals. Ninety percent of known carcinogens test positive on this tool (Polovich, 2003). The study demonstrated that handling HDs during administration resulted in drug absorption by the nurses.

Pharmacists and nurses have reported acute symptoms from HD exposure, such as skin irritation, sore throat, cough, dizziness, headache, hair loss, allergic reaction, diarrhea, nausea, and vomiting (Harrison, 2001; Kyprianou, Kapsou, Raftopoulos, & Soteriades, 2010; Valanis, Vollmer, Labuhn, & Glass, 1993a, 1993b). Adverse reproductive outcomes have been reported more frequently in HD-exposed as compared to unexposed healthcare workers. Those include miscarriage (Kyprianou et al., 2010; Martin, 2003), spontaneous abortions (odds ratios [OR] = 1.5–2.3) (Selevan, Lindbohm, Hornung, & Hemminki, 1985; Stücker et al., 1990; Valanis, Vollmer, & Steele, 1999), infertility (OR = 1.42–1.5) (Martin, 2003; Valanis, Vollmer, Labuhn, & Glass, 1997), longer time to conception (OR = 0.8) (Fransman et al., 2007); preterm labor (OR = 2.98), and preterm births (OR = 5.56) (Martin, 2003). Other documented effects of occupational HD exposure in nurses include DNA damage (Fuchs et al., 1995;...