



## Keep Caregivers Safe: Reduce Secondary Exposure to Chemotherapy

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**C**hemotherapy exposure during drug administration and provision of care is a known risk for oncology nurses and other health-care workers. Guidelines to minimize exposure to hazardous drugs, such as chemotherapy, have long been in place to decrease potential health risks (American Society of Hospital Pharmacists [ASHP], 1990; Occupational Safety and Health Administration [OSHA], 2015). Recommendations for healthcare workers include use of personal protective equipment for handling excreta, changing linens, cleaning toilet areas, and flushing excreta (Polovich, 2011). Because most chemotherapy is now administered in the outpatient setting, extension of precautions to reduce exposure to chemotherapy in excreta should be continued by the patient and caregiver in the home setting.

### Home Exposure

Hazardous drugs and their metabolites may remain active in stool and urine beyond the treatment day. Forty-eight hours is a general time frame for use of personal protective equipment to reduce exposure because most drugs are excreted within this time (ASHP, 1990; OSHA, 2015). Cyclophosphamide (Cytosan®), a commonly administered chemotherapy drug, has been found to be excreted in an unchanged format for as many as two days after administration (ASHP, 1990; Yuki, Sekine, Takase, Ishida, & Sessink, 2013). A study by Yuki, Sekine, Takase, Ishida, and Sessink (2015) was conducted in Japanese women with breast cancer and analyzed risks of home exposure for as many as seven days post-treatment. Yuki et al. (2015) tracked cyclophosphamide content in daily urine samples of patients and caregivers and found that 63% of patients excreted drug three days

after chemotherapy, beyond the expected exposure time and recommendations for precautions. They also reported that concentration peaks of cyclophosphamide 48 hours or later after administration were higher in family members than patients in settings where caregivers were in close patient contact and sharing bathrooms. In addition, swipes of two home toilets, bathroom floors, and doorknobs detected drug contamination that exceeded those in hospital settings (Yuki et al., 2015).

### Taking Precautions

The risk for home caregivers of exposure to hazardous drugs in excreta has been recognized, and recommendations have been made for education about precautions. Polovich (2011) outlines clear instructions for safe chemotherapy management in the home, citing general precautions for 48 hours after chemotherapy administration. These include instructions about use of gloves for disposing of body waste, discussion of need for double toilet flushing and closing the lid, and cleaning laundry and the environment. Information about drugs requiring personal protective equipment for longer than two days does not include cyclophosphamide (ASHP, 1990; Polovich, 2011).

The study by Yuki et al. (2015) indicated that patient and caregiver exposure following cyclophosphamide exceeds 48 hours, and the need for precautions should extend for as many as five days. Although the study included a small number of patients, all urine samples had consistent drug levels for longer than 48 hours, and further investigation is warranted. Oncology nurses should heed the findings of this study and err on the side of caution in their own practice and when instructing patients and

families about risks and the need for extended, diligent protection.

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### References

- American Society of Hospital Pharmacists. (1990). ASHP technical assistance bulletin on handling cytotoxic and hazardous drugs. *American Journal of Hospital Pharmacy*, 47, 1033–1049.
- Occupational Safety and Health Administration. (2015). OSHA technical manual: Section VI: Chapter 2: Controlling occupational exposure to hazardous drugs. <http://1.usa.gov/1MemlyO>
- Polovich, M. (Ed.). (2011). *Safe handling of hazardous drugs* (2nd ed.). Pittsburgh, PA: Oncology Nursing Society.
- Yuki, M., Sekine, S., Takase, K., Ishida, T., & Sessink, P.J. (2013). Exposure of family members to antineoplastic drugs via excreta of treated cancer patients. *Journal of Oncology Pharmacy Practice*, 19, 208–217.
- Yuki, M., Sekine, S., Takase, K., Ishida, T., & Sessink, P.J. (2015). Secondary exposure of family members to cyclophosphamide after chemotherapy of outpatients with cancer: A pilot study. *Oncology Nursing Forum*, 42, 665–671. doi:10.1188/15.ONF.665-671

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