

## Seventeen Percent of Cancer Nurses Unintentionally Exposed to Chemotherapy, Study Finds

Aug. 23, 2011 — Nearly 17 percent of nurses who work in outpatient chemotherapy infusion centers reported being exposed on their skin or eyes to the toxic drugs they deliver, according to a new study from the University of Michigan Comprehensive Cancer Center.

The study surveyed 1,339 oncology nurses from one state who did not work in inpatient hospital units. About 84 percent of chemotherapy is delivered in outpatient settings, largely by nurses. Results appear online in the journal *BMJ Quality and Safety*.

"Any unintentional exposure to the skin or eyes could be just as dangerous as a needle stick," says lead study author Christopher Friese, R.N., Ph.D., assistant professor at the U-M School of Nursing.

"We have minimized needle stick incidents so that they are rare events that elicit a robust response from administrators. Nurses go immediately for evaluation and prophylactic treatment. But we don't have that with chemotherapy exposure," Friese says.

Safety guidelines for chemotherapy drug administration have been issued by organizations such as the National Institute for Occupational Safety and Health. But these guidelines are not mandatory. Guidelines include recommendations for using gowns, gloves and other protective gear when handling chemotherapy drugs.

The U-M Comprehensive Cancer Center adheres to these safety guidelines and has procedures in place to implement and enforce them for all staff who administer chemotherapy drugs. U-M nurses did not participate in this study.

The study authors found that practices that had more staffing and resources reported fewer exposures. Also, practices in which two or more nurses were required to verify chemotherapy orders -- part of the suggested guidelines -- had fewer exposures.

"This research shows that paying attention to the workload, the health of an organization, and the quality of working conditions pays off. It's not just about job satisfaction -- it's likely to lower the risk of these occupational hazards," Friese says.

Unlike needle sticks where a specific virus is involved and preventive treatments can be given, it's more difficult to link chemotherapy exposure to a direct health effect. That makes it more difficult for health care systems to respond to these incidents. Unintentional chemotherapy exposure can affect the nervous system, impair the reproductive system and confer a future risk of blood cancers.

Friese collaborated in this study with the U-M School of Nursing's Occupational Health Nursing Program, which focuses on training nurses to promote injury prevention and protect against work-related injuries and environmental hazards on the job. By combining this practical occupational health perspective with the expertise of quality and safety researchers, the team hopes to better understand what happens during chemotherapy exposure and what can be done in the work place to prevent it.

"If we ensure patient safety, we should also ensure employee safety by strictly adhering to the national safety guidelines and providing staff education on these guidelines," Friese says.

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Funding: National Institute of Nursing Research, National Institutes of Health, U-M Comprehensive Cancer Center

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### Journal Reference:

1. C. R. Friese, L. Himes-Ferris, M. N. Frasier, M. C. McCullagh, J. J. Griggs. **Structures and processes of care in ambulatory oncology settings and nurse-reported exposure to chemotherapy.** *BMJ Quality & Safety*, 2011; DOI: [10.1136/bmjqs-2011-000178](#)

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University of Michigan Health System (2011, August 23). Seventeen percent of cancer nurses unintentionally exposed to chemotherapy, study finds. *ScienceDaily*. Retrieved March 22, 2013, from <http://www.sciencedaily.com/releases/2011/08/110822111749.htm>

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## Journal of Occupational & Environmental Medicine:

August 1999 - Volume 41 - Issue 8 - pp 632-638

Original Articles

# Occupational Exposure to Antineoplastic Agents: Self-Reported Miscarriages and Stillbirths Among Nurses and Pharmacists

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### Abstract

Insult to the germ cells of an ovum or sperm prior to pregnancy as well as exposures to a fetus during pregnancy can affect the outcome of a pregnancy. Antineoplastic agents are mutagenic and teratogenic, so the potential effects of exposure on reproduction are of concern to the workers who handle them. This study investigates pregnancy loss associated with occupational exposures to antineoplastic drugs by comparing rates of spontaneous abortion and stillbirths for pregnancies without antineoplastic exposure and exposed pregnancies in which the pregnant woman or the father handled antineoplastic agents either before or during the pregnancy. A total of 7094 pregnancies of 2976 pharmacy and nursing staff were examined. After age during pregnancy, prior gravidity, maternal smoking during the pregnancy, and occurrence of a spontaneous abortion or stillbirth in a prior pregnancy were controlled for, exposure of the mother to or the handling of antineoplastic agents during the pregnancy was associated with a significantly increased risk of spontaneous abortion (odds ratio = 1.5; 95% confidence interval, 1.2 to 1.8) and combined risk of spontaneous abortion and stillbirth (odds ratio = 1.4; 95% confidence interval, 1.2 to 1.7) but not stillbirth alone. Among the wives of exposed men, too few stillbirths occurred to allow analysis. However, for spontaneous abortion and any loss, the patterns of increased risk were similar to those seen for women, although the odds ratios were not statistically significant.

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