

Are health care providers who work with cancer drugs at an increased risk for toxic events? A systematic review and meta-analysis of the literature

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Objective. A systematic review and meta-analysis was conducted to test the hypothesis that oncology health care workers are at an increased risk of cancer, reproductive complications and acute toxic events.

Design. A structured literature search of *Index Medicus*/ MEDLINE, CINAHL, EMBASE, the Cochrane Database of Systematic Reviews and Healthstar was performed from 1966 to December 2004 for human epidemiological studies evaluating the risk of toxic events in health care workers exposed to cytotoxic drugs. Raw data and adjusted odds ratios (OR) reported in eligible studies were combined using a random effects model to calculate point estimates and 95% confidence intervals (CI) for each potential risk outcome.

Main outcome measures. Adjusted OR for congenital malformations, stillbirths and spontaneous abortions among health care workers

exposure to cytotoxic agents compared to a non-exposed control group.

Results. The systematic review identified 14 studies evaluating the outcomes of interest, seven of which were suitable for statistical pooling. Due to lack of evidence, we were unable to estimate a pooled OR for the risk of cancer and acute toxic events. However, no significant association was detected between exposure to cytotoxic drugs and; congenital malformations (OR = 1.64; 95% CI: 0.91–2.94) and stillbirths (OR = 1.16; 95% CI: 0.73–1.82). In contrast, an association was identified between exposure to chemotherapy and spontaneous abortions (OR = 1.46; 95% CI: 1.11–1.92).

Conclusions. The results of this systematic review identified a small incremental risk for spontaneous abortions in female staff working with cytotoxic agents. Health policy decision makers should effectively communicate the magnitude of this risk to their staff and implement cost effective interventions for its reduction or elimination. *J Oncol Pharm Practice* (2005) 11: 69–78.

Key words: administration; health care workers; chemotherapy, health risks; preparation; workers

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