

HOSPITAL SURFACES CONTAMINATION WITH ANTINEOPLASTIC DRUGS: INFLUENCE OF CLEANING PROCEDURES

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Introduction: The raising frequency of cancer diseases is leading to a widespread application of antineoplastic drugs, thus increasing the probability of workplace surfaces contamination. Most of these drugs are classified by the International Agency for Research on Cancer as known or suspected human carcinogens. Skin absorption is the main route for antineoplastic drugs exposure in occupational settings, therefore cleaning protocols have paramount influence in surfaces contamination and, consequently, in exposure. The aim of this study was to assess surfaces contamination in a Portuguese chemotherapy unit before and during drug administration, in both preparation and administration facilities.

Methods: Samples were collected by wipe-sampling from potentially contaminated surfaces selected by previous protocol observation. Samples were analyzed by HPLC-DAD. Cyclophosphamide (CP), 5-fluorouracil (5FU), and paclitaxel (PTX) were used as surrogate markers for surfaces contamination for all cytotoxic drugs.

Results: From the 34 samples collected before any preparation and administration activities, 41.2% were contaminated with 5-FU (4.0-84.7 ng/cm²) and 23.5% of the samples were contaminated with CP (19.8-139.6 µg/cm²). Only 2 samples presented contamination by PTX (5.9%) with a maximum value of 3.7 ng/cm². Of the 37 samples collected during preparation and administration of antineoplastic drugs, 48.7% were contaminated with 5-FU (1.9-88.7 ng/cm²) and 24.3% with CP (12.0-93.9 µg/cm²). None of the samples showed contamination with PTX.

Discussion: Data showed differences in contamination levels before and after the handling of antineoplastic drugs in preparation and in administration settings. These results point out the importance of cleaning procedures. This is well in accordance to previous studies that showed how the type of cleaning procedures and products used can be determinant for surfaces decontamination.

[1] Hon CY., Barzan C., Astrakianakis, G. (2014). Identification of knowledge gaps regarding healthcare workers exposure to antineoplastic drugs: Review of literature, North America versus Europe. *Safety and Health at Work*.

[2] Viegas S., Pádua M., Veiga A., Carolino E.; Gomes, M. (2014). Antineoplastic drugs contamination of workplace surfaces in two Portuguese hospitals. *Environmental Monitoring and Assessment*.