

Bulletin de veille n° 68

1^{er} juillet 2024 – 31 août 2024

Surveillance biologique de l'exposition professionnelle aux médicaments cytotoxiques. Etude de terrain.

Objectif : *Disposer d'une connaissance actualisée du sujet en accompagnement des demandes d'assistance qui découlent de la valorisation de l'étude sur la surveillance biologique de l'exposition aux médicaments cytotoxiques en milieu hospitalier.*

La validation des informations fournies (exactitude, fiabilité, pertinence par rapport aux principes de prévention, etc.) est du ressort des auteurs des articles signalés dans la veille. Les informations ne sont pas le reflet de la position de l'INRS. Les éléments issus de cette veille sont fournis sans garantie d'exhaustivité.

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- *Articles de périodique (PREPRINT)*

Bouchfaa M., Vasseur M., Courtin J., Pinturaud M., Beauval N., Allorge D., Odou P., Simon N.
Assessment of chemical contamination by cancer drugs during use of the RIVA(TM) compounding robot: A pilot study.

Journal of Oncology Pharmacy Practice, 26 août 2024

Résumé : *INTRODUCTION: Many hospitals are now investing in robotic compounding system for the preparation of cytotoxic agents. The objective of the present study was to describe contamination by cytotoxics inside and outside the RIVA(TM) robot (ARxIUM, Winnipeg, Canada). MATERIAL & METHODS: We applied a risk analysis to determine which locations inside and outside the compounding robot should be monitored. Samples were collected by swabbing with a wet swab (using 0.1 mL of sterile water) before the robots was cleaned. Ten cytotoxics compounded with the robot were screened for using LC-MS/MS. We determined the percentage contamination rates inside (CR(in)) and outside (CR(out)) the robot and the amounts of each contaminant (in ng/cm²). If a sample was found to be positive, a corrective action was implemented. RESULTS: Our risk analysis highlighted 10 locations inside the robot and 7 outside. Ten sampling campaigns (10 samples per campaign) were performed. The mean CR(in) (40%) was significantly higher than the mean CR(out) (2%; $p < 10^{-4}$). Gemcitabine and cyclophosphamide were the main contaminants. After the implementation of corrective measures (such as daily cleaning with SDS/isopropyl alcohol), the CR(in) fell from 60% to 10%. DISCUSSION/CONCLUSION: The frequency of contamination was lower for robotic compounding than for manual compounding in an isolator. However, robotic compounding tended to generated larger mean amounts of contaminant; this was related to incidents such as splashing when syringes were disposed of after the compounding. The implementation of corrective actions effectively reduced the CRs. Further longer-term studies are required to confirm these results.*

<https://doi.org/10.1177/10781552241276530>

- *Articles de périodique*

Campos D., Silva I., Rego M., Correia P., Moreira F. (Préprint dans Bulletin n° 62)
Characterization of education, technical practices and attitudes of Portuguese pharmacy technicians towards manipulation of cytotoxic drugs.

Journal of Oncology Pharmacy Practice, Volume 30, Numéro 5, juillet 2024, Page 893-901

Résumé : *Pharmacy professionals that manipulate cytotoxic drugs need to undergo educational programs, adopt the most convenient practices, and use appropriate equipment to avoid, as far as possible, occupational exposure to cytotoxic drugs. The main goal of this work is to characterize the education, technical practices, and attitudes towards cytotoxic drugs, of Portuguese pharmacy technicians. A questionnaire comprising eleven questions deemed pertinent was elaborated and subsequently validated by a pilot test. The anonymous, web-based survey was conducted between December 2022 and January 2023, by graduated pharmacy technicians that had manipulated cytotoxic drugs between 2017 and 2022. A total of 77 pharmacy technicians responded to the survey. Although sixty-six pharmacy technicians (86%) had been trained before beginning to manipulate cytotoxic drugs, the promotion of regular post-admission training by the institutions is sparse - only assumed by 53% of the pharmacy technicians (n = 41). All participants reported using gloves and gown during manipulation*

and the use of double gloves was common (99%; $n = 76$). Compliances with the recommended limit time for uninterrupted manipulation activity (82%; $n = 63$) and systematic double-checking (86%; $n = 66$) were high, but the regular use of sterile gauze around syringe connection sites 58% ($n = 45$), was less frequent. None of the surveyed pharmacy technicians used closed-system transfer devices (CSTD) and 41 (53%) of those who used spikes did not thoughtfully use these devices. The implementation of regular training programs in manipulating cytotoxic drugs should be fostered, to promote the more judicious use of engineering controls and transversal adoption of the safest technical practices.

<https://doi.org/10.1177/10781552231190025>

Maeda, A., Hori K., Sone Y., Hashimoto N., Uchida K.

Assessing floor contamination by antineoplastic agents in a Japanese medical institution specializing in cancer treatment.

Journal of Oncology Pharmacy Practice, Volume 30, Numéro 5, juillet 2024, Page 880-883

Résumé : *INTRODUCTION: This study investigated the extent of contamination with antineoplastic agents on floor surfaces of the ward and the outpatient chemotherapy center of a Japanese cancer center to evaluate healthcare workers' risk of occupational exposure to antineoplastic agents outside of the designated drug preparation areas. METHODS: In this study conducted at Aichi Cancer Center, the amount of fluorouracil detected on various floor surfaces was measured using liquid chromatography-tandem quadrupole mass spectrometry. Areas around the toilets were cleaned with a surfactant two or three times a day, whereas other floor surfaces were cleaned only with dry and wet mops. RESULTS: Fluorouracil was detected on all surveyed floor surfaces, with particularly high amounts detected around the toilet areas in the ward. Additionally, areas with more human traffic tended to have higher fluorouracil contamination. CONCLUSIONS: This survey suggested that antineoplastic agent contamination occurring through patient excretions might spread throughout the hospital with human traffic. Therefore, controlling the spread of antineoplastic agent contamination in hospitals should include the review of measures to mitigate contamination around toilets and to implement effective cleaning methods for floor surfaces.*

<https://doi.org/10.1177/10781552231190015>

Cheng J., Yuan M., Zhang S., Xiao Q., Zhou Q., Huang X.

Latent class analysis of healthcare workers' knowledge, attitudes, and practice levels, and risk factors regarding associated with occupational exposure to antineoplastic drugs: A multicenter cross-sectional study.

Medicine, Volume 103, Numéro 28, 12 juillet 2024, Page e38400

Résumé : *The study investigated the health care workers' knowledge, attitudes, and practice levels regarding occupational protection against antineoplastic drugs (ADs) via analysis of latent classes and their influencing factors. A convenience sampling method was used to select healthcare workers from 7 hospitals in southern China between April and August 2023. A questionnaire based on literature analysis, brainstorming, and Delphi method was used to investigate the knowledge, practice, and attitudes of healthcare workers exposed to ADs for appropriate occupational protection intervention, followed by latent class analysis. The factors influencing latent classes were identified via single-factor analysis and multiple logistic regression. A total of 322 healthcare workers from departments using ADs were surveyed. The knowledge score associated with occupational protection against ADs was 31.95 ± 7.38 . The attitude score was 21.08 ± 2.729 , while the practice score was 36.54 ± 9.485 . The overall score was 89.57 ± 15.497 . The healthcare workers were divided into 4 latent classes based on their knowledge,*

attitude, and practice associated with occupational protection measures against ADs. Healthcare workers in the 4 categories showed significance differences based on professional title, marital status, educational background, and frequency of exposure to ADs ($P < .05$). The knowledge, attitude, and practice levels of healthcare workers engaged in ADs at work can be divided into 4 latent classes. Despite their increased awareness of the hazards associated with ADs and their attitudes toward protection, the healthcare workers displayed poor knowledge and implementation of occupational protection measures.

<https://doi.org/10.1097/MD.00000000000038400>

Walton A., Powell M., Silva S.G., Jin H., Hatch D., Spasojevic I.

Personal Protective Equipment Use and Surface Contamination With Antineoplastic Drugs: The Impact of the COVID-19 Pandemic.

Clinical Journal of Oncology Nursing, Volume 28, Numéro 4, août 2024, Page 380-388

Résumé : *BACKGROUND: Surface contamination with antineoplastic drugs (ADs) is persistent. The use of personal protective equipment (PPE) is recommended to reduce exposure to ADs. OBJECTIVES: This study explored the impact of the COVID-19 pandemic on nurses' PPE use and surface contamination with ADs. METHODS: Demographic characteristics, PPE use, and associated factors were assessed on two inpatient oncology units where etoposide and cyclophosphamide were administered before ($N = 26$) and during the COVID-19 pandemic ($N = 31$). FINDINGS: PPE use when handling contaminated excreta was significantly higher during the pandemic. Perceived risk of chemotherapy exposure was significantly associated with greater PPE use when handling AD-contaminated excreta, and conflict of interest was related to less PPE use during AD administration and handling of AD-contaminated excreta. During the pandemic, surface contamination with etoposide increased in shared areas and decreased in patient rooms.*

<https://doi.org/10.1188/24.CJON.380-388>