Monitoring of surfaces contamination with antineoplastic drugs in preparation and administration areas

Background

A safe working environment is essential for all who act in the area where cytotoxic drugs are handled. Thus, safe handling procedures should be closely monitored in all areas where antineoplastic drugs are delivered, stored, prepared, administered and disposed of in order to reduce exposure of healthcare workers. Present knowledge on surface contamination with antineoplastic drugs in European hospitals in all areas where these drugs are handled is limited.

Aim of the study

The main goal of the study is to obtain an overview of the current situation in Europe concerning the cytotoxic contamination in the workplace. Additionally, this study will help to evaluate the environmental contamination with cytotoxic drugs circulating within a facility known as the hospital medication system (process flow of drug) as well as the impact of changes in practice to protect those who work in the area where the cytotoxic drugs are handled.

Number of hospitals

The study will be conducted in six European hospitals where antineoplastic drugs are prepared and administered according to national guidelines, with only one hospital from each country.

Study design and duration

Study consists of the successive stages:

1. Selection of six hospitals from different European countries (May 2013)
2. Collection and analysis of wipe samples taken from surfaces in the preparation area (pharmacy) and administration area (ward) (July-August 2013)
3. Collection of questionnaires on local workplace practices and work organization in selected hospitals (July-September 2013)
4. Discussion of analysis and results, and improvement of working conditions (October 2013)
5. Training of representative pharmacists to develop the knowledge and skills needed to perform wipe sampling successfully (October 2013)
6. Collection and analysis of wipe samples taken from the same locations in the preparation area (pharmacy) and administration area (ward) after the implementation of changed working conditions in these hospitals where it will be necessary (January-February 2014)
7. Report of study results (June 2014)

Materials and Methods

Assessment of surface contamination with antineoplastic drugs will be performed by wipe sampling. The pharmacist from each hospital will be trained by the leader of the project on the procedure for wipe sampling. Wipe samples will be taken twice in each hospital from the same locations.

In each hospital wipe samples will be taken from 10 comparable surfaces including five within preparation areas (work surface of biological safety cabinets, floors, checking counters, storage surfaces and refrigerator doors) and five within administration areas (checking counters, floors, cytotoxic waste containers, patient's armchairs and phones). The same locations (as far as possible) will be chosen in all hospitals to allow comparison of data.

Wipe samples within one hospital will be taken by the same, trained pharmacist.

Wipe samples will be collected using Pharma Monitor® kit containing everything needed to collect an accurate surface sample for laboratory analysis. One kit contains standardized supplies for collecting 5 samples. Every hospital will receive four Pharma Monitor® kits which will be obtained from ESOP.

The samples will be analyzed using LC-MS/MS for contaminations with *cyclophosphamide, docetaxel, etoposide, 5-fluorouracil, gemcitabine, ifosfamide, methotrexat and paclitaxel.*

Chemical analysis will be performed at the Institute of Energy and Environmental Technology (IUTA) in Duisburg, Germany.

Outcomes

The results of the study will be presented in the general report and during the 2nd European Conference Oncology Pharmacy in 2014.

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