

Urgent need to improve the safety of chemotherapy ward personnel in hospitals

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Abstract

Cytotoxic and hazardous drugs, which mainly include chemotherapeutic agents,(1) have serious well-known side effects. Where we deliberately use these medicines to save the patient's life, these side effects are acceptable. But now we know that the treatment staff who are occupationally exposed to chemotherapeutic agents are at risk of contamination, which can be avoided. Direct contact with chemotherapeutic agents, whether through handling, preparation, or administration represents an exposure risk.(1)

The extent of contamination depends on the protective equipment as well as the protocols used for handling, preparation, storage, and administration of cytotoxic medicines. According to the Canadian Union of Public employees (CUPE), in the hospital wards where biological safety cabinets are not available for preparation of the chemotherapeutic agents, the air is contaminated with detectable levels of these medicines.(2) Even in well-equipped hospitals there are a considerable risk of occupational exposure. Studies have shown measurable levels of cytotoxic contamination in health facilities in Europe, the US and Australia. Even in preparation areas where biological safety cabinets are used, residues of cytotoxic drugs have been detected in the air and on different surfaces.(3) A recent study conducted in 15 European countries showed that 20% of surfaces in preparation and administration areas were contaminated with cytotoxic drugs that may not necessarily be handled on the day of sampling.(4) This is while in developed countries there is strict adherence to guidelines and standards of safety. However, in developing countries like Iran the level of contamination is expected to be much higher.(5) The urinary level of cyclophosphamide as an indicator of occupational exposure to cytotoxic drugs in oncology hospitals was found to be much higher in Iranian cases compared to other studies.(6)

It seems that in most hospitals of Iran we are facing lack of appropriate biological safety cabinets and personal protective equipment (PPE), which is raising concerns about the safety of treatment staff. In most hospitals of our country, cytotoxic drugs are prepared without biological safety cabinets. In other cases, the cabinets that are used are either not appropriate for that purpose or need service, which means that they do not actually protect the personnel. Unfortunately, the number of standard equipped chemotherapy departments in our country is very few.

After all, the most important thing, lack of which is quite evident, is training and awareness of the personnel. A study conducted in 8 hospitals of Tehran showed that 55% of the personnel do not routinely wear gloves when handling cytotoxic drugs.(7) Other studies have also shown that personnel of oncology wards do not follow the protocols.(8) The “implementation of safe practices” in low- and middle-income countries is 63% on average, and this figure reaches 32% in some countries.(9) Studies on information of nurses in oncology wards’ emphasize the necessity of personnel training.(10)

There are several reports on the occurrence of acute complications due to contamination with cytotoxic drugs among the personnel of oncology departments. Besides, we receive complains from on-

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cology ward staff which indicates the occupational exposure and toxicity including nausea and vomiting during and after drug preparation, hair loss, shortness of breath (especially after working with fluorouracil and doxorubicin), skin dryness and itching (especially after working with cytarabine), frequent eczema, cough, infertility and spontaneous abortion. Although the symptoms are not specific and exclusive to cytotoxic contamination, they are warning signs and indicate the need for further investigations and diagnostic tests.

In order to reduce the exposure risk and make the workplace safer for personnel, a combination of measures and controls must be taken. First of all it is essential to equip the oncology wards of the hospitals with proper biological safety cabinets and clean rooms. It is very important to physically separate the personnel from direct contact with drug particles or aerosols. If properly working, the cabinets can prevent other areas from contamination.

The next important action is to provide the personnel with appropriate PPE including chemical-grade nitrile gloves, goggles, gowns, and other necessities to minimize drug contact with the skin, eye, or respiratory tract. It is also necessary to be prepared to face incidents like breaking vials or accidentally spilling the medicine and to have detoxifying packages in the wards.

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At last, but not least, is to inform and educate the personnel about the potential hazards of working with cytotoxic agents and training them in appropriate handling and safe practice guidelines. Applying adequate cleaning protocols, which is mandatory in certain regions of the world (including the US and the EU) is pivotal.(4) It is shown that personnel training and using standard protocols for cleaning has a significant effect on reduction of the contamination.(4) Furthermore, administrative controls must be in place to ensure proper implementation of protocols.

Performing routine health check-up tests, and changing the workplace of immunocompromised and pregnant personnel or those who intend to become pregnant, are other approaches that can improve the health status of the high risk personnel.

The safety situation of oncology hospitals and clinics is worrying and should be addressed urgently and the health of the personnel should be prioritized. However, it seems that the main problem is neither lack of equipment nor financial resources, but lack of attention and understanding the importance of safety. Paying attention to the safety issue not only reduces future financial costs, but can also prevent human disasters. All of us are responsible.

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