

Staff's training for who comes into contact with cytotoxic drugs

Yosef Samara

Cytotoxicity Unit, Tel Aviv Sourasky Medical Center, Israel

Cytotoxic drugs or cytostatics (also cytotoxic chemotherapy) are drugs that work to destroy cancer cells. Cytotoxic drugs inhibit cellular division and this leads the cancer cells to die. Cytotoxic drugs are transported in the bloodstream throughout the body.

Cytotoxic drugs can be used to destroy tumours, boost the outcomes of surgery or radiotherapy, reduce metastases and alleviate cancer symptoms. Cytostatics are often effective outside the first tumour and also destroy small tumours that haven't been detected in tests. Cytotoxic drugs affect all dividing cells, including those of healthy tissue. But because cancer cells often divide markedly faster than normal cells, they're particularly sensitive to cytostatics. The effects on normal cells are less pronounced and healthy cells also recover faster.

The role of cytotoxic drugs in cancer therapy has decreased slightly with discovery and advancements of drug therapy. However, they continue to be widely used. Several sorts of cytotoxic drugs are utilized in cancer therapy that together have different sorts of effect. The most usual method is to administer a mixture of several different cytotoxic drugs. The effectiveness of chemotherapy depends on the type of tumour, its composition, rate of development and proportion of cells in the distribution stage. Sometimes, cytostatics are administered as high-dose chemotherapy. This is used in treating leukaemia, some lymphomas and brain tumours in children. At the same time, stem cell transplants are required as high-dose chemotherapy can completely destroy bone marrow. The function of bone marrow can be restored following chemotherapy using stem cell transplants. The stem cells can be the patients' own or can be obtained from a donor. Besides being so helpful in various therapies, these drugs can be considered dangerous and harmful to the people (worker/staff/researcher/doctors) who get exposed to them.

The workplace exposure to dangerous drugs and the resulting health risks for healthcare personnel have been well known and documented for over four decades, since it first became a recognized safety risk in the United States in the 1970s. Nowadays, the challenge of protecting workers persists and is expanding, for a number of reasons.

Firstly, the incident rate of cancer is steadily increasing and, in turn, the use of cytotoxic drugs used to treat cancers is growing, amplifying the exposure to healthcare professionals.

Secondly, the number and variety of healthcare workers potentially exposed to cytotoxic drugs is on the increase (e.g. Professionals in immunology, rheumatology, nephrology and

dermatology) because of the rapidly expanding use of these agents in non-oncology practices for treating non-malignant diseases. Thirdly, recent studies have demonstrated a persistence of drug contamination on surfaces even though guidelines and recommendations for the safe handling of cytotoxic drugs have been issued and implemented to minimize the risk of occupational exposure. Moreover, contamination has been detected on work surfaces after recognized cleaning procedures are concluded. Cytotoxic drugs require individual manipulation for every patient before being administered as infusions or bolus injections. Healthcare workers who handle cytotoxic drugs are at potential risk from exposure when control measures are inadequate. Studies have shown that the danger of exposure to them within the working environment is commonplace despite safety policy

improvements and even with recommended precautions in situ. It is noteworthy that healthcare workers may be exposed to small doses of a broad range of cytotoxic drugs over decades, with some workers being exposed every workday, year after year. Nurses, pharmacists and pharmacy technicians

have the highest risk of being potentially exposed Other healthcare, workers, involved in cleaning, transport, laundry and waste disposal of hazardous drugs or contaminated material, are also at risk.

Therefore, little attention has been paid to the hazards that healthcare professionals may be exposed to when administering drugs to patients. Recently, closed system devices are marketed to be used in healthcare settings to scale back environmental contamination during drug preparation. However, these devices haven't gained widespread use due to their high cost and incompatibility with certain products like ampules. In addition, it is not clear whether the hazardous drugs are deactivated by these devices. In an attempt to stop healthcare

professionals from being exposed to hazardous drugs, it's important to wash up contaminated surfaces and also to stop dangerous drugs from spreading. There are some clinical practices and guidelines that must be followed. All medical, nursing and pharmacy personnel must ensure that they are familiar to these guidelines. No person must be involved in the handling, transport, preparation, administration or disposal of waste of any cytotoxic substance, without appropriate training to ensure the protection of the operator, the environment and the patient. This must involve specific training courses as follows with regular update/refresher courses and internal evaluations/reviews of methods and equipment.