

Safe Handling- Cancer Medications in the Community Pharmacy

Safe handling of hazardous drugs may be an occupational health concern. While safe handling techniques have been well-established in hospital-based chemotherapy preparation program, there has been much less emphasis on safe handling in the community pharmacy setting. Yet many of the drugs dispensed through community pharmacies and used for cancer treatment are listed as hazardous drugs by NIOSH^{1, 2}. The occupational hazards differ from drug to drug, but there are three major areas of concern:

- Carcinogenicity is the potential for an agent to cause cancer. Most carcinogens are cytotoxic (cell-killing) drugs, typically called 'chemotherapy' drugs
- Teratogenicity is the potential for an agent to harm a fetus in development, usually resulting in spontaneous abortion, or fetal loss. Many different drugs, including most anticancer drugs and hormonal agents, are teratogenic. In studies, this risk is measured as an increase in fetal loss above the natural background risk. Pregnant women, or women of child-bearing potential are possibly at risk from this harm, and in particular, the risk is greatest in the first trimester of pregnancy.
- Reduced fertility (for both men and women) has been identified in some workers exposed to cancer treatment drugs, both cytotoxic and non-cytotoxic.

There are several ways that a worker could be exposed to one of these drugs:

- Touch contamination when handling the drugs or dispensing equipment with bare hands, followed by percutaneous absorption (through the skin)
 - Some commercial products may have surface contamination on the packaging (i.e. bottle)
- Inhalation of powders (from tablets or capsules) or aerosols (from injectable drugs in syringes)
- Ingestion of drug (if it contaminates food or drink consumed by the worker)

To prevent occupational exposure, there are several things a worker can do to protect his or herself:

- Use gloves when handling bottles, counting pills, filling vials or blister packs; a mask may also be used when manipulating these drugs (especially if the worker could be pregnant)
- Handle the drugs away from the busy areas of the dispensary
- Store the hazardous drug in a separate, designated area, apart from other drug stock. Label the area as the hazardous drug storage area and clean the area regularly
- Do not crush, split, cut or break dosage forms in the open- to crush tablets, use a crushing syringe (preferred) or crush tablets inside a double set of zip lock bags (caution when bags opened)
- Do not empty tablets or capsules from the stock bottle if there is visible powder inside the bottle

¹ National Institute for Occupational Safety and Health, NIOSH List of Antineoplastic and Other Hazardous Drugs in Healthcare Settings 2012

² National Institute for Occupational Safety and Health, Proposed Additions and Deletions to the NIOSH Hazardous Drug List 2014

Safe Handling- Cancer Medications in the Community Pharmacy

- Do not put hazardous drugs in automatic counting machines or blister pack filling machines
- Clean and decontaminate all dispensing equipment (e.g. counting tray, spatula) after each manipulation, such as pill counting or blister pack filling (it is a good idea to have a tray and spatula dedicated to handling hazardous drugs ONLY- clearly label designated equipment)
- Have a spill kit ready for use, in the event that there is some liquid or solid (e.g. dust) spillage during handling.

Cleaning and Decontamination

The optimal process for cleaning and decontamination has been a controversial topic for several years. Studies have shown that use of isopropyl alcohol to 'clean' equipment may do more harm than good, by dissolving and spreading the drug residue, rather than removing it. In most cases, use of soap and water is sufficient to properly clean dispensing equipment, as long as the equipment is well rinsed with copious amounts of water and fully dried before the next use.

There is also evidence that several chemicals can be denatured by sodium hypochlorite (bleach) solution. A number of commercial products are available, but can be costly. The community pharmacy can prepare the 2.4% solution with standard household bleach (not oxy bleach) for periodic use, followed by soap and plenty of water. Spread some bleach solution on the counting tray, then, using a cotton pad, wipe the rest of the tray, the spatula, and the local area where the drugs were counted. Allow to sit for a few minutes, then wash with soap and water. Always wear gloves during this procedure and watch for staff with bleach sensitivities. The NAPRA standards for hazardous products³ recommends chemical decontamination (with bleach solution) of critical work surfaces once monthly.

Cleaning and Decontamination Procedures

- Always wear gloves when handling cancer treatment drugs and when cleaning equipment and work space; if there is evidence of open dust or particulate material, consider wearing a mask
- Immediately after each use to prepare a prescription for a chemotherapy drug (e.g. pouring from a stock bottle, pill counting, etc.), wash all equipment used and clean the work space with soap and water, rinsing with plenty of clean water, and wipe dry with disposable towels (all disposed in a hazardous waste disposal bag).
- Once monthly, decontaminate all equipment and the workspace with sodium hypochlorite 2.4% (bleach) solution. Clean thoroughly with soap and water, followed by clean water rinse, to remove the bleach solution and any denatured contaminants.

³ National Association of Pharmacy Regulatory Authorities, Model Standards for Pharmacy Compounding of Hazardous Sterile Products, Draft 2A. NAPRA August 2014

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Spill Kit:

A simple spill kit can be assembled for the community pharmacy, using inexpensive materials:

- Gloves and mask (universal sizes?); a disposable gown could also be included
- Disposable plastic-backed cloth pads (often called 'blue pads')
- Paper towels
- Small bottle of water (no spray nozzle) and some liquid detergent
- Wastage bags with Hazardous Material designation/logo
- Cardboard warning sign to place near spill- to alert other workers in the area to avoid the spill
- Simple spill management procedure page/card

Cleaning up After a Spill- Procedures

- Quarantine the area where the spill has occurred (e.g. multiple crushed pills/opened capsules); place the warning sign to alert other people in the area
- Always wear doubled gloves and a mask when cleaning a spill; consider wearing a disposable gown if the spill is large or there is a quantity of open liquid
- If the spill is solid material, pour a small amount of water to 'wet' the material
- Use the plastic-backed pad(s) to pick up as much material as possible (or to soak up the liquid spill)- All pads go into a hazardous waste disposal bag
- For solid material spills, use a broom and dustpan (or two cardboard cards) to scoop up the rest of the material
- Clean the area thoroughly with ample soap and water, mopping up the liquid with paper towels and discarding in the hazardous waste disposal bag; follow with bleach solution and further soap and water if the spill was large.
- Discard all personal protective equipment (e.g. gloves, mask, gown) in the waste disposal bag
- Waste disposal bags are sealed and discarded as hazardous waste, per local policies

Personnel and Training:

All pharmacy staff should handle cancer treatment drugs with care, using all reasonable efforts to avoid exposure to themselves, and their co-workers. Personal protective equipment (e.g. gloves) should always be used when directly handling these drugs. Female staff who are pregnant or trying to conceive should consider limiting or avoiding the handling any of these drugs.

Staff should receive some training in safe handling of hazardous drugs, and spill management. There should be a designated lead person responsible for training, policies and procedures, equipment and storage and other responsibilities to ensure the optimal safe handling of these drugs.