



# Capital Health

## INTERDISCIPLINARY CLINICAL MANUAL

### Policy and Procedure

<b>TITLE:</b>	Safe Handling of Cytotoxic Drugs/Waste	<b>NUMBER:</b>	CC 05-055
Effective Date:	January 2014	Page	1 of 11
Applies To:	Holders of Interdisciplinary Clinical Manual		

#### TABLE OF CONTENTS

	<b>Page</b>
<a href="#">Policy</a> .....	2
<a href="#">Definitions</a> .....	2
<a href="#">Guiding Principles</a> .....	3
Procedure	
<a href="#">Equipment</a> .....	4
<a href="#">Personal Protective Equipment</a> .....	4
<a href="#">Preparation</a> .....	5
<a href="#">Transport and Labeling</a> .....	5
<a href="#">Administration</a> .....	5
<a href="#">Cytotoxic Disposal</a> .....	6
<a href="#">Patient Excreta</a> .....	7
<a href="#">Cleaning of Administration Area and Equipment</a> .....	7
<a href="#">Contamination with a Cytotoxic Agent</a> .....	10
<a href="#">Cytotoxic Spills</a> .....	10
<a href="#">Patient/Family Education</a> .....	10
<a href="#">References</a> .....	11
<a href="#">Related Documents</a> .....	11

## POLICY

1. Adherence to appropriate safety practices when handling cytotoxic agents is required to ensure the safety of patients, families, health care providers, and the protection of the environment.
2. All employees involved in any aspect of the handling of cytotoxic drugs and/or waste are to be informed about the potential risks of occupational exposure.
3. All employees who routinely handle cytotoxic drugs or waste are to receive training in proper spill management and cleanup procedures.
4. Spill kits, containing all materials and equipment necessary to clean a spill, are to be available and readily accessible in each area where cytotoxic drugs are handled.

**Note:** A written procedure for spill management is included in each spill kit.

5. Personal Protective equipment (PPE) is to be used by all health care providers to reduce the risk of exposure to cytotoxic agents and waste.
  - 5.1. To minimize cytotoxic exposure, protective equipment is not to be worn outside of the preparation or administration area except when managing a cytotoxic spill.
6. Areas involved in the preparation and/or administration of cytotoxic agents are to have access to an eye wash station and a safety shower or equivalent (e.g. hand held spray device).
7. Employees are not to eat, drink, chew gum, apply cosmetics or store food in or near the chemotherapy preparation or administration area.

## DEFINITIONS

- Closed System Device:** A drug transfer device which mechanically prohibits the transfer of environmental contaminants into the system and the escape of hazardous drug or vapour concentrations outside the system
- Cytotoxic Drug:** An agent that possesses a specific destructive action on cells, which may be genotoxic, oncogenic, mutagenic, teratogenic, or other hazardous mechanisms. This term typically denotes cancer chemotherapy drugs.
- Cytotoxic Materials:** All cytotoxic medication and patient excreta (i.e. urine, feces, emesis) which may be contaminated with cytotoxic drugs or their metabolic byproducts. Any item used in the care of the patient that could be contaminated by medication or body fluid should be handled as potentially cytotoxic.
- Cytotoxic Protective Practices (Cytotoxic Precautions):** Protective practices to protect individuals and the environment from coming in contact with cytotoxic materials. These protective practices include the use of protective equipment and other safe handling practices.
- Cytotoxic Spills:** Uncontained spills of cytotoxic drugs or body fluids.

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**Cytotoxic Waste:** Includes all materials used for the preparation and administration of cytotoxic drugs and the patient's excreta following administration.

## **GUIDING PRINCIPLES**

1. By their design, cytotoxic drugs are harmful to cells. Handling cytotoxic drugs or their byproducts is an area of potential occupational exposure for employees. The long term effects of frequent or prolonged low-dose exposure are not known for most cytotoxic agents. The risk of such exposure is most effectively reduced by strict adherence to PPE and best practice procedures.
2. To date, there is no confirmed safe occupational exposure limit to chemotherapy / cytotoxic agents, and no reliable method of monitoring worker exposure exists. It is therefore imperative that those who work with cytotoxic drugs adhere to practices designed to minimize occupational exposure as much as reasonably possible. Health care providers risk exposure to cytotoxic agents when safe handling practices fail or are not properly used.
3. The potential for exposure may occur during drug preparation, transportation, administration, disposal of equipment/waste, when handling patient excreta and in the event of a spill.
4. The major routes by which employees can be unintentionally exposed to cytotoxic drugs are through:
  - 4.1. absorption through skin or mucous membranes after direct contact with the drugs or from surfaces or objects that are contaminated with cytotoxic drugs
  - 4.2. inhalation of drug aerosols or droplets
  - 4.3. ingestion through contaminated food, beverages, chewing gum, or other hand-to-mouth activity
5. It is possible that employees' personal medical conditions may place them at increased risk of exposure (e.g. broken skin in eczema) or increased susceptibility (e.g. concurrent infection) to cytotoxic agents.
6. Employees concerned about the potential impact of any exposure to cytotoxic materials on his/her personal health status should discuss their concerns with Employee Health staff.
7. Health care professionals who routinely prepare or administer cytotoxic agents may consult with Employee Health to discuss if a reassignment to a less hazardous area is recommended in the event of known or suspected pregnancy, or if they are breast feeding or actively trying to conceive.
  - 7.1. If an employee decides to continue working with cytotoxic agents subsequent to their discussion(s) with Employee Health staff, they should not participate in higher risk tasks such as spill management.

## PROCEDURE

### Equipment

- Disposable Protective Gown - long sleeve, back closure, water/drug repellent, with solid front and tight fitting cuffs (elastic or knit)
- Gloves - Disposable, powder-free non-latex gloves designed and validated for chemotherapy preparation / administration (e.g. Nitrile glove)
- N95 Respirator Mask
- Goggles / Face shield
- Closed-Toe Footwear
- Cytotoxic Sharps Container
- Cytotoxic Non-Sharps Container

### 1. Personal Protective Equipment (PPE)

1.1. Wear PPE when preparing / administering cytotoxic drugs and handling cytotoxic waste. Wash hands before donning PPE and immediately after removing.

#### 1.2. Gowns (Disposable)

1.2.1. Change immediately if soiled or torn

1.2.2. Discard daily to reduce the risk of environmental contamination

1.2.3. Do not wear outside the chemotherapy preparation / administration area except when managing a cytotoxic spill or disposing of waste.

#### 1.3. Gloves

1.3.1. Wash hands thoroughly with soap and water before donning and immediately after removing gloves.

1.3.2. Change between each patient.

1.3.3. Change regularly, preferably every 30 minutes or immediately if torn, punctured or contaminated.

#### 1.4. N95 Respiratory Mask

1.4.1. Use properly fitted masks meeting respiratory protection standards when inhalation is a concern (i.e. suctioning a patient who is on cytotoxic precautions, spill clean up).

#### 1.5. Goggles/Face Shield

1.5.1. Use protective eyewear (i.e. safety glasses with side shields) during cleaning procedures or when there is a risk of aerosolization of cytotoxic drugs and during the clean up of any spill.

1.5.2. Wear masks with face shields if there is any risk of splashing

#### 1.6. Closed Toe Footwear

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- 1.6.1. Wear closed-toe footwear when handling or administering cytotoxic medications / waste.

## **2. Preparation**

- 2.1. The Pharmacy department prepares all cytotoxic medications.
  - 2.1.1. Once prepared, clearly label cytotoxic drugs as cytotoxic.
  - 2.1.2. If cytotoxic medications require refrigeration, label as such.
  - 2.1.3. If required, the crushing or splitting of tablets, compounding of liquid oral or nasogastric doses will be prepared by pharmacy.

## **3. Transport and Labeling**

- 3.1. Wear a lab coat and closed-toe footwear when transporting cytotoxic drugs.
- 3.2. Transport cytotoxic drugs in containers designed to contain leakage and spills.
- 3.3. Clearly label containers as containing hazardous drugs.
- 3.4. Do not transport cytotoxic drugs using a lift or tube device.
- 3.5. Store all cancer chemotherapy drugs in a designated storage area either in the medication room or other specified area.
- 3.6. Ensure that storage shelves are not above eye level and have a ledge to prevent potential slippage and breakage.

## **4. Administration**

**Note:** Administration of Cancer Chemotherapy is a Post-Entry Level Competency for Registered Nurses (refer to [MM 40-005 Administration of Cancer Chemotherapy](#)) which requires assessment of competency prior to performing. Registered Nurses, other than those certified in chemotherapy administration, may administer cytotoxic medications for *non-oncology* indications if the Registered Nurse is knowledgeable about cytotoxic precautions / safe handling practices and the management of expected toxicities / side effects.

- 4.1. Prepare cytotoxic drugs for administration at the bedside, not in the medication or clean utility room.
  - 4.1.1. Place a plastic backed absorbent pad on the work surface to decrease the risk of contamination.
  - 4.1.2. Perform all work at waist level over the absorbent pad.
- 4.2. Handle cytotoxic tablets and capsules in a manner that avoids skin contact, spread of drug into the air and chemical cross contamination with other drugs.
- 4.3. When available, use closed system devices for preparation and administration of cytotoxic and occupationally hazardous drugs.

- 4.4. Prime all IV sets with the flushing solution before the IV bag containing the cytotoxic medication is connected.
- 4.5. If it is necessary to spike an IV bag containing a cytotoxic medication, spike at waist level over a plastic backed absorbent pad.
- 4.6. Use luer-lock connections for delivery of cytotoxic drugs.
- 4.7. When disconnecting tubing, needles and other equipment, cover the connection site with gauze to catch any droplets.
- 4.8. At the end of the infusion(s) dispose of the IV administration set intact into the cytotoxic disposal container. **DO NOT DISCONNECT** the IV bag from the tubing.
- 4.9. When disconnecting a used secondary line and bag, flush the line with the primary line before disconnecting. Cover the connection with gauze to catch any droplets.
- 4.10. Discard all equipment used in the administration of these drugs in an appropriate cytotoxic waste container. (Refer to Cytotoxic Waste Disposal)

**Note:** Once the equipment is used for chemotherapy administration, it is considered cytotoxic.

## **5. Cytotoxic Waste Disposal**

- 5.1. Ensure the availability of a cytotoxic non-sharps container in the room so the patient is able to dispose of wastes.
- 5.2. Separate all cytotoxic drug waste and dispose of differently than other hazardous waste.

**Note: Cytotoxic waste cannot be autoclaved; it must be incinerated at a higher temperature.**

- 5.3. As cytotoxic waste is not mechanically or manually compacted, avoid overfilling waste containers.
- 5.4. Clearly label all cytotoxic waste receptacles.
- 5.5. *Cytotoxic Sharps Containers*
  - 5.5.1. Use cytotoxic sharps containers that are leak-proof, puncture proof with a secure lid and clearly labeled with the cytotoxic hazard symbol.
  - 5.5.2. Use for disposal of contaminated preparation / administration equipment such as needles, syringes, glass bottles and intravenous catheters, bags and tubing.
- 5.6. *Cytotoxic Non-Sharps Container*
  - 5.6.1. Use a closed-lid waste container lined with a red plastic bag that clearly and visibly displays the cytotoxic hazard symbol.

- 5.6.2. Use for disposal of contaminated non-breakable materials such as disposable PPE, dressings, gauzes or ostomy equipment.
- 5.6.3. In preparation for removal of non-sharps cytotoxic waste from the unit, securely tie all cytotoxic waste bags (red bags) and place in a cardboard box.
- 5.6.4. Tape the box closed and label as cytotoxic.
- 5.7. Place all cytotoxic waste containers in the soiled utility room for removal by housekeeping.
  - 5.7.1. Housekeeping removes all cytotoxic waste from the unit on a regular basis.

## **6. Patient Excreta**

- 6.1. Handle patient excreta (i.e. urine, feces, vomit) which may be contaminated with **cytotoxic drugs or their metabolic byproducts as cytotoxic waste materials.**

**Note:** Generally, a time frame of 48 hours following the last dose of cytotoxic drug administered is recommended.

- 6.2. Wear a gown and gloves when emptying bedpans, changing wet soiled linen, changing dressings and/or other care where there is risk of exposure,.
- 6.3. Cover waste containers with a plastic backed absorbent pad for transport (i.e. cover bedpan while taking to toilet) to protect from spillage.
- 6.4. To decrease the risk of exposure by aerosol or droplets, close the toilet lid or cover the toilet bowl with an incontinent pad when flushing.
- 6.5. If the patient is sharing a room, store the bedpan, basin, urinal and other equipment at the patient's bedside.
- 6.6. **Do not use** hoppers for disposal, as they cannot be adequately covered to prevent aerosol release or splashing.
- 6.7. Encourage men to void while sitting rather than standing, to reduce the risk of aerosolization. Encourage use of toilets rather than urinals.

## **7. Cleaning Chemotherapy Administration Area and Equipment**

- 7.1. Clean the Chemotherapy Administration Area at least once daily when in use.
  - 7.1.1. If a specific bed space area is used for more than one patient during the day, clean the bed space area and disinfect between each patient.
- 7.2. Wear safety glasses / face shield, gowns, and protective chemotherapy gloves for cleaning and decontaminating work.
- 7.3. Decontaminate and disinfect all work surfaces in the Chemotherapy Administration Area (e.g., chairs, side tables, stretchers, counter tops and supply carts) daily.
- 7.4. Decontaminate and disinfect floors in the Chemotherapy Administration Area daily.

7.4.1. Do not use floor mops used in the Chemotherapy Administration Area in any other areas of the institution; keep in a utility room in or adjacent to the unit.

7.5. Regularly launder any porous surfaces in the administration area to minimize contamination of the area.

**Note:** If at all possible, use all non-porous surfaces in the Chemotherapy Administration area.

7.6. Empty storage shelving of all supplies, clean and disinfect at least once monthly.

7.7. Decontaminate and disinfect refrigerators, freezers, shelves, and other areas where pharmacy-prepared sterile products are stored at least once monthly.

7.8. Collect waste generated throughout the cleaning or decontamination procedures in red plastic bags (labeled as cytotoxic waste), and remove according to procedure [# 5 – Cytotoxic Waste Disposal](#).

## **8. Cytotoxic Spills**

### **Equipment**

Spill Kit including (but may not be limited to):

- 2 pairs disposable non-latex chemotherapy gloves- large size
- Low permeability disposable gown and shoe covers
- Safety glasses, splash goggles or face shield
- N95 Respirator mask (unless included in face shield)
- Absorbent plastic backed pads (sufficient to absorb a spill of up to 1000mL)
- Disposable towels for absorbing and cleaning liquid spills
- 2 red plastic cytotoxic waste bags
- Cleaning solution for cleaning and decontamination of area
- Instructions on the management of a cytotoxic chemotherapy spill.
- Warning signs to alert other staff to the hazard and isolate the area of the spill.

8.1. Alert other employees in the area of the potential hazard; limit access to the area while a spill kit is obtained and place the warning sign (from the kit) in a prominent position.

8.2. Remove the contents from the spill kit. Don personal protective equipment in the following order:

- 8.2.1. mask,
- 8.2.2. Goggles/ face shield,
- 8.2.3. one pair of non-latex gloves,
- 8.2.4. gown,
- 8.2.5. shoe covers,
- 8.2.6. then second pair of non-latex gloves.

8.3. For a liquid spill, carefully place an absorbent pad over the spilled liquid. Absorb as much liquid as possible into the pad.

- 8.4. If the spill involves a powder, carefully place a damp disposable pad over the powder and carefully pat the spill area to adsorb as much powder as possible.
- 8.5. If there is broken glass in the spill, carefully pick up the glass pieces using a disposable scoop and place all glass in a puncture-proof container.
- 8.6. Gather up the contaminated pads. Discard all waste into the cytotoxic waste container or bag.
- 8.7. Repeat steps until the entire spill has been cleared.
- 8.8. Use the cleaning solution to wash the area of the spill thoroughly, discarding all waste generated into the waste container.
- 8.9. Rinse the area well with clean water.
- 8.10. Dry the area completely to prevent accidental slippage on the wet floor.
- 8.11. Discard all used items including personal protective equipment into the cytotoxic waste container or bag. Remove protective apparel in the following sequence:
  - 8.11.1. top pair of gloves,
  - 8.11.2. goggles,
  - 8.11.3. mask,
  - 8.11.4. shoe covers,
  - 8.11.5. gown.
- 8.12. Wearing a second pair of gloves, double bag with the aid of a second employee and dispose of these gloves.
- 8.13. Arrange for collection of waste.
- 8.14. Wash hands thoroughly with soap and water.
- 8.15. Arrange for housekeeping to re-clean the area.
- 8.16. Arrange for a replacement spill kit to be obtained.
- 8.17. Notify the Health Services Manager or Charge Nurse and complete a 'Patient Safety Report'.

## **9. Contamination with a Cytotoxic Agent**

- 9.1. If an employee or patient/family member is contaminated with a cytotoxic agent, remove all overtly contaminated personal protective equipment and place in the cytotoxic waste container.
- 9.2. Remove all contaminated personal clothing and, if heavily contaminated, discard the clothing into the cytotoxic waste container.

- 9.3. Arrange for clothing with a minimal amount of contamination to be laundered separately and rinsed well.
- 9.4. Use an emergency shower or equivalent (e.g. hand-held spray device) if appropriate. Wash the contaminated area of the skin with soap and rinse with large amounts of water.
- 9.5. If the eyes have been exposed to a cytotoxic agent:
  - 9.5.1. Thoroughly irrigate with water or isotonic eyewash for as long as possible (e.g. up to 15 minutes).
  - 9.5.2. Remove contact lenses, if not flushed from the eye, as soon as possible and discard.
  - 9.5.3. Use an eyewash station, if available, or water splashed by hand into the eye from a faucet.
  - 9.5.4. Do not irrigate the eye directly with running water from a faucet due to the potential for water pressure damage to the eye.
  - 9.5.5. In all cases where the eye is contaminated by a cytotoxic agent, seek ophthalmologic advice as soon as possible.
- 9.6. If the skin is broken or there is a needle-stick injury, express blood from the wound and irrigate the affected area with plenty of water.
- 9.7. Seek medical attention as soon as practical.
- 9.8. Health care providers exposed during spill management report the exposure to occupational health by contacting SAFE.

## **10. Patient and Family Education**

- 10.1. Inform patients and family members of safe handling practices and why these practices are implemented.
- 10.2. Include in teaching for patients and families:
  - 10.2.1. How long to maintain precautions
  - 10.2.2. What is considered cytotoxic – drugs, body fluid / excreta
  - 10.2.3. How to protect others and the environment:
    - Store all cytotoxic drugs in a leak proof container out of reach of children
    - Flush all that is flushable
    - Use a condom during sexual activity
    - Caregivers wear gloves when handling cytotoxic drugs, waste or soiled items.
- 10.3. Provide the following patient brochures::
  - 10.3.1. Cytotoxic Precautions At Home: A Guide for Cancer Patients and Families

## **REFERENCES**

Blecher, C.S., Glynn-Tucker, E.M., McDiarmid, M., & Newton, S.A. (2003). *Safe handling of hazardous drugs*. Pittsburgh, PA: Oncology Nursing Society.

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Nixon, S. & Schulmeister, L. (2009) Safe Handling of Hazardous drugs: Are you protected? *Clinical Journal of Oncology Nursing* 13 (4).

Polvich, M. (2010) Cancer Chemotherapy Guidelines and Recommendations for Practice. (3<sup>rd</sup> ed) Pittsburgh, Pennsylvania.

## **RELATED DOCUMENTS**

### **Policies**

MM 15-015 Independent Double Check  
MM 40-005 Administration of Cancer Chemotherapy  
MM 50-010 High Alert Medication  
CH 90-017 Biomedical Waste Management

### **Brochures**

Cytotoxic Precautions At Home: A Guide for Cancer Patients and Families  
Available from Cancer Care Nova Scotia:

<http://www.cancercare.ns.ca/site-cc/media/cancercare/Cytotoxins.pdf>

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