HEALTH SERVICES

TITLE: HAZARDOUS DRUGS ADMINISTRATION & HANDLING - CHEMOTHERAPY (cancer treatment)
A. Pre-Administration
B. Setting up
C. Administration
   I. Oral
   II. Subcutaneous/Intramuscular
   III. Intravenous
   IV. Assisting with Intrathecal
   V. Intravesicular
   VI. Topical
D. Care of Patient
E. Spills
F. Exposure

CATEGORY: RN – Special Nursing Procedure
           LPN – Advanced Practice may only perform skills in Sections D, E & F

PURPOSE

- To provide a safe environment for individuals involved in handling and administration of hazardous drugs for chemotherapy.

NOTE: RQHR has CEAC approved documents for teaching patients about hazardous medication handling:
   CEAC 0808 – Mitomycin Bladder Instillation – Discharge Instructions
   CEAC 1019 – Hazardous Drugs – Safe Handling of Body Fluids & Disposal of Waste Info for Patients & Caregivers

NURSING ALERT:

- If administration for non-cancer treatment refer to procedure H.30.
- There are no studies to determine safe levels of occupational exposure to hazardous drugs such as antineoplastic, cytotoxic or biochemical agents.
- Potential adverse health effects may include:
  - Alteration to normal blood cell counts
  - Fetal loss and possible malformation in offspring
  - Fertility changes
  - Abdominal pain, hair loss, nasal sores and vomiting
  - Liver damage
NURSING ALERT CONT:

- Contact dermatitis, local toxic reaction or allergic reaction that may result from direct contact with skin or mucous membranes.
- Above adverse health effects have not been reported where high standard of risk control is in place.
- Hazardous drugs will be labelled by pharmacy & alert placed in Chemotherapy Administration Record (CAR).
- Refer to Winnipeg Regional Health Authority website (http://rqhrintranet.rqhealth.ca/depts/Pharmacy/Lists/PharmacyDocuments/Hazardous%20Drug%20List.pdf) for a list of medications labelled by pharmacy as hazardous &/or cytotoxic. This list is a reference only and is not comprehensive.
- Whoever is administering hazardous medications is responsible for knowing handling precautions.
- Pregnant, nursing females and individuals trying to conceive (male & female) should inform their manager if they wish to be excused from handling blood/body fluids and preparing or administering hazardous drugs.
- Vigilant use of personal protective equipment (PPE) must be used to prevent risk of exposure to hazardous drugs. See Appendix A.
- Gloves should be changed after each administration, if contaminated, or puncture occurs, or every 30 minutes.
- Gowns should not be shared and changed at minimum when leaving room or immediately if any contamination occurs.
- Discard all contaminated disposable material and disposable PPE in cytotoxic waste.
- Communicate hazardous drug precautions by posting sign as in Appendix B.
- Place cytotoxic label on outside of patient’s chart and remove in 48 hours after last administration.
- Spill kit must be available on unit during administration of hazardous drugs (Stock #200084).
- **Red cytotoxic bins are suitable for all waste including sharps. Bins are pre-labelled cytotoxic.**
- Hazardous drugs are prepared by specially trained pharmacy staff with access to equipment such as appropriate biological safety cabinet.
- Refer to chemotherapy card/quick reference sheet for administration details if available.
- A Registered Nurse (RN) cannot accept telephone orders for chemotherapy administration or any adjustment to current chemotherapy orders.
- An RN may accept telephone orders for delay or cancellation of chemotherapy.
- Ensure vesicant teaching and signs of extravasation are reviewed with patient prior to administering chemotherapy with vesicant properties.
A. Pre-Administration

PROCEDURE

1. Review following patient information:
   - Applicable lab results
   - Previous treatment with hazardous drugs
   - Previous side effects, hypersensitivities, allergic reactions and interventions
   - Previous dose adjustments
   - Concurrent medical conditions
   - Weight changes >10%
   - Changes in performance status

   **NOTE:** For pediatric patients, prior to chemotherapy administration, complete “Inpatient Chemotherapy Checklist”. Ensure consent is obtained for newly diagnosed oncology pediatric patients or if changes in chemotherapy regime.

2. Obtain baseline vital signs and as indicated/required based on hazardous drug.

   **NURSING ALERT:**
   - If indicated, have emergency medications/equipment easily accessible.

3. Determine appropriate PPE required for route of administration. See Appendix A.

4. Assess patient and/or family’s understanding of:
   - Indication of treatment
   - Method of administration
   - Potential side effects and complications, and importance of informing nurses of same
   - Importance of notifying staff immediately if experiencing any signs and symptoms of extravasation with IV administration
   - Hazardous Drugs – Safe Handling Precautions & Disposal of Waste: Information for Patients & Caregivers CEAC #1019

5. Provide education as required.

B. Setting up

EQUIPMENT

1. PPE as per Appendix A
2. Administration equipment as indicated by route (IV tubing, injection needle, medication cup, etc.)
3. IV administration - closed administration equipment (i.e. Equashield® or PhaSeal™) as available and required if hanging more than one medication. (See Appendix D)
NOTE: If closed system is not available, an N95 respirator must be worn with administration.

4. CAR (Chemotherapy Administration Record)
5. Drug(s) for administration
6. Cytotoxic labels (Stock #200083 package of 10 labels)
7. Spill kit Stock # 200084
8. Disposable, absorbent, plastic backed pad
9. Red cytotoxic waste container:
   - 2 gallon flip top Stock #200080
   - 8 gallon flip top Stock #200081
   - 18 gallon slide top Stock #200082 *This item requires a cart (cart is purchased by unit as a special order through purchasing)
10. Alcohol swabs as required
11. Signage for hazardous drug precautions (Infection Control Intranet site or Appendix B)

PROCEDURE

1. Don PPE. See Appendix A.
   
   NOTE: PPE to remain on through all stages of handling and administration of drug(s).

2. Prepare area placing a disposable, absorbent, plastic backed pad absorbent side up.

3. Check drug, dose, BSA (as per appendix C), method of delivery, date and time against physician order with another registered nurse or physician.

4. Implement independent double check of rate (if applicable) and calculations. (Refer to nursing pharmacy manual procedure 4.9 Independent Checks of Medications.)

5. Verify patient name and medical record number (MRN) or suitable identification number in absence of MRN, against CAR, medication label and physicians order.

6. Check patient’s arm band against medication label.

7. Implement second identification as per RQHR policy 0612 Identification of Client/Patient/Resident.
   
   NOTE: Check each drug using above criteria.

8. Post signage regarding hazardous drug precautions after the first dose and for 48 hours following last dose.

9. Sign on CAR.
   
   NOTE: Two RN’s must sign on CAR at time of administration.
C. Administration

NURSING ALERT:
- Two RNs or an RN and physician must check dose of drug against physician’s written order and both must sign on Chemotherapy Administration Record (CAR).
- Work below eye level for administration of all hazardous drugs. All units handling hazardous drugs should have cytotoxic waste disposal set up as indicated in setting up on page 3 and 4.

I. Oral

1. Don PPE according to Appendix A.

2. Place ordered drug(s) into disposable medication cup using a non-touch technique.

NURSING ALERT:
- **Do not cut, crush, break or open tablets or capsules** for administration. Any drug preparation required must be done in pharmacy.

3. Indicate on CAR number of tablets/capsules dispensed.

4. Administer drug(s) as per physicians order.

5. Observe patient consume drug(s).

6. Dispose of medication cup and gloves in cytotoxic waste container.


8. Post hazardous Drug Signage during administration and for 48 hours following last dose.

II. Subcutaneous/Intramuscular

1. Don PPE According to Appendix A.

   **NOTE:** Closed administration system does not offer protection for administration of subcutaneous or intramuscular delivery, therefore N95 respirator is required.

2. Attach injection needle to prepared syringe containing hazardous drug.

   **NOTE:** DO NOT expel air from needle. Pharmacy will send syringe with a closed administration system. (See Appendix E)
3. Add 0.1 – 0.2 mL of air to syringe to create an air lock, if not already present.

4. Administer drug(s) as per physician’s order.

5. Dispose of hazardous sharps in cytotoxic waste container.

6. Apply dressing (Band-aid®) to injection site as required.

7. Remove PPE and dispose of appropriately.


   **NOTE:** Dispose of any injection site dressing in cytotoxic waste.

9. Post Hazardous Drug signage after first dose and for 48 hours following last dose.

### III. Intravenous (IV)

**NURSING ALERT:**

- When administering any vesicant peripherally:
  - Ensure IV site is patent and less than 24 hours old.
  - A peripheral intravenous site should be above a recent (less than 24 hour) puncture site.
  - Site must be continuously visualized during administration of any vesicant agent. Remain with patient during entire infusion.
  - Vinca Alkaloids MUST be administered in infusion bag by gravity using short term infusion unless through a central venous access device (CVAD). Check for blood return before, during and after administration or every 5 minutes for peripheral route.
  - Pediatric vesicant supplied in infusion bags are to be administered by gravity using short term infusion unless through a CVAD.
  - All other vesicants for adult patients may be administered via IV push using free-flow method (side arm technique) depending on how supplied by pharmacy. Attach syringe at port closest to patient’s IV using closed drug transfer system. Aspirate for blood. Infuse by gravity IV slowly with compatible solution. Slowly administer vesicant chemotherapy agent at a rate of 1-2 mL/min or at prescribed rate determined by pharmacy. Check for blood return every 2-5 minutes.
  - Initial signs and symptoms of extravasation may include but are not limited to:
    - Pain and stinging
    - Swelling and redness
    - Induration
    - Reduced rate or absence of gravity flow
    - Lack of blood return
    - Leaking around IV site/catheter
    - Resistance during IV bolus push
NURSING ALERT Cont.

- If patient complains of pain or discomfort at an intravenous site or CVAD during infusion of a vesicant medication, **stop infusion immediately**, check for extravasation and notify attending physician. For extravasation, refer to nursing procedure E.9.
- Ensure antidote to vesicants is readily available in case of extravasation.
- Continuous infusions of vesicants or vesicant infusions longer than 60 minutes **must** be infused through a CVAD.

NURSING ALERT:

- When administering a vesicant through a CVAD:
  - Check for blood return prior to infusion, every 12 hours with continuous infusions and at end of infusion.
  - For pediatric continuous infusions, check for blood return every 4 hours until infusion complete.

PROCEDURE

1. Don PPE according to Appendix A.

2. Prime IV administration set with compatible IV solution that does not contain hazardous drug for both primary and secondary lines.

NURSING ALERT:

- Label all IV tubing cytotoxic.
- All hazardous drug infusions will be administered via secondary medication line, except where drug requires specialty tubing that must run on primary line.

3. Ensure infusion route is patent.

   **NOTE:** Topical anesthetic is **NOT** recommended for use in initiating a peripheral IV site when a vesicant drug is to be administered.

4. Initiate infusion as per physicians order.
5. Implement independent double check for following:
   - Correct patient
   - Appropriate medication (drug and dose)
   - Appropriate IV tubing and solution for drug being administered
   - Correct date and time
   - Rate and volume
   - Secure connections
   - Site healthy
   - Call back is set


7. Flush line with a minimum of 25 mL of compatible solution from primary line.

8. Dispose of complete IV administration set in cytotoxic waste when complete.

   **NOTE:** Do not remove spike from infusion bag. Do not disconnect any IV administration set in which exposure to hazardous medications may occur. Ensure line is flushed before disconnecting and dispose of entire administration set in cytotoxic waste.

9. Remove PPE and dispose of appropriately.


   **NOTE:** Dispose of any injection site dressing in cytotoxic waste.

11. Post Hazardous Drug signage after first dose and for 48 hours following last dose.

### IV. Assisting with Intrathecal

#### PROCEDURE

1. Don PPE according to Appendix A.

2. Assist physician as required.

   **NURSING ALERT:**
   - If assisting with drug aspiration, don PPE and N95 respiratory mask, place sterile gauze pad around vial during withdrawal of drug to reduce aerosolization.

3. Dispose of hazardous sharps in cytotoxic waste container.

4. Remove PPE and dispose of appropriately.

**NOTE:** Dispose of any injection site dressing in cytotoxic waste.

6. Post Hazardous Drug signage after first dose and for 48 hours following last dose.

V. Intravesicular

**NURSING ALERT:**

- Drug instillation into bladder is performed by physician in operating room.
- Catheter bag and chart should be labeled with a “Cytotoxic Label” – Stock #200083.
- Label must be clearly visible to receiving unit.
- Hand off communication from OR to receiving unit is to include:
  - Time of instillation
  - Amount of time medication has been in bladder (refer to physician orders/OR notes)
  - Time medication was drained from bladder

1. Don PPE according to appendix A.

2. Follow physicians orders post instillation for following:
   2.1 Repositioning of patient
   2.2 Clamping and unclamping of indwelling catheter

3. Open clamp and allow hazardous drug to drain by gravity into drainage bag after treatment is completed.

**NURSING ALERT:**

- Do not empty chemotherapy agent with urine from drainage bag.
- If catheter is to remain in place, use appropriate PPE, clamp catheter, disconnect catheter bag with chemotherapy agent, attach a new catheter bag and unclamp catheter. Apply cytotoxic label to catheter bag. Empty contents using appropriate PPE for 48 hours following installation.

4. Remove indwelling catheter leaving drainage bag attached according to physicians order.

   **NOTE:** Ensure catheter is clamped to avoid exposure.

5. Dispose into cytotoxic waste container.

6. Remove PPE and dispose of appropriately.


8. Post Hazardous Drug signage during administration and for 48 hours following last dose.
VI. Topical

PROCEDURE

1. Don PPE according to Appendix A.

2. Wash treatment area according to drug instructions and pat dry completely before applying cream/lotion.

3. Apply thin layer of cream/lotion over entire affected area as per physicians order avoiding eyes, eyelids, nose or mouth.

   NOTE: Leave treatment area open to air unless otherwise ordered.

4. Remove PPE and dispose of appropriately.

5. Store drug according to manufacturer recommendations.


7. Post Hazardous Drug signage during administration and for 48 hours following last dose.

D. Care of Patient

EQUIPMENT

1. Cytotoxic labels
2. Hazardous drug disposal equipment (as noted in setting up)
3. Spill kit
4. Hazardous Drugs Precautions Signage as per Appendix B (if not already posted)
5. Disposable, absorbent, plastic backed pads
6. PPE according to Appendix A

NURSING ALERT:

- All body fluids are considered hazardous when a patient is receiving hazardous medication.
- Label all drainage collection devices with cytotoxic label.
- Discard all contaminated disposable material and disposable PPE in cytotoxic waste.
- PPE should always be worn when handling any body fluid (blood, vomitus, urine, saliva, sweat and stool) from patients treated with hazardous drugs and precautions continued for 48 hours following last dose.
- If a patient is incontinent, clean skin well with each change. Apply protective barrier ointment to skin as required. Physician may choose to order an indwelling catheter.
- Specimens do not require a cytotoxic label as universal precautions are used to handle all specimens.
PROCEDURE

1. Ensure hazardous drugs precaution sign is posted.

2. Don PPE according to Appendix A when providing personal care if risk of body fluid contact or handling any body fluid.

3. Use disposable containers label with a cytotoxic sticker for emesis or to empty body fluid for drainage.

4. Dispose of body fluid in usual manner.

   NOTE: Prior to flushing hazardous body fluids down toilet, place plastic backed pad with absorbent side down over seat or put toilet lid down to reduce splash back.

5. Empty basin water from personal hygiene care into toilet as per above note.

6. Discard any disposable items in cytotoxic waste once use is discontinued.

7. Place linen in laundry hamper.

   NOTE: This includes any linen with body fluids as all linen is processed using standard precautions. No special labeling or laundry bags are required.

8. Remove PPE and dispose of appropriately.

E. Spills

NURSING ALERT:

- Use spill kit to clean up any hazardous liquid medication that has been spilled or any large amount of body fluid not absorbed into linen. Smaller amounts of body fluid should be cleaned using same procedure with disposable absorbent material placed in hazardous waste container available on unit.

EQUIPMENT

1. PPE as indicated in Appendix A. (Use N-95 respirator you have been fit with. Do not use N-95 in spill kit)
2. Spill Kit (Stock #200084)
3. Extra absorbent material as required (i.e. disposable absorbent pads from unit)
4. Cytotoxic waste container (as on unit and noted in Section B – Setting Up)
5. Disposable containers for disinfectant solution and water
6. Facility approved disinfectant (ask housekeeping to fill up disposable container)
7. Tap water
8. Disinfectant cloths
9. RQHR Confidential Occurrence Report form
**PROCEDURE**

1. Identify area of spill in order to protect others from exposure.

2. Notify charge nurse or unit designate.

3. Use Chemotherapy emergency spill kit for clean up.

4. Post warning sign to alert others of hazardous drug spill and limit access to area.

   **NOTE:** Unit staff administering hazardous agents are responsible for spill clean-up.

5. Don PPE according to Appendix A.

6. Contain spill using absorbent material from spill kit.

7. Place spill control pillows in “V” position on outer perimeter of spill to prevent spread.

8. Cover spill gently with disposable absorbent material for liquid spills.

9. Pick up saturated absorbent material and spill pillows placing all contaminated disposable materials into a waste disposal bag from spill kit.

10. Clean spill area three times, from least to most contaminated areas, using detergent followed by clean water rinse.

11. Place all materials used in cleaning process into first labeled plastic waste disposal bag along with outer gloves and tie closed.

12. Place first bag and all other disposable items (gown, shoe covers and inner gloves) into second labeled plastic waste disposal bag and tie closed.

13. Place bag in cytotoxic waste container on unit.

14. Wash hands using soap and warm water.

15. Don 2 pair clean gloves and clean goggles using appropriate disinfectant wipe.

16. Place disinfectant cloth and gloves in cytotoxic waste container.

17. Wash hands thoroughly with soap and water.

18. Remove N95 respiratory and wash hands.


   **NOTE:** Submit above form to supervisor/manager.

20. Replace spill kit.
HEALTH SERVICES

CODE H.30.1

F. Exposure

EQUIPMENT

1. Water
2. Soap
3. Confidential occurrence report (as appropriate)
4. Employee report of incident/hazard form (or online)

PROCEDURE

1. Follow appropriate First Aid steps.

1.1 Mucosal Exposure:
   - Flush affected membrane (i.e. eye) immediately with copious amounts of clean water for at least 15 minutes.
   - If no eyewash station, use IV tubing and flush with normal saline.
   - Do not administer anesthetic drops or ointment.

1.2 Skin Contact:
   - Remove contaminated clothing.
   - Wash affected area with copious amounts of clean water and soap.
   - Do not administer anesthetic ointment.

1.3 Skin Puncture:
   - Wash affected area with copious amounts of clean water and soap, encourage bleeding.

NOTE: Seek emergency medical attention as appropriate.

   If skin puncture is contaminated with blood or body fluids see RHD Policy 1.5.3.02 – Protocol for RHD Employees Following Blood/Body Fluid Exposure – Non-Sexual.

NOTE: If vesicant, should be treated as per extravasation protocol see nursing procedure E.9.

2. Inform charge nurse or supervisor.


4. Complete RQHR Confidential Occurrence Report form if patient is involved and submit to manager.

5. Complete RQHR Employee Report of Incident Hazard and bring to Employee Health Office for Employee Health Nurse. Include in report:
   - Name of hazardous drug
   - Type of exposure/amount
   - If body fluid exposure, indicate treatment plan and chemo day
REFERENCES


BC Cancer Agency. Policy III-50. *Administration of Cytotoxic Drugs by the Intrathecal Route via Lumbar Puncture or Ommaya Reservoir*. (Nov 2012)


Institute for Safe Medication Practices (ISMP) Canada (March 16, 2010). *Medication Incidents Involving Cancer Chemotherapy Agents Volume 10, Number 1*


Kline, N.E. (2011) *The Pediatric Chemotherapy and Biotherapy Curriculum* (3rd Ed.) AHPON


Saskatoon Health Region. (March 2014). *Chemotherapy Drugs For Cancer Treatment: Administration & Precautions* I.D. Number: 1065.

University of Toledo Medical Centre. (April 2010). *Management of Antineoplastic Agents: Handling of Excreta and Vomitus from Patients Who Have Received Antineoplastic Agents within the Previous 48 Hours (F18)*.

West Suffolk Hospital NHS Trust (Sept 2009). *Handling and Administration of Cytotoxic Drugs* PP (08)034.

Winnipeg Regional Health Authority (February 2015) Cytotoxic & Non-Cytotoxic Hazardous Medications.

## Hazardous Drug Administration & Care of Patient PPE Requirements

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<th>Care of Patient</th>
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<tbody>
<tr>
<td>Nitrile Gloves</td>
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<td>N-95 Respirator</td>
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* N-95 respirator is not required if using a closed IV administration system.

- If pregnant or nursing, inform your manager if you wish to be excused from administering or preparing the hazardous drug or handling body fluids from the patient receiving them
- Discard contaminated waste material in a cytotoxic waste container (order from SPD – see procedure for order numbers)
- Label all drainage devices with a cytotoxic label
- Specimens do not require cytotoxic labeling
- Soiled linen is processed as normal
- Spill kit must be available on unit (order from SPD – see procedure for order number)
- Precautions must be followed 48 hours following last dose of medication
- Refer to Nursing Procedure H.30 for clarification or further detail.

Code:  H.30.1
Author: Lisa Roland, Jana Lowey
Revised: January 2016

Approved: February 4, 2016
Hazardous Drug Precautions
Required For Contact With Body Fluids

1. **Clean Your Hands**

2. **Staff Wear**

3. **Follow Removal Sign When Leaving Room**
   - Place sharps/disposable items contaminated with body fluids or hazardous drugs in CYTOTOXIC WASTE
   - Pad toilet to prevent splash or put down lid when flushing toilet

Code: H.30.1
Author: Lisa Roland, Jana Lowey
Revised: June 2015

Approved: February 4, 2016
BSA Calculations

One commonly used formula is the Mosteller formula, published in 1987\textsuperscript{[2]} and adopted for use by the Pharmacy and Therapeutics Committee of the Cross Cancer Institute, Edmonton, Alberta, Canada:

**Equation**: \( BSA \ (m^2) = SQR \ RT \ ( [Height(cm) \times \ Weight(kg) ]/ \ 3600 ) \)

**Formula of Mosteller (Adults and Children)**

\[
BSA \ (m^2) = SQR \ RT \ \frac{Ht \ (cm) \times \ Wt \ (kg)}{3600} \quad \text{or} \quad SQR \ RT \ \frac{Ht \ (in) \times \ Wt \ (lb)}{3131}
\]
Appendix D

Equashield® vs PhaSeal ™ Products - Nursing

You may use Equashield products in the same situations where you use the PhaSeal products. Equashield products cannot be used with PhaSeal and vice versa.

<table>
<thead>
<tr>
<th>Equashield Luer Lock Adaptor (LL-1) same as the PhaSeal Connector</th>
<th>Equashield Female Luer Lock Connector (FC-1) same as the PhaSeal Injector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equashield Y-Site line (LL-1Y) same as the PhaSeal Y-Site line</td>
<td>IV push and injection syringes must arrive from pharmacy with the protective plug in place for sterility purposes if using Equashield. <strong>Do Not</strong> swab inside of Female Luer Lock Connector – return to pharmacy if no protective cap is in place!</td>
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</table>
Administering Subcutaneous and IM Chemo with Equashield

The syringe and injector from Equashield will come together fused as one piece. DO NOT try to remove the injector from the syringe! It will break the syringe and destroy the use of this drug. This fused system requires the use of an Equashield connector along with the appropriate gauge needle. The syringe will come with a mint green injector protector on the syringe. This protector is removed by pulling straight out. Place appropriate needle on the Equashield connector. Line up the red lines with the injector and connector. Push the two pieces firmly together. You are now ready to give the injection as per hazardous drug protocol. Make sure you wear your N-95 respirator during all stages of attaching the needle to the syringe and during administration.

1. As it looks Supplied from pharmacy
2. Remove protector by pulling straight out
3. Obtain Equashield connector
4. Attach Equashield connector to needle
5. Push together connector and injector until you hear a click
6. You are now ready to administer the injection