



Nursing Practice Reference

Title: CHEMOTHERAPEUTIC DRUGS, ADMINISTRATION OF:

Effective Date: February, 2019

Approved:

Sites:

All

AC

CN

CSI

FVC

VC

VIC

Other

Reason for Directive:

To provide guidelines for the safe administration of chemotherapeutic drugs.

These guidelines are used in conjunction with:

- [V-10](#) Hazardous Drug Safe Handling Standards
- [V-20](#) Employee Health Risks Related to Hazardous Drugs
- [V-30](#) Hazardous Drug Spill Management
- [III-10](#) Systemic Therapy Treatment Delivery Process
- [III-20](#) Prevention and Management of Extravasation of Chemotherapy
- [III-50](#) Administration of Hazardous Drugs by the Intrathecal Route via Lumbar Puncture or Ommaya Reservoir
- [III-60](#) Physician Coverage for Medical Emergencies During Delivery of Selected Chemotherapy Drugs
- [III-80](#) Algorithm for Assessment of Needle Placement / Catheter Patency in CVC Devices
- [SCDRUGX](#) Protocol Summary for Management of Hypersensitivity Reactions to Chemotherapeutic Agents
- [C-75](#) Central Venous Access Devices (CVADs): Care and Maintenance of Implantable Venous Access Devices
- [C-80](#) Central Venous Access Devices (CVADs): Care and Maintenance of Tunneled (T-CVAD) and Non-Tunneled (NT-CVAD) Catheters
- [C-86](#) Central Venous Access Devices (CVADs): Care and Maintenance of Peripherally Inserted Central Catheters (PICCs)
- BC Cancer Provincial High Alert Medications Policy (H:\EVERYONE\BCCA Policy Manual\Patient Care\High Alert Medication Policy)

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DEFINITIONS:

Hazardous Drug - Drug that exhibits one or more of the following characteristics in humans and/or animals: carcinogenicity, teratogenicity or other developmental toxicity, reproductive toxicity, organ toxicity at low doses, genotoxicity and structure and toxicity profiles of new drugs that mimic existing drugs determined hazardous by the five previous criteria. If there is no information found and the drug is primarily used as an antineoplastic drug, it will be deemed as hazardous. If a drug contains living organisms with potential to cause infections in humans it will be considered a hazardous drug and will be designated a biohazardous drug on the Hazardous Drug List. Note: Hazardous drugs have been referred to as “cytotoxic, antineoplastic, hazardous, and/or chemotherapy”. (Refer to [Cancer Drug Manual](#) Hazardous Drug List.)

Biohazardous Drug - Drug that contains living organisms with the potential to cause infection in humans. Biohazardous drugs are considered hazardous drugs and will be included on the NIOSH HD List or BC Cancer Drug Manual Hazardous Drug List. Note: Biohazardous drugs may include gene therapy, biologicals, and/or biohazards.

Independent Double Check (IDC) - is “a process in which a second practitioner conducts a verification.

Such verification can be performed in the presence or absence of the first practitioner. In either case, the most critical aspect is to maximize the independence of the double check by ensuring that the first practitioner does not communicate what he or she expects the second practitioner to see, which would create bias and reduce the visibility of an error”.

(Institute for Safe Medication Practices Canada - ISMP Canada) <https://www.ismp-canada.org/definitions.htm>

“Once verifications are complete, results are compared and discrepancies, if any, must be resolved before any action is taken e.g. transcription, preparation or administration”.
(H:EVERYONE\BCCA Policy Manual\Patient Care\High Alert Medication Policy)

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RN EDUCATIONAL REQUIREMENTS:

The RN administering hazardous chemotherapy drugs will have completed the [BCCA Chemotherapy and Biotherapy Education Program](#) as outlined by the employer. The RN participating in the chemotherapy certification practicum may administer chemotherapy drugs under the supervision of a chemotherapy preceptor.

To maintain chemotherapy certification the RN must meet the requirements of [continuing competency in chemotherapy](#) annually.

[\(CANO, 2016\)](#)

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PATIENT CONSENT AND EDUCATION:

- Ensure the patient and caregiver understands the diagnosis, treatment plan risks and benefits and goals of therapy so that informed consent (verbal, written or implied) is given prior to treatment – per [BCCNP standards](#)
- Ensure that at minimum the following **written** information is given to the patient and discussed:
 - The diagnosis requiring chemotherapy, goals of therapy, planned duration of chemotherapy drugs, and schedule (this can be found on each [chemotherapy protocol](#) patient handout)
- Provide education regarding the potential side effects of the medication(s), and self-care measures to minimize or prevent side effects.
- Emergency contact information (e.g., symptoms to report, who to call, phone number)
- Discuss the plan for monitoring and follow-up
- For Intravenous, Intrathecal, Intraperitoneal, Subcutaneous Chemotherapy: Instruct the patient to notify the nurse immediately of any infusion-related complications during the administration of antineoplastic drugs:
 - (e.g., pain, burning at the injection site, rash, lower back pain, urticaria, shortness of breath, chest heaviness, sense of impending doom).
- For Oral Chemotherapy: Provide written information and discuss administration, storage and handling of oral antineoplastic drug agent(s), including the importance of taking these drugs as scheduled and swallowing oral drugs whole.
- Discuss ‘Guidelines for Handling Cancer Drugs and Body Fluids in the Home’, located in the [Cancer Drug Manual](#), with the patient.

- Documentation of patient education and consent should include patient feedback that demonstrates patient and/or caregiver's understanding and engagement. (Yarbro, Blecher, ASCO)

([Yarbro, 2016](#); [Neuss, 2016](#); [Polovich, 2014](#))

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SAFE HANDLING:

Directives:

- Hazardous drugs must be properly handled, in accordance with [Provincial Systemic Therapy Policy V-10](#)
- Personal protective equipment (PPE) must be worn whenever hazardous drugs are handled (See [TABLE 2: PERSONAL PROTECTIVE EQUIPMENT](#) p.11 in ST V-10).
- All RNs who prepare, handle or administer chemotherapeutic drugs will maintain exposure records, using the Record of Exposure to Hazardous Drugs Form as part of continuing competency in compliance with Work Safe BC regulations.
- PPE (as per [Provincial Systemic Therapy Policy V-10](#)) must not be worn outside the preparation, administration, or storage area.
- PPE (as per [Provincial Systemic Therapy Policy V-10](#)) will be worn and disposed of as hazardous waste whenever chemotherapeutic drugs are handled. This includes when dismantling and disposing equipment used in the administration of chemotherapeutic drugs.

Oral Hazardous Tablets or Capsules:

- Appropriate personal protective equipment (PPE) must be worn when handling hazardous tablets or capsules: Two pairs of chemotherapy approved gloves, and a no-touch technique to avoid damage and contamination should always be used. Full PPE should be worn if a cytotoxic oral liquid is being administered as a splash could occur. (See [Provincial Systemic Therapy Policy V-10](#))
- Oral hazardous tablets or capsules will not be cut or crushed.

Intravenous Hazardous Drugs:

- Appropriate personal protective equipment (PPE) must be worn when handling hazardous drugs: Two pairs of chemotherapy approved gloves, chemotherapy gown and eye/mask protection as appropriate (see [Provincial Systemic Therapy Policy V-10](#)).

- Any tubing used to administer chemotherapeutic drugs will be disposed of as hazardous waste.
- On inpatient units, all IV tubing used to infuse chemotherapy will be flagged with a label indicating "chemotherapy, dispose of properly".
- When a patient leaves a care area with an IV running, any IV tubing that has been, or is being used to infuse chemotherapy, will be flagged with a label indicating "Chemotherapy, dispose of properly"

Closed System Drug Transfer Device:

1. Chemotherapy administration will be delivered within a closed system by using either a Closed System Drug Transfer Device (CSDTD) or approved procedures to maintain the closed system.
 - A closed system is defined as one that "does not exchange unfiltered air or contaminants with the adjacent environment" (Olle, Olofsson & Johansson, 2009 p. 549).
 - There are situations where a completely closed system cannot be achieved even with the use of a CSDTD. For example, subcutaneous (SC) or intramuscular (IM) injection.

NOTE: Use of a CSDTD does not replace safe handling guidelines or use of personal protective equipment when administering chemotherapeutic drugs.

2. Where CSDTDs are not yet available, attempts should be made to minimize opening the system by:
 - Closing the vent on all tubing prior to initiating chemotherapy
 - Clamping and changing the secondary medication line with each new chemotherapy drug (NOT unspiking the bag)

([Neuss, 2016](#); [Polovich 2014](#); [Olle, 2009](#))

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CHECKING CHEMOTHERAPEUTIC DRUGS ORDERS:

Directives:

1. Chemotherapy certified nurses will adhere to the principles and guidelines outlined in the British Columbia College of Nursing Professionals' Standard: [Medication Administration](#), including the seven "rights" of medication administration – right medication, right patient, right dose, right time, right route, right reason and right documentation.
2. All orders for chemotherapeutic drugs will be checked by chemotherapy certified RN, prior to administration of these drugs to the patient, as per Nursing Directive

C-252 and [Provincial Systemic Therapy Policy III-10](#). Discrepancies exceeding plus or minus 5% of the dose, calculated according to the patient's treatment plan, must be clarified with a qualified prescribing practitioner and documented.

- *'If required for the cancer treatment being prescribed, body surface area calculations must be determined according to the Mosteller equation and be done **for the first treatment of each chemotherapy protocol only**. Subsequent body surface area recalculations will only be done if, in the physician's opinion, it is warranted by a change in the clinical status of the patient. The reasons prompting the recalculation must be documented in on the preprinted order'. ([ST III-10](#))*. Therefore – use the height and weight the prescriber used initially or at the last change in dose, for the calculation.

3. An RN who is caring for a patient on multi-day chemotherapy and has not carried out a full chemotherapy check for the patient's current day of treatment, will do so according to C-252.
4. All orders for chemotherapeutic drugs will be written by a qualified practitioner as per [Provincial Systemic Therapy Policy III-10](#).
 - To facilitate drug preparation, changes to a previously written order may be made by a pharmacist upon verbal order from a qualified practitioner.
 - The RN will not administer the dose until the new order has been signed and dated by the prescribing practitioner.
 - An exception can be made for a telephone order to suspend (hold) chemotherapy for reasons of safety.

Procedure for Checking Chemotherapy Drug Orders:

1. Review patient data such as:
 - signed special consents if required
 - applicable lab results. For new patients or patients beginning a new course of cancer treatment, baseline tests must have been conducted within four weeks of the start of therapy. Exceptions to this will be noted within the protocol.
 - previous treatments for cancer
 - side effects experienced and any interventions
 - previous dose adjustments
 - other concurrent medical conditions
 - weight
 - *Note:* If the patient gains/loses weight the BSA is NOT automatically recalculated. Recalculation of the BSA is at the prescriber's discretion based on clinical assessment ([per ST III-10](#)). Weight change is one indicator used to determine a patient's tolerance of treatment. Use clinical judgment as to appropriateness of contacting the prescriber to highlight a significant change in weight and need to recalculate BSA.
2. Compare the prescribed orders with the documented treatment plan and protocol.

3. Determine that the ordered dose falls within the recommended range according to the treatment plan. This includes:
 - calculating body surface area (m²) or area under the curve (AUC) as specified in protocol
 - calculating dose
 - calculating dose modifications according to protocol and applicable lab results.
 - ensuring dose is within the 5% variance limit.
 - With dose banded chemotherapy, i.e. the 5FU infusor, it is a two-step process:
 - Step 1, your initial calculation must fall within the 5% rule.
 - Step 2, ensure the ordered dose falls within the right band on the PPO.
Rationale: The banded dose is intended to cover a range of doses deemed safe for the patient based on the ordered dose.
4. Discuss any discrepancies with a qualified prescribing practitioner. Document clarifications and rationale as a verbal / telephone order.

[\(Accreditation Canada, 2017; Polovich 2014; Neuss, 2016; Hewitt, 2015; Schwappach, 2016\)](#)

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ADMINISTRATION:

Directives:

1. Immediately prior to administering the chemotherapy, two registered nurses will conduct an **independent double check** of the medication at **the point of care** to verify:
 - Right patient (two identifiers)
 - Right drug
 - Right dose as ordered (no calculation needed at point of care)
 - Right volume and solution
 - Right route of administration
 - Accurate IV pump programming
 - Correct tubing and inline attachments
2. The first nurse conducting the independent double check at the point of care will be the nurse caring for the patient and administering the medications, who has completed the full clinical check of the chemotherapy orders as outlined in [Procedure for Checking Chemotherapy Drug Orders](#) (pp. 7-8), and is chemotherapy certified.
3. If an elastomeric device is used, both nurses will verify that the clamps are open and that the flow restrictor is secured with tape to the skin.
4. If a discrepancy is identified, both nurses will review the information, and reconcile the discrepancy. If the discrepancy is not resolved, a third nurse will conduct an independent double check of each of the elements noted in directive 1. If

discrepancies persist, the nurse caring for the patient will clarify the order(s) with the prescriber.

5. Both nurses will sign the medication administration record, with the first signature being that of the nurse who administered the medication
6. Two nurses will conduct an independent double check of pump programming each time the rate of infusion changes (eg, when medication titration is required), and will sign the documentation of the rate change in the Focus Charting (DARP) entry in the Nursing Notes.
7. Chemotherapy will always be initiated and administered at the rate specified in the qualified practitioner's orders [as per Systemic Therapy policy III -10](#), prescriber process.
8. All procedures will be performed using aseptic technique (correct hand-washing, "no touch" technique, and disposable non-sterile gloves) unless otherwise stated.
9. Health care providers must be chemotherapy certified in order to administer chemotherapy.
10. Some routes are designated for administration by physician only. Consult individual drug monographs within BCCA [Cancer Drug Manual](#). If no monograph exists for a particular drug, consult [Systemic Therapy policy III-90](#) for where to find such information.
11. Chemotherapy medications are not usually administered concurrently via Y-site (Special circumstances will be specified within PPO/ protocol).
12. Intravenous chemotherapy (vesicants excluded) will be:
 - Infused using an infusion device with a functioning alarm and with Dose-Error Reduction Software (DERS), within the BC Cancer Agency.
 - Infused using an elastomeric device (e.g. INFUSOR[®]) where specified by the chemotherapy protocol pre-printed order. Ensure that the device dispensed is the type and model specified in the pre-printed order (PPO).
 - Infused using an electronic ambulatory infusion device (e.g. CADD[®] pump).
 - Infused using a CSDTD within BC Cancer Agency
7. Only luer lock needleless tubing and where appropriate a CSDTD to complete a closed system, will be used for the administration of hazardous drugs via an infusion.
8. All tubing used to administer chemotherapy will be primed with a non-chemotherapy solution. If there are special circumstances in which a chemotherapy solution is required to prime the tubing, the line will be primed by pharmacy.
9. Certain chemotherapy drugs are required to be administered via a filter. When pre-medications or other chemotherapy drugs not requiring a filter are given

consecutively, attach additional tubing that does not contain a filter to the lowest port on the tubing.

10. All chemotherapy infusions will be administered via a secondary medication line. When the chemotherapy has been absorbed from the secondary bag – back flush into the secondary line and chemotherapy bag and then flush with a minimum of 25ml before attaching the next medication.
11. Once all medications have been given, the primary line will be flushed with a **minimum** of 25 ml of compatible IV solution prior to disconnection, unless special requirements are dictated within the orders.
12. Chemotherapy will always be initiated and administered at the rate specified in the orders.
13. Continuous chemotherapy infusions must be administered as close as possible to the specified time on the order. Interruptions can be minimized by:
 - Using alternative routes for intermittent medications where possible
 - Starting another IV site for intermittent IV medications if appropriate
 - Using minimum infusion times for intermittent medications if no other route / IV access point available.

Hypersensitivity:

1. See [Systemic Therapy Policy III-60](#) Physician Coverage for Medical Emergencies During Delivery of Selected Chemotherapy Drugs
2. See [SCDRUGX](#) Management of Hypersensitivity Reactions to Chemotherapeutic Agents.
3. The RN should remain with the patient during the first 10 minutes of the infusion of a drug with known hypersensitivity risk. The RN should be familiar with each drug and the possible toxicity and time of onset of reaction – provided in the appendix of ST III-60. The nurse may decide to observe the patient for more than 10 minutes when required.
4. The RN shall confirm that a physician is available to respond on an urgent basis according to ST III-60 prior to starting the infusion.

Vesicants:

Drugs capable of causing necrosis of tissue if they escape the vein into the surrounding tissue. This is known as extravasation.

- If an extravasation of a vesicant occurs the nurse will immediately initiate the procedure to manage the extravasation as per [Systemic Therapy Policy III-20: Prevention and Management of Extravasation of Chemotherapy](#).

- Prompt action is necessary to prevent or minimize the effects of extravasation. During chemotherapy administration via peripheral line or central line, instruct patient to report any local adverse reactions such as discomfort, stinging, burning, itching or pain. Observe for swelling, lack of blood return, change in skin colour, or other signs and symptoms of infiltration and extravasation.
- Guidance in differentiating between extravasation, irritation and a flare can be found in the [Systemic Therapy Policy III-20](#): Prevention and Management of Extravasation of Chemotherapy.

Administering a Vesicant Via a Peripheral Intravenous (PIV) Line:

1. Prior to administration of vesicant chemotherapy, assess for patency of venous access by checking for blood return and ensuring the IV is free-flowing to gravity.
2. When given peripherally, use a newly inserted IV whenever possible.
3. When possible select a large vein away from joints or tendons ([See NPR I-390](#) for IV therapy guiding principles around insertions, catheter size and maintenance and [ST III-20](#) for prevention and management of extravasations).
4. A vesicant drug when given peripherally must never be administered via an infusion pump.
5. A vesicant drug that is supplied in a **syringe** must be administered by IV push via the sidearm of a primary IV line flowing freely at all times by gravity maintaining a closed system using a CSDD.
6. A vesicant drug that is supplied in a **minibag** and given peripherally must be administered by gravity, over the time specified in the order, as a secondary medication through a free-flowing IV. The RN will remain with the patient, and will check blood return and assess the IV site every 2 minutes throughout the procedure

Administering a Vesicant Via a Central Venous Access Device (CVAD):

1. Prior to administration of vesicant chemotherapy, assess for patency of venous by checking for blood return ([see NPR C-75, C- 80, C- 86](#)) and ensuring the IV is free-flowing to gravity. A 25-mL bolus of normal saline should then be infused via gravity to ensure free flow without local discomfort or swelling prior to administration of the vesicant.
 - For an IVAD also assess needle placement ([See Systemic Therapy Policy III-80](#))
 - For a PICC assess the integrity of the dressing, the insertion site and review the date of the last documented dressing change fulfilling the requirements of NPR C-86.
 - Midlines should NOT be used for chemotherapy administration because of the difficulty in detecting infiltration or extravasation, and the increased risk of serious complications (see NPR C-86, C-80 and I-390 for more information).
2. A vesicant drug that is supplied in a **syringe** must be administered by IV push via the sidearm of a primary IV line flowing freely at all times by gravity maintaining a closed system using a CSDD.
3. A vesicant drug that is supplied in a **minibag** and given via a Central Venous Access Device may be infused using a pump.

4. It is acceptable to use a syringe smaller than 10ml when administering a vesicant via a central line using the side arm route of administration. Never connect a small syringe (<10ml) directly to the hub of the central line.

[\(Yarbro, 2016; Polovich, 2014; Neuss, 2016; Gorski, 2016\)](#)

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INTRAVENOUS -

Procedure for Infusion:

1. All procedures will be performed using aseptic technique (correct hand-washing, “no-touch” technique, and disposable non-sterile gloves) unless otherwise stated.
2. Hang primary IV line. Check that tubing vent is closed.
3. Attach a secondary medication line. If the order requires a drug or infusion to be administered after a hazardous drug has been given, attach a CSDTD specific secondary to maintain a closed system throughout the treatment.
4. Check that tubing vent on secondary medication line is closed
5. Perform hand hygiene with either (alcohol) antiseptic hand cleanser or soap and water per PHSA Hand Hygiene Policy before donning two pairs of chemotherapy gloves and designated chemotherapy gown per V-10 (Hazardous Drug Safe Handling Standards).
6. Attach bag of chemotherapeutic drug to secondary line. Always spike bags of IV chemotherapy drugs below eye level. If using CSDTD specific secondary set, back flush until drip chamber is half full to remove air from line
7. Administer at the rate specified in the order.
8. When the chemotherapeutic drug has been infused, back flush into secondary medication line.
9. Flush with a minimum of 25mls of the primary IV solution at the same rate as specified in the physician orders then close the clamp on the secondary tubing.
10. If CSDTD is utilized then multiple hazardous drugs may be administered consecutively using the same CSDTD secondary set. The CSDTD connector from the top port of the primary line should never be removed in order to maintain a closed system. For additional medications attach new bag of chemotherapy to the existing CSDTD secondary set. In some instances the nurse may need to attach a bag spike to non-hazardous drugs for compatibility with the CSDTD tubing.
11. Repeat steps 5 through 10 as needed to complete treatment plan.
12. If IV catheter is to be discontinued, leave all tubing attached to the IV and discard entire system intact.

13. If ongoing IV therapy is required, proceed with treatment plan.

Side Arm Route:

Direct administration of chemotherapy through the lowest medication port of a free-flowing IV to either a peripheral IV device or central venous access device. Used for administration of vesicant and other drugs given by IV push.

See also [Systemic Therapy Policy III-20](#) Prevention and Management of Extravasation of Chemotherapy

Procedure for Side Arm Administration via Peripheral IV:

1. Perform hand hygiene with either (alcohol) antiseptic hand cleanser or soap and water per PHSA Hand Hygiene Policy before donning two pairs of chemotherapy gloves and designated chemotherapy per V-10 (Hazardous Drug Safe Handling Standards).
2. Place plastic backed absorbent pad under lowest side-port of IV tubing.
3. Attach CSDTD connector to lowest sidearm port. Syringe with vesicant will have CSDTD injector attached in pharmacy
4. Ensure peripheral injection site is visible throughout injection.
5. Regulate rate so IV is free-flowing to gravity.
6. Gently pinch IV tubing just above or below lowest side port. Check that blood returns into IV catheter or tubing.
7. Ask patient to inform you **immediately** of any changed sensation or discomfort at and/or near the IV site during procedure. (e.g. stinging, burning, pain).
8. Inject up to 2 mLs of chemotherapy into lowest port. Do this slowly enough that that IV flow does not stop or reverse. Always keep hand on plunger of syringe when injecting and when checking blood return.
9. Assess blood return every 2 mLs of drug injected as in Step 5. Assess tissue surrounding IV catheter insertion site and along path of vein for redness, swelling, or “bleb” formation.
10. Continue administering the drug as long as blood return present, IV fluid runs free to gravity, site appears normal and patient is comfortable.

11. In the event of loss of blood return, changes at IV site, decrease in free flowing IV fluid or patient discomfort at IV site.
 - **Stop injection.**
 - Assess
 - If drug is classified as a vesicant, refer to [Systemic Therapy Policy III-20](#) Prevention and Management of Extravasation.
12. At the end of medication administration, flush thoroughly. Remove syringe with CSSTD by disconnecting between the two CSSTD connections. The CSSTD on the primary line must remain connected for remainder of treatment.

Procedure for Side Arm Administration via Central Venous Access Device:

1. Access the central venous catheter (CVC), assess for blood return and patency; attach IV administration set. Refer to appropriate Nursing Practice Reference:
 - [C-75 Central Venous Catheters](#), Care and Maintenance of Implantable Venous Access Devices
 - [C-80 Central Venous Catheters](#) - Care and Maintenance of Open-ended Right Atrial Catheters
 - [C-86 Central Venous Catheters](#), Care and Maintenance of PICCs
2. Perform hand hygiene with either (alcohol) antiseptic hand cleanser or soap and water per PHSA Hand Hygiene Policy before donning two pairs of chemotherapy gloves and designated chemotherapy per V-10 (Hazardous Drug Safe Handling Standards).
3. Attach CSSTD to lowest sidearm port. Syringe with vesicant will have CSSTD injector attached in pharmacy
4. Place plastic backed absorbent pad under lowest side port of IV tubing.
5. With the IV fluid free-flowing to gravity, instill at least 25-mLs to ensure free flow without local discomfort or swelling. The medication can then be administered.
6. Ensure CVC site is visible throughout injection in order to monitor for redness, swelling or “bleb” formation.
7. Ask patient to inform you immediately of any changed sensation or discomfort at CVC site during procedure (e.g., stinging, burning, or pain).
8. Inject chemotherapy into lowest port. Do this slowly enough that that IV flow does not stop or reverse. Always keep hand on plunger of syringe to prevent reflux. It is not necessary to check for blood return every 2 mLs when using a central venous access device.
9. In the event of changes at CVC site, resistance to administration, decrease to free flowing IV fluid or patient discomfort at CVC site
 - **Stop injection**

- Assess
 - If drug is classified as a vesicant, refer to [Systemic Therapy Policy III-20](#) Prevention and Management of Extravasation.
10. Following administration of the medication, flush line thoroughly. Remove syringe with CSSTD by disconnecting between the two CSSTD connections. The CSSTD connector on the primary line must remain connected for remainder of treatment. ([Yarbro, 2016; Polovich, 2014; Neuss, 2016; Gorski, 2016](#))

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INTRATHECAL via Lumbar Puncture or Ommaya Reservoir -

Directives:

1. Intrathecal administration of chemotherapeutic drugs is carried out by physicians as per [Systemic Therapy Policy III-50](#) Administration of Hazardous Drugs by the Intrathecal Route via Lumbar Puncture or Ommaya Reservoir.
2. Only chemotherapy certified RNs can assist the physician. The nursing role includes, but is not limited to:
 - Checking chemotherapy orders and verifying medication at bedside (see [ST III-50](#))
 - Patient education: Outline of procedure, possible side effects, post treatment restrictions if applicable and who to call in the event of a fever, headache, neck stiffness or vomiting.
 - Patient comfort and support, utilising anti-anxiety medication if required.
 - Monitoring patient condition, vital signs per physician order and assessing site.
3. Accidental intrathecal administration of Vinka Alkaloids and some other chemotherapy drugs, such as Bortezomib, can be fatal. See [Systemic Therapy Policy V-40](#) Dispensing and Labelling of Vinca Alkaloid Preparations. (ref Gilbar)
4. For further background information on intrathecal chemotherapy and an Ommaya reservoir, please refer to Cancer Nursing: Principles and Practice, Yarbro et al, 8th edition, p446

([Yarbro, 2016; Neuss, 2016; Gilbar, 2014](#))

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INTRAPERITONEAL -

Directives:

1. IP chemotherapy must be administered via gravity, not via a pump.

2. **Sterile Aseptic Technique** will be used for all procedures unless otherwise stated. In sterile aseptic technique, sterile parts may only contact other sterile parts; contact between sterile and non-sterile parts must be avoided
3. Patients are monitored for potential complications throughout the procedure and addressed as required. Refer to textbook 'Cancer Nursing: Principles and Practice' Yarbro et al 2016.

Procedure:

1. Encourage patient to empty bladder and/or move bowels prior to procedure
2. Perform hand hygiene before patient contact
3. Place the patient into semi-Fowler position
4. Access port with a 19 gauge Huber needle, 1-1.5. Follow the procedure in [Nursing Practice Reference C-75](#), page 8 'Accessing and Flushing an IVAD', omitting step 13 of the procedure 'aspirate for brisk blood return'. Instead flush with 20ml normal saline. If pain, swelling, occlusion or leakage occurs, contact physician immediately.
5. Connect appropriate tubing and attach secondary medication line. If administering a hazardous drug a CSDTD specific secondary set should be utilized. Check that the neutral IV solution is able to run freely to gravity.
6. Perform hand hygiene with either (alcohol) antiseptic hand cleanser or soap and water per PHSA Hand Hygiene Policy before donning two pairs of chemotherapy gloves and designated chemotherapy PPE per [Systemic Therapy V-10](#) (Hazardous Drug Safe Handling Standards).
7. Attach bag of chemotherapeutic drug to secondary line.
8. Administer chemotherapy and any further fluids by gravity as per orders and as tolerated by patient.
9. Encourage patient to remain on bed rest, as tolerated – bathroom breaks permitted, for the duration of the chemotherapy infusion to reduce the chance of the needle being dislodged.
10. When treatment is complete clamp the catheter and clamp the tubing
11. Flush and de-access the port, following the procedures in [Nursing Practice Reference C-75](#), pages 11 and 13, 'Completing an Infusion' and 'De-Accessing an IVAD'.
 - o *Note:* Flushing with 5mL heparin (10 units/mL) prior to de-accessing non-valved ports is recommended to prevent obstruction from fibrin sheath formation.

12. Ensure chemotherapy tubing remains intact. Dispose of the tubing hazardous waste according to 'Hazardous Drugs, Safe Handling Standards V-10'.
13. If required by protocol, assist the patient to change position every 15 minutes, for the time specified in the protocol/PPO, to include:
 - Semi-Fowler's
 - Trendelenburg
 - Lying on left side
 - Lying on right side

[\(Yarbro, 2016; Polovich, 2014; Neuss, 2016; Anastasia, 2012\)](#)

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ORAL-

Directives:

1. Healthcare providers must be chemotherapy certified to administer cancer chemotherapeutic drugs orally.
2. Appropriate personal protective equipment (PPE) must be worn when handling hazardous tablets or capsules: Two pairs of chemotherapy approved gloves, and a no-touch technique to avoid damage and contamination should always be used. Full PPE should be worn if a cytotoxic oral liquid is being administered as a splash could occur.
3. Never cut or crush oral cytotoxic tablets or capsules.
4. Contact pharmacy immediately before administering the medication if:
 - Tablet/capsules must be cut/broken in order to achieve the correct dose
 - Patient is unable to swallow tablets/capsules
 - Administration is via a feeding tube and a different formulation is required
5. Patient should take the cytotoxic medication immediately from the medication cup, with no handling
6. All contaminated items (medications cup/containers/PPE) must be discarded as cytotoxic waste.

[\(Neuss, 2016; Polovich, 2014; Yarbro, 2016\)](#)

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SUBCUTANEOUS AND/OR INTRAMUSCULAR INJECTION -

For more detailed information on how to perform a subcutaneous or intramuscular injection see [Elsevier Online Clinical Skills](#).

Cancer chemotherapeutic drugs administered by subcutaneous or intramuscular route can often be in volumes larger than is recommended in Elsevier Online Clinical Skills.

Refer to the [Cancer Drug Manual](#) and appropriate [Chemotherapy Protocol](#) for evidence based information on tolerated volumes of individual drugs.

Directives:

1. Appropriate PPE: two pairs of chemotherapy approved gloves, chemotherapy gown and eye goggles (if risk of splash. See [Provincial Systemic Therapy Policy V-10](#))
2. Place a non-permeable plastic backed pad on a firm surface and ensure a cytotoxic sharps container is within easy reach.
3. Hazardous medication syringes that are dispensed with the Chemolock CSSTD need to be administered subcutaneously using the air sandwich technique:
 - a. Attach the connector and needle to syringe
 - b. Draw up 1.0 mL of air into the syringe
 - c. When administering the medication hold the syringe at a 90 degree angle if possible to ensure that the air bubble is towards the back of the syringe
 - d. The medication is then “sandwiched” between the air in the syringe barrel and the air in the needle
4. DO NOT expel air from the syringes prior to administration
5. DO NOT RECAP NEEDLE. If a syringe with an attached needle is used, it should be dropped intact into a chemotherapy sharps container without activating the safety device because this will aerosolize the drug and increase risk of contamination.

([Yarbro, 2016](#); [Neuss, 2016](#); [Polovich 2014](#); [Shpilberg, 2013](#); [Liptrott, 2015](#))

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ELASTOMERIC INFUSION DEVICES:

1. A RN must be chemotherapy certified to connect a patient’s IVAD or PICC to an elastomeric infusion device
2. Appropriate personal protective equipment (PPE) must be worn when connecting and disconnecting the elastomeric infusor: Two pairs of chemotherapy approved gloves and a chemotherapy gown
3. Prior to connecting the elastomeric infusor, the RN will check the infusor according to the [Checking Chemotherapeutic Drugs’ Orders](#) directives and following criteria:

- a. Ensure that the correct infusor is selected: compare the infusor code (LV10, SV2, LV2, LV5 or LV1.5) on the BCCA pre-printed order to the one on the Infusor to minimize risk of selection error. Complete the blank space on the patient handout *Your Infusor- A Guide for Patients* to indicate when the patient needs to call according to the table below.

Infusor Size	Duration	Baxter	Proposed
SV2	46-48 h	+/-12.5%	+/- 5 hrs
LV5	46-48 h	+/-10%	+/- 5 hrs
LV2	96-120 h	+/-10%	+/- 10 hrs
LV1.5	168 h	+/-10%	+/- 17 hrs
LV 10	24 h	+/-10%	+/- 2.5 hrs

- b. Ensure that the correct diluent (D5W) is used
- c. Inspect the infusor for any signs of leaking
- d. Check that the access system for connecting the Infusor is 22 gauge or larger
4. Prepare the following equipment for connecting the elastomeric infusor to a patient's access line
- Alcohol swabs
 - 1x 20 mL syringe of Normal Saline
 - 10 x 14 cm Transparent Semi-permeable Membrane (TSM)
 - An extension tubing (Y connector)
5. Cleanse surface entry of IVAD or PICC and attach a primed Y-connector. Flush with Normal Saline to check patency (see [NPR C-75 & C-80](#)). Connect the flow restrictor of the Infusor to the Y-connector. Ensure luer lock connections are secured tightly. Secure extension tubing and flow restrictor with a TSM. Unclamp the infusor and open any other clamps so that the medication can start flowing.
6. Prior to sending the patient home ensure:
- The flow restrictor is taped securely to the skin
 - A visual inspection is done to determine any flow obstructions such as kinks or clamps in the tubing
 - Patient Teaching Standard: Managing at Home with an Elastomeric Infusion Device (Appendix) and *Your Infusor- A Guide for Patients* is reviewed and provided to the patient
7. To disconnect the elastomeric infusor device follow instructions in *Discontinuing an Infusor from an Implanted Venous Access Device (IVAD) or Discontinuing an Infusor from a PICC line*
8. If concerns arise once after an infusor has been attached (e.g., drug infusing slower than prescribed, drug infusing faster than prescribes or medication remaining in balloon past completion time), please call the physician to determine next steps.

DOCUMENTATION:

1. Document all RN administered cancer chemotherapeutic drugs on the appropriate Medication Administration Record (MAR).
2. Independent double checks at the point of care will be documented in the patient record, and signed by both nurses completing the check
3. In case of vesicant extravasation, follow documentation and follow-up guidelines in [Systemic Therapy Policy III-20](#), "Extravasation of Chemotherapy, Prevention and Management".

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APPENDIX 1



Provincial Health Services Authority

Patient Teaching Standard: Managing at Home with an Elastomeric Infusion Device

<p>Prior to sending a patient home with an Elastomeric Infusion Device, the RN will teach the patient the following points.</p>
<p>At the end of the first treatment and subsequent treatments, the RN will ensure the patient will be able to:</p>
<p>I. IDENTIFY KEY PARTS OF THE INFUSOR™</p>
<ul style="list-style-type: none"> • Elastomeric balloon that contains chemotherapy • Plastic casing that protects the balloon • Flow restrictor that needs to be securely taped to skin • Volume indicator line that shows progress of infusion • Safety Clamp that should be open to allow flow of medication
<p>II. DESCRIBE WAYS OF MANAGING DAILY ACTIVITIES WHILE WEARING INFUSOR™</p>
<ul style="list-style-type: none"> • Bathing: Keep IVAD/ PICC dressing dry and avoid infusor getting wet. Can wear a scarf around neck and pin carrier to scarf • Activities: keep infusor in a carrying bag. Keep infusor at the level of the IVAD or PICC. Keep infusor at room temperature • Sleeping: keep the infusor in bed near you and to position device so not lying on it.
<p>III. DESCRIBE ROUTINE CHECKS OF THE DEVICE WHILE IN OPERATION</p>
<ul style="list-style-type: none"> • Check breakfast/lunch/dinner/bedtime/every 8 hrs • Take device out of carrier to check it thoroughly • Look for: <ul style="list-style-type: none"> - Flow restrictor taped to skin - Balloon getting smaller since last check - Device, carrier, tubing and dressing are dry - Clamp is open and tubing free of kinks and blood
<p>IV. DESCRIBE ACTIONS IF PROBLEMS ARISE WITH DEVICE</p>
<ul style="list-style-type: none"> • Call _____ if: <ul style="list-style-type: none"> - Balloon has emptied _____ hours sooner than expected - Balloon size has not changed in past 8 hours - Device, carrier, tubing or dressing damp or wet - Blood in tubing or redness, pain or swelling at IVAD/ PICC site - If infusor leaks or bursts
<p>V. STATE THE CORRECT TIME FOR EXPECTED COMPLETION OF INFUSION</p>
<ul style="list-style-type: none"> * Expected completion time is _____ * If > 5 hours beyond or < 5 hours before expected completion time call _____

APPENDIX 2:



Provincial Health Services Authority

Patient Teaching Standard: Discontinuing an Infusor™ from a PICC at Home

STANDARD RESOURCES: Guide Sheet (name TBD)

Safe Handling of Chemotherapy at home

By the end of the teaching session the caregiver will be able to:

I. IDENTIFY EXPECTED TIME FOR COMPLETION OF INFUSOR™

- * Expected completion time is _____
- If more than 5 hours beyond or more than 5 hours before expected completion time call _____

II. USE CLEAN TECHNIQUE THROUGHOUT PROCEDURE

- Cleaning the working surface using rubbing alcohol
- Washing hands for one minute using liquid soap and drying with clean towel
- Wearing gloves to reduce exposure
- Removing tape that secures sensor
- Clamping Y-site connector line that infusor is attached too.
- Cleansing connection of second Y-site line.
- Flushing PICC line (as required by manufacturer) through second line.
- Attaching *cap to PICC (clarify...Cap should already be on PICC)

III. DESCRIBE ACTIONS IF PROBLEMS ARISE WITH DEVICE

- Inability to flush line
- Call _____ if:
 - Balloon has emptied _____ hours sooner than expected
 - Balloon size has not changed in past 8 hours
 - Device, carrier, tubing or dressing damp/wet
 - Blood in tubing

IV. STATE NUMBERS TO CALL IN CASE OF PROBLEMS

- (List center-specific / community-specific information)

V. DESCRIBE HOW TO CORRECTLY STORE SHARPS AND HAZARDOUS WASTES/SUPPLIES

- Disposing of equipment and supplies in Hazardous Waste container.
- Storing waste container safely at home(away from children, food, pets)
- Returning container after 4 Infusors (or when full).

Form #

Date Developed: June, 2010

Date Revised:

APPENDIX 3:



Patient Teaching Standard: Discontinuing an Infusor™ from an IVAD at Home

STANDARD RESOURCES: Guide Sheet (name TBD), Safe Handling of Chemotherapy at home

By the end of the teaching session the caregiver will be able to:

I. IDENTIFY EXPECTED TIME FOR COMPLETION OF INFUSOR™

- Knowing expected completion time
- If more than 5 hours beyond or more than 5 hours before expected completion time call _____
- Importance of filling Heparin prescription at community pharmacy (if Heparin required)

II. USE CLEAN TECHNIQUE THROUGHOUT PROCEDURE

- Cleaning the working surface using rubbing alcohol
- Washing hands for one minute using liquid soap and drying with clean towel
- Wearing gloves to reduce exposure
- Removing tape that secures sensor
- Clamping line on Y-connecotor line that infusor is attached too.
- Cleansing connection of second Y-site line.
- Through second Y-site line, flush IVAD with saline (and heparin, if required).
- Clamping catheter while still flushing to maintain positive pressure
- Removing dressing without dislodging needle
- Removing needle

III. DESCRIBE ACTIONS IF PROBLEMS ARISE WITH DEVICE

- Inability to flush line
- Call _____ if:
 - Balloon has emptied 5 hours sooner than expected
 - Balloon size has not changed in past 8 hours
 - Device, carrier, tubing or dressing damp/wet
 - Blood in tubing

IV. STATE NUMBERS TO CALL IN CASE OF PROBLEMS

- (List center-specific / community-specific information)

V. DESCRIBE HOW TO CORRECTLY STORE SHARPS/HAZARDOUS WASTES/SUPPLIES

- Disposing of equipment and supplies in Hazardous Waste container.
- Storing waste container safely at home (away from children, food, pets)
- Returning container after 4 Infusors (or when full).

Form #

Date Developed: June, 2010

Date Reviewed: May, 2017

APPENDIX 4: Independent double checking at point of care workflow

