Nursing Practice Reference

Title: Systemic Cancer Therapy Administration

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Sites: ☒ **Abbotsford** ☒ **Prince George** ☒ **Kelowna**

☒ **Surrey** ☒ **Vancouver** ☒ **Victoria**

Reason for Directive:

To provide guidelines for the safe administration of systemic cancer therapy treatments.

Scope:

Registered Nurses (RNs) who hold current Systemic Therapy Education Certification.

CERNER Updates:

BC Cancer High Alert Medication Policy and List

BC Cancer Independent Double Check Medication List (see appendix 5)

BC Cancer Chemotherapy Stability Chart and Policy- Revised

BC Cancer Automated Dispensing Cabinets (ADC) Policy

CST Medication Administration Management Policy

CST Orders Management Policy

Hazardous Drug Updates:

Provincial Hazardous Drug Exposure Control Program

Provincial Hazardous Drug List

Provincial Nursing Resource

Those sites that are live with Cerner, will document using the EMR and follow the policies and site specific workflows associated with this electronic system.
i.e. BC Cancer Vancouver -CST Ambulatory Systemic Therapy Manual

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)

1. BC Cancer Provincial High-Alert Medications Policy
2. BC Cancer Drug Manual
3. BC Cancer Automated Dispensing Cabinets (ADC) Policy
4. CST Orders Management Policy
5. CST Medication Administration Policy
6. BC Provincial Hazardous Drug Exposure Control Program
7. BC Provincial Hazardous Drug List 2022 02 01
8. BC Provincial Nursing Resource

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DEFINITIONS:

Systemic Therapy- medication(s) that are prescribed as part of a treatment protocol to treat a specific type of malignant tumor. These medications may be classified as hazardous drug(s) group 1 or 2 or they may be non-hazardous.

Hazardous Drug - if the drug has accompanying Manufacturer Special Handling Information (MSHI) or if they exhibit one or more of the following toxicity criteria in humans, animal models, or in vitro systems (unless the drug also exhibits a molecular property that may limit the potential for adverse health effects in health care worker exposure to the drug): • Carcinogenicity • Developmental toxicity (including teratogenicity) • Reproductive toxicity • Genotoxicity • Organ toxicity at low doses or • Structure and toxicity profile that mimics existing drugs determined hazardous by exhibiting any one of the previous five toxicity types. **Note:** Hazardous drugs group one have been referred to as *"cytotoxic, antineoplastic, hazardous, and/or chemotherapy".* BC Provincial Hazardous Drug Exposure Control Program, Provincial 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 Provincial Hazardous Drug List
Note: Biohazardous drugs may include gene therapy, biologicals, and/or biohazards.

BC Provincial Hazardous Drugs List – A list of hazardous drugs in the province of BC categorized into Group 1 and 2. Drugs are assigned to these two groups based on *Tables 1 and 2 of the draft NIOSH 2020 Hazardous Drug List*, in addition to other drugs that are reviewed. *Table 1* contains drugs that have an accompanying Manufacturer Special Handling Information (MSHI) or are known or probable carcinogens. *Table 2* contains hazardous drugs that do not have an accompanying MSHI and are not known or probable carcinogens. Many of the Group 1 hazardous drugs are cytotoxic and the majority are hazardous to males or females who are actively trying to conceive, women who are pregnant or may become pregnant, and women who are breast feeding. Not all of the Group 1 hazardous drugs are antineoplastic drugs.

Independent Double Check (IDC) - is a process by which two clinicians work separately to verify the accuracy of the order and medication related care to be delivered. The two clinicians perform the verification process independent of one another, without assistance from each other and without knowledge of the steps followed or conclusions arrived at by each other. 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. Refer to "Independent Double Check for Medication Administration" **NPR M-100**

Preparation by Nursing -Actions taken to alter a drug product by means other than compounding or repackaging. This includes crushing and cutting tablets, opening capsules, mixing, reconstituting, and any other preparation that is performed in accordance with safe work procedures.

Touchless Technique -A drug administration technique where there is no hand contact with the drug being administered. Medication is transferred directly into a medicine cup and given to the patient. Neither the health care worker nor the patient touches the medication with their hands.

Provider- Oncologist, General Practitioner in Oncology, Nurse Practitioner qualified to prescribe systemic therapy.
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RN EDUCATIONAL REQUIREMENTS:

The RN administering systemic therapy will have completed the *BC Cancer Systemic Therapy Education Program* and meet annual requirements of Systemic Therapy Continuing Competency. The RN participating in the certification practicum may administer systemic therapy under the supervision of a systemic therapy certified preceptor.

(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 BCCNM standards

- Ensure that at minimum the following **written** information is given to the patient and discussed:
  - The diagnosis requiring systemic therapy, goals of therapy, planned duration of treatment, and schedule (may be found within each systemic therapy 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, whom to call, phone number).
- Discuss the plan for monitoring and follow-up.
- For intravenous, intrathecal, intraperitoneal or subcutaneous systemic therapy: Instruct the patient to notify the nurse immediately of any infusion-related complications during the administration of hazardous 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 systemic therapy: Provide written information and discuss administration, storage and handling of oral hazardous 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: See Control Matrix APPENDIX B (p.51) in the ECP and BC Provincial Nursing Resource

Directives:

- Hazardous drugs must be properly handled, in accordance with Provincial Systemic Therapy Policy V-10 and the Provincial Hazardous Drug Exposure Control Program (ECP) and Hazardous Drug List , BC Provincial Nursing Resource
- All certified RNs who prepare, handle or administer hazardous 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 must **not** be worn outside the preparation, administration, or storage area.
- PPE will be worn and disposed of as hazardous waste whenever hazardous drugs are handled. This includes when dismantling and disposing equipment used in the administration of hazardous drugs.

Oral Hazardous Tablets or Capsules:

- Appropriate personal protective equipment (PPE) must be worn when handling hazardous tablets or capsules: Two pairs of hazardous groups1 and 2

(chemotherapy) approved gloves, and a no-touch technique to avoid damage and contamination should always be used. Full PPE should be worn if a hazardous oral liquid is being administered as a splash could occur. BC Provincial Hazardous Drug Exposure Control Program

- Oral hazardous tablets or capsules should not be cut or crushed. In the event that this is necessary, a risk assessment must be completed and the use of an approved device must be used. (Provincial Hazardous Drug Exposure Control Program (ECP) and Hazardous Drug List , Provincial Systemic Therapy Policy V-10)

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 hazardous drugs will be disposed of as hazardous waste.

- On in-patient units, all IV tubing used to infuse hazardous drugs will be flagged with a HD1 or HD2 label.

- In the rare event that a patient must leave a care area (i.e. tests, evacuation) with an IV running, any IV tubing that has been, or is being used to infuse hazardous drugs, will be flagged with a HD1 or HD2 label.

Closed System Drug Transfer Device:

1. Hazardous drugs 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. All efforts should be made to keep a closed system and limit possible exposure.
    - A closed system is defined as one that “does not exchange unfiltered air or contaminants with the adjacent environment” (Olle, Olofsson & Johannson, 2009 p. 549).

2. 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. A risk assessment must be done to determine best practice when preparing hazardous drugs outside of a pharmacy. Use of personal protective gear will need to be adjusted dependent on exposure risk. (Provincial Hazardous Drug Exposure Control Program (ECP) and Hazardous Drug List, Provincial Systemic Therapy Policy V-10)

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

3. 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 systemic therapy
   - Clamping and changing the secondary medication line with each new hazardous drug (NOT unspiking the bag)

4. In all cases when a CSDTD is NOT used and where safety standards cannot be met, a risk assessment must be completed by Professional Practice Nursing, Provincial Professional Practice Pharmacy, Clinical Area Operational Leadership, and Organizational Occupational Health and Safety and a Safe Work Procedure (SWP) established. These situations will be assessed on a case-by-case basis and must be documented on the patient chart.

   - A CSDTD may be exempted if, during preparation or administration, there is *greater than 5% loss of the dose or where there is documented evidence that the drug is incompatible with the CSDTD.*

   - If the use of a hazardous drug without a CSDTD is approved as per the above process, IV bags or syringes containing hazardous drugs must be attached by pharmacy if appropriate, as per the ECP and BC Cancer Provincial Pharmacy standards (IV-70)

(Neuss, 2016; Polovich 2014; Olle, 2009)

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CHECKING CHEMOTHERAPEUTIC MEDICATION ORDERS:

Directives:

1. Systemic therapy certified Registered Nurses (RNs) will adhere to the principles and guidelines outlined in the British Columbia College of Nurses and Midwives' 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 systemic therapy 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 formula and be done* ***for the first treatment of each systemic therapy 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 on the order'. (ST III-10).* Therefore – use the height and weight the prescriber used initially or at the last change in dose, for the calculation.

- Important to note: Clinical Trials protocols may require the use of the Dubois formula. Refer to protocol for specific calculation details. *(ST III-10).*
    - The RN must ensure the necessary learning education and competency is completed for the Dubois formula calculation prior to using it.

3. A 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 or entered 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 provider.
    - The RN will not administer the dose until the new order has been signed and dated by the provider.
    - An exception can be made for a telephone order to suspend (hold) chemotherapy for reasons of safety.

Procedure for Clinical Check of Chemotherapy Medication 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 or 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.

4. This includes:
    - calculating body surface area (m^2) or area under the curve (AUC) as specified in protocol
    - calculating the dose
    - ensuring the dose of medication is prepared in the correct volume of diluent using the BC Cancer Chemotherapy Preparation and Stability Chart.

http://www.bccancer.bc.ca/health-professionals/clinical-resources/cancer-drug-manual

- calculating dose modifications according to protocol, and applicable lab results.
- ensuring dose is within the 5% variance limit.
- when administering a medication that has a maximum lifetime cumulative dose, review the total mg/m^2 received and verify that the dose ordered falls within the maximum lifetime range according to the protocol.
- 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 order. *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 provider. Document clarifications and rationale.

(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 and the Dose Error Reduction Systems (DERs) infusion pump programing at **the point of care (POC)** to verify:

- Right patient (two identifiers)
- Right drug
- Right dose as ordered (no calculation needed at point of care)
- Right total volume and type of diluent (no additional calculation required at POC)
- Infusion rate/duration
- Right route of administration
- Correct tubing and inline attachments

2. The **first RN** conducting the independent double check at the point of care will be the RN caring for the patient and administering the medications, who has completed the full clinical check of the systemic therapy orders as outlined in Procedure for Checking Systemic Therapy Medication Orders (pp. 9), and is systemic therapy certified.

3. If an elastomeric device is used, both RNs 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 RNs will review the information, and reconcile the discrepancy. If the discrepancy is not resolved, a third RN will conduct an

independent double check of each of the elements noted in directive 1. If discrepancies persist, the RN caring for the patient will clarify the order(s) with the prescriber.

5. Both RNs will sign the medication administration record or eMAR, with the first signature being that of the RN who administered the medication.

6. The same two RNs 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 each change in rate .

7. Systemic therapy 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 systemic therapy certified in order to administer hazardous drugs group one.

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. Systemic therapy medications are not usually administered concurrently via Y-site (Special circumstances will be specified within PPO/protocol).

12. Intravenous systemic therapy (vesicants excluded) will be:
- Infused using an infusion device with a functioning alarm and with Dose-Error Reduction Software (DERS), within the BC Cancer.
- Infused using an elastomeric device (e.g. INFUSOR®) where specified by the chemotherapy protocol 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 syringe pump module where specified (RN's must be competent and validated in this skill)
- Infused using a CSDTD within BC Cancer.

13. 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.

14. All tubing used to administer systemic therapy will be primed with an IV solution that is compatible with the hazardous drug(s). If there are special circumstances in which a systemic therapy solution is required to prime the tubing, the line will be primed by pharmacy.

15. Certain systemic therapy 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.

16. All systemic therapy infusions will be administered via a secondary medication line. When the systemic therapy has been absorbed from the secondary bag – back flush into the secondary line and the bag containing systemic therapy and then flush with a minimum of 25ml before attaching the next medication.

Note: Except in those cases where the nature of systemic therapy requires special tubing and flushing requirements.

17. 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.

18. Systemic therapy will always be initiated and administered at the rate specified in the prescriber's orders.

19. Continuous systemic therapy 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 SCDRUGRX Management of Infusion-Related Reactions to Systemic Therapy Agents.

3. The RN will 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.* Based on the RN's assessment, the patient may require observation for longer than 10 minutes.

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 CSDTD.
6. **A syringe pump will not be used** to administer a known vesicant drug by IV push
7. 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 systemic therapy, 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 are contraindicated for systemic therapy 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 running wide open by gravity maintaining a closed system using a CSDTD.
3. **A syringe pump will not be used** to administer a known vesicant drug by IV push.
4. A vesicant drug that is supplied in a **minibag** and given via a Central Venous Access Device may be infused using a pump.
5. 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 syringe less than10mL 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 BC Provincial Hazardous Drug Exposure Control Program

6. Attach bag of hazardous drug to secondary line. Always spike IV bags below eye level. If using CSDTD specific secondary set, back flush until drip chamber is half full to remove air from line. If using a syringe pump driver, have medication “y-sited ”into the primary line at the closest port to the patient unless otherwise specified (ie in clinical trials protocol)

7. Administer at the rate specified in the order.

8. When the systemic therapy drug has been infused, back flush into secondary medication line. For clinical trials, flush drug as indicated by specific protocol.

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 systemic therapy 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 PPE per, V-10 Hazardous Drug Safe Handling Standards, BC Provincial Hazardous Drug Exposure Control Program, BC Provincial Nursing Resource

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. 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 open 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 CSDTD by disconnecting between the two CSDTD connections. The CSDTD 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 CSDTD to lowest sidearm port. Syringe with vesicant will have CSDTD 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.

1. Following administration of the medication, flush line thoroughly. Remove syringe with CSDTD by disconnecting between the two CSDTD connections. The CSDTD 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, utilizing 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 (IP)

Directives:

1. IP chemotherapy must be administered via gravity, not 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:

a. Encourage patient to empty bladder and/or move bowels prior to procedure

b. Perform hand hygiene before patient contact

c. Place the patient into semi-Fowler position

d. 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.

e. 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.

f. 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). BC Provincial Hazardous Drug Exposure Control Program

g. Attach bag of systemic therapy drug to secondary line.

h. Administer systemic therapy and any further fluids by gravity as per orders and as tolerated by patient.

i. 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.

j. When treatment is complete clamp the catheter and clamp the tubing

k. 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'.

- *Note:* Flushing with 5mL heparin (10 units/mL) prior to de-accessing non-valved ports is recommended to prevent obstruction from fibrin sheath formation.

l. Ensure chemotherapy tubing remains intact. Dispose of the tubing hazardous waste according to 'Hazardous Drugs, Safe Handling Standards V-10'.

m. If required by protocol, assist the patient to change position every 15 minutes, for the time specified in the protocol/PPO, to include:
i. Semi-Fowler's
ii. Trendelenburg
iii. Lying on left side
iv. Lying on right side

(Yarbro, 2016; Polovich, 2014; Neuss, 2016; Anastasia, 2012)

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ORAL

Directives:

1. Registered nurses must be systemic therapy certified to administer cancer systemic therapy 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 hazardous oral liquid is being administered as a splash could occur. BC Provincial Hazardous Drug Exposure Control Program

3. Never cut or crush hazardous oral tablets or capsules.

4. Contact pharmacy immediately before administering the medication and do a risk assessment 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 hazardous medication immediately from the medication cup, with no handling

6. All contaminated items (medications cup/containers/PPE) must be discarded as hazardous 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.

Systemic therapy 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.

Under certain circumstances, Group 1 or 2 hazardous drugs given by the subcutaneous or intramuscular route may be deemed incompatible with CSDTD's (See below)

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 BC Provincial Hazardous Drug Exposure Control Program

2. Place a non-permeable plastic backed pad on a firm surface and ensure a hazardous drugs sharps container is within easy reach.

3. Hazardous medication syringes that are dispensed ***with*** the CSDTD 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. Hazardous medication syringes that are dispensed ***without*** CSDTD (due to low volume drugs or CSDTD incompatibility) and where closed system safety standards cannot be met, a risk assessment must be completed ***in all cases,*** in collaboration with Professional Practice Nursing, Provincial Professional Practice Pharmacy, Clinical Area Operational Leadership and Occupational Health and Safety.

    a. The syringe will be dispensed with a Luer Lock tip from pharmacy with an air pocket between drug and syringe cap tip.

    b. Remove Luer Lock tip and apply subcutaneous needle.

    c. For **low volume injections** (less than 1ml), draw up **at least** 0.2 ml of air. For injections of greater than 1.0 ml, may draw **up to** 1.0 ml of air.

d. When administering the injection, hold the syringe at a 90 degree angle if possible to ensure air bubble is towards the back of the syringe as above to ensure the medication is "sandwiched" between the air in the syringe barrel and the air in the needle.

5. DO NOT expel air from the syringes prior to administration

6. DO NOT RECAP NEEDLE. If a syringe with an attached needle is used, it should be dropped intact into a hazardous drug sharps container without activating the safety device because this will aerosolize the drug and increase risk of contamination.

NOTE: Hormonal agents: For Group 1 or 2 drugs classified as hormonal agents that are NOT dispensed by pharmacy and come pre-packaged by the manufacturer, follow specific medication reconstitution instructions and BC Cancer best practice guidelines and/or protocols for administration. Use PPE as per ECP Control Matrix

(Yarbro, 2016; Neuss, 2016; Polovich 2014; Shpilberg, 2013; Liptrott, 2015; Bezce, 2022)

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ELASTOMERIC INFUSION DEVICES:

1. A RN must be systemic therapy 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. Refer to BC Provincial Hazardous Drug Exposure Control Program

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 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
a.Alcohol swabs
b.1x 20 mL syringe of Normal Saline
c.10 x 14 cm Transparent Semi-permeable Membrane (TSM)
d.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.

e) Prior to sending the patient home ensure:
   a. The flow restrictor is taped securely to the skin
   b. A visual inspection is done to determine any flow obstructions such as kinks or clamps in the tubing and that it is labeled with appropriate hazardous drug label
   c. 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

f) 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

g) 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.

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DOCUMENTATION:

1. Document all RN administered systemic therapy drugs on the appropriate Medication Administration Record (MAR) or eMAR.

2. Independent double checks at the point of care will be documented in the paper or electronic patient record, and signed by both RNs 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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Unit of Origin: Provincial Professional Practice Nursing

APPENDIX 1

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

Prior to sending a patient home with an Elastomeric Infusion Device, the RN will teach the patient the following points.
At the end of the first treatment and subsequent treatments, the RN will ensure the patient will be able to:
I. IDENTIFY KEY PARTS OF THE INFUSOR™
• 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
II. DESCRIBE WAYS OF MANAGING DAILY ACTIVITIES WHILE WEARING INFUSOR™
• 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.
III. DESCRIBE ROUTINE CHECKS OF THE DEVICE WHILE IN OPERATION
• Check breakfast/lunch/dinner/bedtime/every 8 hrs • Take device out of carrier to check it thoroughly • Look for: - 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
IV. DESCRIBE ACTIONS IF PROBLEMS ARISE WITH DEVICE
• Call _____ if: - 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
V. STATE THE CORRECT TIME FOR EXPECTED COMPLETION OF INFUSION
* Expected completion time is _____ * If > 5 hours beyond or < 5 hours before expected completion time call _____

APPENDIX 2:

BC CANCER 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

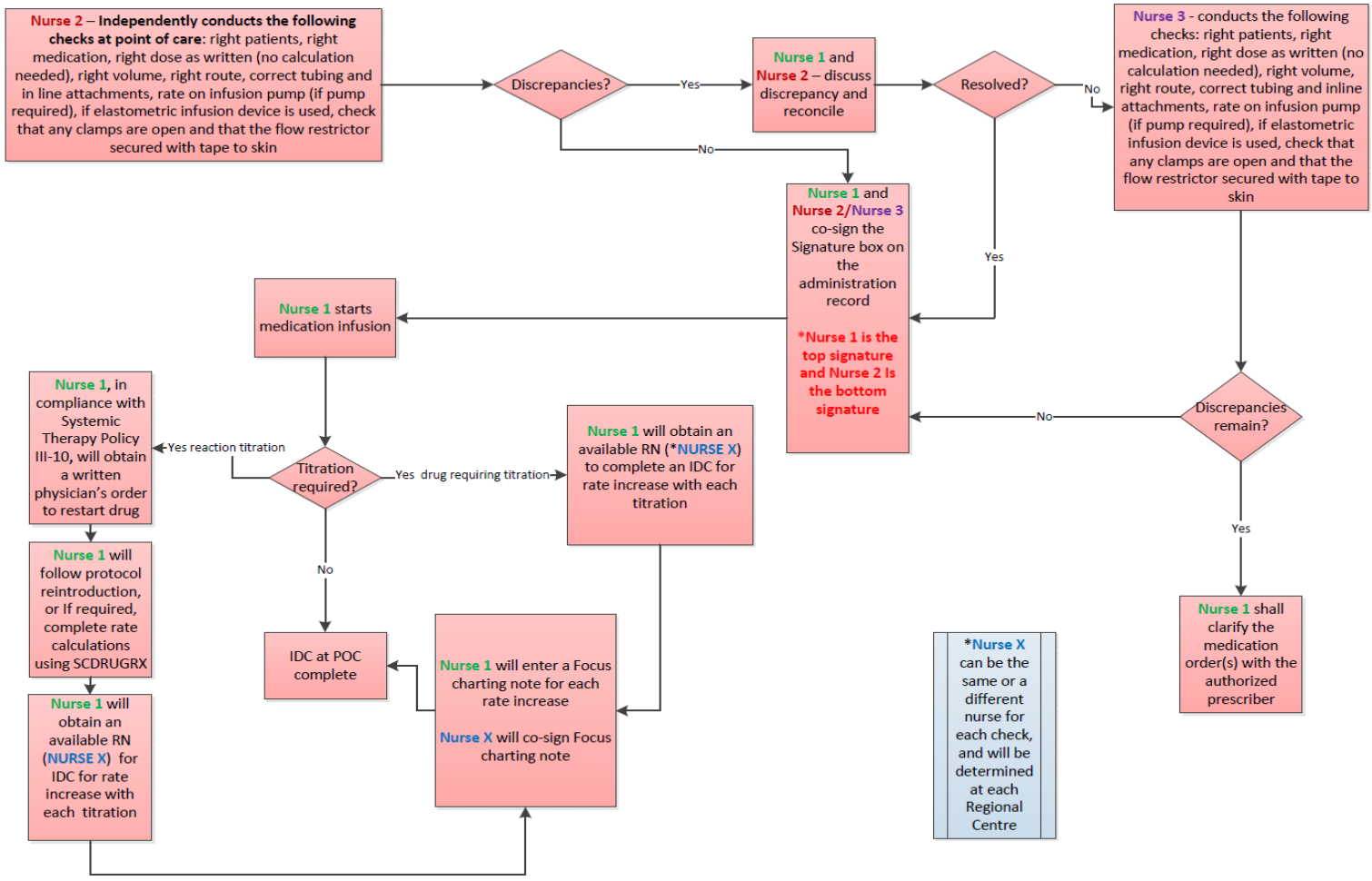
IV. STATE NUMBERS TO CALL IN CASE OF PROBLEMS

- (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).

APPENDIX 4: Independent double checking at point of care workflow



APPENDIX 5: BC Cancer Independent Double Check Medication List

BC Cancer Independent Double Check Medication List

Oncology- All high alert medications on provincial list (see Appendix A- Provincial High Alert Medication Policy) *Provincial High Alert Medication Policy*
Heparins 1. **low molecular weight** - Multidose vials - Single dose syringes including prefilled syringes 2. **Unfractionated** - Total dose per container greater than 50 000 units - Greater than or equal to 10 000units total per container - Intravenous premixed bags - Total dose per container is less than 10 000 units
Insulins- All
Opioids, parenteral vials or ampoules containing more than: *fentanyl 100 mcg* *morphine 15 mg (adults)* *morphine 2 mg (pediatrics)* *HYDROmorphone 2 mg*
HYDROmorphone 50 mg/mL **all routes**
Methadone **oral liquid**
Concentrated Electrolytes: **Calcium** salts for injection at concentrations of **10% or above** **Magnesium sulfate** for injection at concentrations **above 20%** **Potassium** (all salts) for injection at concentrations of **2 mmol/mL or more** **Sodium acetate and sodium phosphate for injection at concentrations of 4 mmol/mL or more** **Sodium chloride for injection at concentrations above 0.9%**
Neuromuscular blocking agents: i.e. Succinylcholine, rocuronium, cisatracurium, atracurium, mivacurium, pancuronium, vecuronium
Medications by specific routes: Epidural Intrathecal Perineural Patient Controlled Analgesia (IV- PCA, EpiDural - PCEA, Perineural - PCPA)
Midazolam- SC infusion
Lidocaine- IV
Ketamine- IV

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