



Nursing Practice Reference

Title: CHEMOTHERAPEUTIC AGENTS, ADMINISTRATION OF:

Effective Date: June, 2010

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Reason for Directive:

1. To provide guidelines for the safe administration of chemotherapeutic agents.

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ADMINISTRATION OF CHEMOTHERAPEUTIC AGENTS

Also See BCCA Systemic Therapy Program Policies on the Web at:
<http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm>

- V-10 Cytotoxic Agents, Safe Handling Standards
- III-10 Chemotherapy Process
- III-20 Prevention and Management of Extravasation
- III-50 Administration of Cytotoxic Drugs by Intrathecal Route via Lumbar Ommaya Reservoir
- III-80 Algorithm for Assessment of Needle Placement / Catheter Patency in CVC Devices.
- IV-10 Acute Hypersensitivity Reactions to Chemotherapeutic Agents.

Directives:

Education:

1. The RN administering cytotoxic agents will have completed a Chemotherapy Certification Program <http://www.bccancer.bc.ca/HPI/CE/Nursing/chemo/certification/default.htm> as outlined by the employer. The RN participating in the chemotherapy certification practicum may administer cytotoxic agents under the supervision of a chemotherapy preceptor or clinical nurse leader.
2. Each chemotherapy certified RN must meet the requirements of continuing competency in chemotherapy annually.
<http://www.bccancer.bc.ca/HPI/CE/Nursing/chemo/continuingcomp/default.htm>

Checking Responsibilities:

3. Chemotherapy certified nurses will adhere to the principles and guidelines outlined in the College of Registered Nurses of British Columbia Practice Standard: Medications, including the seven “rights” of medication administration – right medication, right patient, right dose, right time, right route, right reason, right documentation.
<http://www.crnbc.ca/downloads/408.pdf>
4. All orders for chemotherapeutic agents will be checked by a chemotherapy certified RN, prior to administration of these agents to the patient, as per Nursing Directive C-252, <http://www.bccancer.bc.ca/HPI/Nursing/References/NursingBCCA/C-252.htm> and Provincial Systemic Therapy Policy III-10 <http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm> . Discrepancies exceeding plus or minus 5% of the dose, calculated according to the patient’s treatment plan, must be clarified with the physician.
5. An RN who is caring for a patient on multi-day chemotherapy and who has not done a full chemotherapy check on that patient for the current course of treatment, will do so according to C-252, Section A, “Checking Chemotherapeutic Agents’ Orders”.

6. All orders for chemotherapeutic agents will be written by a physician. To facilitate drug preparation, changes to a previously written order may be made by a pharmacist upon verbal order from a physician. However, the RN will not administer the dose until the new order has been signed and dated by the physician.
7. Before connecting a patient's IV to a mechanical ambulatory infusion pump, the programming of that pump and infusion will be checked **independently** by 2 chemotherapy certified nurses.
8. Each of the 2 nurses will **independently** check the programming of the electronic ambulatory infusion device to ensure:
 - Mls per hour corresponds with order
 - Total volume in device corresponds with order
 - Total volume infused is set at zero
 - Pump is locked
 - Batteries register at least 80% when tested
 - Air sensor is on.
9. Each of the 2 nurses will sign for having completed this check in the MAR. The nurse who actually initiates the ambulatory infusion must be one of the 2 nurses who have checked the programming as above.
10. The nurse initiating a chemo infusion via an elastomeric device (e.g. INFUSOR[®]) will ensure that the device dispensed is the type and model specified in the PPO.

Administration:

11. Any BCCA personnel administering chemotherapeutic agents will follow procedures in Nursing Directive C-252
<http://www.bccancer.bc.ca/HPI/Nursing/References/NursingBCCA/C-252.htm> and/or relevant Site Directives.
12. Some routes are designated for administration by physician only. Consult BCCA - Approved Parenteral Routes List in the Parenteral Drug Therapy Manual (PDTM).
13. Chemotherapy medications are not usually administered concurrently via Y-site, even if they are compatible.
14. Intrathecal administration of chemotherapeutic agents is carried out by physicians. Only chemotherapy certified RNs will assist with this procedure as per Provincial Systemic Therapy Policy III-50
<http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm>. The RN will assist the physician by verifying medications, educating and supporting the patient/family and monitoring the patient's condition. RNs assisting with this procedure must be certified to administer chemotherapy.

15. When patients receive chemotherapeutic agents via the intrathecal route in fluoroscopy department, the RN will verify the medications on the ward. The physician is then responsible for taking the medications to fluoroscopy to administer.
16. For chemotherapeutic agents that have a known high risk of hypersensitivity reactions (see Systemic Therapy Policy III-60)
<http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm>
the RN will remain with the patient during the first 10 minutes of the infusion, and confirm that a physician is in the building and available immediately if paged on an urgent basis.
17. A vesicant drug, when given peripherally, will be administered via the sidearm of an infusing primary IV line. Exceptions to this Policy will be noted in the PPOs and in the Cancer Drug Manual.
18. A vesicant drug that must be given as a peripheral infusion will be supplied in a 50 ml minibag and 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.
19. A vesicant drug when given peripherally must never be administered via an infusion pump.
20. Chemotherapy, both vesicant and non-vesicant, given through functioning central venous access devices (i.e., tunnelled right atrial catheter, implanted venous access device, peripherally inserted central catheter) may be administered as an infusion or via the sidearm of an infusing primary IV line.
21. Chemotherapy infusions that must be given over a specific period of time, will be regulated by an appropriate mechanical flow regulating device or pump (with a functioning alarm). A pump is not necessary if the RN is continuously present throughout the infusion.
22. Only luer-lock or secure Interlink connections will be used for the administration of cytotoxic agents via an infusion.
23. All tubing used to administer chemotherapy will be primed with a non-chemotherapy solution, unless required by a clinical trial.
24. All chemotherapy infusions will be administered via a secondary medication line, except in those cases where the nature of the chemotherapy requires specialty tubing.
25. The primary line will be flushed with a minimum of 25 ml of compatible IV solution prior to disconnection, unless requirements are different as dictated by a clinical trial.

Safe Handling:

26. Cytotoxic tablets or capsules will be handled using chemotherapy approved gloves, and a no-touch technique to avoid damage and contamination.
27. Oral cytotoxic tablets or capsules will not be cut or crushed.

28. Any tubing used to administer chemotherapeutic agents will be disposed of as cytotoxic waste, even though tubing has been flushed prior to disconnection.
29. Chemotherapeutic agents will only be transferred from syringes to bags inside an approved biological safety cabinet. The appropriate personal protective equipment (PPE) must be available in all areas where chemotherapeutic agents are handled.
30. PPE (as per Provincial Systemic Therapy Policy V-10) <http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm>) must not be worn outside the preparation, administration, or storage area.
31. PPE (as per Provincial Systemic Therapy Policy V-10) <http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm>) will be worn whenever chemotherapeutic agents are handled. This includes when dismantling and disposing equipment used in the administration of chemotherapeutic agents.
32. On inpatient units, all IV tubings used to infuse chemotherapy will be flagged with a label indicating "chemotherapy, dispose of properly".
33. When a patient leaves a care area with an IV running, any IV tubing that has been is being used been used to infuse chemotherapy will be flagged with a label indicating "Chemotherapy, dispose of properly".
34. All RNs who prepare, handle or administer chemotherapeutic agents will maintain exposure records, using the Record of Exposure to Cytotoxic Drugs Form <http://www.bccancer.bc.ca/HPI/CE/Nursing/chemo/continuingcomp/ExposureRecord.htm> in compliance with WorkSafe BC regulations.

1. Checking Chemotherapeutic Agents' Orders

Procedure

1. Review patient data such as:
 - signed special consents if required
 - applicable lab results
 - previous treatments for cancer
 - side effects experienced and any interventions
 - previous dose adjustments
 - other concurrent medical conditions
 - weight changes > 10%
2. Compare physician's orders with documented treatment plan.
3. Determine that ordered dose falls within the recommended range according to the treatment plan or cytotoxic drug reference. This includes:
 - calculating body surface area (m²)
 - calculating dose
 - calculating dose modifications according to applicable lab results.
 - ensuring dose is within the 5% variance limit.
4. Review any discrepancies between physician's written orders and treatment plan, cytotoxic drug reference and protocol. Discuss any discrepancies with the ordering physician and/or pharmacist. Document clarifications and rationale in Patient Chart.
5. Sign the MAR (Medication Administration Record).

2. Methods of Administration:

A. Intravenous -

Infusion –

Intermittent or continuous infusion of chemotherapeutic agents via a secondary medication line.

- See Appendix 1: IV Set Up for Administration of Taxanes (Page 23)
- See Appendix 3: Managing Continuous Chemotherapy Infusions (Page 26)
- See Appendix 4: Managing Continuous 5 FU (Fluorouracil) Infusion on an Inpatient Unit (Page 27)
- See Appendix 6: Patient Teaching Standard – Managing at Home with an Electronic Infusion Device
- See Appendix 7: Patient Teaching Standard – Managing at Home with an Elastomeric Infusion Device

Procedure

1. Hang primary IV line
2. Connect secondary medication line to secondary medication port and backflush to prime the secondary medication line.
3. Attach bag of chemotherapeutic agent to secondary line.
4. Regulate the flow rate of chemotherapeutic agent according to Physician's orders or cytotoxic drug reference, if no specific rate ordered.
5. When the chemotherapeutic agent has been infused, backflush into secondary medication line.
6. Allow secondary medication line drip chamber to empty, then clamp just above the fluid line level.
7. Flush the primary medication line with a minimum of 25 mls of primary IV solution.
8. Backflush secondary med line to refill drip chamber. Remove IV bag.
9. Remove first bag and process with other bags of cytotoxic agents as ordered.
10. Infuse appropriate post-chemotherapy hydration if ordered.

11. If IV catheter is to be discontinued, leave all tubings attached to the IV and discard entire system intact.
12. If ongoing IV therapy is required, proceed with Physician's Orders, or cap and flush IV catheter according to agency policy.

Side Arm Route

Direct administration of chemotherapy through the lowest medication port of a free-flowing IV attached to either a peripheral IV device or central venous catheter. Used for administration of vesicant and push drugs to provide a mechanism for monitoring blood return and venous integrity throughout).

Procedure

1. Insert IV. (See Systemic Therapy Policy III-20 re: site selection)
<http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm>
2. Place plastic backed absorbent pad under lowest sideport of IV tubing.
3. Ensure peripheral injection site is visible throughout injection.
4. Regulate rate so IV is freeflowing.
5. Gently pinch IV tubing just above or below lowest side port. Check that blood returns into IV catheter or tubing.
6. Ask patient to inform you immediately of any changed sensation or discomfort at IV site during procedure. (e.g., stinging, burning, pain).
7. 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.
8. Assess:
 - a. blood return every 2 mls of agent injected as in Step 5
 - b. tissue surrounding IV catheter insertion site and along path of vein for redness, swelling, or "bleb" formation.
 - Continue administering the agent as long as blood return present, IV site appears normal, and patient is comfortable.
9. In the event of loss of blood return, changes at IV site, or patient discomfort at IV site.
 - Stop injection.
 - Assess reaction.
 - If drug is classified as a vesicant, refer to Policy III-20 Prevention and Management of Extravasation. <http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies.htm>

B. Intrathecal -***Via Lumbar Puncture –***

Administration of chemotherapeutic agents intrathecally, via lumbar puncture.

Pre-Procedure Teaching

1. The patient will need to know that the procedure will take about 45 minutes in total. This includes 30 minutes of lying flat after the procedure, which reduces the likelihood of headache. A nurse will be present to provide support. It is a good idea to have someone available to drive them home.
2. The patient may experience a headache following the chemotherapy administration, but this is not a common side-effect. Assess previous experience with lumbar punctures and intrathecal chemotherapy. If patients have experienced headaches in the past, related to these procedures, they are at higher risk for headache.

NB: Chemotherapeutic agents administered via lumbar puncture can be expected to produce the same side effects as when administered via the bloodstream.

Equipment and Materials

1. LP tray
2. Skin preparation solution: chlorhexidine 0.5% (1:200) in 70% alcohol or betadine
3. Local anesthetic: 2% xylocaine without epinephrine
4. Chemotherapy medications for intrathecal administration
5. Sterile gloves
6. Masks
7. Chemotherapy gowns
8. Goggles - needed only when there is a risk of spray
9. 0.9% sodium chloride (NS)

Procedure

1. Ensure patient is in a private room or partitioned treatment area as per Policy #III-50.

Rationale: *Decreases distraction and traffic in treatment area.*

2. Gather equipment.
3. Elicit patient understanding of procedure and reinforce, clarify, or correct as necessary. Explain what the patient can expect to happen and the nurse's role (support to assist in relaxation).
4. Conduct a focused assessment relevant to lumbar puncture. Discuss how the patient has relaxed in the past and what he or she would like to do this time. Determine how you can best assist the patient to remain comfortable, still, and relaxed during the procedure.

5. Have patient change into a hospital gown to ensure easy access to the LP site.
6. Ensure consent is obtained as per BCCA Policy. BCCA Agency Consent to Surgical / Special Procedure Form (#OR-11 June/95 80411).

Note: Explanation of the procedure and risks are physician responsibilities.

7. Check the medications with the physician. Both physician and chemotherapy certified RN need to sign the chemotherapy order, indicating that the medication has been checked.
8. Wear PPE as indicated in Directives 13, 14, 15 and V-10 (Cytotoxic Agents, Safe Handling Standards).
9. Assist the physician with setting up the tray by pouring the skin preparation solution, as well as assisting with drawing up the local anesthetic and the NS.
10. Assist the patient into the appropriate position (e.g., side-lying or sitting up, curled over a pillow or bedside table).
11. Provide support during the procedure, as discussed with the patient.
12. Prior to the administration of chemotherapy the physician will read the label on the syringe aloud to the nurse as a final check. If the chemotherapy is given under fluoroscopy, this step is omitted. See III-50 - Provincial Systemic Therapy Policy.
13. When the procedure is over, ensure that the patient is comfortable. The patient will remain lying down flat for one hour after the procedure to reduce the likelihood of headache.
14. Ensure that specimen tubes are properly labelled and are numbered according to sequence of collection. The labelled specimens and appropriate requisition should be sent immediately to the lab.

Rationale: *The third specimen tube should be used for cell count and differential as it will be least likely to be contaminated with blood*

15. Monitor the patient for headache until able to return home (usually 1 hour).

Post-Procedure Teaching:

1. Discharge teaching: headache is an infrequent side-effect that usually occurs after the patient returns home. The headache can vary markedly in terms of severity. Patients should be instructed that if this happens it is helpful to lie flat, drink lots of fluids, and take an OTC (over the counter) analgesic, such as acetaminophen. If the headache is severe and is not relieved by an OTC analgesic, instruct the patient to call the Cancer Centre. Give a contact number and person. Advise patient to go to emergency department if after hours.

Via Ommaya Reservoir –

Administration of chemotherapeutic agents intrathecally, via Ommaya reservoir.

NB: See Appendix 2: "About the Ommaya Reservoir" and 2B: "Diagram of an Ommaya Reservoir"

Pre-Procedure Teaching

- The patient will need to know the procedure will take about 45 minutes. This will include 30 minutes post-procedure. The patient and family should be made aware of the signs and symptoms of local infection and systemic infection (fever, headache, and neck stiffness). They need to know to advise the physician immediately if these problems develop. The patient should have arrangements made for a drive home post-procedure.

Equipment and Materials

1. Masks - 2
2. Chlorhexidine
3. Betadine swabs - 3
4. Alcohol wipes - 3
5. Sterile drapes - 2
6. Sterile gloves – 2 pairs
7. Sterile razor
8. Sterile dressing tray
9. Sterile water
10. Sterile 4 x 4's - 4
11. Butterfly needle with tubing - #27 or #25
12. Chemotherapy drugs for administration via the Ommaya Reservoir
13. Sterile containers or tubes x 3
14. Small dressing or bandaid as necessary

Note: Physician option may be to use a lumbar puncture tray.

Procedure

1. Ensure patient is in a private room or treatment area.
2. Ensure consent is obtained as per BCCA Policy.
3. Assess skin integrity and assess for signs and symptoms of infection at reservoir site.
4. Check the medications with the physician. Both physician and chemotherapy certified RN need to sign the chemotherapy order, indicating that the medication has been checked.

5. Position patient with head at foot of bed or may use sitting position at physician's discretion.

Rationale: *Most advantageous for physician to perform procedure (consideration for patient needs, i.e. wheelchair, limited mobility).*

6. Prior to the administration of chemotherapy the physician will read the label on the syringe aloud to the nurse as a final check.
7. Ensure CSF specimens obtained by physician are labelled and sent to lab.
8. Apply a dry dressing to puncture site, if oozing present.
9. Position patient in supine position.
10. Observe for 30 min. post-procedure for changes in mental alertness or behaviour, seizures, headache, nausea / vomiting or dizziness.

C. Intraperitoneal -

Peritoneal Dialysis Catheter (External) – Peritoneal Port -

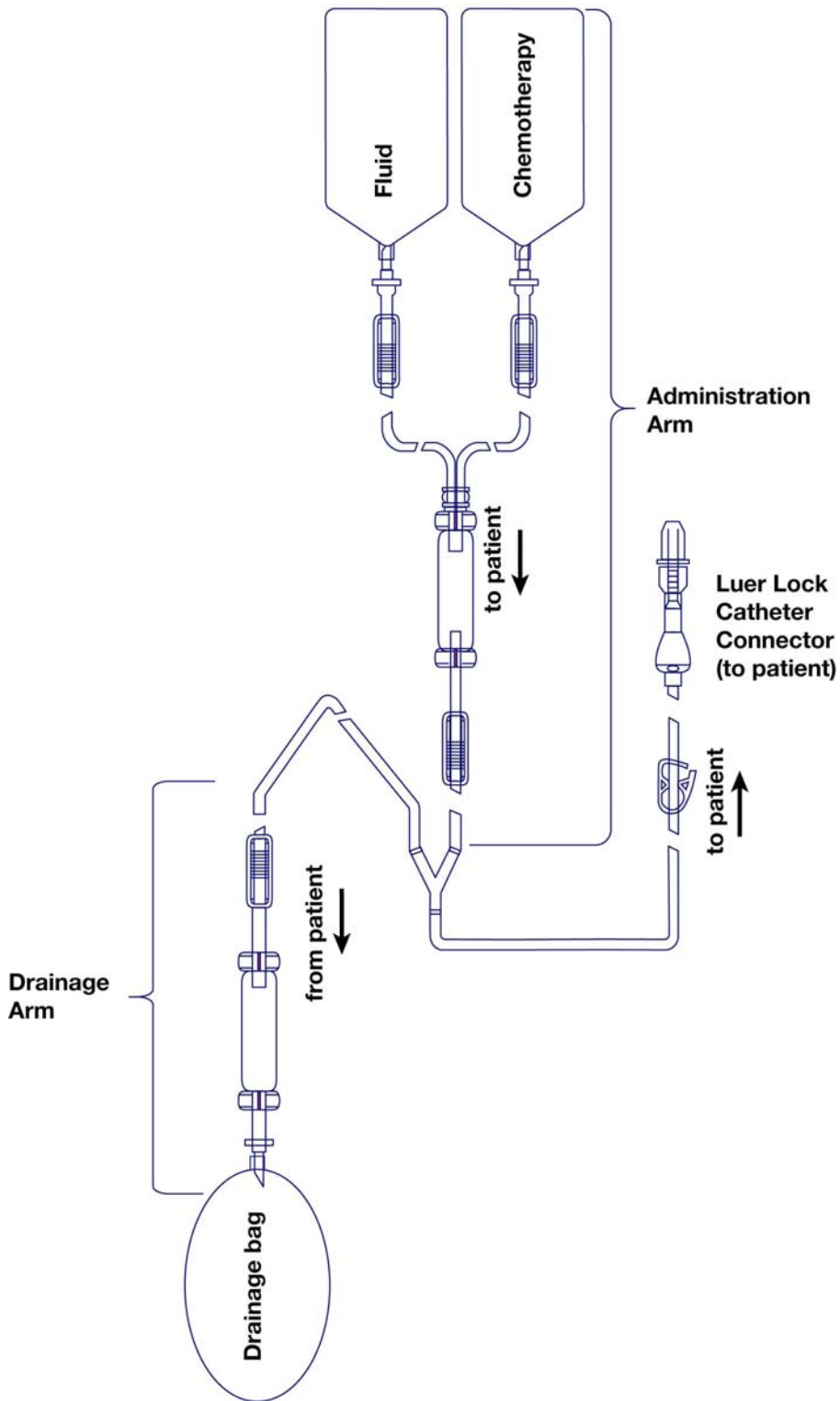
Directives:

1. A physician must remain on site for the duration of the infusion of intraperitoneal chemotherapy.

Rationale: *To ensure the safe management of medical emergencies that arise during treatment.*

2. IP chemotherapy may be given through a peritoneal dialysis catheter (external) or a peritoneal port. Patients being treated for ovarian cancer will only have peritoneal ports.
3. Peritoneal dialysis catheter (external) tubing preparation and port accessing or de-accessing will be performed using aseptic technique (correct hand-washing, “no-touch” technique, and disposable non-sterile gloves)
4. Peritoneal dialysis catheter (external) dressing changes will be performed using a sterile technique. Dressing will be changed at least every 48 hours.
5. ‘Y-type peritoneal dialysis solution administration set for intermittent peritoneal dialysis’ is to be used if required to drain fluid from the abdominal cavity prior to the administration of chemotherapy.
6. Patients being treated for ovarian cancer will not have fluid drained from abdominal cavity prior to chemotherapy.
7. Appropriate non-PVC IV administration set is to be used for the administration of taxanes.
8. IP chemotherapy must be administered via gravity, not via a pump.
9. Patients are monitored for potential complications and address as required. Refer to ‘Potential Complications and Prevention and Management Strategies of IP Chemotherapy’. (Appendix 5)

Y-TYPE PERITONEAL DIALYSIS SOLUTION ADMINISTRATION SET FOR INTERMITTENT PERITONEAL DIALYSIS



Peritoneal Dialysis Catheter (External) –

Equipment and Materials

To Set Up Tubing and Access Catheter:

1. Appropriate IV solution and administration set
2. Non-sterile gloves.
3. Cleansing solution.
4. 20mls syringe and 0.9% sodium chloride for injection.
5. Transparent film dressing to stabilize catheter during procedure.

To De-Access Catheter and Change Dressing:

1. Sterile dressing pack
2. Sterile gloves
3. Non-sterile gloves
4. Cleansing solution
5. 20mls syringe and 0.9% sodium chloride for injection
6. 0.9% sodium chloride for cleansing skin
7. Adhesive wound dressing
8. Injection site cap

Procedure

1. Encourage patient to empty bladder prior to procedure.
2. Prime tubing with prescribed solution and clamp tubing.
3. If required to drain fluid from abdominal cavity, attach drainage bag to the drainage arm of the primed tubing, keeping the tubing clamped.
4. Remove the dressing for the catheter.

Rationale: *Allows the exit site to be observed during administration of fluid.*

5. Observe catheter exit site for any signs of infection.
6. Place transparent dressing over exit site of catheter.

Rationale: *Secures catheter and allows observation of exit site.*

7. To cleanse the connection between peritoneal catheter and IV tubing or injection cap use appropriate cleansing solution swabs:
 - Grasp connection with one swab.
 - Use second swab to clean from catheter connection up catheter, discard swab.
 - Cleanse connection site or injection cap vigorously with third swab, remove cap and discard swab.
 - Do not drop a connection site once it is cleaned.

8. Flush with 20 - 200 mls 0.9% normal saline and monitor for localized swelling, pain and occlusion.

Rationale: *Confirms placement and patency of catheter.*

9. Clamp the catheter and connect primed tubing.
10. If required to drain fluid from abdominal cavity, unclamp the catheter and the drainage arm, drain fluid for 1 hour prior to administration of IP chemotherapy.

Rationale: *Ensure all fluid is drained from abdominal cavity prior to instillation. See Directive #6.*

11. Clamp the drainage arm.
12. Attach chemotherapy bag to the primed tubing.
13. Unclamp the administration arm with the chemotherapy bag and administer chemotherapy and any further fluid as per orders, by gravity as fast as possible.
14. Monitor the patient for any potential complications and address as required. (See 'potential complications and prevention and management strategies of IP chemotherapy' Appendix 5).
15. When chemotherapy infusion is complete, flush tubing with 50 -100 mls of compatible fluid, unless other volume prescribed. Clamp tubing to prevent air from entering the peritoneal cavity

Rationale: *Flush the remaining chemotherapy from the line.*

16. Clamp the catheter and clamp the tubing.
17. Ensure chemotherapy tubing remains intact. Do not remove drainage bag from the drainage arm of the tubing or empty the contents of the drainage bag. Dispose of the tubing and the drainage bag as cytotoxic waste according to 'Cytotoxic Agents, Safe Handling Standards V-10'.
18. Cleanse catheter connections and flush catheter with 20mls normal saline.
19. Clamp catheter, cleanse catheter connections and recap.

20. Remove transparent dressing.
21. Cleanse skin with 0.9% sodium chloride.
22. Change catheter dressing.
23. Use an adhesive wound dressing over catheter. Do not use transparent film dressing.

Rationale: *Transparent film dressing prevents air circulation to skin.*

24. Secure the catheter to the skin loosely to prevent excessive traction or movement of the catheter.
25. Encourage patient to change positions every 15 minutes for 1 hour, alternating from right side to left side.

Rationale: *Repositioning disperses fluid throughout the peritoneal cavity.*

26. Observe patient for side effects and manage appropriately.
27. Document as required.

Peritoneal Port -

Equipment and Materials

1. Appropriate IV solution and administration set
2. Alcohol swabs
3. Cleansing solution
4. Gloves (sterile if using non- “gripper” needle)
5. Huber point needle with extension tubing
6. 1 x 20 ml syringe of Normal Saline
7. 10 X 14 cm transparent film dressing
8. 1 x 10 ml syringe of 6 mls Normal Saline

Procedure

1. Encourage patient to empty bladder prior to procedure.
2. Prime tubing with prescribed solution and clamp tubing.
3. If required to drain fluid from abdominal cavity, attach urine drainage bag to the drainage arm of the primed tubing, keeping the tubing clamped.
4. Access catheter by following nursing practice reference C-75 ‘inserting needle into IVAD’, omit step 11 of the procedure ‘aspirate until blood is visible in the tubing’.
5. Flush with 20 – 200 mls 0.9% normal saline and monitor for localized swelling, pain and occlusion.

Rationale: *Confirm placement and patency of catheter.*

6. Clamp the catheter and connect primed tubing.
7. If required to drain fluid from the abdominal cavity, unclamp the catheter and the drainage arm, drain fluid for 1 hour prior to administration of IP chemotherapy.

Rationale: *Ensure all fluid is drained from abdominal cavity prior to instillation. See Directive #6.*

8. Clamp the drainage arm.
9. Attach chemotherapy bag to the primed tubing.
10. Unclamp the administration arm with the chemo bag and administer chemotherapy and any further fluid as per orders, by gravity as fast as possible.

11. Encourage patient to remain on bed rest for the duration of the chemotherapy infusion

Rationale: *To prevent the needle from being dislodged.*

12. Monitor the patient for any potential complications and address as required. (See Appendix 5).

13. When chemotherapy infusion is complete, flush tubing with 50 - 100 mls of compatible fluid, unless other volume prescribed. Ensure no air enters peritoneal cavity.

Rationale: *Flush the remaining chemotherapy from the line.*

14. Clamp the catheter and clamp the tubing.

15. Ensure chemotherapy tubing remains intact. Do not remove drainage bag from the drainage arm of the tubing or empty the contents of the drainage bag. Dispose of the tubing and the urine drainage bag as cytotoxic waste according to 'Cytotoxic Agents, Safe Handling Standards V-10'.

16. Flush port using 6 mls Normal Saline Solution and remove port needle.

17. Assist the patient to change position every 15 minutes for 1 hour in the sequence listed:
 1. head up 30°
 2. slight trendelenburg
 3. right lateral
 4. left lateral

18. Observe patient for side effects and manage appropriately.

19. Document as required.

DOCUMENTATION

1. Document all RN Administered Medications on Medication Administration Record (MAR), and when appropriate / necessary on Nursing Assessment Form, Part B / Nursing Care Plan / Nurses' Notes as per Nursing Documentation Guidelines.
2. In case of vesicant extravasation, follow documentation and follow-up guidelines in BCCA Systemic Program Policy - III-20, "Extravasation of Chemotherapy, Prevention and Management".

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Unit of Origin: Regional Professional Practice & Academic Leaders, Nursing

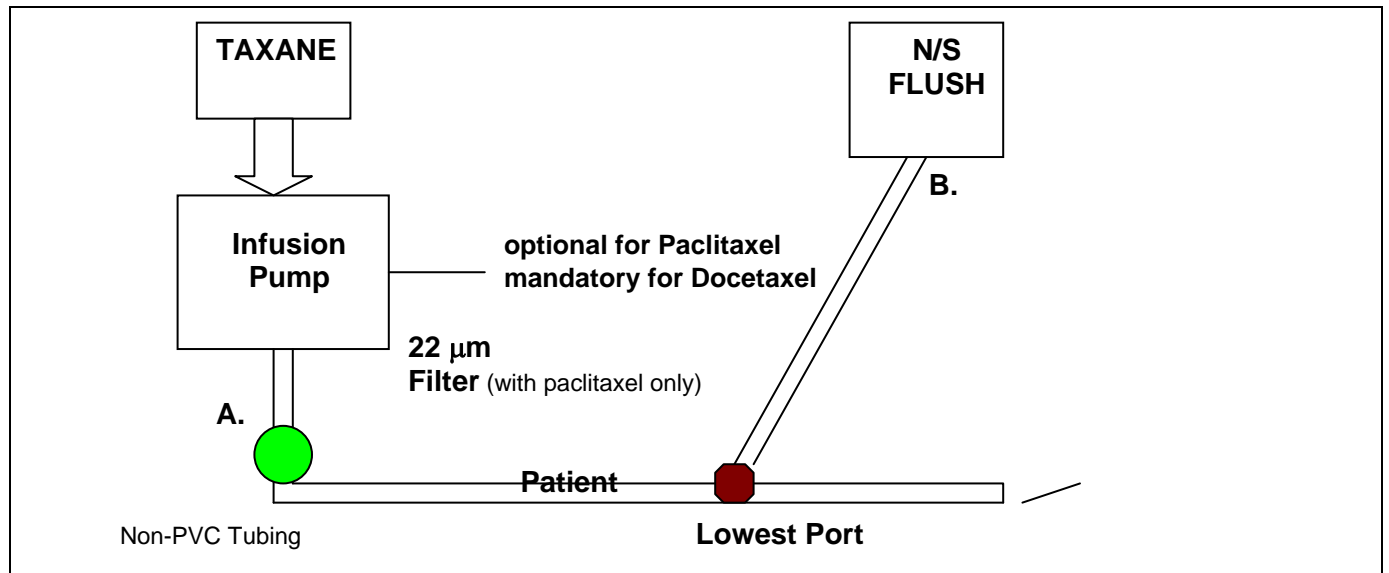
APPENDIX 1:

IV Set Up for Administration of Taxanes

Taxanes are suspended in a diluent, Cremophor EL, which is known to leach the plasticizer DEHP from standard PVC (polyvinyl chloride) IV tubing. Because of this, polyethylene lined tubing (non-PVC) is to be used as the tubing that taxanes are in contact with.

Intravenous equipment is set as shown in Figure 1. An appropriate non-PVC IV administration set (A), is primed with 0.9% sodium chloride. **Paclitaxel requires the addition of a 0.22 μm filter.** This IV functions as the taxane line and serves to eliminate any unnecessary contact of the taxane with PVC tubing.

FIGURE 1. Equipment Set-Up



A second solution set (B), with two injection sites, is primed and attached at the lowest port. PVC tubing may be used for the second line, which allows for continued venous access in the event that the taxane infusion needs to be interrupted.

Any additional extension sets or tubings **used** should have been shown to be compatible with Taxanes.

An infusion pump is mandatory for the delivery of Doxetaxel. It is optional for Paclitaxel.

APPENDIX 2:

About the Ommaya Reservoir

The **Ommaya** intraventricular subcutaneous reservoir is used to treat central nervous system involvement of malignant disease, as may be seen in leukemia, breast cancer, lymphoma and rhabdomyosarcoma. The self-sealing dome provides easy access while the attached catheter allows communication with CSF in the lateral ventricle. **Only a physician** may access an intraventricular device, but the physician **must be assisted** by a Chemotherapy Certified Registered Nurse.

See Provincial Systemic Program Committee Intrathecal Policy #III-50 for detailed procedure.

General uses of the **Ommaya** include:

1. sampling CSF,
2. monitoring CSF pressure,
3. administration of analgesics,
4. administration of antibiotics, and
5. administration of chemotherapeutic agents directly into the CSF as prophylaxis or to manage existing disease.

Drug administration via the **Ommaya**:

1. produces optimal consistent CSF levels,
2. allows decrease in drug dosage to achieve the same CSF level,
3. enhances drug distribution, and
4. facilitates alternative medication schedules (ie "C x T", where multiple low doses achieve constant CSF levels but decrease "peak" concentrations).

Complications with the Ommaya are rare but include catheter malfunction, migration and displacement. **Infection** is the primary potential complication, and **strict adherence to sterile technique while accessing the device is essential**. Most infections that occur can be treated successfully with antibiotics and do not require removal of the device.

APPENDIX 2B:

Diagram of an Ommaya Reservoir

Baird, McCorkle & Grant (1991). Cancer Nursing: A Comprehensive Textbook
Delivery of Cancer Chemotherapy, pp 317.

APPENDIX 3:

Managing Continuous Chemotherapy Infusions

Continuous chemotherapy infusions must run as close as possible to the prescribed rate over the specified time.

Use the 5% rule (BCCA policy III-10) to guide calculations of maximum allowable deviations in infusion rates, times and interruptions.

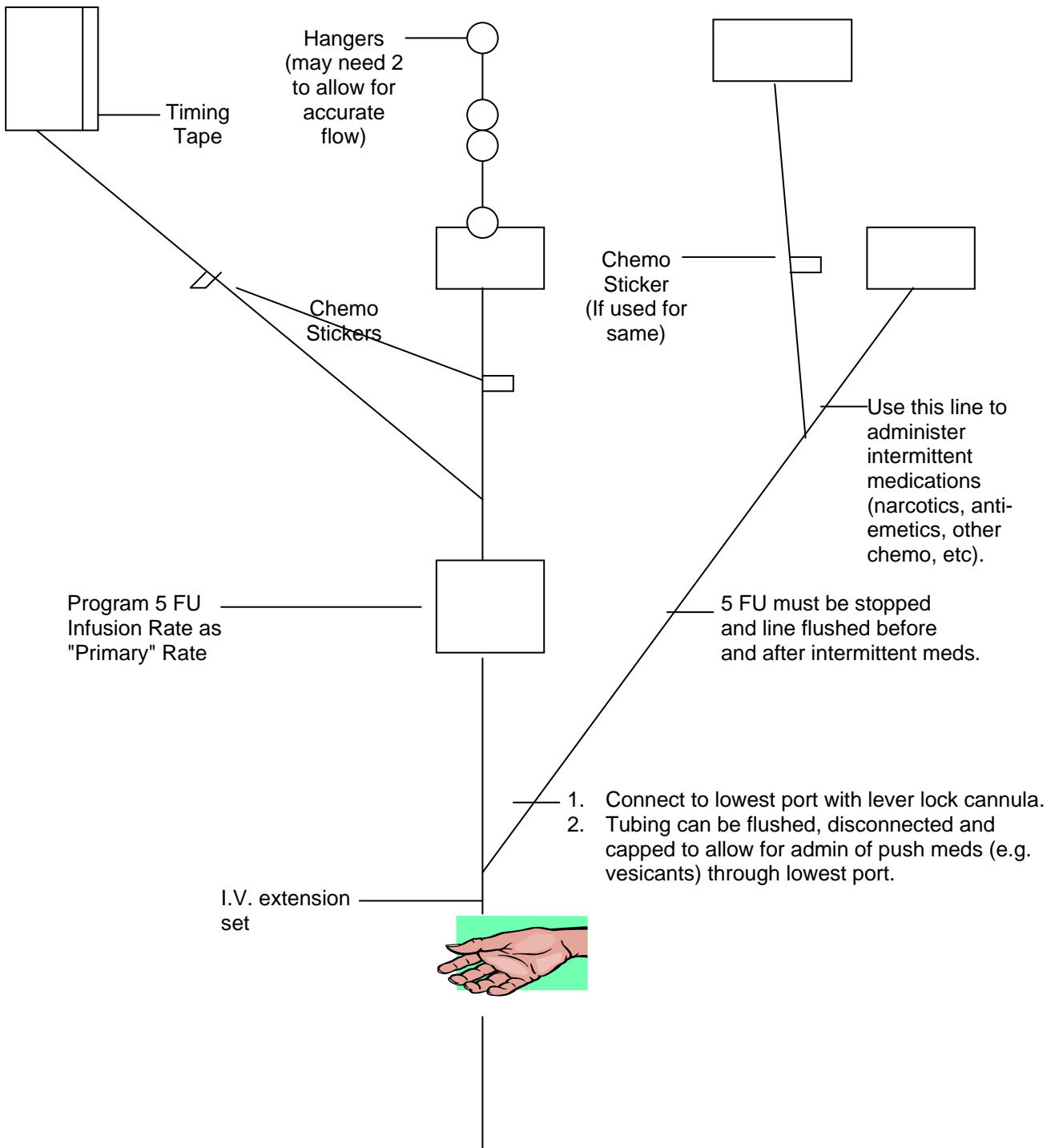
Guiding Principles

- 1. Infusions should not be interrupted for more than 1.2 hours in total over 24 hours (5% of 24 hrs = 1.2 hrs; 1.2 hrs = 72 mins). Interruptions can be minimized by*
 - Using minimum infusion times for incompatible intermittent medications*
 - Using alternative routes for incompatible intermittent medications where possible and/or*
 - Starting another IV site for incompatible medications, if appropriate.*
- 2. Each 24 hour dose of a multi-day infusion should be infused on time (+/- 5% of 24 hours = 1.2 hours). Bag contents remaining at 24 hours + 1.2 hours can be safely bolused providing the contents are less than 5% of the original bag dose.*
- 3. Infusions must be maintained at as close to a constant rate over 24 hours as possible. Make minor adjustments in hourly infusion rates (<5%) after each interruption to limit fluctuations in hourly dose.*

In cases where these principles are not sufficient to guide practice consult pharmacy and medicine.

APPENDIX 4:

Standard Tubing Set-Up for INPATIENT Fluorouracil (5FU) Infusions



This standard tubing set-up allows for:

- adherence to BCCA standards for chemotherapy administration (e.g. 5FU administered on secondary line, flush line secured with lever lock cannula).
- administration of intermittent medications (e.g. anti-emetics, cisplatin bolus) during the 5FU infusion.

Because the Y-site compatibility of 5FU with other medications is dependent on several factors including concentration of 5FU infusion, dilution of intermittent drug and length of time 5FU and other drugs are in contact, Pharmacy and Nursing at VCC have agreed, in the interests of safety and consistency, to consider infusional 5FU incompatible with all other IV medication.

This directive applies to inpatient 5FU infusions only. Consult pharmacy to establish compatibilities involving other infusional and intermittent IV medications.

APPENDIX 5:

Potential Complications and Prevention and Management Strategies of IP Chemotherapy

Problem	Clinical Manifestation	Possible Cause	Prevention and Management Strategy
Abdominal discomfort and distention.	<ul style="list-style-type: none"> Discomfort during the infusion. Abdominal distention. 	<ul style="list-style-type: none"> Increased abdominal pressure related to volume of fluid infused. 	<ul style="list-style-type: none"> Elevate head of the bed to alleviate pain. Slow the rate of infusion. Analgesia as ordered.
Respiratory distress.	<ul style="list-style-type: none"> Dyspnea. Shortness of breath. 	<ul style="list-style-type: none"> Increased intra abdominal pressure restricting diaphragmatic movement. 	<ul style="list-style-type: none"> Elevate head of the bed. Offer supplemental oxygen. <i>If severe, stop infusion and contact physician.</i>
Nausea and vomiting.	<ul style="list-style-type: none"> Nausea and vomiting immediately following instillation of IP chemo. Nausea and vomiting 24 – 48 hours following IP chemo. 	<ul style="list-style-type: none"> Increased abdominal pressure related to volume of fluid infused. Side effect of specific chemotherapy drug. 	<ul style="list-style-type: none"> Anti-emetics as ordered. Encourage small, frequent meals.
Diarrhea	<ul style="list-style-type: none"> Diarrhea following instillation of IP chemo. Diarrhea 24 – 48 hours following IP chemo. Abdominal cramps 	<ul style="list-style-type: none"> Increased abdominal pressure related to volume of fluid infused. Side effect of specific chemotherapy drug. 	<ul style="list-style-type: none"> Maintain hydration. Elevate head of the bed. Analgesia as ordered. Anti-diarrheal as ordered.
Chills	<ul style="list-style-type: none"> Feeling chilled. 	<ul style="list-style-type: none"> IP fluid cooler than body temperature. 	<ul style="list-style-type: none"> Offer warm blankets. Offer hot drinks. <i>If in conjunction with fever and rigours, stop infusion and contact physician.</i>
Abdominal pain	<ul style="list-style-type: none"> Severe abdominal pain during infusion. Swelling at catheter site. Chemotherapy leakage. 	<ul style="list-style-type: none"> Catheter migration. Chemical irritation 	<ul style="list-style-type: none"> Analgesia as ordered. Ensure catheter secured. Stop infusion and contact physician. Confirm catheter placement. If extravasation suspected, treat as per extravasation policy.
Catheter occlusion.	<ul style="list-style-type: none"> Slowing of fluid infusion or drainage. Complete stop of infusion or drainage. 	<ul style="list-style-type: none"> Catheter migration. Development of fibrin sheath. 	<ul style="list-style-type: none"> Reposition patient. Confirm patency of administration tubing set. Flush catheter with 20mls of 0.9% sodium chloride. Confirm catheter placement.
Infection	<ul style="list-style-type: none"> Pain. Redness at catheter site. Swelling at catheter site. Fever. Chills and rigour. Abdominal distention. 	<ul style="list-style-type: none"> Contamination from skin. Contamination of the catheter. 	<ul style="list-style-type: none"> Ensure aseptic technique used. Monitor vital signs. Analgesia as ordered. Contact physician Obtain peritoneal cultures as ordered. Antibiotics as ordered.

APPENDIX 6:



Patient Teaching Standard:

Managing at Home with an Electronic Infusion Device

STANDARD RESOURCES: (device-specific materials).

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

I. IDENTIFY KEY PARTS OF THE ELECTRONIC INFUSION DEVICE

- Display panel
- Stop/start button
- Medication delivery system
- Battery door
- Battery connection
- Tubing clamp
- Lockout button

II. DESCRIBE ESSENTIAL PROCEDURES RELATED TO DEVICE OPERATION

- How to change battery if low
- Unkinking tubing if high pressure
- Unclipping reservoir when empty if d/cing infusion at home
- Stopping and starting the pump
- Clamping tubing if cannot problem-solve

III. DESCRIBE WAYS OF MANAGING ADLS WHILE WEARING DEVICE

- Bathing: place in plastic bag and tie bag close.
- Activities: using belt or pouch
- Sleeping: position pump so not lying on it

IV. USE DEVICE BOOKLET TO TROUBLE SHOOT MOST COMMON REASONS FOR PUMP ALARMING

- Low volume
- Low battery
- High pressure

V. CALL FOR HELP IF OTHER PROBLEMS ARISE

- Call _____

Form #

(over)

VI. STATE THE EXPECTED TIME FOR COMPLETION OF INFUSION
VII. DESCRIBE IV CARE WHILE AT HOME
<ul style="list-style-type: none">• How to dc IV at home
VIII. DESCRIBE HOW TO CORRECTLY STORE WASTE WHEN INFUSION FINISHES
<ul style="list-style-type: none">• Removing cassette from pump• Keeping pump separate from cassette• Disposing of cassette in Zip-Lock bag• Bring pump to next clinic appointment
VIII. STATE DATES OF FOLLOW-UP APPOINTMENTS (e.g., peripheral IV changes, lab, physician)

Prepared: March 12, 2008

APPENDIX 7:



BC Cancer Agency
CARE & RESEARCH
An agency of the Provincial Health Services Authority

Patient Teaching Standard:

Managing at Home with an Elastomeric Infusion Device

STANDARD RESOURCES: (device specific materials).

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

I. IDENTIFY KEY PARTS OF THE INFUSOR™

- Plastic casing that protects balloon
- Flow restrictor that needs to be taped to skin
- Elastomeric balloon that contains medication
- Volume indicator line that shows progress of infusion
- Tubing that carries medication
- Luer lock connector that connects securely to IV line

II. DESCRIBE WAYS OF MANAGING DAILY ACTIVITIES WHILE WEARING INFUSOR™

- Bathing: scarf around neck and pin carrier to scarf
- Activities: avoid pressure, squeezing infusor
- Sleeping: 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
 - Tubing free of blood

IV. DESCRIBE ACTIONS IF PROBLEMS ARISE WITH DEVICE

- Retaping flow restrictor if tape comes off
- 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

Form #

(over)

V. STATE THE CORRECT TIME FOR EXPECTED COMPLETION OF INFUSION
<ul style="list-style-type: none">• Expected completion time is _____• If > 5 hours beyond or < 5 hours before expected completion time call _____
VI. STATE NUMBERS TO CALL IN CASE OF PROBLEMS
<ul style="list-style-type: none">• (List center-specific/community-specific information)
VII. DESCRIBE IV CARE WHILE AT HOME
VIII. DESCRIBE HOW TO CORRECTLY STORE WASTE SUPPLIES FROM INFUSOR™
<ul style="list-style-type: none">• Attaching cap to end of line• Storing empty Infusor and tubing in zip-lock plastic bag that is closed securely
VIII. STATE DATES OF FOLLOW-UP APPOINTMENTS (e.g. discontinuation, lab, needle changes, physician appointments)

Prepared: March 12, 2008

APPENDIX 8:



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
- Cleansing connection.
- Flushing PICC line with saline
- Attaching cap to PICC

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)

VI. DESCRIBE HOW TO CORRECTLY STORE SHARPS AND CYTOTOXIC WASTES/SUPPLIES

- Disposing of equipment and supplies in Cytotoxic 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 9:



BC Cancer Agency
CARE & RESEARCH
An Agency of the Provincial Health Services Authority

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

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
- Cleansing connection
- Clamping line before opening connection
- Flushing IVAD with saline then heparin
- 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)

VI. DESCRIBE HOW TO CORRECTLY STORE SHARPS/CYTOTOXIC WASTES/SUPPLIES

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

Date Developed: June, 2010

Date Revised: