	Policies & Procedures Title: CHEMOTHERAPY DRUGS FOR CANCER TREATMENT: ADMINISTRATION, SAFE HANDLING & DISPOSAL I.D. Number: 1065
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Note: In this policy, 'chemotherapy' refers to drugs identified by pharmacy as requiring Chemotherapy Drug Precautions, based on the level of risk they present. Hormonal therapies are not included in this definition.

Note: Please review the SHR Region-Wide Policies & Procedures Manual- # 7311-60-020 High Alert Medications - Identification, Double Check and Labeling.

Note: For information on bladder instillation of chemotherapy drugs refer to the SHR Nursing policy Chemotherapy Bladder Instillation (Intravesical) – Mitomycin: Assisting With & Care of Patient #1067.

DEFINITIONS

Anaphylaxis - dramatic, acute systemic reaction that may be marked by the sudden onset of rapidly progressing hives, itching, or respiratory distress. May precipitate vascular collapse, leading to shock and death.

Antineoplastic - A chemotherapeutic agent that controls or kills cancer cells. Drugs used in the treatment of cancer that may be cytotoxic but are generally more damaging to dividing cells than to resting cells. However, not all antineoplastic drugs are cytotoxic.

Biotherapy - agents derived from biological sources or agents that affect biologic responses.

Chemotherapy - A chemical agent used to treat diseases. The term usually refers to a drug used to treat cancer. However, also prescribed for non-cancer treatment.

Cytotoxic - A pharmacologic compound that is detrimental or destructive to cells within the body.

Extravasation - the passage or escape of vesicant chemotherapy drugs into the tissue. Tissue sloughing and necrosis may occur if the condition is severe.

Flare Reaction - a local allergic reaction to an agent, manifested by streaking or red blotches along the vein, but without pain or swelling and the presence of a good blood return.

Hazardous - Drugs that exhibit one or more of the following six characteristics in humans or animals: carcinogenicity, teratogenicity or other developmental toxicity, reproductive toxicity, organ toxicity at low doses, genotoxicity, structure and toxicity profiles of new drugs that mimic existing drugs determined hazardous by the above criteria. There are various levels of risk within the hazardous drug definition.

Hypersensitivity - exaggerated or inappropriate immune response that may be localized or systemic, occurring during or within hours of drug administration.

Independent Double-Check means the process where two clinicians separately check (alone and apart from each other, then compare results) each component of prescribing, dispensing and verifying the high-alert medication for errors before it is administered to the patient. The clinician checking has to form an independent judgment without cues from the clinician doing the initial work.

Irritant - any agent that causes aching, tightness, and phlebitis along the vein or at the injection site, with or without a local inflammatory reaction but does not cause tissue necrosis.

Road map or Therapy Delivery Map – a patient’s individualized chemotherapy protocol .

Vesicant - any agent that has the potential to cause blistering, severe tissue injury or tissue necrosis when extravasated.

1. PURPOSE

- 1.1 To safely administer chemotherapy drugs to patients for cancer treatment.
- 1.2 To provide a safe environment for staff working with chemotherapy drugs.

2. POLICY

2.1 Registered Nurses (RNs) identified by their manager, will be certified in this Special Nursing Procedure to administer oral, topical, subcutaneous, intramuscular and intravenous chemotherapy drugs for cancer treatment in accordance with the policy of the nursing unit. The RN is expected to apply these standards when assisting the physician with intrathecal chemotherapy administration.

Note: *Certification for oral administration can be obtained through completion of self study modules, post test and skills demonstration with the clinical nurse educator.*

2.2 RN’s shall demonstrate continuing competence in cancer chemotherapy annually.

2.3 Employees who are pregnant, attempting to conceive or breastfeeding may refrain from administering chemotherapy drugs upon request. This must be communicated in writing as soon as possible to the Manager of the unit prior to commencement of their shifts.

2.4 A physician must write all orders for chemotherapy drugs. Pre-printed orders are preferred. Faxed orders are accepted as written orders. RNs will NOT accept verbal or telephone orders. Exceptions:

- to stop or restart chemotherapy
- to increase or decrease a chemotherapy infusion rate.

2.5 Pediatric patients are required to have a road map (therapy delivery map) completed by the physician ordering the drug. A copy of this road map must be in the patient chart and a copy faxed to Pharmacy.

- 2.6 Pharmacy will identify all chemotherapy drugs and some biotherapy drugs on the drug packaging and on the Medication Administration Record (MAR) as requiring Chemotherapy Drug Precautions.
- 2.7 Special precautions for safe handling of chemotherapy drugs will be observed during their preparation, transport and administration.
- 2.8 Pharmacy will prepare all chemotherapy drugs, including oral drugs that must be compounded or crushed, in a biological safety cabinet. All chemotherapy drugs will be dispensed in its final dosage form
- 2.8.1 The IV bag containing the chemotherapy drug will be spiked with a closed system secondary tubing set and primed with neutral solution by pharmacy. IV and injectable chemotherapy drugs will be delivered to the ward in a sealed transport bag. Refer to Appendix B.
- 2.9 When the physician's order is received, 2 RNs or 1 RN/1 pharmacist will independently verify the chemotherapy drug dose is correct by using one of the following dose determination calculation methods:
- body surface area (BSA) or m²
 - area under the curve (AUC) for carboplatin dosing
 - mg/kg (infants weighing less than 10 kg).
- 2.10 A current and accurate height and weight must be recorded on the patient's chart. A physician must calculate drug doses based on the most current height and weight.

2.11 Intravenous Drug Administration

- 2.11.1 RNs who are competent and certified in chemotherapy administration will **independently** calculate the infusion rate, and check the settings on the infusion pump at initial set-up, change of bag and/or change in infusion rate. Document on the MAR and include both RNs initials and time of double-check.
- 2.11.2 All chemotherapy infusions will be administered via designated IV tubing with a closed male luer connector attached to the end of the primary IV tubing closest to the patient.
Note: *Pediatrics – use IV micro pump tubing.*
- 2.11.3 All intravenous chemotherapy drugs must be infused via an infusion pump with the **exception of vesicants administered peripherally and drugs ordered IV push.**
- 2.11.4 **Pediatric Patients:** All intravenous chemotherapy administration will be administered via a central venous catheter.
- 2.11.5 All chemotherapy infusions will be administered via the secondary function or Line B on the infusion pump.
- 2.11.6 To verify patency of the line, blood return must be confirmed prior to administration of any chemotherapy drug.
- 2.11.7 The primary IV line minimum flush volume will be 25mls of compatible IV solution prior to disconnection and 10 mls between drugs, unless otherwise required for a clinical trial.
- Note:** *Pediatrics:* Flush Volume 10-20 mls (micro IV tubing)

- 2.11.8 The IV site, rate and volume of infusion must be assessed hourly during administration of the chemotherapy drug.

2.12 Continuous Intravenous Drug Administration

- 2.12.1 Continuous Infusions must not be interrupted for more than 72 minutes in total over 24 hours. (equivalent to 5% of a 24-hour period).

Note: *It is not acceptable to interrupt continuous chemotherapy infusions for tests, patient showers or personal preference. Interruptions should only occur when it is unavoidable (e.g delay from pharmacy, extravasations, chemotherapy spill).*

- 2.12.2 Continuous infusions must be infused at a constant rate over 24 hours. Minor adjustments to hourly infusion rates may be made. The total 24 hour rate increase is not to exceed 5% of the initial rate. These adjustments must be documented on the MAR.

- 2.12.3 Each 24-hour dose of a continuous infusion must be infused within a 24-hour period and no longer than 72 minutes exceeding or falling short of this time. Any contents remaining after that time may be safely infused over 10 minutes providing the volume remaining does not exceed 5% of the original total volume.

Note: *Pharmacy & the ordering physician are to be consulted in cases where the above principles cannot be applied.*

- 2.12.4 Blood return must be verified every 12 hours when infusing vesicants by continuous infusion.

2.13 Vesicant Chemotherapy Drug Administration via Peripheral Venous Access (ADULTS ONLY)

- 2.13.1 When administering vesicants peripherally, a new intravenous site is preferred. Avoid using a site that is more than 24 hours old.

- 2.13.2 Vesicant chemotherapy administered through a peripheral intravenous must be infused IV push as ordered or via a short-term gravity intravenous line.

Note: *Do not use an infusion pump when administering a vesicant via a peripheral intravenous.*

- 2.13.3 When administering vesicants peripherally, the RN must remain with the patient to continuously monitor the site for signs of extravasation and to check for blood return at least:

- every five minutes for infusions less than 30 minutes
- every 10 minutes for infusions longer than 30 minutes

Note: *Vesicant drugs must not infuse peripherally for infusions longer than 60 minutes.*

2.14 Elastomeric Ambulatory Infusion Pump (Baby Bottle Infusor) – Refer to Appendix G

- 2.14.1 Elastomeric infusors utilize elastomeric reservoirs to infuse non-vesicant chemotherapy at a slow, controlled rate over an extended period of time ie) 2-7 days

- 2.14.2 Infusors may be used with peripheral IV's or central venous access devices (CVADs).

- 2.14.3 The Infusor must be protected from direct sunlight.
- 2.14.4 The flow restrictor must be taped directly to the skin since temperature affects the flow rate.
- 2.14.5 The pump must be worn at, or near, waist level at all times to maintain correct flow rate. Do not place on floor while in bed or seated. Keep the pump in a carrying pouch or pocket where it will not fall out.
- 2.14.6 Patients can be sent home with chemotherapy infusing via an Infusor and instructed when to return to the outpatient clinic for disconnection.

2.15 Drug Safe-Handling Precautions and Disposal

- 2.15.1 Chemotherapy Drug Safe Handling Precautions for body waste will be followed for **48 hours** post administration of last chemotherapy dose for all routes of administration.
- 2.15.2 Chemotherapy waste must be handled separately from other waste to ensure those individuals handling the waste are protected from potential exposure
- 2.15.3 Chemotherapy waste containers (red colored) must be available in all areas where these drugs are prepared and administered. These containers must be properly labelled.
- 2.15.4 Personal Protective Equipment (PPE) must be consistently and properly worn for all handling of blood or body fluids
 - disposable, impervious gown
 - nitrile gloves (doubled: 1 pair under gown cuff and 1 pair over gown cuff)
 - eye shield/mask when there is a risk of splashing or aerosolization
- 2.15.5 A Chemotherapy/Hazardous Drug Spill Kit must be available on the unit for spill management.

Note: *Only RNs certified in chemotherapy administration may clean up chemotherapy drug spills.*
- 2.15.6 MSDS sheets on all hazardous drugs/chemicals available at site of use

3. PROCEDURE

3.1 Processing Chemotherapy Orders

- 3.1.1 When the physician order is received, 2 RNs or 1 RN/1 pharmacist complete an **independent double check** of the drug dose orders.
 - 3.1.1.1 Recalculate the drug dose and compare to the ordered dose using one of the following drug determination calculations: body surface area (BSA), mg/kg or area under the curve (AUC) Refer to Appendix F
 - 3.1.1.2 If there is more than a 5% variance in your calculations from the prescribed dose, notify the ordering physician and pharmacist. Document clarifications and rationale in physician's orders. If changes are required, the physician must write a new order.
 - 3.1.1.3 Verify that the prescribed dose is within the recommended range for the patient, disease indication and treatment plan by referring to the SHR IV

Medication Reference Manual, Lexicomp, CPS, medication product monograph or other approved reference that describes the chemotherapy drug regimen.

- 3.1.1.4 Assess chemotherapy orders for completeness including pre and post supportive therapies (e.g. pre-medications, hydration, antiemetics, blood work).
- 3.1.1.5 Both RNs document their initials beside each medication on the physician's orders to indicate that the dose has been verified.

3.2 Pre-Administration

- 3.2.1 Review the following patient information:
 - applicable lab results
 - previous treatment for cancer
 - experienced side effects and interventions
 - previous dose adjustments
 - concurrent medical conditions
 - weight changes greater than 10%
 - roadmap (pediatrics only)
- 3.2.2 Assess the patient's prior experience with chemotherapy (e.g. reactions, delayed side effects, adequacy of symptom management, willingness to proceed). Report any hesitancy or refusal of treatment to physician.
- 3.2.3 Provide information to the patient and family caregivers regarding:
 - indication of chemotherapy
 - method of administration
 - potential side effects/complications, and the importance of informing nurses of the same
 - importance of notifying staff immediately if experiencing any signs and symptoms of extravasation such as edema, blanching, coolness, pain or discomfort, a feeling of tightness or leaking at the intravenous site
 - safe handling and disposal of drug and body waste
- 3.2.4 Set up the following drug safe handling precautions:
 - 3.2.4.1 Post a Drug Precautions sign above the patient bed or on the room door. Refer to Appendix C.
 - 3.2.4.2 Affix Drug Precaution labels on the patient chart and on all tubing's exiting patient. Refer to Appendix D.
 - 3.2.4.3 Place the appropriate waste containers in the patient's room: Sharps & Fluid Resistant Waste Container and/or Soft-Sided Waste Container. Refer to Appendix E.
 - 3.2.4.4 All sharps are to be disposed of in the Sharps & Fluid Resistant Waste Container. Staff are to tape closed the sharps container in the patient's room and affix the sign alerting staff to dispose of sharps in the Sharps & Fluid Resistant Waste Container. Refer to Appendix D
 - 3.2.4.5 Ensure that a chemotherapy/hazardous SPILL kit is available on the unit
 - 3.2.4.6 MSDS sheets on all hazardous drugs/chemicals available at site of use

- 3.2.5 Immediately before administration, 2 RNs, 1 RN/1 pharmacist, or 1 RN/1 physician (competent and certified in chemotherapy administration) will verify:
- the order and dosages have been independently double checked & initialed
 - drug names
 - dosages
 - rates
 - volumes
 - expiration dates and times
 - pre-medications
 - solution compatibilities
 - 2 different patient identifiers (e.g. name, date of birth, hospitalization number) on the medication label and the original physician's order
- 3.2.6 Gather appropriate equipment and supplies. Refer to Appendix A.
- 3.2.7 Administer pre-medications as ordered.
- 3.2.8 Don PPE required for route of administration.

3.3 Oral Administration

- 3.3.1 Take tablets (capsules) in their original package to the patient bedside. Open container/blister pack and tip into disposable medicine cup. Observe patient consume the drug
- 3.3.2 Do NOT CUT OR CRUSH chemotherapy tablets or capsules. Tablets/capsules must be swallowed whole.
- 3.3.3 If patient is unable to swallow or when administering via a PEG, G-tube or a nasogastric tube, contact the pharmacist for advice on alternative dose formulations and the physician for a new medication order if required. In the rare instance that Pharmacy is unable to make an oral formulation (stability issues, no recipe for formulation etc) refer to one of the following notes.
- Note:** *To dissolve a tablet or capsule place the medication in a capped "Dissolve-a Dose" tube and add diluent (sterile water or saline). Securely attach cap and mix gently until medication is dissolved. Open the small outer cap and attach an oral syringe and withdraw the entire contents of the tube. For enteric coated tablets contact pharmacy as above.*
- 3.3.4 If the patient vomits immediately after oral ingestion and the tablet or capsule cannot be seen, do not re-administer the dose and treat the vomit as a chemotherapy spill. Refer to 5.1. Inform the physician for further guidance.
- 3.3.5 Dispose of drug packaging and medicine cup in the Soft Sided Waste Container.

3.4 Topical Administration

- 3.4.1 Prepare the area to be treated as ordered.
- 3.4.2 Apply the drug with a sterile tongue blade or cotton tipped applicator to the area to be treated.

- 3.4.3 Ensure the patient understands that the drug is only applied to the specific area to be treated and should avoid contact with eyes, nose, mouth or areas close to mucous membranes unless this is the area to be treated.
- 3.4.4 Ensure you remove immediately all drug from areas not to be treated.
- 3.4.5 Unless contraindicated, consider covering the treated area with a gauze pad to prevent exposure to other areas of the body, clothing, or other people, if the drug is being applied to exposed skin.
- 3.4.6 If applicable, ensure you remove completely the drug on completion of the required contact time.
- 3.4.7 Immediately after the application of the drug, remove PPE and perform hand hygiene.

3.5 Subcutaneous/Intramuscular Administration

- 3.5.1 Do **NOT** expel air out of syringe. Tap air to the plunger end of the syringe before administering medication.
- 3.5.2 Dispose of needle/syringe in the Sharps & Fluid Resistant Waste Container.
- 3.5.3 Document site of injection on MAR and patient's tolerance of procedure on the nursing flow sheet.

3.6 Intravenous Administration

- 3.6.1 To determine the vesicant and irritant potentials(s) of the drug(s) refer to the SHR IV Medication Reference Manual.
 - 3.6.1.1 If administering a vesicant, review the signs and symptoms associated with vesicant extravasation, vein irritation and flare reaction. Refer to Appendix H.
 - 3.6.1.2 Ensure an extravasation kit is available in patient's room. Refer to 3.7.
- 3.6.2 To determine the hypersensitivity/anaphylaxis potential(s) of the drug(s), refer to the SHR IV Medication Reference Manual. If drug is known to cause a hypersensitivity or anaphylaxis reaction then:
 - 3.6.2.1 obtain baseline vitals.
 - 3.6.2.2 have emergency medications/equipment available in patient's room, if ordered by the physician.
 - 3.6.2.3 follow monitoring requirements for administration.
- 3.6.3 Prime the primary IV tubing with a compatible additive free solution.
- 3.6.4 Affix a Drug Precaution label to IV tubing.
- 3.6.5 Take the sealed transport bag with the drug to the bedside and verify :
 - patient's identity with patient's armband and the label on the drug
 - secondary tubing is securely connected to the IV bag
 - secondary tubing is primed and clamped

- absence of moisture within the transport bag (i.e. drug leakage)
- red cap is on the end of the tubing (closed system male connector)

Note: Immediately prior to administering infusion, verify blood return.

3.6.6 Central Venous Catheter: If blood return is absent, the physician must be notified BEFORE proceeding with chemotherapy administration. An order is required to check placement in interventional radiology.

3.6.7 Peripheral IV (Adult only): If blood return is absent, a new site must be started. Veins of choice should be smooth and pliable; the large veins of the forearm are preferred.

- Select the smallest gauge and shortest length catheter to accommodate the prescribed therapy.
- If venipuncture is unsuccessful, use the opposite arm for the next attempt; if not possible to use the opposite arm, select a site proximal to the first attempt.

3.6.8 **Intravenous Drug Administration via Secondary Port (Piggy-back)**

3.6.8.1 Swab the secondary port of the primary IV tubing with an alcohol swab before connecting the secondary tubing.

3.6.8.2 Open clamps on secondary tubing.

3.6.8.3 Program IV pump settings as per ordered rate. Complete independent double checks to verify pump settings.

3.6.8.4 Flush the secondary port with 10mls neutral solution if administering additional drugs.

3.6.8.5 Flush the primary IV tubing with 25mls of neutral solution (PEDIATRICS:10-20 mls) **prior** to disconnection from patient.

3.6.8.6 Wipe the port(s) after disconnection with a 2x2 gauze.

3.6.8.7 Dispose of contaminated IV tubing/syringe in the Sharps & Fluid Resistant Waste Container.

3.6.8.8 Removed PPE.

3.6.9 **Intravenous Drug Administration of a Vesicant in Minibag via Secondary Port (Piggyback) through a Peripheral IV (ADULTS ONLY)**

3.6.9.1 Prime a gravity IV tubing set with a compatible neutral solution.

3.6.9.2 Lower primary (neutral solution) IV bag with the supplied blue hanger.

3.6.9.3 Attach the drug bag tubing to the most distal injection port from the patient. Ensure it is clamped.

3.6.9.4 Attach a 10 ml syringe (with a closed male connector attached) to the Y-site injection port most proximal to the patient.

3.6.9.5 Pinch or clamp the primary IV tubing above the injection port and aspirate with a 10 ml syringe to verify blood return and IV patency. Leave syringe attached.

3.6.9.6 Adjust the rate of the primary infusion with the roller clamp to flow freely.

3.6.9.7 Unclamp the secondary tubing and adjust the flow rate with the roller clamp.

3.6.9.8 During administration, monitor the IV site and drip chamber continuously to ensure IV patency.

Note: *Suspect an extravasation if the infusion rate slows or stops completely. Refer to 3.7.*

3.6.9.9 Verify blood return every 5 minutes for infusions less than 30 minutes and every 10 min for infusions between 30-60 min.

3.6.9.10 When drug administration is complete, verify IV patency by visualizing blood return.

3.6.9.11 Flush primary IV tubing with 25 mls of neutral solution prior to disconnection from the patient

3.6.9.12 Dispose of contaminated IV tubing/syringe in the Sharps & Fluid Resistant Waste Container.

3.6.10 Free-Flow IV Push Drug Administration(ADULTS ONLY)

3.6.10.1 Do **NOT** expel air out of the syringe.

3.6.10.2 Prime a gravity IV tubing set with a compatible neutral solution.

3.6.10.3 Attach the chemotherapy syringe at the Y-site injection port most proximal to the patient.

3.6.10.4 Pinch the primary tubing above the injection port and aspirate to verify IV patency and blood return.

3.6.10.5 Adjust the rate of the primary infusion with the roller clamp to flow freely.

3.6.10.6 Push the chemotherapy drug at the prescribed rate, allowing the neutral solution to dilute the drug. If the rate is not ordered, administer at a rate of 1-2ml/min.

Note: *Keep pressure on the plunger of the syringe to prevent back flow of neutral solution into the syringe.*

3.6.10.7 During administration, monitor the IV site and drip chamber continuously to ensure IV patency.

Note: *Suspect an extravasation if the infusion rate slows or stops completely. Refer to 3.7.*

3.6.10.8 Verify blood return every 3 mls by pinching the primary IV tubing while gently aspirating with the syringe.

Note: *When infusing via a central venous catheter, blood return verification is required only before and after administration.*

3.6.10.9 When drug administration is complete, check vein patency and flush with 25 mls of compatible IV solution.

3.6.10.10 Wipe the injection port after disconnection with 2x2 gauze.

3.6.10.11 Dispose of contaminated IV tubing/syringe in the Sharps & Fluid Resistant Waste Container.

3.6.11 **Drug Administration via Elastomeric Ambulatory Infusion Pump (Baby Bottle Infusor)**
Refer to Appendix G

Connecting Infusor:

3.6.11.1 Check to ensure solution is clear and free from bubbles.

3.6.11.2 Unwrap Infusor tubing.

3.6.11.3 Remove winged luer cap from the end of the Infusor tubing

3.6.11.4 Attach Infusor tubing connector directly to the CVAD/IV line. Do not use an adaptor between the tubing and CVAD ie)microclave

3.6.11.5 Tape flow restrictor directly on the skin.

3.6.11.6 Place Infusor in pouch and use as a waist belt, or secure in patient's pocket.

Disconnecting Infusor:

3.6.11.7 Confirm Infusor system is empty (balloon touches all 8 empty indicator bumps on the sides of the system). A small amount of solution may remain in pump.

3.6.11.8 Disconnect Infusor connector from the CVAD/IV line.

3.6.11.9 Flush/lock CVAD or discontinue peripheral IV.

3.6.11.10 Dispose of Infusor in the Sharps & Fluid Resistant Waste Container.

3.6.11.11 Document time infusor disconnected.

3.7 Treatment Of Extravasation

3.7.1 At the first sign of infiltration, stop the administration of the drug and IV fluids immediately. **Do not flush and do not remove the IV device.** Refer to SHR IV Medication Reference Manual for extravasation management guidelines of the specific drug

3.7.2 Gather the following equipment and supplies:

- Personal Protective Equipment: Non-sterile nitrile gloves, disposable low-permeable long sleeved gown, and eye/face protection
- Extravasation Kit (assembled by clinical unit):
 - 3 ml syringe with closed male connector attached
 - alcohol swabs
 - 1 cold pack
 - 1 hot pack
 - 1 4x4 sterile gauze
 - 1 non-adherent dressing
 - 1 indelible ink pen/marker

3.7.3 Don PPE.

3.7.4 Disconnect IV tubing from IV device.

Note: *If using an implanted port, assess the site for correct needle placement.*

3.7.5 Attach a 3ml syringe to the hub of the intravenous device and attempt to aspirate the residual drug.

3.7.6 Notify the physician immediately.

3.7.7 Remove the intravenous device and apply a dry dressing. Avoid applying excessive pressure to the extravasation site.

3.7.8 Mark the boundaries of the extravasation on the patient's skin with indelible pen/marker.

3.7.9 Observe the site at least every 12 hours and document any signs of inflammation and necrosis, which may develop weeks later. Instruct the patient to do the same.

3.7.10 Dispose of contaminated supplies in the appropriate Chemotherapy Waste Container. Refer to Appendix E.

3.7.11 Document on the Nursing Flow sheet:

- Date and time that extravasation occurred
- Time of physician notification
- Type and size of peripheral venous access device or central venous access device including gauge/length of noncoring needle for implanted ports
- Location and patency of peripheral or central venous access device
- Number and location(s) of venipuncture attempts (for peripheral vesicant administration)
- Description and quality of blood return before and during vesicant administration
- Vesicant administration technique (e.g., IV push, infusion)
- Concentration and estimated amount of extravasated vesicant
- Symptoms reported by patient (e.g., burning, pain)
- Description of administration site appearance including measurement of edema and/or redness if present
- Assessment of extremity (if applicable) for range of motion and discomfort with movement
- Immediate nursing interventions (e.g., topical, cold or heat,)
- Follow-up recommendations (e.g. plastic surgeon referrals, return appointments)
- Patient education (e.g., skin assessment, temperature monitoring, reporting pain)

3.7.12 Report incident.

3.8 Treatment Of Flare Reaction

3.8.1 Distinguish between a flare reaction or extravasation. Refer to Appendix H.

3.8.2 Flush the vein slowly with saline and watch for resolution of flare.

- 3.8.3 If resolution does not occur, obtain a physician's order to administer intravenous hydrocortisone.
- 3.8.4 Once the flare reaction has resolved, slowly resume infusion of the drug.
- 3.8.5 Document on the nursing flow sheet
- 3.8.6 If the drug is to be re-administered at a later date, consider pre-medicating with anti-histamines and/or corticosteroids. Slowing infusion rates maybe helpful.

3.9 Report to the physician

- Toxicities experienced by the patient
- Adverse reactions
- Assessment of need for a venous access device

3.10 Documentation

- Nursing Care Plan: Record start and end times of Drug Precautions
- MAR: Drug administration time and site
- Nurses Notes/Flow sheet: Patient education; patient response to treatment; and condition of intravenous/injection site

3.11 Chemotherapy Drug Safe Handling Precautions For Body Waste And Supplies

- 3.11.1 Drug Precautions for body waste will be followed for **48 hours** post administration of last chemotherapy dose, regardless of route.
- 3.11.2 The following PPE must be worn when handling blood or body waste:
 - a disposable, low-permeable long-sleeved gown
 - doubled non-sterile nitrile gloves (1 pair under gown cuff; 1 pair over gown cuff)
 - eye/face protection as when there is a risk of splashing or aerosolization.
- 3.11.3 Place Drug Precautions labels on front of the patient's chart and on IV and drainage tubes (e.g. urinary drainage catheter bag, tubing and chest tube drainage unit).
- 3.11.4 Use disposable diapers on incontinent children and adults. Dispose in the Soft-Sided Waste Container, or if saturated, in the Sharps & Fluid Resistant Waste Container. Clean the patient's skin well and apply a barrier cream/ointment to the skin in contact with the diaper to decrease skin irritation.

Note: *Pediatrics: Infants may have a foley catheter inserted during the treatment to decrease skin irritation.*

- 3.11.5 When disposing of excreta, cover toilet/hopper with a plastic backed absorbent pad with absorbent side down prior to flushing to prevent backsplash. Dispose of the plastic-backed absorbent pad after every use in the Soft-Sided Waste Container.

Note: *Patient does not require a private bathroom.*

- 3.11.6 Place soiled linens into a plastic laundry bag. No special handling is required.
- 3.11.7 Items being returned to SPD for cleaning should be handled in the usual manner (e.g. dressing trays, scissors).

3.12 Precautions for Spill Management, Accidental Drug Exposure, and Needlestick Injury

3.12.1 Drug Spill

- 3.12.1.1 Do **NOT** leave the area of the spill. Have a co-worker bring the Chemotherapy/Hazardous Drug Spill Kit.
- 3.12.1.2 Alert persons in immediate area.
- 3.12.1.3 Put on PPE from the spill kit.
- 3.12.1.4 Immediately notify the manager/supervisor.
- 3.12.1.5 Attend to anyone who has been splashed with the drug.
- 3.12.1.6 Contain the spill from the outer edges to the center by placing absorbent towels over the contaminated area.
- 3.12.1.7 Wash area three times, first with the detergent (supplied in kit) followed by water. Dry well with absorbent towel. Follow these same guidelines to clean contaminated equipment.
- 3.12.1.8 Dispose of supplies and waste in appropriate waste containers
- 3.12.1.9 Remove PPE.
- 3.12.1.10 Report incident

3.12.2 Drug Exposure

3.12.2.1 Splash to eyes

- 3.12.2.1.1 Flush eyes immediately at eyewash station for at least 15 minutes (use entire contents of the eye wash station). If eyewash station unavailable, flush with copious amounts of water or normal saline for at least 15 minutes.
- 3.12.2.1.2 Report incident.

3.12.2.2 Splash to skin (intact or non-intact)

- 3.12.2.2.1 Remove contaminated clothing immediately.
- 3.12.2.2.2 Flush area with copious amounts of water for at least fifteen minutes.
- 3.12.2.2.3 Follow with washing area with soap and water.
- 3.12.2.2.4 Report incident.
- 3.12.2.2.5 Launder contaminated clothing at home separately once, then re-wash with regular wash, or arrange for laundry services to launder your uniform for you. If a replacement uniform is not available on your unit, call SPD to arrange pick-up of a decontamination uniform.

3.12.2.3 Needle stick Injury

- 3.12.2.3.1 Express blood from needle puncture site.
- 3.12.2.3.2 Flush puncture site with cool running water for at least 15 minutes.
- 3.12.2.3.3 Apply ice or heat to the injected site, as per SHR IV Medication Reference Manual. Treat skin punctures with vesicant or irritant drugs as if an extravasation has occurred.
- 3.12.2.3.4 Report incident.

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Appendix A

Chemotherapy Drug Administration							
Equipment & Supplies	ROUTES						
	Oral Tablet/ Capsule	Oral Liquid	Topical	IM / SC or Intrathecal Assistance		IV Vesicant Peripheral Site	
Nitrile Gloves (DOUBLED: 1 pair under gown cuff; 1 pair over gown cuff) <ul style="list-style-type: none"> Small SPD SKU # 61428 Medium SPD SKU # 61429 Large SPD SKU # 61430 	X	X	X	X	X	X	X
Eye/Face Protection Eye Shield/Mask SPD SKU # 83128		X	X	X	X	X	X
Disposable Gown with white cuffs Stores SKU # 123011		X	X	X	X	X	X
Intravenous Infusion Pump <ul style="list-style-type: none"> ADULTS: IV Pump Tubing with Clave on Secondary Port PEDIATRICS: IV Micro Pump Tubing with Clave on Secondary Port Stores SKU #202623					X		
Closed Male Connector (IV Infusions) <ul style="list-style-type: none"> Spinning Spiros SPD SKU # 206080 Spiros (Red Cap) SPD SKU # 201901 10 ml syringe 					X	X	X
Gravity IV Tubing						X	X
Medicine Cup	X						
Plastic-backed Absorbent Liner		X		X	X	X	X
2x2 Gauze		X			X	X	X
Alcohol Swabs				X	X	X	X
Extravasation Kit (assembled by clinical unit)						X	X
Chemotherapy/Hazardous Spill Kit SPD SKU # 201903	X	X	X	X	X	X	X
MSDS information sheet for hazardous drugs (see MSDS binder)	X	X	X	X	X	X	X
Drug Precaution Labels Stores SKU # 211571	X	X	X	X	X	X	X
Drug Precautions Sign Printing # 103392	X	X	X	X	X	X	X
Sharps & Fluid Resistant Waste Container (18 gallon) <ul style="list-style-type: none"> Pull Cart (Unit Purchase) Container Stores SKU #215429 Signage for Cart Printing # 103168 	X	X	X	X	X	X	X
Sign Alerting Staff to Use the Sharps & Fluid Resistant Waste Container Printing # 103446	X	X	X	X	X	X	X
Soft-Sided Waste Container <ul style="list-style-type: none"> Linen Hamper (Unit Purchase) Red Liner Bags Stores SKU # 202734 Sign for Hamper Printing # 103170 Transport Waste Container (soft sided) <ul style="list-style-type: none"> 18 gallon red container Stores SKU #201905	X	X	X	X	X	X	X

Appendix B

Closed Male Luer Connector: Spiros



- A needle free closed system transfer device for the safe mixing, transfer, administration and disposal of hazardous drugs.
- The spiros maintains a normally closed system until it is attached to a needle-free connector and the fluid path is activated. When placed on the end of a syringe or IV tubing the spiros will passively remain closed to prevent drips or leaks. In the even of accidental disconnect the spiros will automatically return to the closed or safe position.

Drug Precautions Signage

Drug Precautions

TO BE FOLLOWED FOR **48 HOURS** FOLLOWING
LAST DOSE OF DRUG.

1. Wear **DOUBLED** non-sterile **nitrile** gloves and disposable impervious **gowns** when handling drug waste and all body waste.
2. Wear **eye/face** protection when there is a risk of **splashing** drug or body waste.
3. Wash hands well before and after client contact.
4. Process all linen in the regular manner (if personal linen/clothing is laundered at the facility, or if linen is soiled, place in plastic bag and label dirty linen with Drug Precautions sticker - staff handling that laundry must wear personal protective equipment-PPE and wash separately from other laundry).
5. Affix the Drug Precautions label on the front of the chart, requisitions, specimens, IV tubing containing the drug, and all tubes exiting from client (i.e. NG, foley catheters, chest tubes, JP drains, etc.).
6. Cover toilet/hopper with a **plastic backed absorbent pad** prior to flushing and **dispose of after use**.
7. All waste contaminated with drug or body waste will be disposed of in either the **Sharps & Fluid Resistant Waste Container for Drug Precautions** OR the **Soft-Sided Waste Container for Drug Precautions**, as appropriate.

Form #103392

Drug Precautions Label

CAUTION

Drug Precautions.

Handle & dispose of contaminated
drug/body waste appropriately.

STORES SKU # 211571

Chemotherapy Waste Disposal Containers (RED Bins)
Soft-Sided Waste Container

Includes:

- Drug packaging & drug transport bag
- Disposable gowns, gloves, full face shield
- Drug administration items (i.e. absorbent pads, gauze pads, alcohol swabs, etc.)
- Disposable materials contaminated with body waste (i.e. diapers, absorbent pads, dressings, etc.)
- Body fluid measuring containers



Red liner bags SKU 202734

When bag is 3/4 full
transfer to red bin.
**RED BAGS MUST BE
TRANSPORTED IN RED BIN
FOR DISPOSAL**



18 gallon SKU 201905

Sharps & Fluid Resistant Waste Container

Includes:

- IV bag / tubing and syringes
- Needles and other sharps
- Waste Blood Tubes
- Materials saturated with drug
- Foley bag



4 inch
SKU #47617



2 gallon
SKU #121507



8 gallon
SKU #207135



18 gallon
SKU #215429



Tape this sign to
sharps container
in patient room

STOP!

This client is on
Drug Precautions.

Please dispose of sharps
in the red
"Sharps & Fluid Resistant
Waste Container for Drug
Precautions"

Word Form # 103446 02/12

Dose Determination Calculations

1. Body Surface Area (BSA) or m² Calculations

1. Obtain and document the patient's actual, not stated, body weight and height
2. Use the formula of Mosteller to calculate the BSA

$$\text{BSA (or m}^2\text{)} = \sqrt{\frac{\text{height(cm)} \times \text{weight(kg)}}{3600}}$$

3. Multiply the BSA by the unit dose that is written on the original order to confirm the correct prescribed dose
4. *BSA should be recalculated to adjust dosing when the actual body weight has changed by greater than 5-10%*

Note:

For pediatric patients weighing less than 10 kg., calculate the dose using mg/kg

2. Area under the Curve (AUC) Calculations

Steps:

1. Estimate the GFR or CrCl based on a serum creatinine with the Cockcroft-Gault formula.

N = 1.04 for females

N = 1.23 for males

$$\text{GFR or CrCl (ml/min)} = \frac{N \times (140 - \text{age in years}) \times (\text{weight in kg})}{\text{serum creatinine (mcmol/L)}}$$

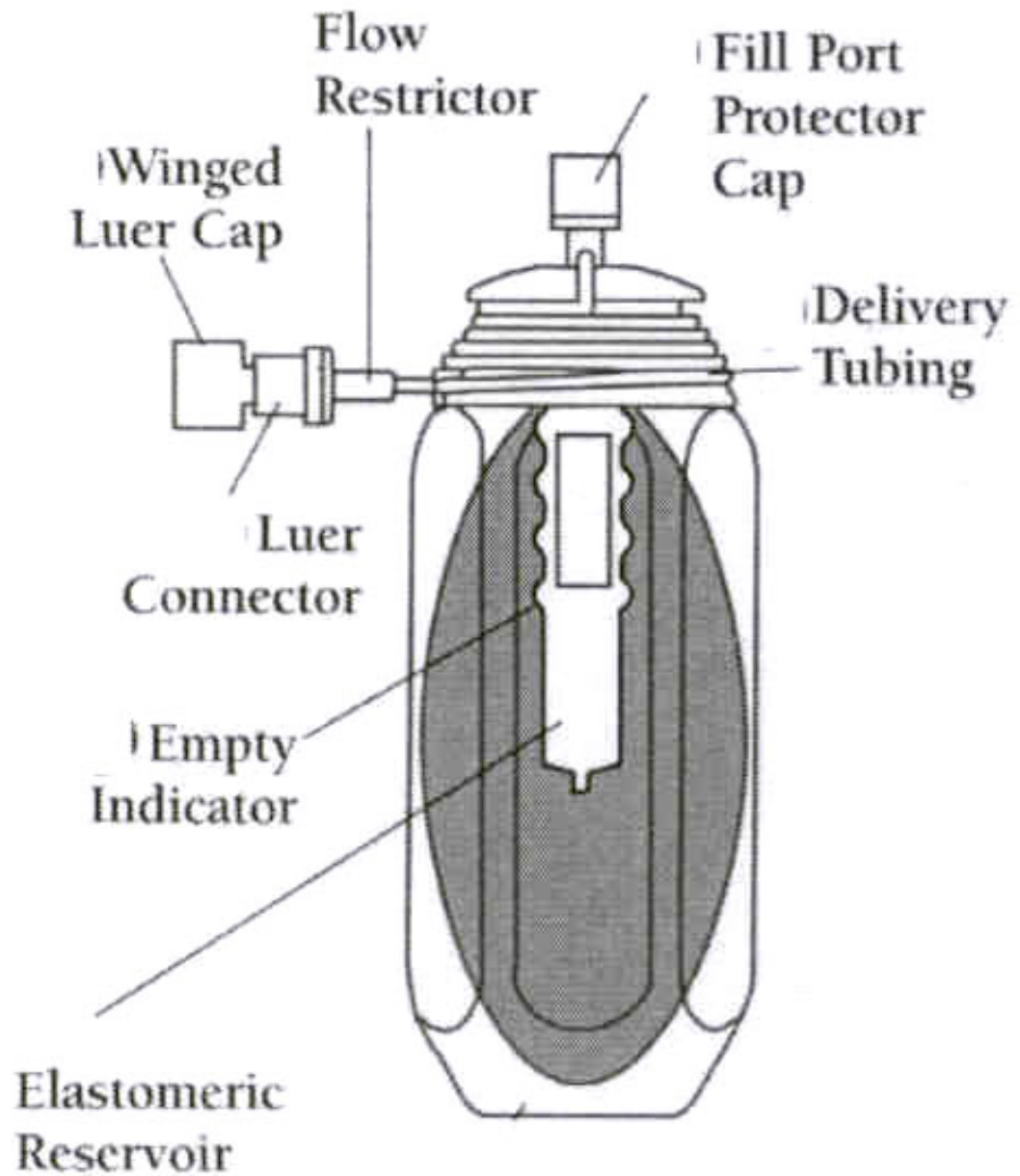
2. Complete the Calvert formula with the value obtained in Step 1 to determine the final recommended dose

$$\text{Dose of Carboplatin (mg)} = (\text{Target AUC}) \times (\text{GFR} + 25)$$

Note: Total dose calculated is in mg, **NOT** mg/m²

Note: *Calvert-AUC based formula is not recommended with GFR or CrCl less than 20 ml/min.*

Elastomeric Ambulatory Infusion Pump (Baby bottle Infuser)



Appendix H

Nursing Assessment of Vesicant Extravasation, Vein Irritation and Flare Reactions

Assessment Parameter	Extravasation		Irritation of the Vein	Flare Reactions
	<u>Immediate Manifestations</u>	<u>Delayed Manifestations</u>		
Pain	Pain typically occurs and is described as burning, stinging, or a sensation of coolness at and around the vesicant administration site. However, some patients do not experience pain when a vesicant extravasates.	Pain usually increases in intensity over time.	Aching and tightness along a peripheral vein, above the administration site, occurs as the drug infuses.	No pain; the skin overlying the vein may itch.
Redness	Redness in the area of the vesicant administration site commonly occurs but is not always present or may be difficult to detect if the extravasation is occurring deeper in the tissue (e.g., as a result of needle dislodgment from implanted port).	Redness generally intensifies over time.	The vein may appear reddened or darkened.	Immediate blotches or streaks develop along the vein, which usually subside within a few minutes. Wheals may appear along the vein.
Swelling	Swelling commonly is observed and is easier to detect when extravasation is superficial (e.g., from a peripheral vein) rather than deep in the tissue (e.g., implanted ports).	Swelling typically increases over time.	Swelling does not occur.	Swelling does not occur.
Blood return	Loss of blood return from IV device occurs.		Blood return should be present. If loss of blood return occurs, suspect infiltration of irritant.	Blood return is present.
Ulceration	Skin integrity is intact.	If vesicant extravasation is not treated, blistering and sloughing begins within 1–2 weeks, followed by tissue necrosis that may require surgical debridement, grafting or flap placement.	Ulceration does not occur.	Ulceration does not occur.

Note. Based on information from Goolsby & Lombardo, 2006; Sauerland et al., 2006; Schulmeister, 2007a. Table credit to Chemotherapy and Biotherapy Guidelines and Recommendations for Practice, Third Edition