



**Fluorouracil (5FU)  
Chemotherapy Takedown  
2023**

# Learning Goals

By the end of this module, learners will be able to:

Apply knowledge of home infusion therapy to daily nursing practice.

- Identify how to access NurseLink resources for both patient and nurse educational.
- Reduce risk of exposure related to safe handling of and disposal of hazardous drugs.
- Identify appropriate PPE (personal protective equipment) for all stages of handling hazardous drugs.
- Appropriately don and doff PPE.
- Identify components of and proper use of a spill kit
- Safely dispose of hazardous waste.
- Identify post infusion precautions.
- Identify appropriate use of the chemo spill kit.
- Apply best practice when teaching and caring for home infusion patients receiving chemotherapy.

# Access to Nurse Link



To login, follow the link below and click “*Login to Nurse Link.*”

<https://carepathrxllc.com/nurselink-welcome/>

**Password:** email [nursingsupport@homeinfusion.com](mailto:nursingsupport@homeinfusion.com)

*Be sure to bookmark this URL and save your password for future use.*

NL Patient Site:

<https://carepathrxllc.com/nurselink-patient/>

Patient  
teaching  
Videos

Patient  
Written  
Instructions

Nursing  
P & P

Links to RN  
virtual  
training

Nurse  
Videos

Home  
Infusion  
Society links

CarepathRX  
in the News

# CarepathRx On Call

24 / 7 Access to the Clinical Pharmacy team

For after-hours, weekend and holiday support, troubleshooting, and delivery needs:

- CarepathRx Pharmacist
- Local pharmacy support varies by pharmacy.
- Dietitians
  - **1-877-ENTERAL**
- Nurses
- Delivery



Contact the pharmacy by calling the phone number at the top of the medication label.

# Chemotherapy Drug Considerations



No safe levels of exposure to hazardous drugs have been determined.

Avoid spills of hazardous drugs through appropriate handling of all drug containers, administration sets, and other supplies used. Inadvertent punctures of solution bags, inadequate connections between the solution container and the administration set, loose connections along the administration set, and improper use of closed system transfer devices are common causes of exposure.

Safe handling of hazardous drugs and appropriate use of PPE are required during preparation, administration, and disposal of all hazardous drugs.

## WHO CAN ADMINISTER CHEMOTHERAPY

Chemotherapy is administered by a qualified nurse who has completed a comprehensive education program, a chemotherapy competency validation and who completes ongoing educational requirements for administration.



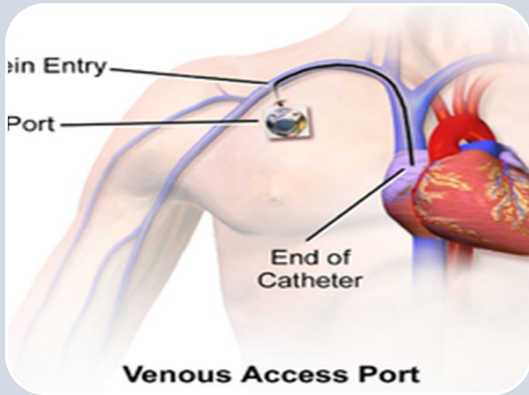
## WHO CAN TAKEDOWN CHEMOTHERAPY

Chemotherapy takedown can be performed by a nurse who has completed training and has documented competency on handling hazardous drugs.

**\*\*\*CHECK YOUR ORGANIZATION'S POLICIES AND PROCEDURES\*\*\***

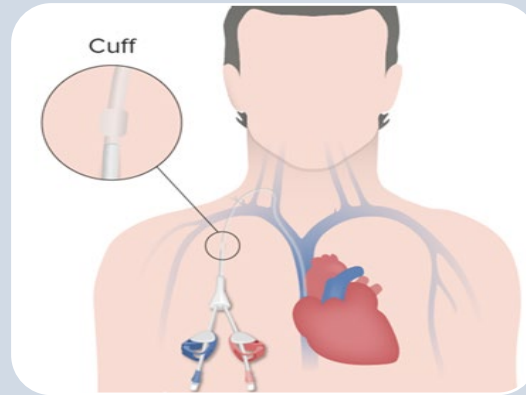
# MODES OF CHEMOTHERAPY ADMINISTRATION

# Central Lines for Home Chemotherapy



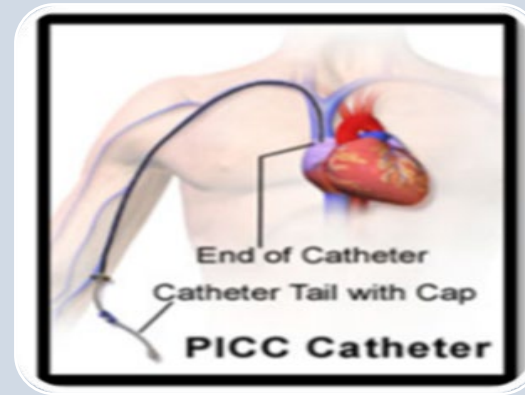
## Port

- Surgically implanted reservoir attached to a catheter that is threaded into the SVC.
- Must be surgically removed
- Long term use (years)
- Usually placed in the chest
  - Other locations: Arm, Thigh, Abdomen, ribs/side
- Usually, single injection ports
  - double injection ports are available
- NON-CORING (Huber) needles must be used to access the self-sealing port silicone self to prevent coring (hole punching the silicone barrier).



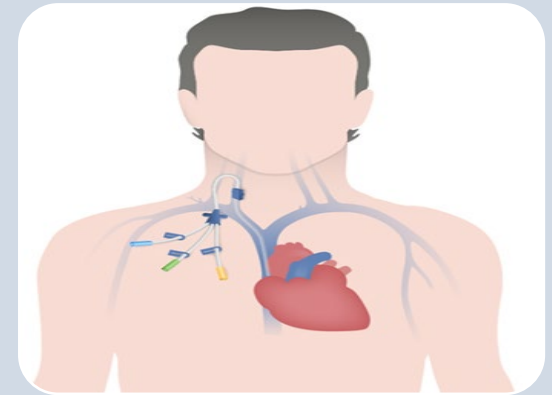
## Tunneled CVC

- Surgically inserted into the subclavian vein, then advanced to the SVC. The distal portion of the catheter is then threaded through a subcutaneous tunnel to an exit site. Dacron cuff encourages tissue growth to provide catheter stability and serves as a barrier to prevent infection
- Must be surgically removed
- Examples: aPheresis catheter, Hickman, Broviac, Groshong
- Percutaneously inserted into central veins (subclavian, internal jugular (IJ), femoral)



## PICC

- Inserted into basilic, cephalic, brachial veins and enters superior vena cava.
- Can feature more than one lumen.
- Dwell time weeks to several months.
- Inserted in radiology or at the bedside.
- Correct catheter placement can be confirmed by using EKG technology or x-ray to confirm placement of the tip in the SVC (Superior Vena Cava).
- Clinicians trained in PICC line removal may perform PICC removals.
- Increased risk for line migration



## CVC (non-tunneled)

- NO CUFF
- Short term
- Typically used for days-weeks for all types of IV therapy and blood draws
- Percutaneously inserted directly into central veins (subclavian, internal jugular (IJ), femoral)
- Highest risk of infection.



# CATHETER INJECTION CAPS & EXTENTIN SETS

USP 800 requires hazardous medications to be compounded in needless and closed (negative pressure) systems.

Injection caps may need to be neutral pressure to prevent leaking at the connection.



Injection caps may be:

**Positive pressure**

\* Can't be used with negative pressure containment systems

**Neutral pressure**

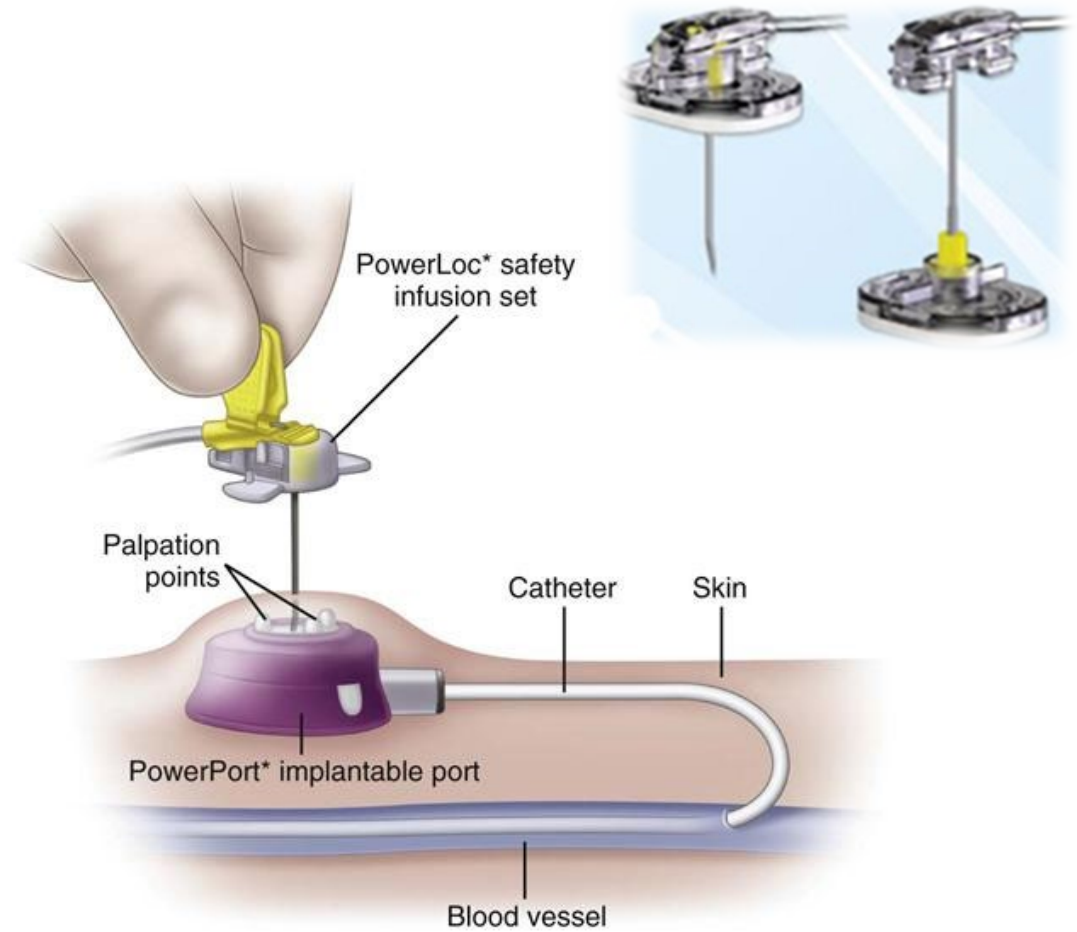
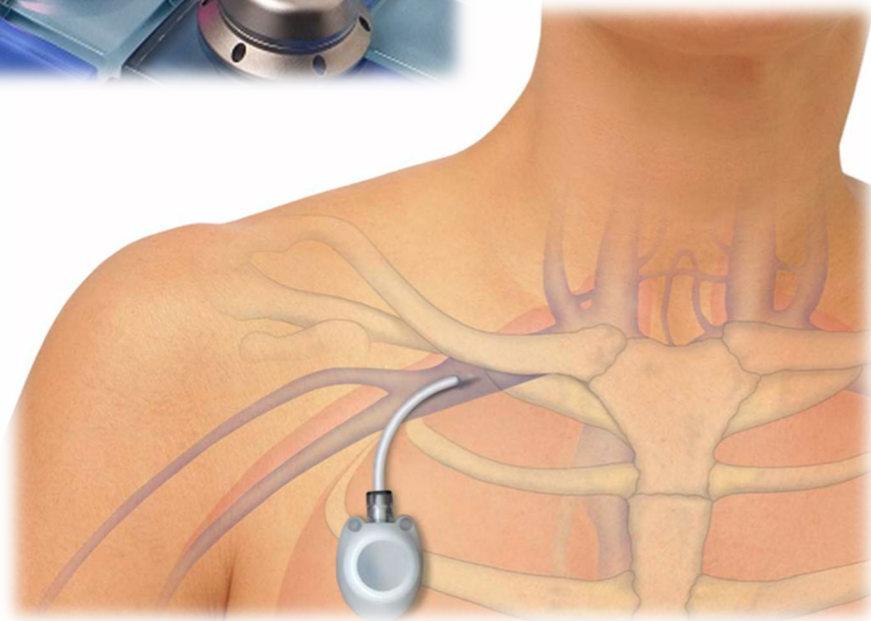
\* No specific clamping sequence

Extension tubing allows for the patient to self-administer medications with 2 hands.

**Injection caps must be changed every seven (7) days and with each blood draw.**

# Non-coring Needle for Implanted Infusion Ports

**NON-CORING** needles must be used to access the self-sealing implanted injection port.



# HIT Complications

## Catheter malposition / migration

- Intravascular malposition
- Extravascular malposition
- Infiltration – medication goes into the surrounding tissue
- Extravasation – infiltration of vesicants

## Infection

- Sepsis
- Skin infection
- Skin erosion

## Hypersensitivity reaction

- Site reaction
- Anaphylactic, systemic reactions
- Red-Man's syndrome

## Line related

- Catheter fracture/damage
- Catheter occlusion by clot, residue or kink

## Vascular

- Thrombosis – blood clot in the vein
- Thrombophlebitis – inflammation and damage of the vessel
- Superior vena Cava syndrome occlusion of SVC (sx: edema, coughing up blood, CP)
- Air embolism

## Fluid overload

- Monitor:
- Vital signs
  - Weight
  - Breath sounds
  - Edema status

# SASH Method → Teaching patients to flush their own IV line.

**1 . Follow physician orders on POT for flushing volumes.**

Patients are **NOT** taught to check for a blood return.

Flush using **Push Pause Method.**

Flush all lumens with adequate amount of saline or heparin to ensure **patency.**

After lab draws flush with 10-20mls of saline to clear the line.

**2. Flush before AND after every dose of medication.**

- S – Flush the device with sterile Saline
- A – Administer the medication / draw blood work
- S – Flush the device with Sterile Saline
- H – Flush the device with Heparin

**3. Unused lumens to be flushed daily with heparin only (no saline).**

# Alcohol Caps

Alcohol kills microorganisms by the *friction* of scrubbing the hub and *drying*.  
*Increased scrubbing and drying time reduces infection risk.*



## Facility Hub Scrub P&P

- Scrub for 5 seconds
- Allow to dry for 15 seconds
- Scrub once for flushes and medication

Need  
Alcohol  
Caps

## Home Infusion Hub Scrub P&P

- Scrub hub for 30 seconds
- Allow to dry for 60 seconds
- Scrub with new alcohol wipe for each line access (4 alcohol wipes for SASH)

Does NOT  
Need  
Alcohol  
Caps



- The Catheter Hub is a known source of line infections related Bloodstream Infections (CLABSIS).
- Cap with alcohol-soaked sponge to cleans hub and covers injection port
  - Alcohol dries and cap becomes a simple cover
- **Must continue to scrub the hub!**
  - Must scrub the hub for 30 seconds before EVERY IV hub access
  - Failure to scrub the hub will result in increased risk of infection
- Single use only
- Teach the patient scrupulous **hand hygiene** and maintaining aseptic technique.

# Prior to Chemo Disconnect

- 1. Confirm the infusion is complete**
  - Pump should be beeping
  - Reservoir Volume (Res Vol) reads 0.0mL
  - Container is empty/near empty (container contains 5-10mL overflow)
- 2. Gather supplies provided by the IV Pharmacy & examine for damage, abnormalities (discoloration and/or particulate matter), expiration date. Notify pharmacy to send additional supplies if indicated.**

Gloves (2 pair)	Chemo gown
Mat	2 – 10mL NSS flushes
1 – 5mL Heparin (per physician order)	Alcohol wipes
Sharps/chemo container being deaccessed	Band-aide/gauze and tape if port
Chemo spill kit	
- 3. Wash hands with soap and water**
- 4. Don PPE:**
  - 1 pair of gloves (pulling cuffs up high)
  - Chemotherapy gown (cuffs over gloves)
  - 2<sup>nd</sup> pair of gloves (pulling cuffs over the gown)
  - Mask with eye shield (or goggles/glasses)





# PUMPS FOR CHEMOTHERAPY ADMINISTRATION

CADD Prism Pump  
CADD Solis Pump  
Curlin Pump (rarely used)

Low Volume Cassette  
0.1-250 ml/hr



Low Volume Tubing  
0.1-250 ml/hr



Variety of Cassettes  
Low and High Volume



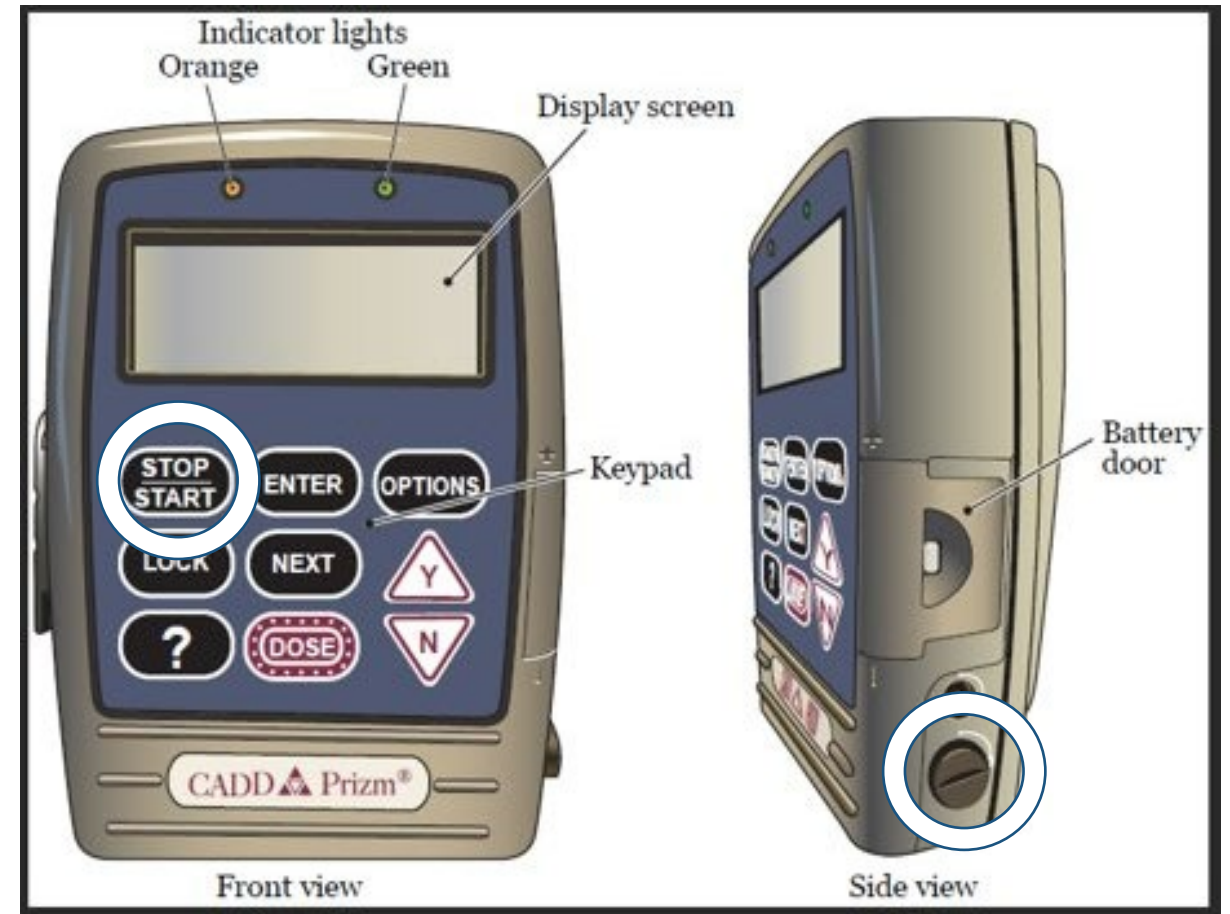
# CADD Tubing and Cassettes

For use with the CADD Solis & CADD Prism pumps



# CADD Prizm Pump: Discontinuing Therapy

1. Press Stop/Start to stop the pump.
2. Close all tubing clamps.
3. Use coin to unlatch used cassette.
4. Remove the battery to turn the pump off.
5. Disconnect tubing/product using proper PPE.
6. Flush and lock the VAD as ordered.
7. Deaccess the port if appropriate.
8. Dispose of all hazardous materials in appropriate container.



# CADD Solis Pump: Discontinuing Therapy

1. Press **STOP/START** button  
Pump will display Stop Pump?
2. Press the soft button under YES.  
Pump displays Pump is Stopping.
3. Unlock the cassette latch and remove cassette.
4. Turn the pump off by pressing the power button  
Pump will display “turn off pump?”
5. Press the soft button under YES
6. Clamp the tubing and disconnect from patient.
7. Disconnect tubing/product using proper PPE.
8. Flush and lock the VAD as ordered.
9. Deaccess the port if appropriate.
10. Dispose of all hazardous materials in appropriate container.



# Sapphire Pump

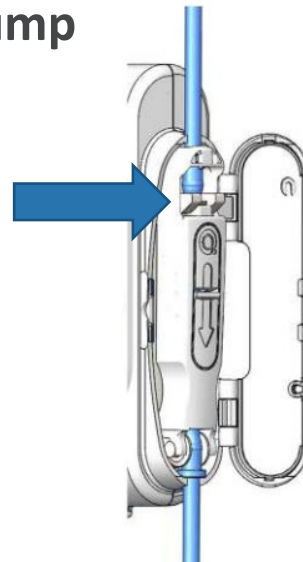
## STOP THE PUMP

Press **STOP**



## TO REMOVE CASSETTE

Disconnect administration set from the patient, close the clamps and remove administration cassette by raising the **metal lock** that secures it to the pump



## TURN OFF PUMP

To turn pump off, press and hold **ON/OFF** button for 5 seconds



# Curlin Pump: Discontinuing Therapy



1. Press RUN/PAUSE to stop the pump.
2. Open the Pump Door.
3. Remove the tubing from the pump.
4. Press the ON/OFF button to power down the pump.
5. Disconnect tubing/product using proper PPE.
6. Flush and lock the VAD as ordered.
7. Deaccess the port if appropriate.
8. Dispose of all hazardous materials in appropriate container.



- Remind patients pumps must be returned to the pharmacy when therapy is completed.
- Pumps are not disposable!



# Pump Returns



## CarepathRX will contact the patient & arrange pump pick up by UPS.

- The pharmacy will print and deliver an UPS shipping label and padded shipping box to the patient for pump return.
- The patient does not need to be home for the UPS driver to pick up the boxed pump.
- There is no fee to the patient for this service.

**Nurses are NOT to remove pumps from patients' homes.**

(exceptions may apply)

**Contact Carepathrx for equipment return.**

# Port Care and Assessment

Supplies:  
2 – 10mL NSS flushes  
1 – Heparin Flush (100u/mL)  
Alcohol wipes

Assess the port site for any signs of redness, swelling, or warmth. Ask the patient if there is any pain at the site. If any of these are present, call the provider IMMEDIATELY. Do not provide intervention until directed.

Scrub the hub of the venous access device for at least 60 seconds. Allow to dry for at least 30 seconds.

Remove air from all NSS and Heparin prefilled flushes.

Attach a prefilled 10mL NSS flush and slowly aspirate to assess blood return. If you are unable to obtain blood return, you need to stop at this step and call the provider for next steps. If blood return is present, flush the patient's line with one 10mL NSS flush. Flush using the push-pause technique.

Scrub the hub again for 30 seconds and allow to air dry for 60 seconds.

Flush with a second 10mL NSS flush. S

Scrub the hub again for 30 seconds and allow to air dry for 60 seconds.

Administer a pre-filled Heparin syringe per physician order.

Clamp the Huber Needle extension tubing.

Carefully remove the port dressing.

De-access the line by stabilizing the port using thumb and forefinger of the nondominant hand, holding the safety down securely, and grasping the needle with the dominant hand. Pull the needle up at a 90 degree angle from the port site. Ensure that the safety mechanism is fully engaged to prevent an accidental needle stick.

Place the needle in the sharps container/bin provided by Chartwell.

Place a band-aid or tape & gauze over venous access site

# Chemotherapy and Hazardous Drug Considerations



## Chemo PPE:

- Double gloves
- Protective gown
- Eye protection
- Mat to protect work area from drip

Closed system drug transfer device and drug administration sets should be attached and primed prior to administration.

Dispose of in proper container (not household garbage).

Chemo spill kit in home to safely clean spills.

- Fabrics washed twice separately in warm water.

Chemo precaution for body fluids for 48 hours after chemotherapy dose.

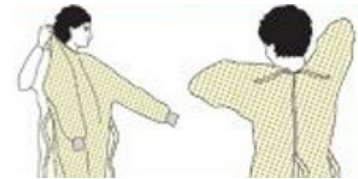


# Proper Sequence for Donning of Personal Protective Equipment

Insert hands into gloves. Ensure that inner gloves are under the gown cuff.



Chemotherapy Gowns close in the back with no open front, have long sleeves with tight-fitting elastic or knit cuffs to fit over gloves, and fasten at the neck and waist.



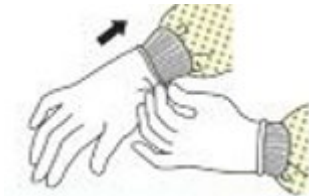
Don mask. Fit snug to face.



Don eye and face protection.

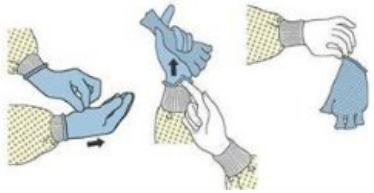


Insert hands into outer gloves and ensure that the gloves cover the gown cuff.



# Proper Sequence for Doffing of Personal Protective Equipment

Removal of PPE must be done cautiously to avoid transferring contamination to skin, the environment, or other surfaces that may be touched with uncovered skin.



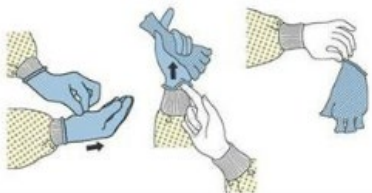
Gloves should be removed one at a time with the contaminated glove fingers touching only the outer surface of the other glove, never the inner surface. The first glove should be removed and then turned inside out. Place the fingers underneath the wrist of the second outer glove and roll the glove down, turning it carefully inside out to avoid touching the outside.



Remove the gown, using care to avoid transfer of contamination to clothes and skin. They should then turn the gown inside out, fold it tightly, and discard.



Other PPE (goggles, facemask, shoe coverings) should then be carefully removed, from least contaminated to most contaminated.



The inner gloves should be removed last and discarded in the HD disposal container. Hands should be washed with soap and water.

# Chemo Takedown Safety

Protect yourself.

Protect the environment

Dispose of in the biohazard bin provided.

- **Wrap the chemo container and tubing in the mat.**
- **Wrap the external gloves around the mat.**
- **Wrap your gown around the gloves.**
- **Wrap your inner pair of gloves around last.**
- **Place in puncture resistant chemo bin provided.**
  - **Chemo spill kit can be used in the event the bin is full or not available.**

# POST INFUSION PRECAUTIONS

Handle patient body fluids safely for 3-7 days (drug specific) after receiving a hazardous drug and instruct the patient/caregiver in safe handling.

1. Close toilet lid or cover with a plastic-backed pad and flush twice after use, especially with toilets that have low volume for flushing.
2. Wear 2 pairs of powder-free, chemotherapy-tested gloves and a gown shown to resist permeability when handling patient emesis or excretions. Wear a face shield if splashing is anticipated.
3. Use disposable linens and leakproof pads to contain contaminated body fluids if possible. Washable linens should be placed in a leakproof bag and handled as contaminated.
4. In the home setting:
  - a. Place contaminated linens and clothing in a washable pillowcase separate from other items and machine wash twice with regular detergent.
  - b. Discard disposable diapers in plastic bags and discard used gloves in hazardous waste containers.





# MEASURES FOR EXPOSURE



2 pairs of nitrile gloves  
Gown  
Shoe covers  
Goggles

Mask  
Solidifier  
Scoop and scraper  
Yellow bag

1. Immediately following skin exposure, remove contaminated clothing and wash skin with soap and water.
2. For eye exposure, flush the eye with saline or water for at least 15 minutes and obtain emergency treatment.
3. For inhalation, move away from the area and obtain emergency treatment if symptoms are severe.
4. Report employee exposure to the organization's occupational health and safety department. Follow organizational policy for reporting patient exposure to hazardous drugs.
5. Chemotherapy spill kits are for the clean-up and containment of chemotherapy spills.
6. Chemotherapy spill kits are for the clean-up and containment of chemotherapy spills. It helps to solidify and contain hazardous chemical spills for disposal for minimal exposure.

# HAZARDOUS DRUG SPILL PROCEDURE

A hazardous drug spill requires immediate attention.  
Follow the procedures listed below to effectively contain a hazardous drug spill.

- 1 Evacuate patients and personnel from the spill area.
- 2 Display "Hazardous Drug Spill" sign
- 3 Apply two gloves to each hand. Put on protective gown, shoe covers, and respirator mask. Refer to the spilled item's Material Safety Data Sheet for additional personal protective equipment recommendations.
- 4 Without touching the spill, place the absorbent pad, writing side down, over the spill area. Use a second pad if necessary.
- 5 Once the liquid has absorbed, carefully place the absorbent pads into the biohazard bag.
- 6 Sweep any broken glass using the scooper/scrapper. Dispose of glass and scooper/scrapper in biohazard bag.
- 7 Clean the spill area using the provided cloth towels and a detergent. Rinse twice with clean water. Dispose of cloth towels in biohazard bag.
- 8 Grabbing the cuff of each of the outer gloves, turn them each inside out and place in the biohazard bag. Keep one glove on each hand.
- 9 Remove gown, shoe covers and respirator mask and place in the biohazard bag.
- 10 Seal the biohazard bag using the twist tie and place it inside of the second biohazard bag.
- 11 Grabbing the cuff of each of the gloves, turn them each inside out and place in second biohazard bag.
- 12 Seal the biohazard bag using the twist tie and dispose of properly.
- 13 Wash hands with hot, soapy water.

# CHEMO SPILL

1. Contain, deactivate, and decontaminate the surface, followed by cleaning the spill using appropriate PPE.
2. Large spills should be handled by health care workers who are trained in hazardous waste handling.
3. After any exposure to hazardous drugs, perform thorough hand washing with soap and water, as alcoholic hand gel is not sufficient to remove the drug from skin.
4. Spill kits should be easily accessible for anyone transporting hazardous drugs.
5. Report such spills as an occurrence according to organizational procedures.

# DISPOSAL OF HAZARDOUS WASTE



- Ensure all containers of hazardous drugs are labeled or marked with the drug identity and the appropriate hazard warning.
- In the home setting, dispose of all hazardous waste in a separate container labeled for this purpose. Place this container in an area away from pregnant women, children, and pets.
- Place contaminated materials, including solution containers, administration sets, gloves, and gowns into hazardous waste container.
- Do not place hazardous drug waste in containers used for other types of medical waste because medical waste disposal is handled differently from hazardous waste.



# Sharps/Chemotherapy Container Use



Keep original packaging/box – it has a USPS prepaid label for return for disposal

Only fill to FULL Line (about  $\frac{3}{4}$  full)

Never place fingers/hands in the sharps/chemo container

When disposing of more than a few mL of hazardous product, ensure an absorbent material/pad is adequate to absorb spilled product in the bin during shipping. If not, add absorbent pad from chemo spill kit and request a new chemo spill kit. If large volume is being wasted, contact pharmacy to pick up disposed product.

## CarepathRx Contacts:

[nursingsupport@homeinfusion.com](mailto:nursingsupport@homeinfusion.com)

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National Director, Nursing  
Cell: 412-295-7849

### Product Label Pharmacy Contact Information:

**CarepathRx Pharmacy**  
2700 Sesame Street, Springfield, FL 22022  
(412) 920-7500      Toll Free 800-755-4704

# Thank you for participating!

Please reach out with questions or for information on additional training opportunities.