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Specialty Pharmacy & Infusion Solutions

Tufts Medicine

Care at Home

Traditional Home Infusion & Enteral

Training Goals

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

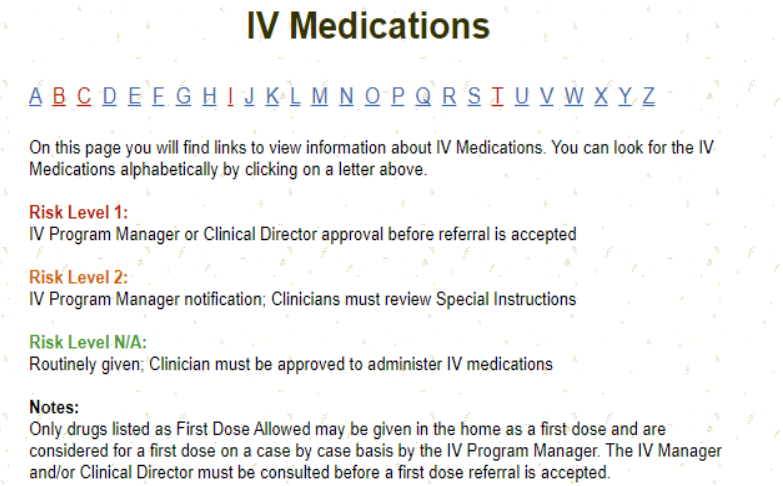
- Apply knowledge of home infusion & enteral therapies to daily nursing practice.
- Evaluate appropriate NurseLink resources for home infusion patients to promote effective learning to safely administer home infusion therapy.
- Apply NurseLink policies and procedures to daily nursing practice for home infusion and home enteral patients.
- Apply best practice in all modes of administration when teaching and caring for home infusion patients.
- Apply best practice techniques while performing vascular-access dressing changes and lab draws.
- Analyze and synthesize home infusion orders, product labels, and resources for application in the clinical setting.
- Identify opportunities to prevent medication errors and patient adverse events.

Home Infusion Therapy (HIT) defined by CMS

Home infusion therapy involves the intravenous or subcutaneous administration of drugs or biologicals to an individual at home. The components needed to perform home infusion include the drug (i.e., antivirals, immune globulin), equipment (i.e., a pump), and supplies (i.e., tubing and catheters). Likewise, nursing services are necessary to train and educate the patient and caregivers on the safe administration of infusion drugs in the home. Nurses play a large role in home infusion. Nurses typically train the patient or caregiver to self-administer the drug, educate on side effects and goals of therapy, and visit periodically to assess the infusion site and provide dressing changes. The home infusion process typically requires coordination among multiple entities, including patients, physicians, hospital discharge planners, health plans, home infusion pharmacies, and, if applicable, home health agencies.

IV Medications FAQs

Password: education



Click on the hyperlink and choose the medication via the alphabetical choice

i.e., StatSeal Disc

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Access to NurseLink

To login, follow the link below and click "*Login to NurseLink*."

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

Password: tufts_NL

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

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Contact Us | CONTACTUS@CAREPATHRXLLC.COM

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Home | Solutions | About | News | NurseLink | Resources | Careers

As your partner in care, CarepathRx is committed to ensuring unmatched clinical expertise for home infusion and enteral nutrition care. NurseLink equips our home health nursing partners with the education, policies, and resources needed to provide expert patient care in the home setting. Once you become a CarepathRx partner, you will have access to dozens of home infusion policies and procedures by therapy type, continuing education and therapy-specific trainings, and more.

If you are a current partner, please log into NurseLink here with your password. If you would like more information on how CarepathRx is revolutionizing pharmacy care, please contact nursingsupport@homeinfusion.com.

LOGIN TO NURSELINK

Click to email Clinical Nursing Team

Click to access NurseLink Resources

Contact Us CONTACTUS@CAREPATHRXLLC.COM

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Home Solutions About News NurseLink Resources Careers

Health System Solutions

ProCure by CarepathRx

Enter Password
Tufts_NL
- then click enter

This content is password protected. To view it please enter your password below:

••••••••••••••

ENTER

This post is password protected. Enter the password to view any comments.

Online Resources

[Nurselink Welcome - CarepathRx (carepathrxllc.com)]

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Home | Solutions | About | News | NurseLink | Resources | Careers

Home » Nurselink

Nurse Link
BY CAREPATHRX

NURSE EDUCATION

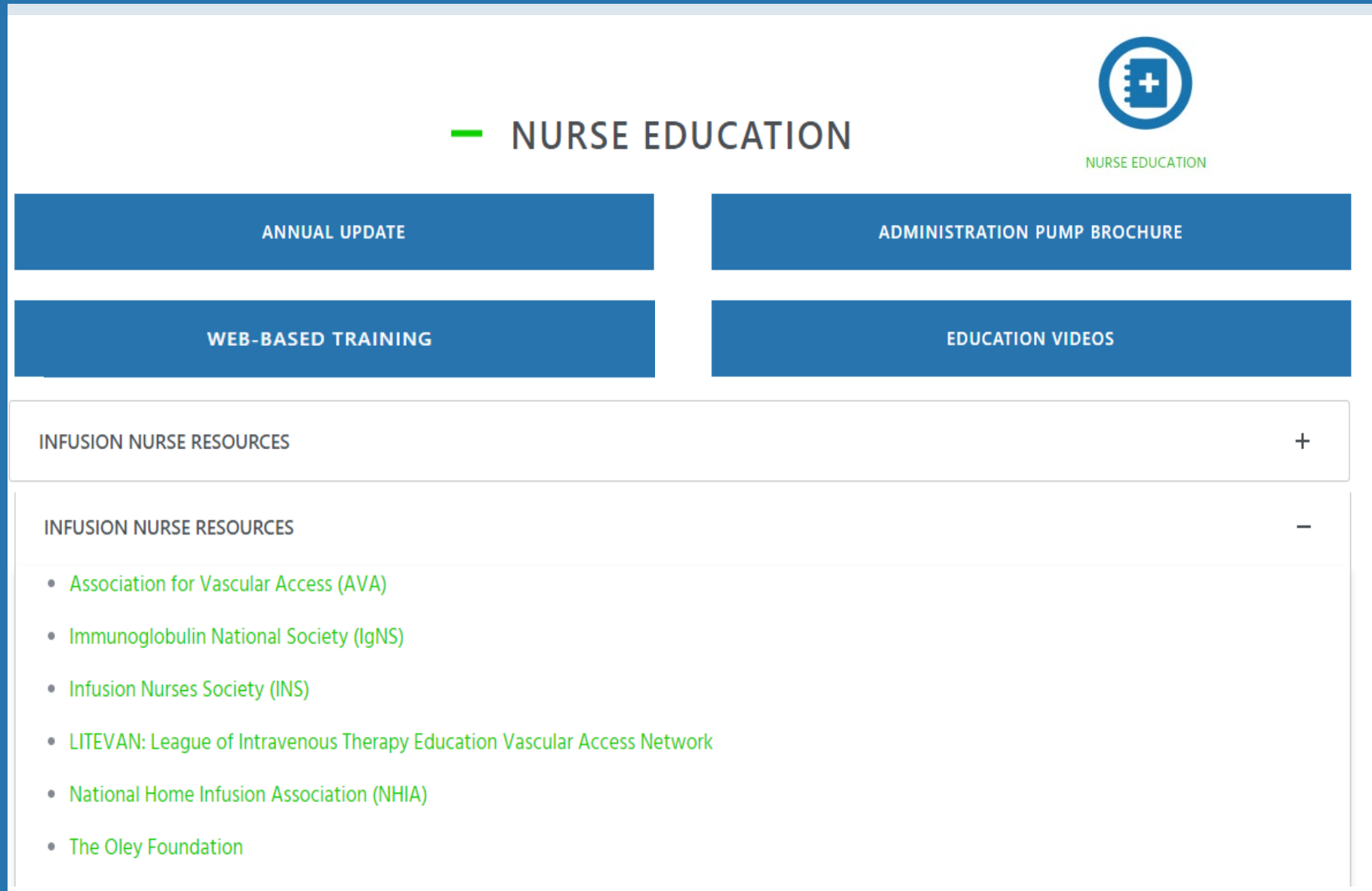
PATIENT EDUCATION

POLICIES & PROCEDURES

NEWS

NurseLink: Nurse Education

- Annual Update: Home Infusion Nursing Manual
- Pump Brochure: Image and explanation of all pumps
- Education Videos: Patient step-by-step videos and simple nurse instructional videos. Enteral, Infusion and Virtual Education Videos (Enteral Therapy, Specialty Biologics, HIT Basics and TPN)
- Web-Based Training: Virtual training sessions
- Infusion Nurse Resources: List of links to Home Infusion organizations



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Nurse Link
BY CAREPATHRX

TRAINING REGISTRATION

CarepathRx is currently scheduling virtual, in-person or hybrid annual competencies for 2022. We also offer therapy-specific training sessions, new home infusion nurse training, and much more. Browse the sessions below and register to attend a virtual Zoom Session via the links.

Contact CarepathRx's Christie Fisher, National Director, Nursing at christina.fisher@carepathrxllc.com to schedule an in-person session at your office or agency.

CONTACT US

HIT Basics for Non-Nurses – 60 Mins.

Attendees: Pharmacists, pharmacy support staff, interns, reimbursement, intake, billing, nurse schedulers, etc.

Description: Providing an overview of Home Infusion Therapy (HIT) and Enteral Therapy, types of IV lines, supply needs, and modes of administration for both enteral and HIT.

OCTOBER 13 - 12:30 PM >

NOVEMBER 10 - 12:30 PM >

DECEMBER 8 - 12:30 PM >

Click selected training date/time to access Zoom Registration page

Specialty Biological Infusions (RNs) – 60 Mins.

Attendees: Nurses and nurse schedulers

OCTOBER 27 - 2 PM >

NOVEMBER 17 - 1:30 PM >

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Website Videos

Enteral Teaching Videos | Infusion Teaching Videos

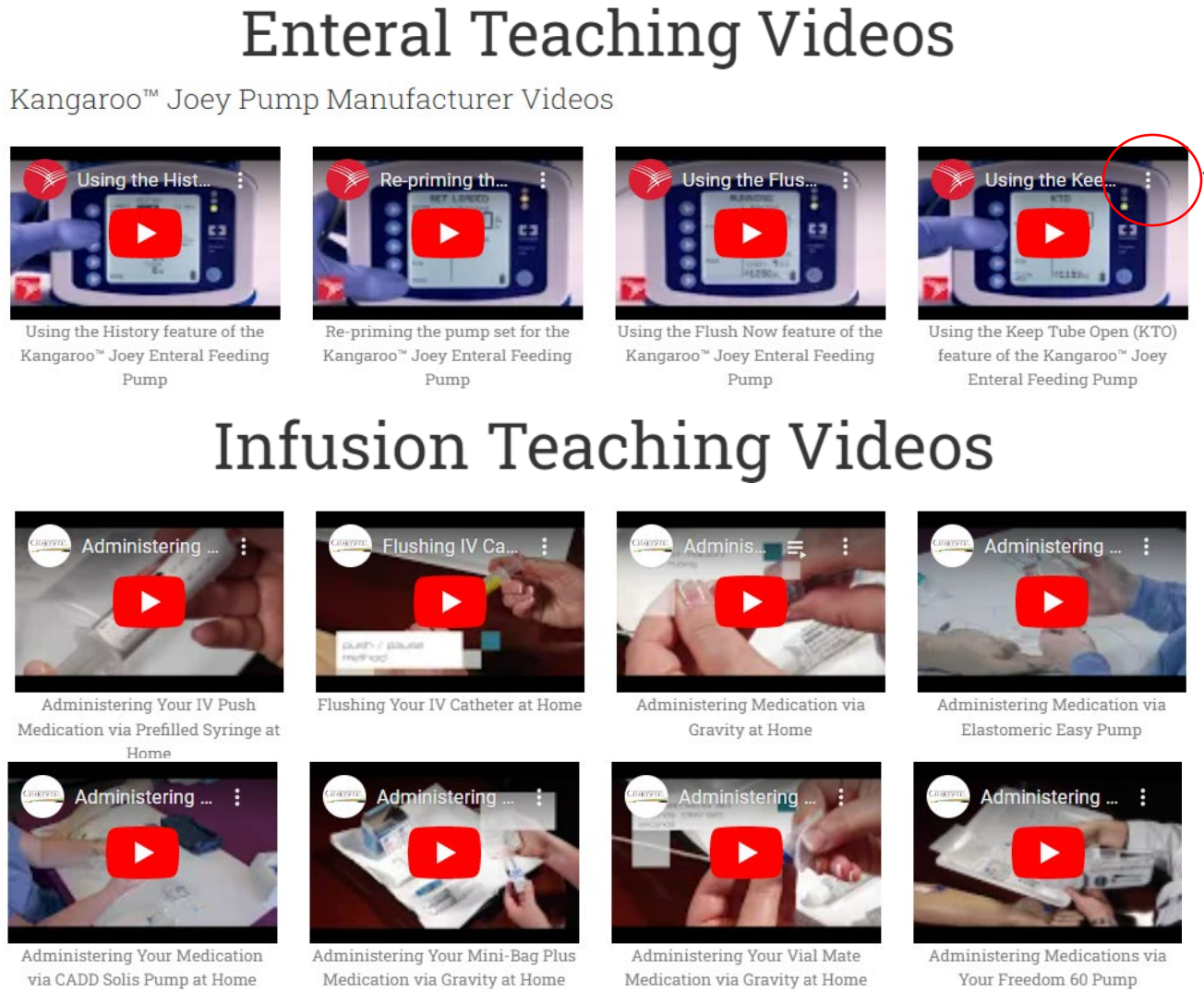
Manufacture Videos:

- Kangaroo Joey Pump
- Infinity Pump

Carepathrx Videos:

- Gravity Feed
- Bolus Feed
- Solis Pump
- Sapphire Pump
- Freedom 60 Pump
- Elastomeric
- IV Push
- Flushing Your IV Catheter
- TPN Administration
- Gravity Administration
- Mini-Bag Plus by gravity
- Vial Mate by gravity

"Flushing your IV Catheter at Home"



Click to share video or copy link

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Nurse Link
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PATIENT EDUCATION

PATIENT EDUCATION

NurseLink aims to not only provide agency education and training, but also to help further caregiver and patient education throughout their time on service with you. We know that the more comfortable your patients are with their therapy and administration, the better the therapy outcome.

INFUSION VIDEOS

INFUSION TEACHING GUIDES

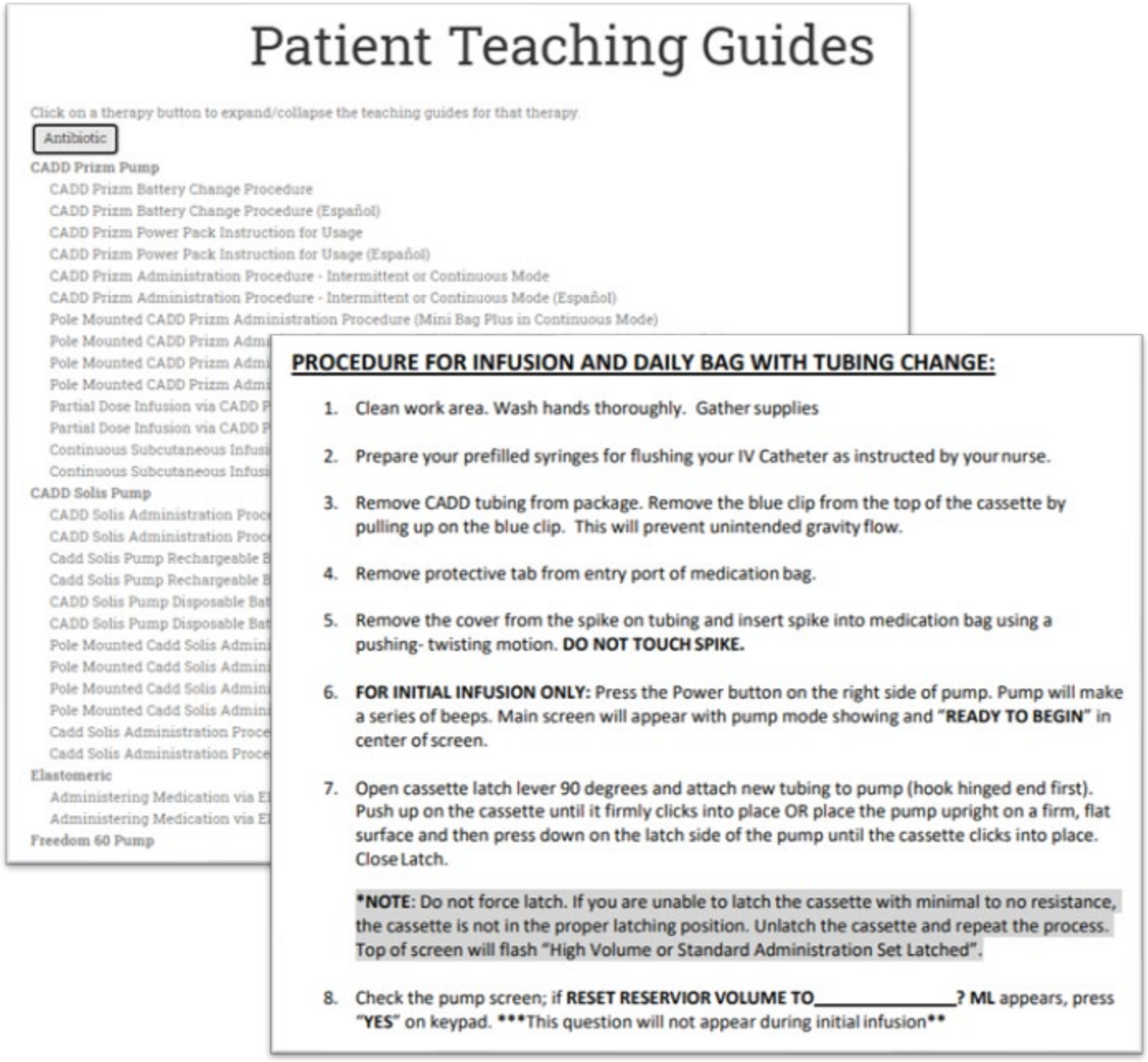
ENTERAL VIDEOS

ENTERAL TEACHING GUIDES

PHARMACIST FAQs +

NURSE FAQs +

EMERGENCY MEDICATIONS +



Patient Teaching Guides

Click on a therapy button to expand/collapse the teaching guides for that therapy.

Antibiotic

CADD Prizm Pump

- CADD Prizm Battery Change Procedure
- CADD Prizm Battery Change Procedure (Español)
- CADD Prizm Power Pack Instruction for Usage
- CADD Prizm Power Pack Instruction for Usage (Español)
- CADD Prizm Administration Procedure - Intermittent or Continuous Mode
- CADD Prizm Administration Procedure - Intermittent or Continuous Mode (Español)
- Pole Mounted CADD Prizm Administration Procedure (Mini Bag Plus in Continuous Mode)
- Pole Mounted CADD Prizm Admi
- Pole Mounted CADD Prizm Admi
- Pole Mounted CADD Prizm Admi
- Partial Dose Infusion via CADD P
- Partial Dose Infusion via CADD P
- Continuous Subcutaneous Infusi
- Continuous Subcutaneous Infusi

CADD Solis Pump

- CADD Solis Administration Proc
- CADD Solis Administration Proc
- Cadd Solis Pump Rechargeable B
- Cadd Solis Pump Rechargeable B
- CADD Solis Pump Disposable Bat
- CADD Solis Pump Disposable Bat
- Pole Mounted Cadd Solis Admini
- Pole Mounted Cadd Solis Admini
- Pole Mounted Cadd Solis Admini
- Pole Mounted Cadd Solis Admini
- Cadd Solis Administration Proce
- Cadd Solis Administration Proce

Elastomeric

- Administering Medication via El
- Administering Medication via El

Freedom 60 Pump

PROCEDURE FOR INFUSION AND DAILY BAG WITH TUBING CHANGE:

1. Clean work area. Wash hands thoroughly. Gather supplies
2. Prepare your prefilled syringes for flushing your IV Catheter as instructed by your nurse.
3. Remove CADD tubing from package. Remove the blue clip from the top of the cassette by pulling up on the blue clip. This will prevent unintended gravity flow.
4. Remove protective tab from entry port of medication bag.
5. Remove the cover from the spike on tubing and insert spike into medication bag using a pushing- twisting motion. **DO NOT TOUCH SPIKE.**
6. **FOR INITIAL INFUSION ONLY:** Press the Power button on the right side of pump. Pump will make a series of beeps. Main screen will appear with pump mode showing and "**READY TO BEGIN**" in center of screen.
7. Open cassette latch lever 90 degrees and attach new tubing to pump (hook hinged end first). Push up on the cassette until it firmly clicks into place OR place the pump upright on a firm, flat surface and then press down on the latch side of the pump until the cassette clicks into place. Close Latch.

   ***NOTE**: Do not force latch. If you are unable to latch the cassette with minimal to no resistance, the cassette is not in the proper latching position. Unlatch the cassette and repeat the process. Top of screen will flash "High Volume or Standard Administration Set Latched".

8. Check the pump screen; if **RESET RESERVIOR VOLUME TO_____? ML** appears, press "**YES**" on keypad. ***This question will not appear during initial infusion**

Patient Step-by-Step Teaching Guides

- Delivered to patient with 1st delivery.
- Detailed instruction on how to administer home IV and enteral therapies.
- Can be found on NurseLink on the CarepathRx website.

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POLICIES & PROCEDURES

Nurse Link
BY CAREPATHRX

POLICIES AND PROCEDURES

CarepathRx policies and procedures provide our nursing partners with the strategy and guidelines needed to establish safe and effective infusion therapy in the home setting.

- A. GENERAL +
- B. CATHETERS +
- C. OTHER ADMINISTRATION ROUTES +
- D. THERAPIES +

Nurse Link
BY CAREPATHRX

POLICIES AND PROCEDURES

CarepathRx policies and procedures provide our nursing partners with the strategy and guidelines needed to establish safe and effective infusion therapy in the home setting.

A. GENERAL

- Flushing Catheters NUR-001
- Intravenous Therapy Principles NUR-002
- IV Lines and Care; Quick Reference NUR-003
- Blood Culture Collection NUR-004
- Drug Level Drawing Times NUR-005
- Lab Draw Protocol NUR-006
- Antimicrobial Lock Therapy Central Venous Access Device NUR-010
- Management of Allergic/Anaphylactic Reactions NUR-012
- IV Push Medication via Syringe NUR-013
- Withdrawing Medication from a Vial NUR-014
- Administration of Cathflo Activase in Adult Patient NUR-015
- Infiltration and Phlebitis NUR-121
- Vesicants, Chemotherapeutic Agency and Vascular Access Recommendations NUR-208

Click policy number to view

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NEWS

NEWS

CarepathRx Announces Home Infusion Partnership with Yale New Haven Health

October 12, 2022 News

CarepathRx to provide comprehensive home infusion services to the Yale New Haven Health System patient population across five hospitals...

Read More

CarepathRx and Orlando Health Announce Home Infusion Collaboration

September 12, 2022 News

CarepathRx and Orlando Health recently announced a multi-year home infusion management service agreement to benefit patients across the systems' ten hospitals...

Read More

CarepathRx Chief Human Resources Officer Leah Silver named 2022 Front of the Front Line Award Finalist

September 8, 2022 News

This prestigious honor from HRO Today recognizes excellence within healthcare HR leadership...

Read More

BioPlus Introduces the BioPlus V: Virtual Pharmacy Tool

August 22, 2022 News

BioPlus V is the only virtual pharmacy tool that provides comprehensive visibility for prescribers into every step of their patients' specialty medication journey...

Read More

CarepathRx and Antelope Valley Medical Center Announce Inclusive Home Infusion Partnership

August 16, 2022 News

Antelope Valley Medical Center is the only full-service, acute-care hospital serving northern Los Angeles County...

Read More

Delivering Fast and Easy Access to More Generic Oncology Medications

July 13, 2022 News

BioPlus Specialty Pharmacy today announced the expansion of its "Hope Delivered in 24 Hours" program for oncology meds...

Read More

Home Infusion Contacts

Tufts Medicine
Home Infusion Services

Phone

781-306-6700

800-464-3908

Fax

781-306-6705

Backline

781-306-6707

CarepathRX
Nursing Support

nursingsupport@homeinfusion.com

Christie Fisher – call/text

412-295-7849

(text preferred)

Joelle Hall, PharmD, MS
Tufts Medicine
System Director – Infusion Services
Joelle.Hall@tuftsmedicine.org

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Therapy Education

- Remind patients pumps must be returned to the pharmacy when therapy is completed.
  - Pumps are not disposable
- Supply reordering
  - Patient must speak to the pharmacy to schedule delivery.
- Will need for re-deliveries:
  - List of supplies, medications and formula needed.
  - Complete inventory of supplies, medications and formula in the home.
  - Patient's response to therapy.
  - Script for order changes & when next doctor appointment is.

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Patient Education

Procedure for medication administration, to incorporate:

- Infection Control
- Standard Precautions for Caregivers
- Aseptic Non-Touch Technique (ANTT)
- Hand Hygiene

Risks, benefits, side effects and goals of treatment

Activity precautions

Proper care of access

Routine site inspection for redness, swelling or pain

Educational material provided for the dispensed medication(s)

Setup, features, routine use, cleaning and troubleshooting infusion pump and supplies

Signs and symptoms of a reaction, including those that may occur post treatment

Signs and symptoms of access device complications

Adverse effects of treatment

Safe storage of medication (appropriate conditions of light and temperature) and supplies

Disposal of medications, supplies and equipment

How to contact the appropriate personnel during business hours, the availability of an answering system to receive calls during evenings, nights, weekends and holidays, and accessibility of a Registered Pharmacist 24 hours a day, 7 days a week

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SOC Visit Responsibilities

Review the **Patient Welcome Guide**

- Patient Specific Documents:
  - Pharmacy Plan of Treatment (orders, also on product label)
  - Patient Teaching Guide (step-by-step administration instructions)
  - Drug information sheets.

Educate patient and caregiver on therapy administration and troubleshooting.

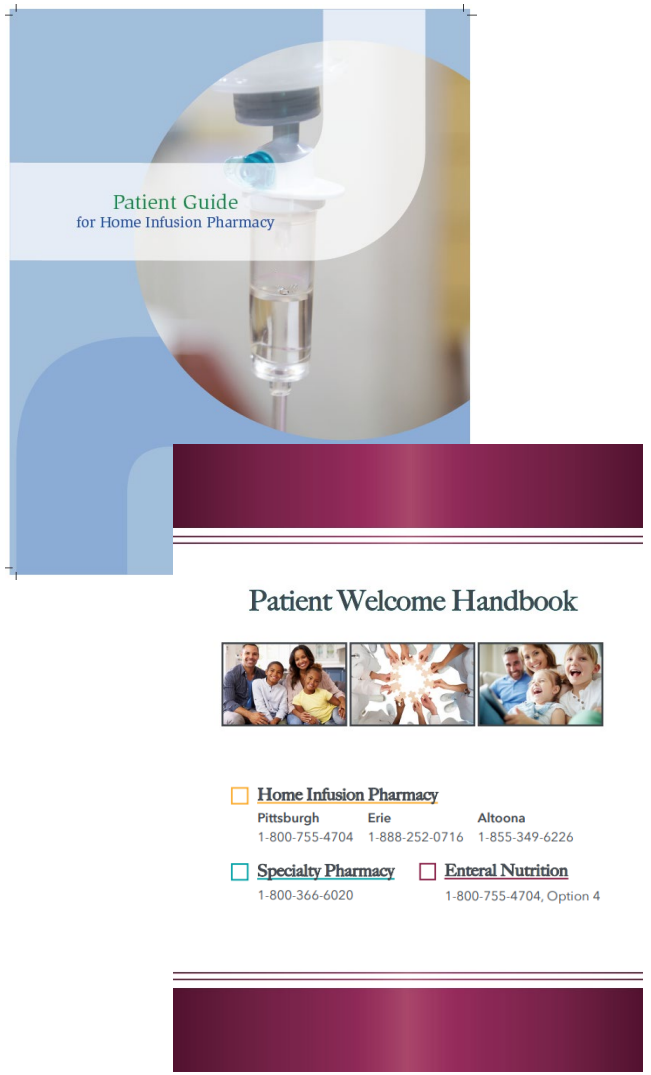
- Supplies, mediation usage and storage.
- Use patient teaching guide and video resources

Remind patients pumps must be returned to the pharmacy when therapy is completed.

- Not disposable

The pharmacy must speak to the patient before to each delivery to assess the patient and for medication and supply ordering.

- Complete inventory of drugs and supplies
- Delivery needs
- Response to therapy
- Answer patient questions



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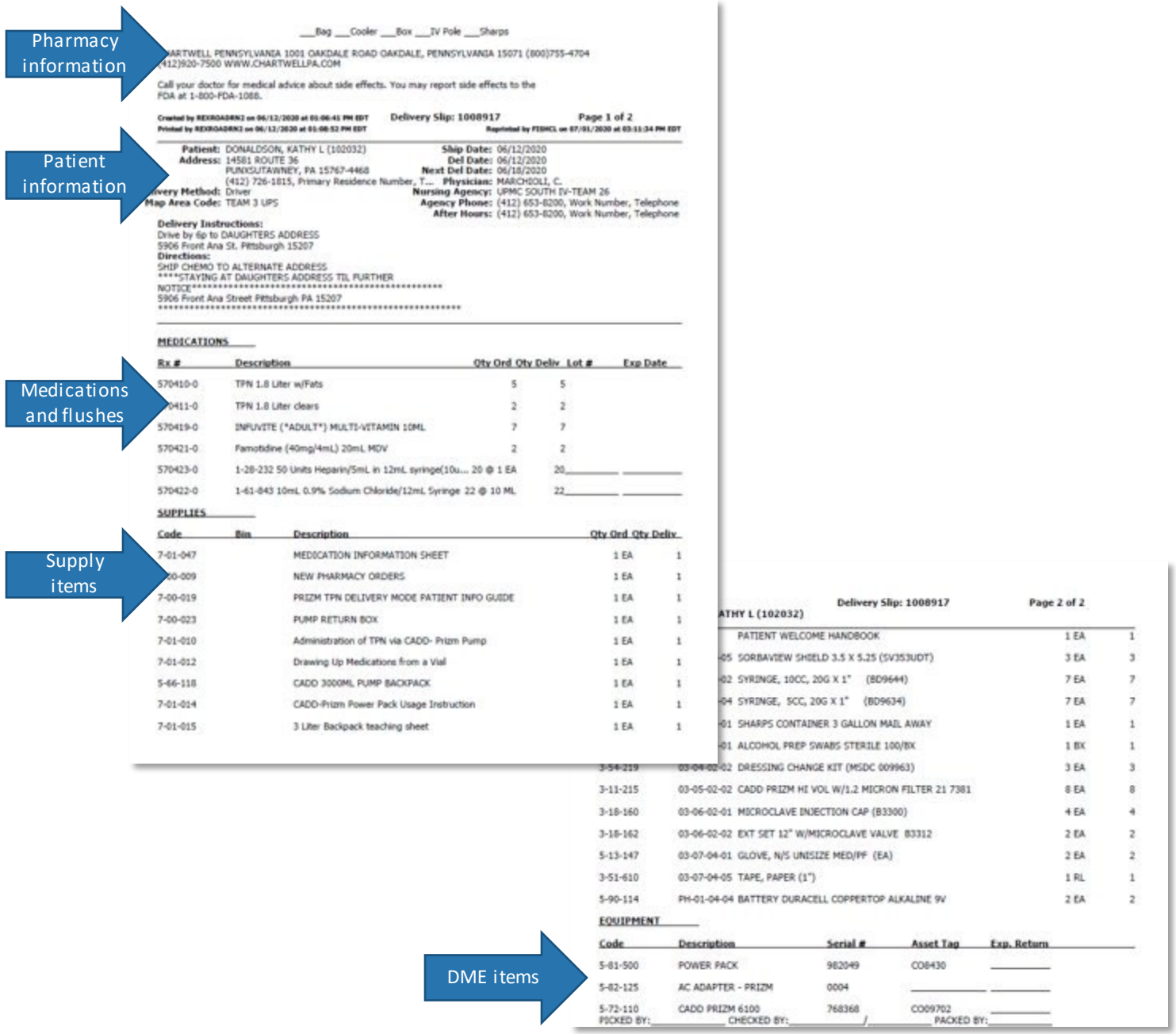

Delivery Slip

- Review to make sure all items have been delivered
- Use to communicate to patient which supplies require reordering during pre-delivery phone call with the pharmacy.

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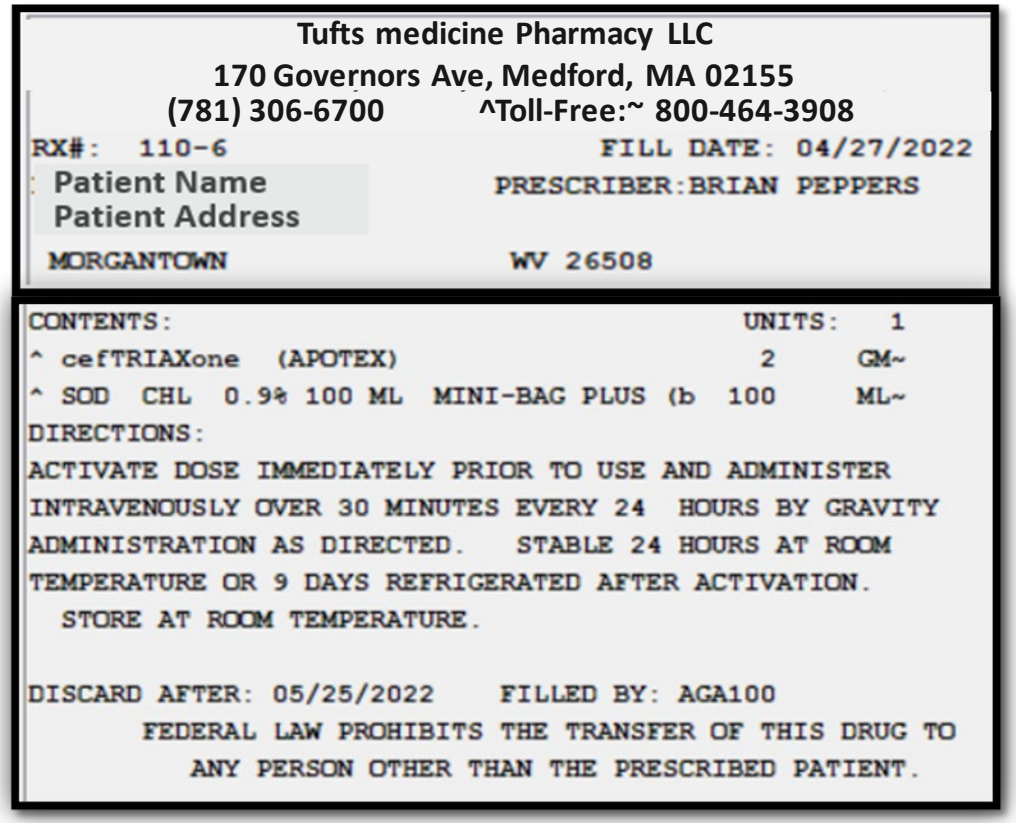
Product Label

Product label to be reviewed with each dose or bag change.

Pump settings to be reviewed on the pump with each dose or bag change.

Product label components to review:

- Patient name
- Medication name and dose in bag or cassette
- Diluent name and volume
- Administration instructions / Pump parameters
- How often to change bag if continuous
- Storage instructions
- Instructions for removal from refrigerator prior to infusion
- Expiration date



Tufts medicine Pharmacy LLC
170 Governors Ave, Medford, MA 02155
(781) 306-6700 ^Toll-Free:~ 800-464-3908

RX#: 110-6 FILL DATE: 04/27/2022
Patient Name PRESCRIBER:BRIAN PEPPERS
Patient Address
MORGANTOWN WV 26508

CONTENTS: UNITS: 1
^ cefTRIAXone (APOTEX) 2 GM~
^ SOD CHL 0.9% 100 ML MINI-BAG PLUS (b 100 ML~
DIRECTIONS:
ACTIVATE DOSE IMMEDIATELY PRIOR TO USE AND ADMINISTER INTRAVENOUSLY OVER 30 MINUTES EVERY 24 HOURS BY GRAVITY ADMINISTRATION AS DIRECTED. STABLE 24 HOURS AT ROOM TEMPERATURE OR 9 DAYS REFRIGERATED AFTER ACTIVATION.
STORE AT ROOM TEMPERATURE.

DISCARD AFTER: 05/25/2022 FILLED BY: AGA100
FEDERAL LAW PROHIBITS THE TRANSFER OF THIS DRUG TO ANY PERSON OTHER THAN THE PRESCRIBED PATIENT.

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PATIENT EDUCATION

CADD Solis Administration Procedure (Intermittent or Continuous Mode)

Properly administering your medication at home is important to your safety. In the event of an emergency, call 911.

SUPPLIES:

- Medication bag or cassette
- CADD tubing **(change M-W-F for continuous Infusions, or daily if intermittent)**
- CADD Solis pump w/ rechargeable battery & AC adapter
- 4- AA batteries for emergency backup
- (2) Sodium chloride (Saline) prefilled syringes
- (1) Heparin prefilled syringe (if indicated)
- Alcohol or antiseptic wipes
- 4-AA batteries for emergency backup
- (1) light blue sterile cap

SASH FLUSH PROCEDURE:

S Saline ___ ml
A Administer medication as instructed by your nurse
S Saline ___ ml
H Heparin ___ ml (if required)

PROCEDURE FOR INFUSION AND DAILY BAG WITH TUBING CHANGE:

1. Gather supplies. Clean work area. Wash hands thoroughly for at least 20 seconds.
2. Check medication label for name, drug, frequency, and expiration. Inspect the medication syringe for any cracks, leaks, particulate matter, and clarity of medication. Contact us for any discrepancies or concerns.
3. Prepare your prefilled syringes for flushing your IV Catheter as instructed by your nurse.
4. Remove CADD tubing from package. Remove the blue clip from the top of the cassette by pulling up on the blue clip. This will prevent unintended gravity flow.
5. Remove protective tab from entry port of medication bag.
6. Remove cover from spike on CADD tubing and insert spike into medication bag using a pushing-twisting motion. **DO NOT TOUCH SPIKE.**
7. Press the Power button on the right side of pump. Pump will make a series of beeps. Main screen will appear with pump mode showing and "**READY TO BEGIN**" in center of screen.

Patient Teaching Guides

Teaching Guides and Videos are located on the CarepathRX NurseLink site.

Step by step instruction on how to administer medications.

- Resources
- Supplies
- Set up
- Administration
- Clean up

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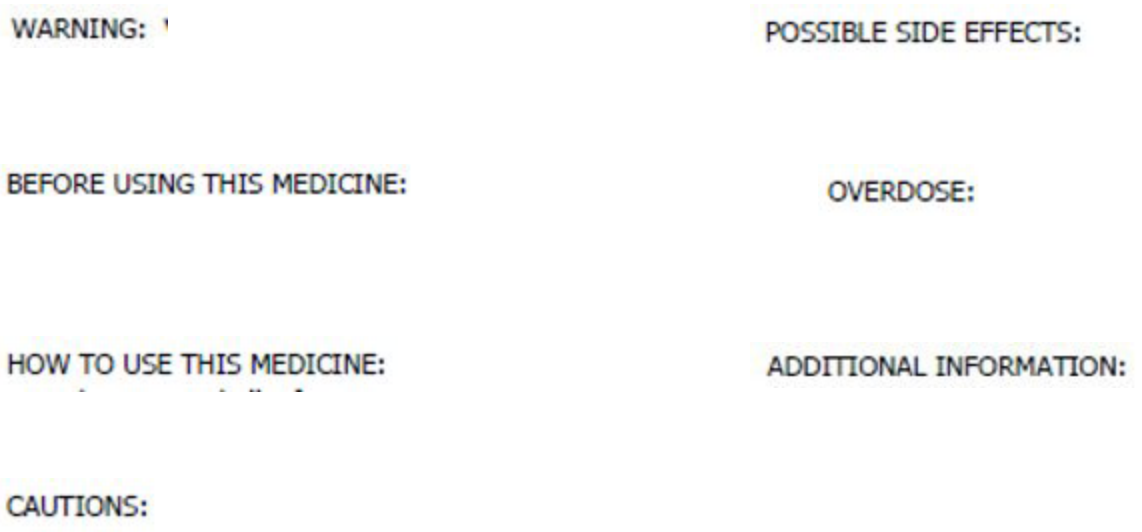
Drug Information Sheets

- Delivered to the patient at State of Care (SOC)
- Review medication and side effects with patient/caregiver



Patient: NAME

PATIENT EDUCATION MONOGRAPH

Ganciclovir Sodium

Date: Friday, November 6, 2020
Physician: KILARU, SILPA (103385)
Rx: 587708
GENERIC NAME: Ganciclovir (Systemic) (gan SYE kloe veer)

WARNING: Very bad and sometimes life-threatening blood and bone marrow problems like anemia, low platelet counts, or low white blood cell counts have happened with this drug. Change in dose or even stopping the drug may be needed if any of these side effects happen. Talk with the doctor. This drug has caused fertility problems in animals and some humans. Fertility problems may lead to not being able get pregnant or father a child. This may go back to normal but sometimes it may not. If you have questions, talk with the doctor. In animals, this drug has caused harm to unborn babies and cancer. This drug may have the same effects in humans. If you have questions, talk with the doctor. COMMON USES: It is used to treat a viral infection of the eyes in people with immune system problems. It is used to prevent cytomegalovirus (CMV) disease after organ transplant. It may be given to you for other reasons. Talk with the doctor.

BEFORE USING THIS MEDICINE: WHAT DO I NEED TO TELL MY DOCTOR BEFORE I TAKE THIS DRUG? TELL YOUR DOCTOR: If you are allergic to this drug; any part of this drug; or any other drugs, foods, or substances. Tell your doctor about the allergy and what signs you had. TELL YOUR DOCTOR: If you have any of these health problems: Low white blood cell count, low platelet count, or low red blood cell count. TELL YOUR DOCTOR: If you are taking imipenem-cilastatin. TELL YOUR DOCTOR: If you are breast-feeding. Do not breast-feed while you take this drug. This is not a list of all drugs or health problems that interact with this drug. Tell your doctor and pharmacist about all of your drugs (prescription or OTC, natural products, vitamins) and health problems. You must check to make sure that it is safe for you to take this drug with all of your drugs and health problems. Do not start, stop, or change the dose of any drug without checking with your doctor.

HOW TO USE THIS MEDICINE: HOW IS THIS DRUG BEST TAKEN? Use this drug as ordered by your doctor. Read all information given to you. Follow all instructions closely. It is given as an infusion into a vein over a period of time. Drink lots of noncaffeine liquids unless told to drink less liquid by your doctor. HOW DO I STORE AND/OR THROW OUT THIS DRUG? If you need to store this drug at home, talk with your doctor, nurse, or pharmacist about how to store it. WHAT DO I

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Medication Temperature for Infusion

Solutions should be at room temperature for infusion.

- Most medication to be removed from the refrigerator 2-4 hours prior to their infusion.
- Elastomeric Device (Easy Pumps) must be removed from the refrigerator 6-12 hours prior to infusion.

Instruct to NOT artificially warm the bag or syringe.

- ∅ Do NOT microwave
- ∅ Do NOT bath in warm water
- ∅ Do NOT heat in any way

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Tufts Medicine Home Infusion Services 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

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

800-464-3908

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Adult Line Care Standing Orders

Peripheral Line Care	
Catheter change every 72 hours and PRN for s/sx of complications or malfunction.	Flush with 5-10ml Saline before and after each medication administration and PRN to ensure patency.
PICC / Midline Care	
Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush each lumen with 5-10ml Saline before and after each medication administration and PRN to ensure patency and follow with 5ml Heparin 10units/ml flush.
	Flush each lumen with 10-20ml Saline before and after each lab draw and PRN to ensure patency and follow with 5ml Heparin 10units/ml flush.
	Flush unused lumen(s) only with 5ml Heparin 10units/ml daily.
Implanted Venous Access Device Care (Port)	
Huber needle re-access weekly and PRN for s/sx of complications or malfunction. Sterile dressing change with each re-access and PRN for compromised dressing integrity.	Flush with 5-10ml Saline before and after each medication administration and PRN to ensure patency, and follow with 5ml Heparin 100units/ml.
	Flush with 10-20ml Saline before and after each lab draw and PRN to ensure patency and follow with 5ml Heparin 100units/ml flush.
	Cath Care: Re-access and flush with 5-10ml saline followed by 5ml Heparin 100units/ml monthly and prn for venous access.
Central Line Care (tunneled and non-tunneled)	
Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush each lumen with 5-10ml Saline before and after each medication administration and PRN to ensure patency and follow with 5ml Heparin 10units/ml flush.
	Flush each lumen with 10-20ml Saline before and after each lab draw and PRN to ensure patency and follow with 5ml Heparin 10units/ml flush.
	Flush unused lumen(s) only with 5ml Heparin 10units/ml daily.
Valved Catheter Care (Groshong/PASV)	
Sterile dressing changes weekly and PRN for compromised dressing integrity.	Flush each lumen with 5-10ml Saline before and after each medication administration and PRN to ensure patency.
	Flush unused lumen(s) only with 5-10ml Saline weekly and PRN to ensure patency.
	Flush with 10-20ml Saline before and after each lab draw and RPN to ensure patency.
	Flush with 5ml Heparin 10units/ml PRN to for sluggish flushing to ensure patency.

**All specific patient orders will supersede standing orders. z*

Line Care Protocol Example

Protocol Currently Under Review

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Anaphylaxis Protocol Example
Protocol Currently Under Review

FOR SEVERE REACTIONS, DO NOT DELAY ADMINISTRATION OF EPINEPHRINE

MILD	MODERATE	SEVERE
For flushing, dizziness, headache, diaphoresis, nausea, or palpitations: Slow drug administration Assess vital signs including Airway, Breathing, Circulation Administer Diphenhydramine **25-50mg PO** **AND/OR** Acetaminophen **650mg PO** **IF NO RELIEF** Infuse NSS at **500-1000mL/hr** If symptoms resolve, may resume infusion at slowed rate and titrate as tolerated	*For chest discomfort, dyspnea, hives, hypotension/hypertension, erythema, fever, or other pronounced symptoms:* **STOP** drug administration Assess vital signs including Airway, Breathing, Circulation Administer Diphenhydramine **25-50mg** IV push Acetaminophen **650mg PO** **IF NO RELIEF** Methylprednisolone **125mg** IV push Infuse NSS at **500-1000mL/hr** Monitor vital signs until WNL If symptoms resolve, may resume infusion at slowed rate and titrate as tolerated	*For bronchospasm, severe hypotension/hypertension, fever with rigors, angioedema, or other potentially life-threatening symptoms:* **STOP** drug administration **CALL 911** Place in supine position and elevate legs Give epinephrine **0.5mg** IM injection (May repeat every 5 minutes x 3 doses if needed) **NSS IV bolus up to 500mL/hr**

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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.

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VASCULAR & SUBCUTANEOUS ACCESS DEVICES

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Access Devices

Subcutaneous Needles

Peripheral Catheter

Midline Catheter

PICC (Peripherally Inserted Central Catheter)

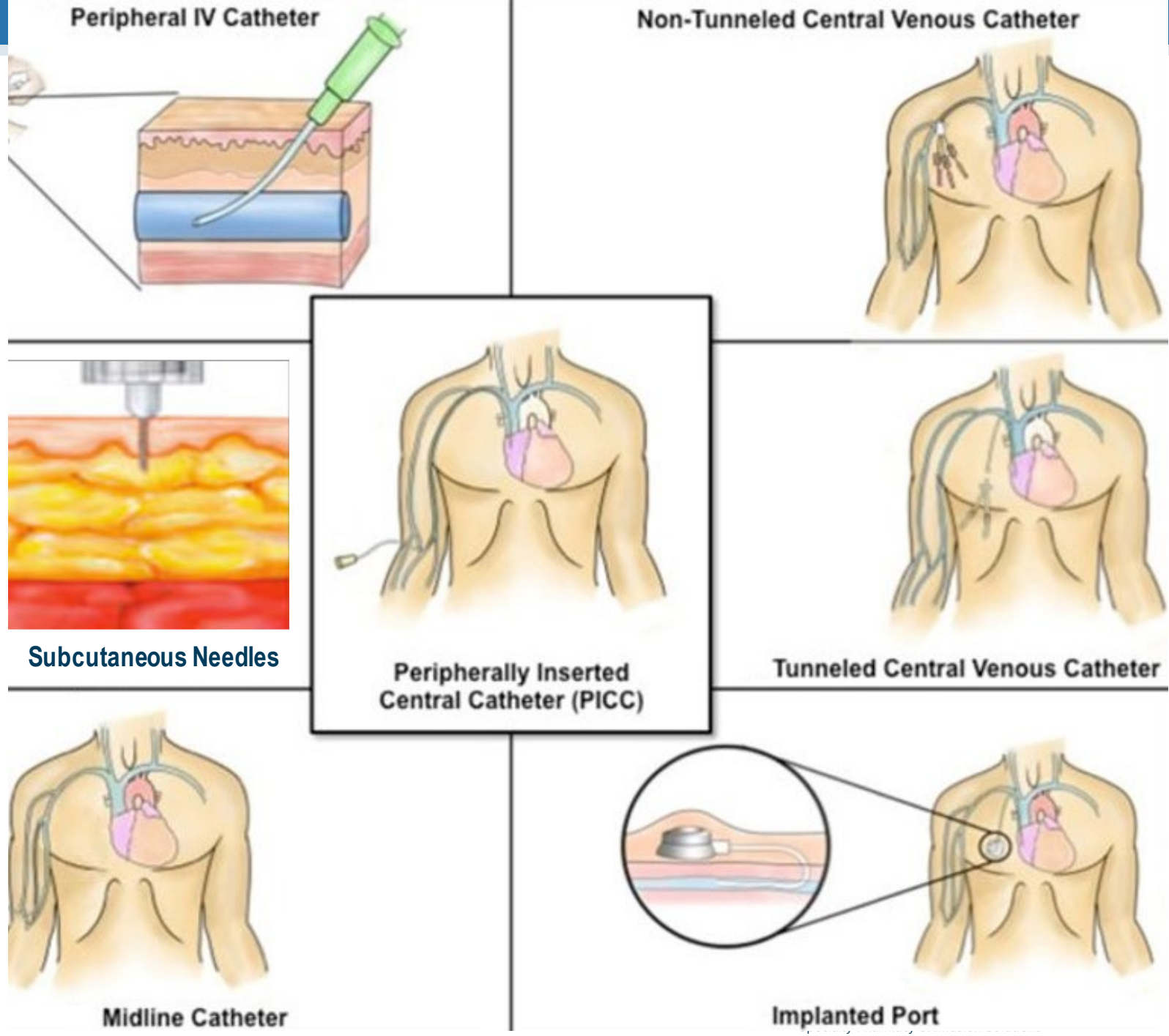
Non-tunneled central Cather

(CVC – Central Venous Catheter)

Tunneled Central Catheter

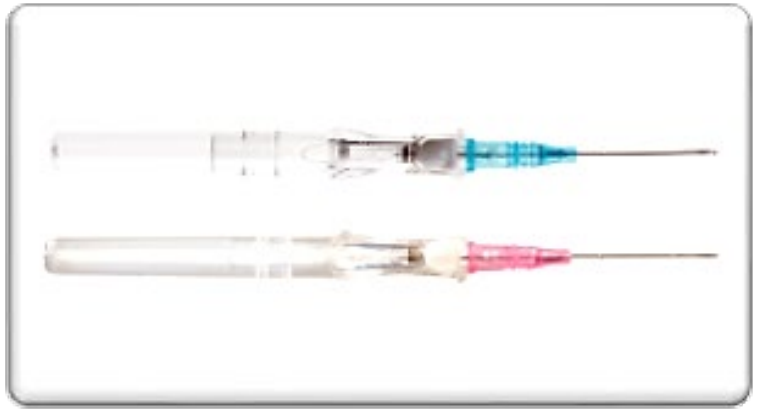
Implanted Ports

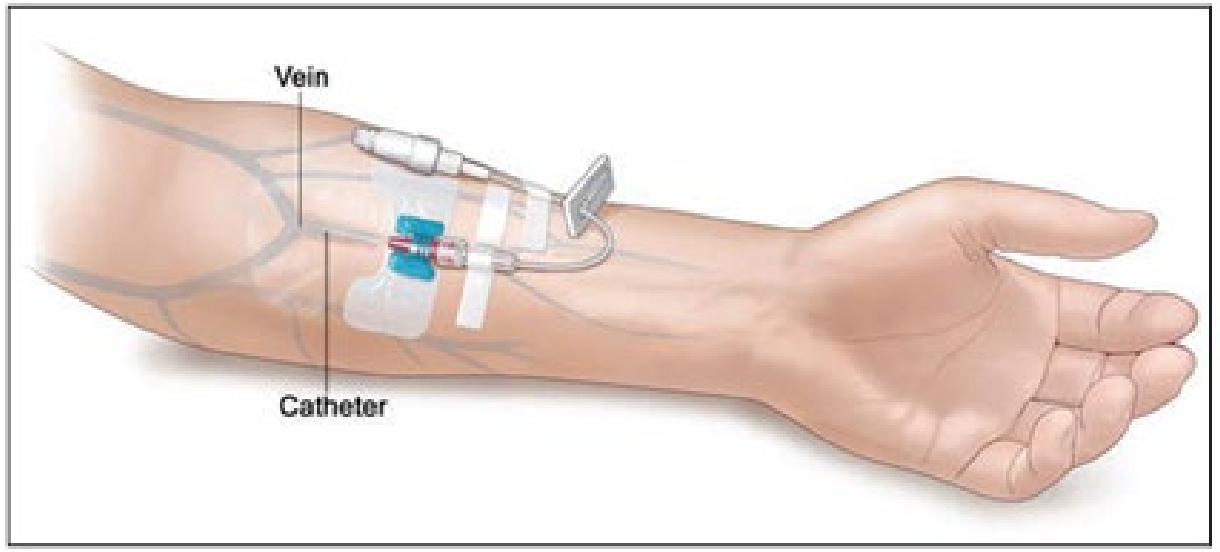
Catheter Lumens



Peripheral Catheters

- Easily inserted into veins of the forearm or hand.
- May be inserted by RN or LPN in the home.
- Used for short term therapy.
- Used to administer fluids, medications and blood products.
- DO NOT use peripheral IV catheters for continuous vesicant therapy or parenteral nutrition.
- Removed/changed when there are unresolved complications or no longer necessary for therapy.
- Safely removed in the home by an RN, LPN and, in some cases, by the patient or caregiver with a medical background who has completed IV training.
- With each visit, document site condition, dressing condition, patency of catheter and ongoing need.





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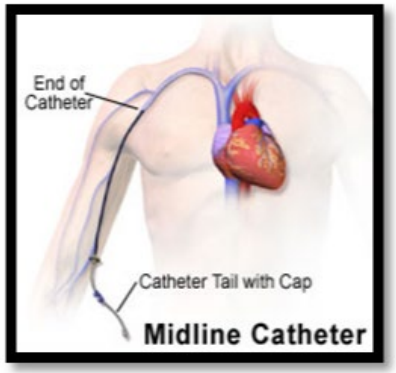
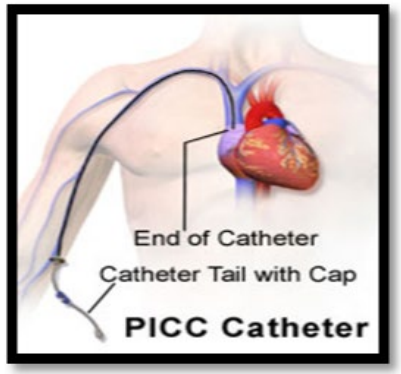
MIDLINE LINE



- Inserted via antecubital fossa into a peripheral vein in the upper arm; basilic, cephalic, or one of the two brachial veins, with the internal tip located level at or near the level of the axilla and distal to the shoulder.
- Typically used for infusion and short-term intravenous therapies.
- Used for medications and solutions such as antimicrobials, fluid replacement, and analgesics with characteristics that are well-tolerated by peripheral veins.
- Do not use midline catheters for continuous vesicant therapy or parenteral nutrition.

PICC LINE



- Inserted into basilic, cephalic, brachial veins and enters superior vena cava.
- Can stay in place for weeks or months.
- Can feature more than one lumen.
- Can be used to administer IV fluids or medications which may irritate peripheral veins (chemotherapy, TPN).

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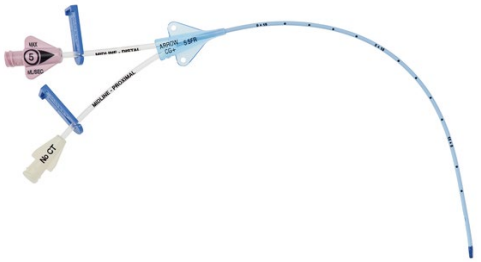
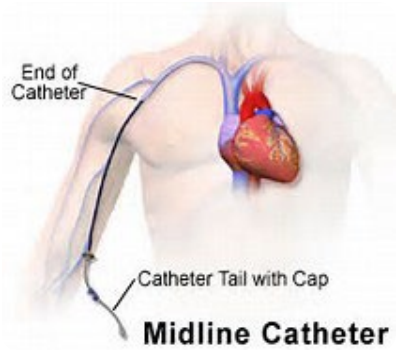
Midline Catheters

- THIS IS A LONG PERIPHERAL CATHETER
  - TIP OF CATHETER ENDS AT THE AXILLA
  - **MEDICATION MUST BE APPROPRIATE FOR PERIPHERAL INFUSION.**

    ANTIBIOTICS, FLUID REPLACEMENT, ANALGESICS
  - USED FOR SHORT TERM THERAPIES.
  - DWELL TIME PER MANUFACTURER RECOMMENDATION.
    - TYPICALLY 2-4 WEEKS
  - REMOVE WHEN CLINICALLY INDICATED OR WHEN THERAPY IS COMPLETE.
  - **DO NOT USE FOR CONTINUOUS VESICANT THERAPY OR PARENTERAL NUTRITION**
- CATHFLO ALTEPLASE IS NOT APPROPRIATE.
  - RESEARCH TO INVESTIGATE
- **REMOVAL OF ACCESS DEVICE**
  - RNS TRAINED IN MIDLINE REMOVAL MAY PERFORM MIDLINE REMOVALS
  - LPNS MUST REFER TO THEIR STATE BOARD OF NURSING SCOPE OF PRACTICE
- WEEKLY LINE CARE AND PRN
  - DRESSING CHANGE WITH SECUREMENT DEVICE.
  - CAP AND EXTENSION CHANGES.





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PICC LINES

PERIPHERALLY INSERTED CENTRAL CATHETERS

Dwell time weeks to several months.

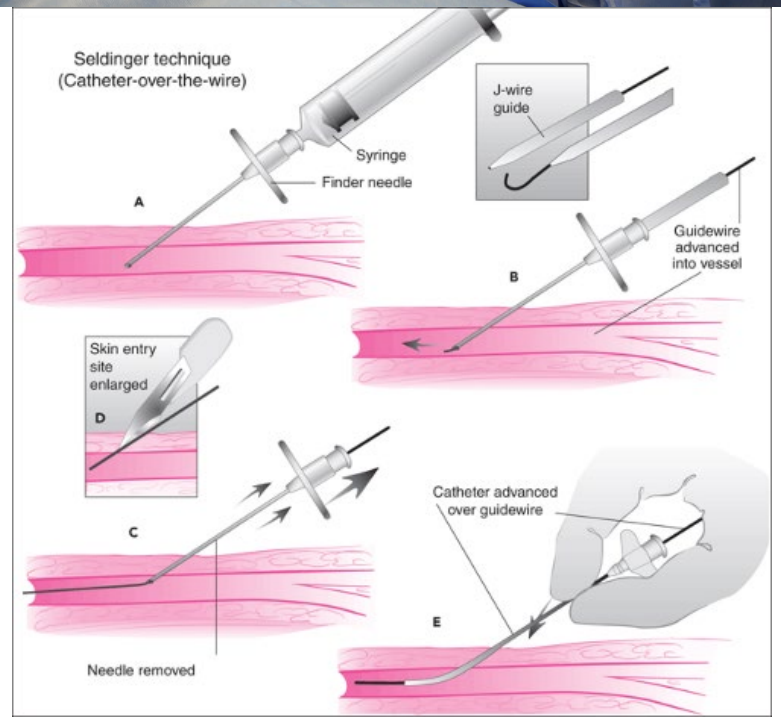
Inserted in radiology or at the bedside.

- 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).

Can feature more than 1 lumen.

Can be used to administer IV fluids or medications which may irritate peripheral veins (chemotherapy or TPN).

- **REMOVAL OF ACCESS DEVICE**
  - RNs trained in PICC line removal may perform PICC removals.
  - LPNs must refer to their state Board of Nursing Scope of Practice.



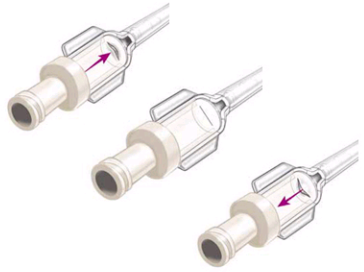
PICC LINES

OPEN-ENDED:

Requires heparin flushes and should be clamped when not in use.

VALVED:

Catheter valves are meant to prevent back flow of blood into the catheter and do not require heparin.



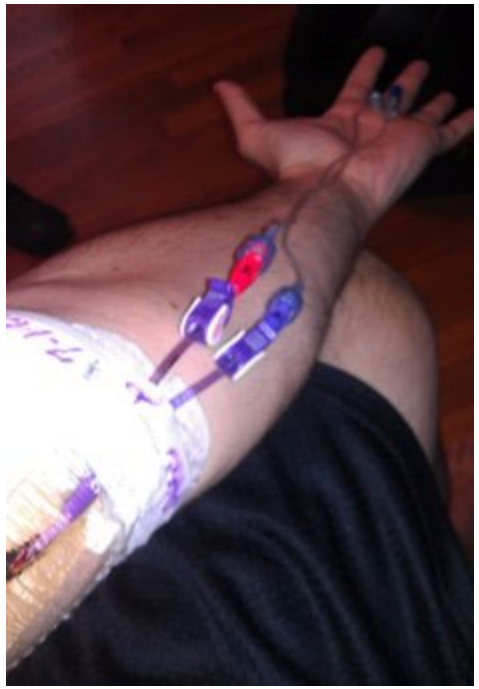
PICC Extension Sets

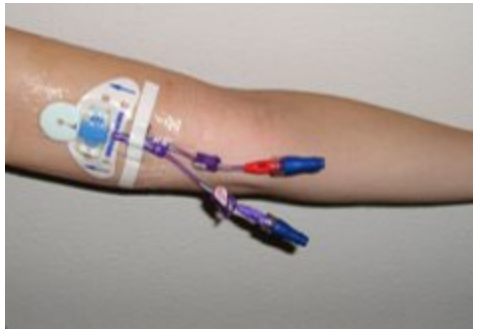
Extension sets must be placed on PICC lines

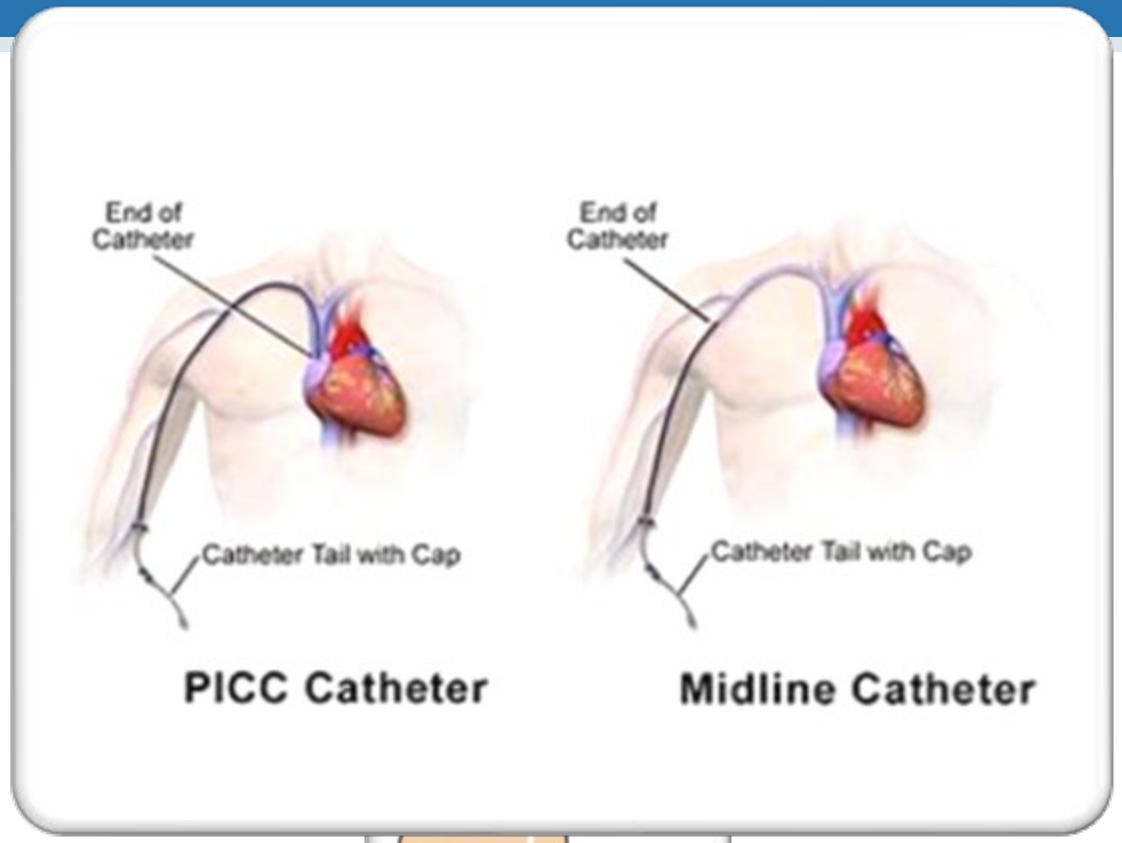
- Patients are not able to flush or administer medications if they are not able to reach their vascular access device with both hands

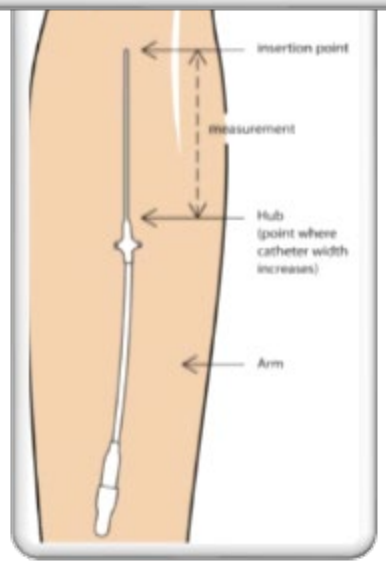
Instructions:

- Maintain sterile technique
- Prime extension set with clave cap
- Prior to removing clave cap from vascular access device cleanse connection with antiseptic wipe
- Attach extension set with clave cap
- Flush line









PICC AND MIDLINE LINE CARE

- INS STANDARDS RECOMMEND USE OF A MANUFACTURED SECUREMENT DEVICE
    - SORBA VIEW DRESSING
    - STATLOCK
    - OTHER SECUREMENT DEVICE.
- WEEKLY DRESSING CHANGES
    - THE EXTERNAL LENGTH OF THE PICC/MIDLINE MUST BE MEASURED AND DOCUMENTED WITH EACH DRESSING CHANGE.
        - IF THE EXTERNAL LENGTH OF THE PICC CATHETER HAS INCREASED BY 2CM OR GREATER, THE **MD SHOULD BE NOTIFIED**.
    - ASSESS EXTREMITY FOR SIGNS/SYMPTOMS OF CATHETER ASSOCIATED DVT (CA-DVT).
        - A 3 CM INCREASE IN MIDARM CIRCUMFERENCE IS ASSOCIATED WITH A CA-DVT IN ADULTS, THE **MD SHOULD BE NOTIFIED**.

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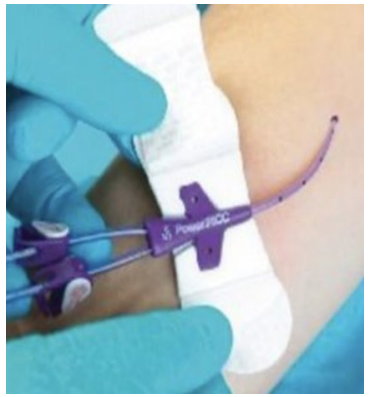
Securement Devices.

Stabilizes the catheter, eliminates the chance of any pull and increases dwell time.
Sometimes double securement is appropriate (StatLock + Sorbaview dressing).

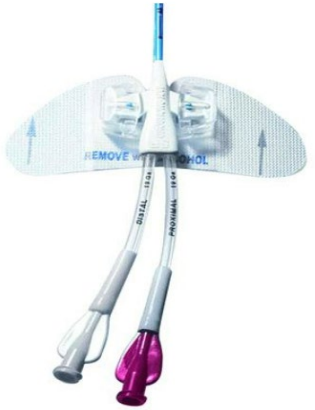
3M PICC/CVC SECUREMENT	GRIPLOCK	UNIVERSAL SECUREMENT	STATLOCK	WINGUARD	SORBA VIEW SHIELD

https://youtu.be/-KmppMxkmJY



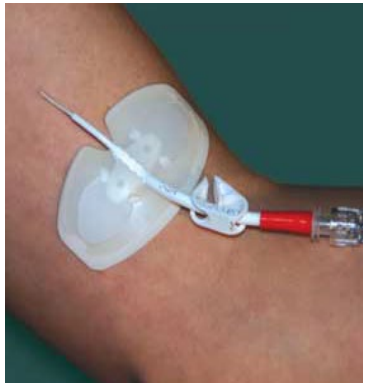
https://youtu.be/lo4_o6x7UTE

https://youtu.be/3HbvNJRwOk0



Application:
https://youtu.be/5XUpQLOtM9M

Removal:
https://youtu.be/Sdsd9N4jMNg



https://youtu.be/-IV7OS7yGJU

https://youtu.be/dURvIi9OwE0

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SorbaView Shield

SorbaView® SHIELD
APPLICATION
Prep dressing site according to facility protocol.
Remove larger liner without touching adhesive.
Center the insertion site in the large window.
Smooth down to adhere, then remove remaining liner.
Guide the tubing through the notch.
Overlap the edges to form a tight seal and smooth down to adhere.
Slip closure piece under tubing and over the edge of the dressing.
Remove the liner on one side and smooth down to adhere and remove the liner on remaining side and smooth down to adhere.
REMOVAL:
Locate the v-notch on the outer edge of the closure piece and pull apart to break center perforations.
Holding the catheter in place, peel back the closure piece and dressing together as one piece.
Peel back slowly, keeping dressing close to skin and following catheter toward insertion site.

SorbaView SHIELD for PICC Line Securement - YouTube

https://youtu.be/dURvIi9OwE0

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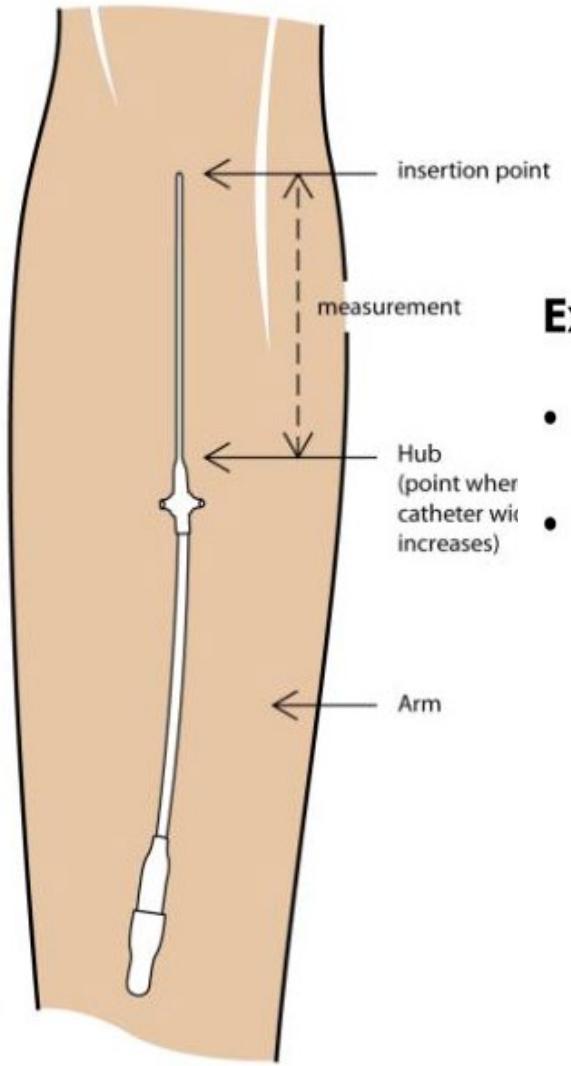
Vascular Access Device (VAD) Care

- Dressing changes are weekly and as needed
- All supplies must be changed with every dressing change
  - ✓Securement device
  - ✓Extension sets
  - ✓Injection caps
  - ✓Biopatch or other CHG disc
- INS guidelines recommends use of a securement device or securement dressing.

ASSESSMENT:

- External length of the PICC/Midline to be measured and documented with each dressing change
  - ✓If the external length of the catheter has increased by 2cm or more since SOC the MD and the Infusion Pharmacist must be notified.
  - ✓Compare to baseline measurement at insertion if available.
- Palpate the insertion site to assess for swelling and pain.
- Measure arm circumference. Location of measurement must be noted for comparison.
  - ✓Compare the circumference of both extremities, if unilateral edema is noted.
  - ✓ A 3cm increase in midarm circumference in adults is associated with CA-DVT.
- Changes in color may include redness and/or blanching.



External Measurement

- Measure from insertion site of PICC to catheter hub
- Measure and record the exposed catheter length at each dressing change to ensure migration has not occurred

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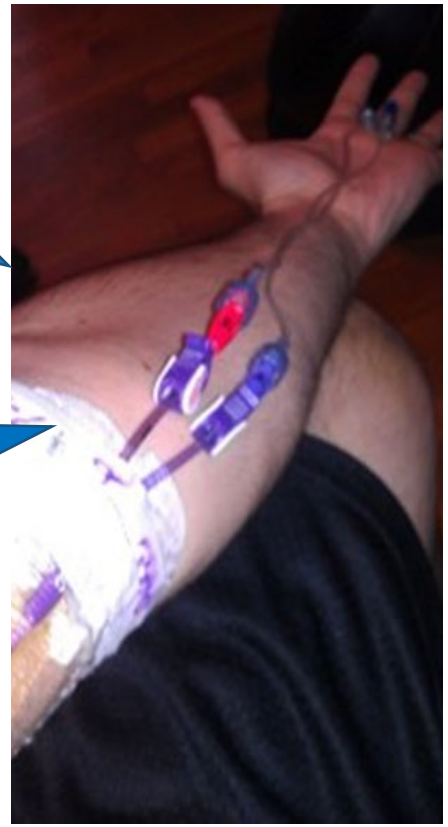
CATHETER INJECTION CAPS

USP 800
Requires hazardous medications to be compounded into needless and closed systems.

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



Injection caps may be:
Positive pressure
Neutral pressure
Negative pressure

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

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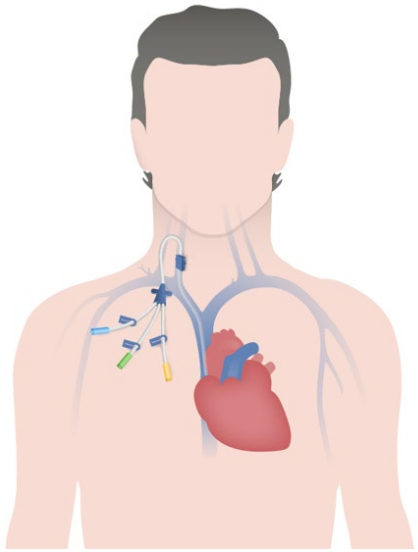
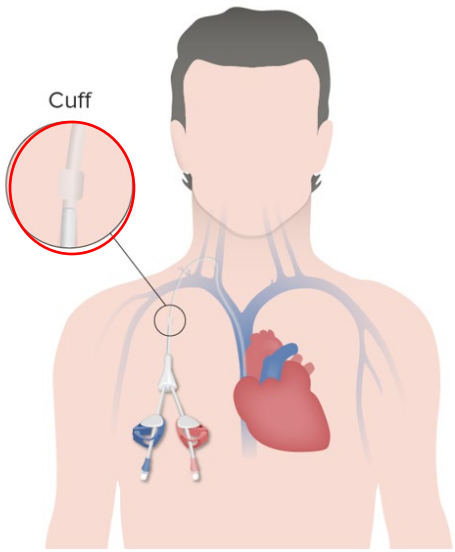
CVC
Central Venous Catheters

NON-TUNNELED



- **NO cuff**
- Short term
- Typically used for days-weeks for all types of IV therapy and blood draws
- Percutaneously inserted into central veins (subclavian, internal jugular (IJ), femoral)

TUNNELED



- **Dacron cuff** provides catheter stability and serves as a barrier to prevent infection
- Long term therapies: TPN, chemo
- Examples: aPheresis catheter, Hickman, Broviac
- Percutaneously inserted into central veins (subclavian, internal jugular (IJ), femoral)

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TUNNELED CATHETERS (CVC)

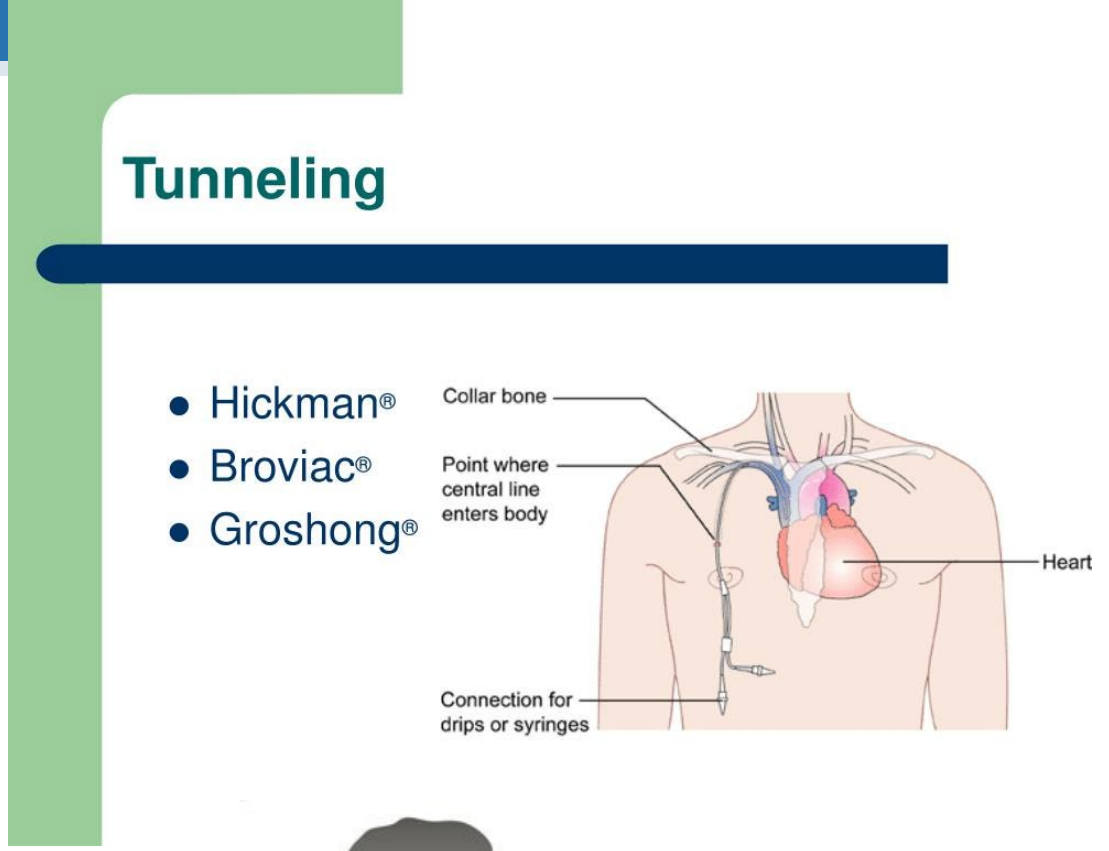
Long term use

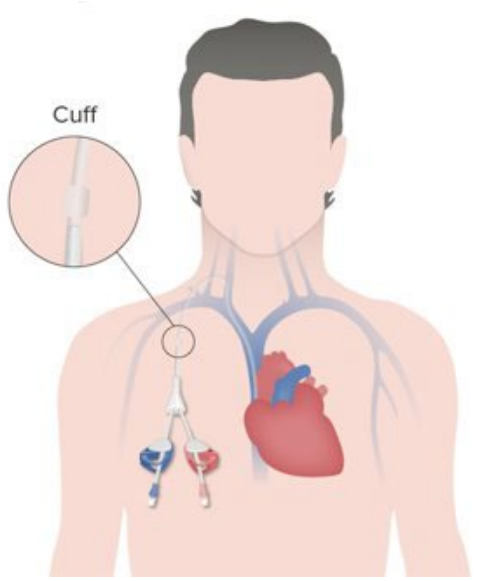
Surgically inserted into the subclavian vein, then advanced to the SVC. The distal portion of the catheter is then threaded through a subcutaneous tunnel to an exit site.

Dacron Cuff

- encourages tissue growth around the catheter which secures it in place and serves as a barrier to prevent infection.

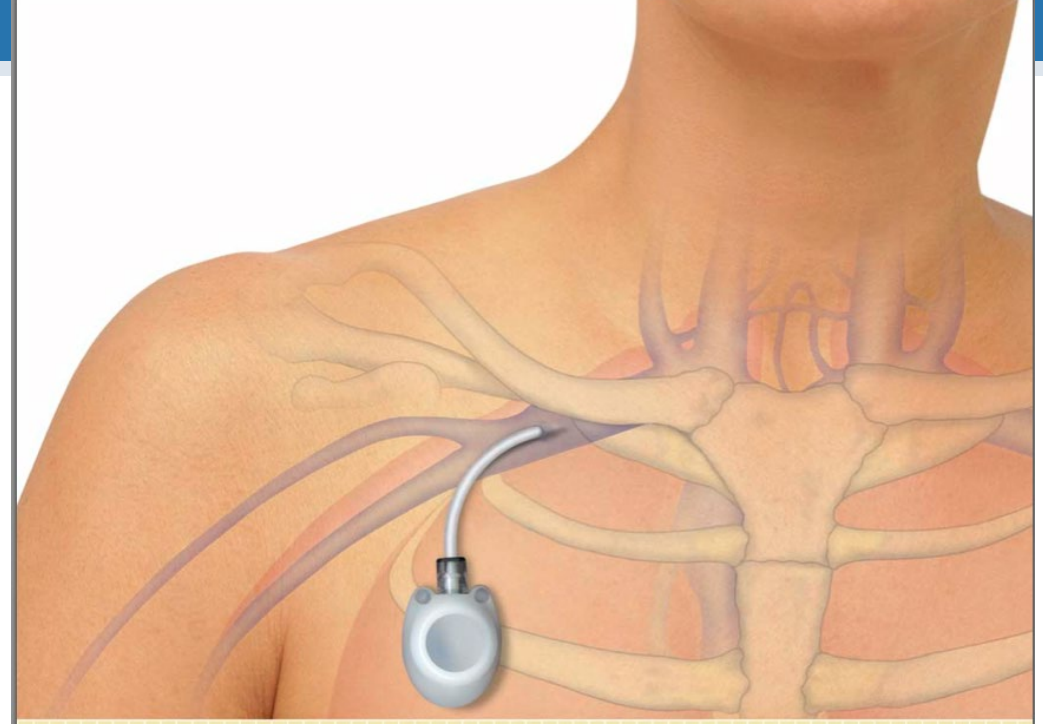
Must be surgically removed.

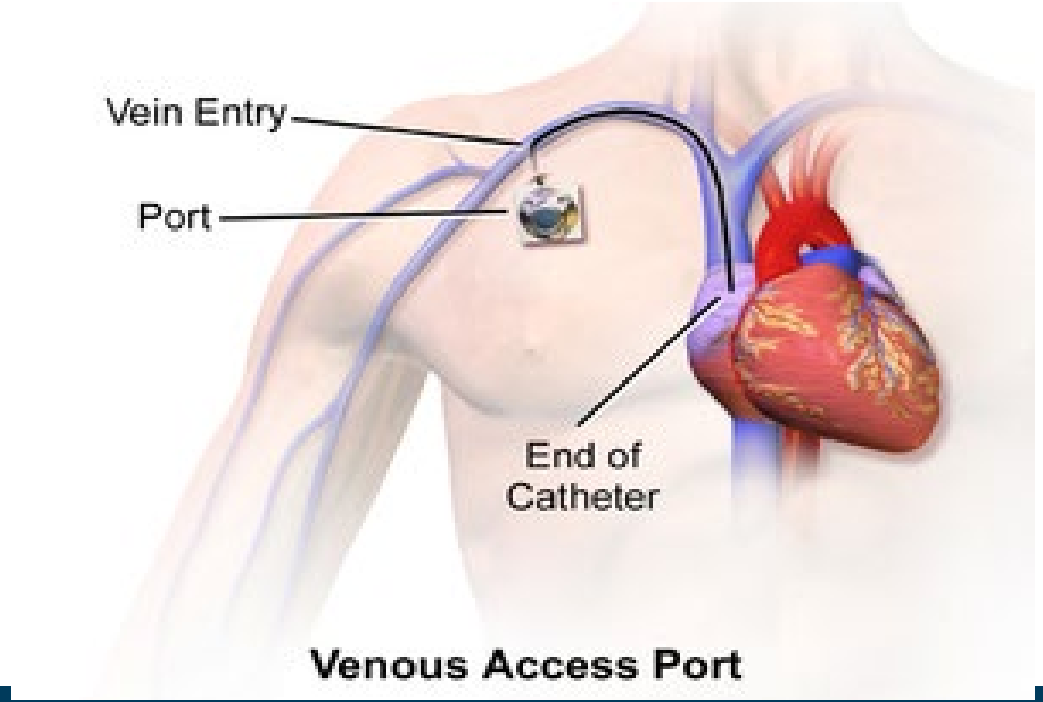




IMPLANTED PORTS

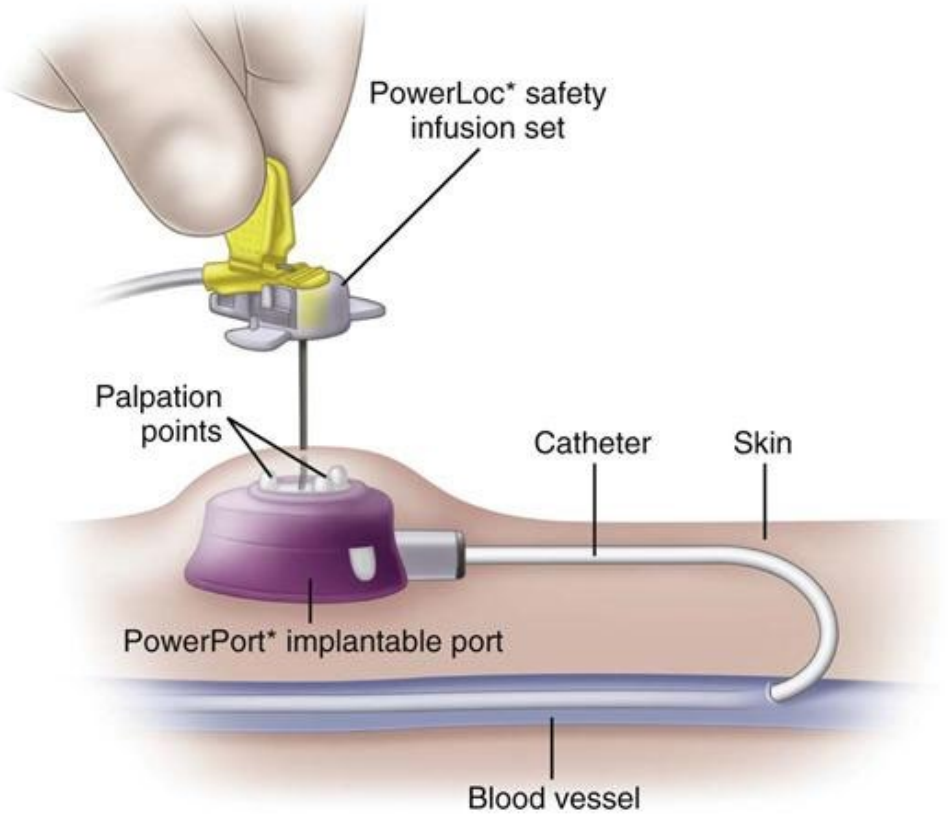
- Surgically implanted
  - attached to a catheter that is threaded into the SVC.
- Must be surgically removed
- Long term use
- Usually placed in the chest
  - Other locations: Arm, Thigh, Abdomen, ribs/side
- Usually, single injection ports
  - double injection ports are available
- Must use non-coring Huber Needle to prevent coring (hole punching) of the port silicone.





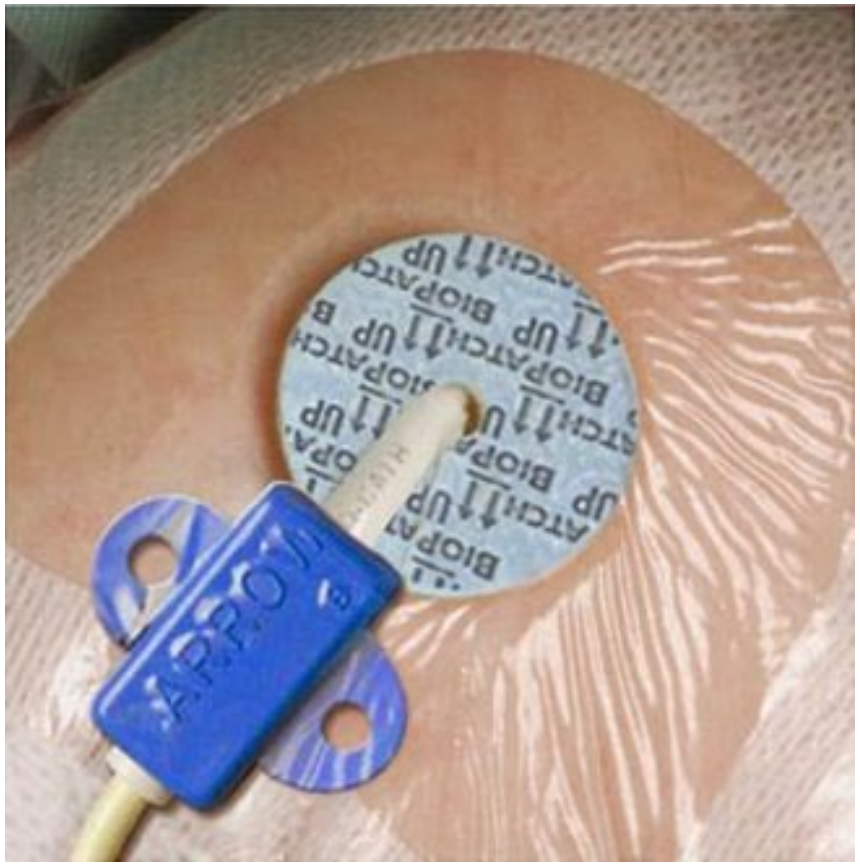
IMPLANTED PORTS

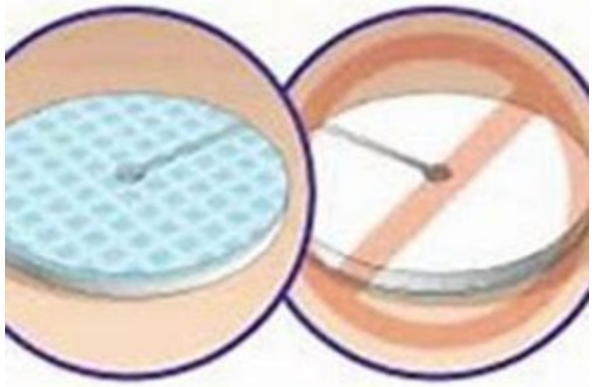
NON-CORING needles must be used to access the self-sealing implanted injection port.



CHG Disc: Biopatch

- Chlorhexidine impregnated disc.
- Reduces site infections, CABSI, and skin colonization of microorganisms
- To be changed with each dressing change
- Place the BIOPATCH Dressing around the catheter, making sure the BLUE grid side is facing upward. The smooth WHITE foam side should be next to the patient's skin
- In order to ensure easy removal when used with a film dressing, place the BIOPATCH Dressing around the catheter/pin site in such a way that the catheter rests upon the slit portion of the BIOPATCH Dressing. The edges of the radial slit must approximate one another to assure efficacy.





Biopatch Application:
https://youtu.be/9es1CUdU1Co

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Implanted Ports

Surgically implanted & removed

- Attached to a catheter that is threaded into the superior vena cava, subclavian or internal jugular vein.
- Removed surgically.

Long-term use

Usually placed in the chest

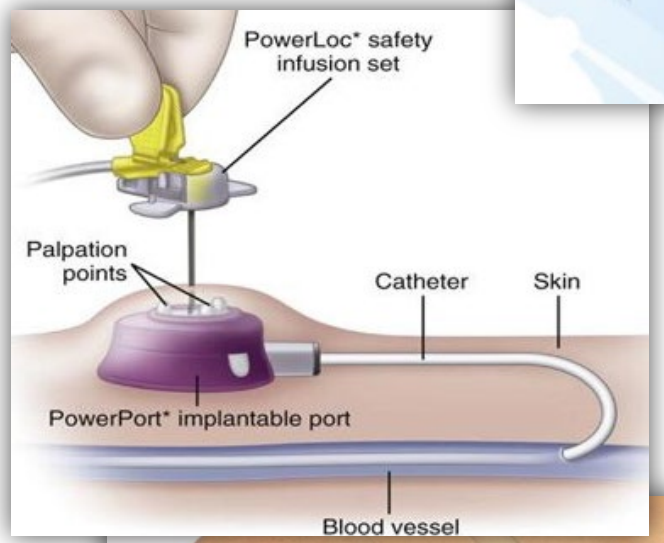
- Other locations: Arm, Thigh, Abdomen, ribs/side

Usually, Single Injection Ports

- Double injection ports are available

Must use non-coring Huber Needle

- To prevent coring (hole punching) port silicone



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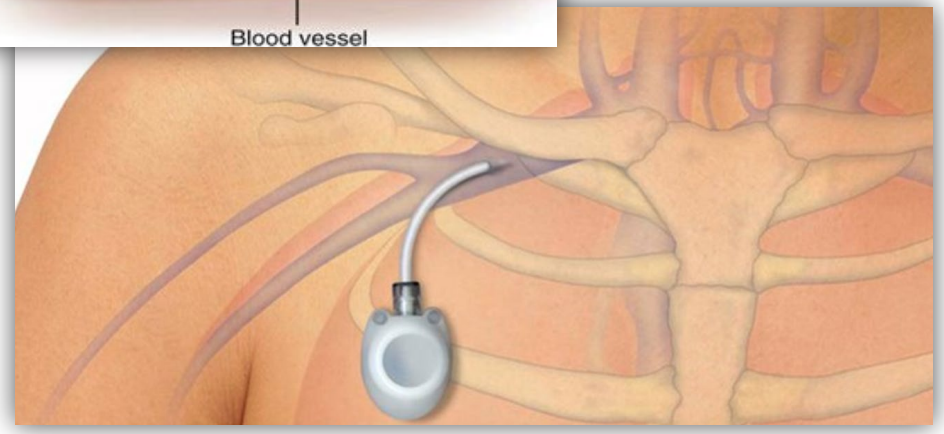

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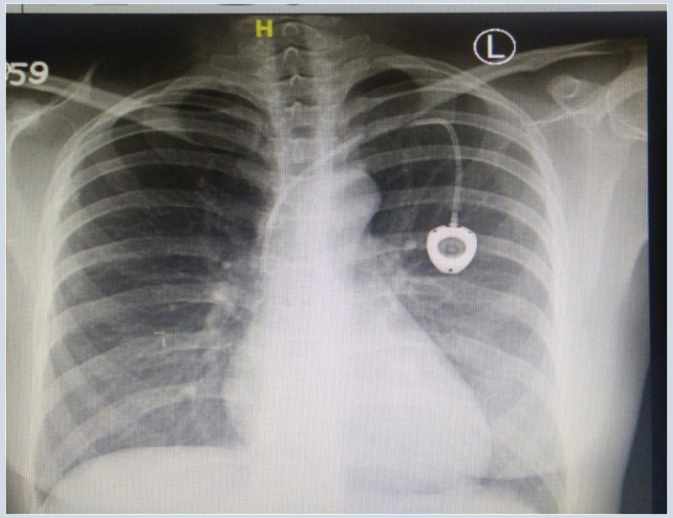
Vascular Access Line Related Complications

Catheter malposition / migration

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

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

Vascular Access Line Related Complications

PHLEBITIS
Signs and symptoms of phlebitis include pain/tenderness, erythema, swelling, purulence, or palpable venous cord

INFILTRATION AND EXTRAVASATION
Swelling/edema may appear as a raised area under the skin near the peripheral VAD site or as an enlarged and tense extremity due to fluid accumulating in compartments of the extremity. Edema from a CVAD may appear as a raised area on the neck, chest, or groin.

NERVE INJURY
paresthesia-type pain during peripheral venipuncture and during catheter dwell time

INFECTION
signs and symptoms
erythema, edema, pain, tenderness or drainage, fluid in the subcutaneous pocket and/or tunnel of a totally implanted intravascular device or tunneled catheter, induration at the exit site or over the pocket, drainage, or skin breakdown at the VAD insertion site, and/or body temperature elevation.

CENTRAL VASCULAR ACCESS DEVICE OCCLUSION
signs and symptoms of possible CVAD occlusion:
1. Inability to withdraw blood or sluggish blood return
2. Sluggish flow; resistance or inability to flush lumen; inability to infuse fluid
3. Frequent occlusion alarms on electronic infusion pump.
4. Swelling/leaking at infusion site.
5. No reflow or insufficient blood flow in hemodialysis CVADs

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Vascular Access Line Related Complications

CATHETER DAMAGE

Suspect catheter damage/embolism if assessment reveals signs and symptoms such as: visible catheter or fractured hub, leaking at the site, catheter dysfunction (e.g., inability to aspirate blood, frequent infusion pump alarms), localized pain and/or swelling along CVAD pathway during infusion, parasthesia in the arm, radiographic findings, respiratory distress, or arrhythmias

AIR EMBOLISM

Suspect air embolism with the sudden onset of dyspnea, gasping, continued coughing, breathlessness, chest pain, hypotension, tachyarrhythmias, wheezing, tachypnea, altered mental status, altered speech, changes in facial appearance, numbness, or paralysis as clinical events from air emboli produce cardiopulmonary and neurological signs and symptoms.

CATHETER-ASSOCIATED DEEP VEIN THROMBOSIS

Signs and symptoms:

- pain/edema/erythema in the extremity, shoulder, neck, or chest and engorged peripheral veins of the extremity
- a 3-cm increase in midarm circumference in adults with PICCs was associated with CA-DVT

CATHETER-ASSOCIATED SKIN INJURY

Signs and symptoms:

- Redness
- Color (e.g., pink, red, purple, tan, white).
- Skin stripping, skin tears, and tension blisters
- Weeping, oozing drainage

Vascular Access Line Related Complications

CENTRAL VASCULAR ACCESS DEVICE MALPOSITION

Indication of malposition:

1. Absence of blood return from all catheter lumens.
2. Changes in blood color and pulsatility of the blood return from all catheter lumens.
3. Difficulty or inability to flush the CVAD.
4. Arterial vs venous waveform from an attached pressure transducer.
5. Atrial and ventricular dysrhythmias.
6. Changes in blood pressure and/or heart rate.
7. Shoulder, chest, or back pain during insertion or dwell time.
8. Edema in the neck or shoulder.
9. Changes in respiration.
10. Complaints of hearing gurgling or flow stream sounds on the ipsilateral side.
11. Paresthesia and neurological effects due to retrograde infusion into the intracranial venous sinuses.

Preventing CABSI
Scrub the Hub!

- The catheter hub is a known source of Catheter Associated Blood Stream Infections (CABSI).
- The CDC recommendations are to "SCRUB" rather than "WIPE" the hubs with alcohol or chlorhexadine before accessing.
- SCRUB THE HUB before each use.
  - S.A.S.H requires cleaning the HUB 4 times.
- Teach the patient scrupulous hand hygiene and maintaining aseptic technique.

"Hub scrub" for 30 seconds using alcohol and friction in a twisting motion.

Allow to dry for 60 seconds

TPN patients:
30 second scrub with a 60 second air dry twice prior to each line access.

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SASH Method

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).

WHEN IT IS TIME TO FLUSH YOUR LINE:

1. Clean work area and placemat with a disinfectant wipe.

2. Gather equipment on placemat.

3. Wash hands for 20 seconds with soap and water.

4. Prepare flushes, syringes, and have several alcohol wipes nearby per your teaching sheet.

5. Follow the patient teaching sheet and plan of treatment, located in your patient handbook, to flush your IV catheter.

S - SALINE

A - ADMINISTER MEDICATION

S - SALINE

H - HEPARIN

IMPORTANT

Not all patients will complete every step when flushing the catheter.
Your nurse will let you know which steps to complete based on your specific therapy orders.

NEVER TOUCH THE TIP OF ANY SYRINGE.
If touched, discard syringe.

S	A	S	H
SALINE	ADMINISTER MEDICATION	SALINE	HEPARIN
 	 Administer Medication (if prescribed)	 	 

Alcohol Caps

- Cap cover for injection port (hub/connector)
- Cap with alcohol-soaked sponge to cleans hub
- Cap is left in place between IV-line access
  - Alcohol dries and cap becomes a simple cover
- Reduces risk of CLABSI from injection port contamination
- **Must continue to scrub the hub!**
- Single use only

Must scrub the hub for 30 seconds before EVERY IV hub access

Failure to scrub the hub will result in increased infection risk!

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Blood Sampling Tips

- Always stop the infusion prior to lab draw
- Flush line before and after lab draw
  - 5-10ml flush before
  - 10-20ml flush after
- Waste 2ml of blood prior to collecting specimen.
  - Can use Push Pull method
- Trough results should be drawn immediately prior to next dose.
  - Should the patient administer dose, do not draw trough and re-schedule lab draw.
  - Do not draw from the same line the medication is infusing.
- Hub to hub for best results
  - Always remove extension sets when drawing labs.
  - Attach new sterile caps/extension sets after lab draws.
- Helpful with sluggish or no blood return
  - Positioning of line and limb
  - Syringe draw by pulling back 1-2 ml increments and allow to fill.
  - Use the other line lumen
  - Ensure catheter is not kinked under the dressing (may need dressing change)
  - Flush briskly with 10mls using the push pause method to create turbulent flow

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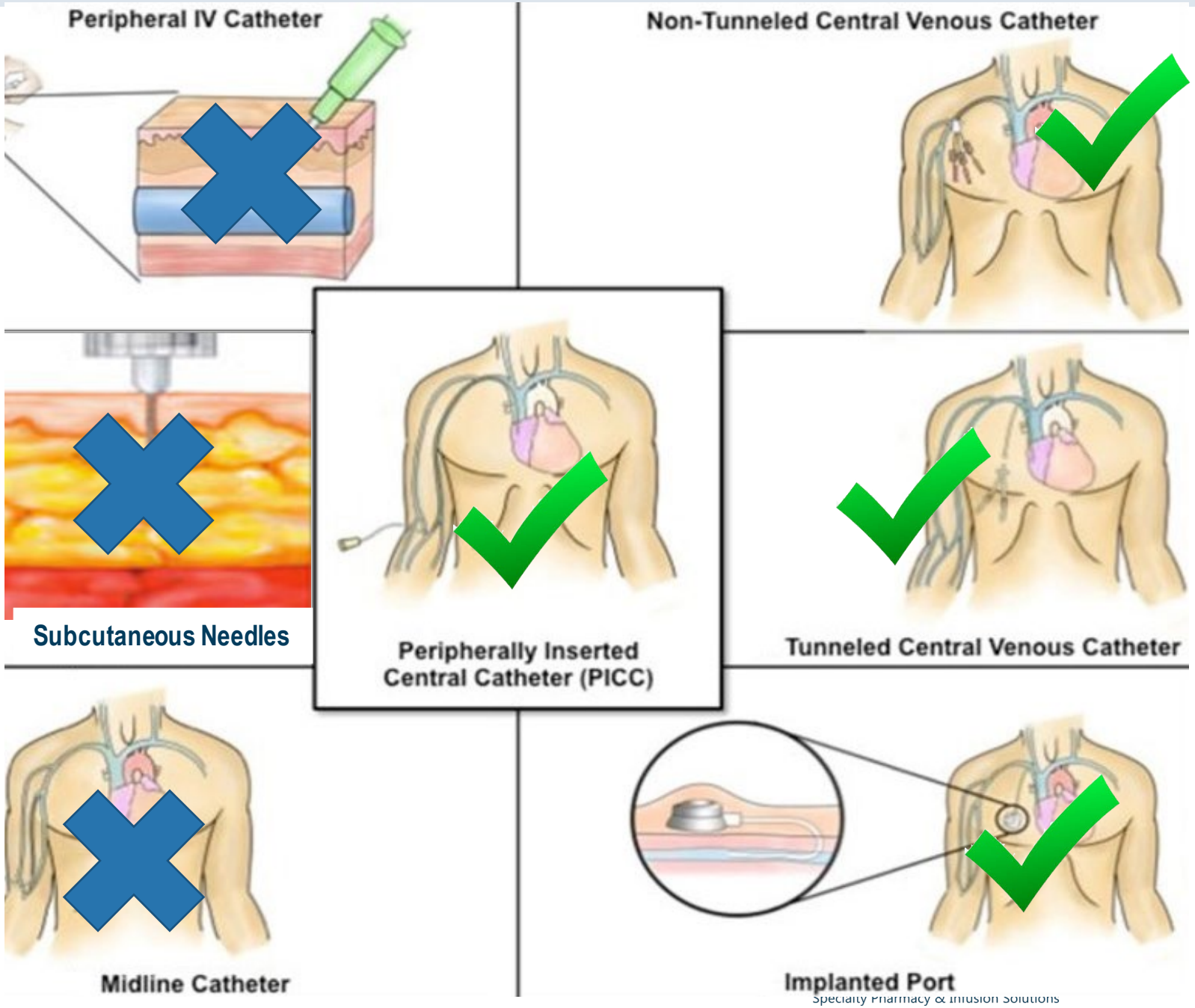
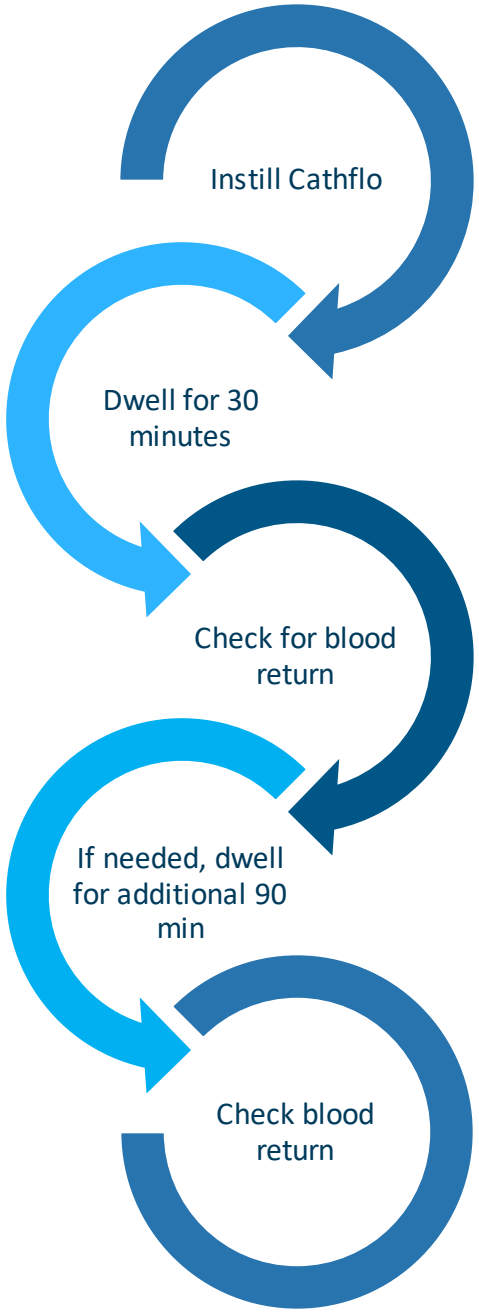
Cathflo is appropriate for:

- PICC
- Non-tunneled central
- Tunneled central
- Implanted Ports

Catheter Lumens





Cathflo Activase

Cathflo Activase is reconstituted immediately prior to administration by injecting 2.2ml of sterile water into the vial.

- Once reconstituted, pull up the ordered dose of the reconstituted Cathflo Activase into a 10ml syringe. The standard dose of Cathflo Activase is 2mg/2ml, but orders may vary based on the volume the CVAD can hold.
- Instill Cathflo Activase into the CVAD.
- Allow the Cathflo Activase to dwell in the catheter for 30 minutes.
- After 30 minutes, assess the CVAD for blood return.
- If there is no blood return, allow Cathflo Activase to dwell for an additional 90 minutes (120 minutes/2 hours total).
- Once a blood return has been restored, aspirate 3-5ml of blood to remove the Cathflo Activase and any residual clot, followed by a saline flush.
- The CVAD can now be used for medications and lab draws.

If there is no blood return after 2 hours, you may repeat with a second dose.

- If you are administering a second dose of Cathflo Activase, the first dose of Cathflo Activase in the line will be flushed systemically with the second dose. This is okay after two hours of dwell time due to the short half-life of the medication. After 120 minutes, Cathflo Activase efficacy is greatly reduced, resulting in minimal thrombolytic effect.

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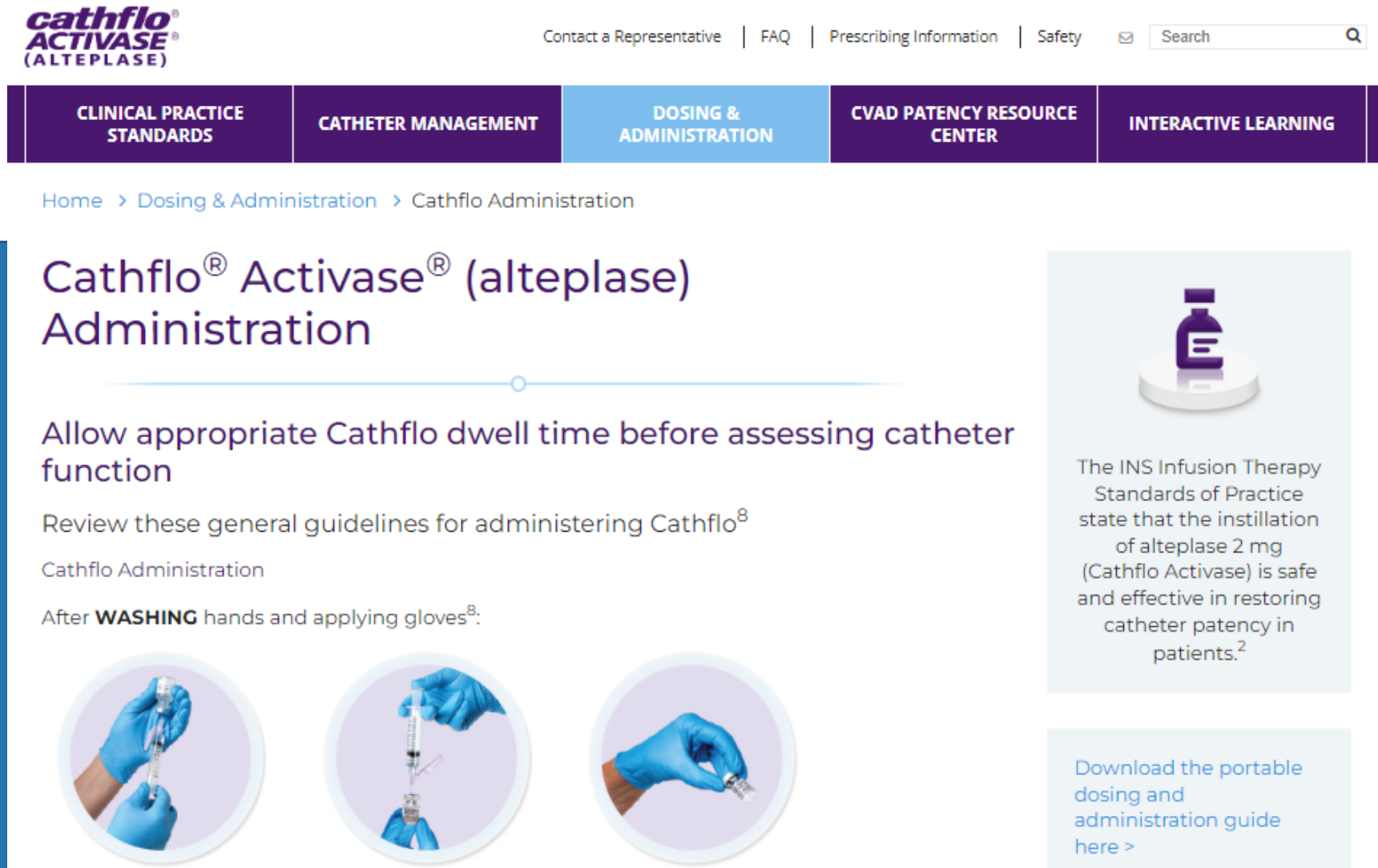
cathflo.com

Link to website:

Single-Use Vial Lytic Thrombolytic - Cathflo® Activase® (alteplase)

Dosing & Administration tab

- Reconstitution instructions
- Dwell/administration instructions
- Video instructions
- Link to downloadable documents



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Cathflo® Activase® (alteplase) Dosing and Administration

Cathflo 2 mg is the standard of care for treatment of thrombotically occluded catheters

Administration[1]

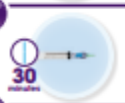
After WASHING hands and applying gloves:

1. 

   After performing hand hygiene and donning gloves, aseptically reconstitute using 2.2 mL Sterile Water for Injection and **INSPECT** solution for foreign matter and discoloration.

2. 

   INSTILL the appropriate dose of Cathflo into the occluded catheter using a 10-mL syringe (see dosing chart below).

3. 

   After 30 minutes of **DWELL** time, assess the catheter function by attempting to aspirate blood. If the catheter is functional, go to step 5; if not functional, go to step 4.

4. 

   ASSESS catheter function after a total of 120 minutes of dwell time by attempting to aspirate blood. If the catheter is functional, go to step 5. If the catheter is still occluded, a second dose of equal amount may be instilled. Repeat steps 1 through 3.

5. 

   If catheter function has been restored, **ASPIRATE** 4 mL to 5 mL of blood in patients ≥10 kg or 3 mL in patients <10 kg to remove Cathflo and residual clot. Then discard aspirate, and flush catheter with 0.9% Sodium Chloride, USP. **Any unused solution should be discarded.**

Single-use vial

Note: Store lyophilized Cathflo at refrigerated temperature (2°C–8°C/36°F–46°F). Cathflo should be reconstituted immediately before use. The solution may be used within 8 hours if stored at 2°C to 30°C (36°F–86°F). **No other medication should be added to solutions containing Cathflo.**

FDA-approved dosing with Cathflo Activase (alteplase) 2 mg[1]

Patient weight	Cathflo dose
≥30 kg (66 lb)	2 mg in 2 mL
<30 kg (66 lb)	110% of the internal lumen volume of CVAD, not to exceed 2 mg in 2 mL

CVAD=central venous access device.

Indication

Cathflo® Activase® (alteplase) is indicated for the restoration of function to central venous access devices as assessed by the ability to withdraw blood.

Important Safety Information

Contraindications

Cathflo Activase should not be administered to patients with known hypersensitivity to alteplase or any component of the formulation.

Please see additional Important Safety Information on next page.

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www.cathflo.com

Cathflo® Activase® (alteplase) Dosing and Administration

Cathflo 2 mg is the standard of care for treatment of thrombotically occluded catheters

Highest Level of Evidence in CVAD Guidelines

Cathflo is the only thrombolytic recommended by clinical practice standards, including the Infusion Nurses Society (INS), Association for Vascular Access (AVA), American Association of Critical Care Nurses (AACN), and Oncology Nursing Society (ONS).[2-7]

ONS Oncology Nursing Society

Use 2 mg alteplase (Cathflo Activase) to restore patency and maintain catheter function.[3]

— Class 1; Level of Evidence A, ONS Access Device Standards of Practice, 2017, page 10, section VI, practice standard B

INS Infusion Nurses Society

Instill alteplase 2 mg (Cathflo Activase) in the catheter lumen in accordance with manufacturer's directions for use and repeat 1 time if first attempt is unsuccessful.[2]

— Practice Recommendation; Level of Evidence II, INS Infusion Therapy Standards of Practice, 2021, page S151, recommendation F-2b

Important Safety Information (cont'd)

Precautions

General

Certain causes of catheter dysfunction should be considered before treatment with Cathflo Activase (e.g. catheter malposition, mechanical failure, constriction by a suture and lipid deposits or drug precipitates within the catheter lumen). These types of conditions should be considered before treatment with Cathflo Activase.

Bleeding

The most frequent adverse reaction associated with all thrombolytics in all approved indications is bleeding.

Should serious bleeding in a critical location (e.g., intracranial, gastrointestinal, retroperitoneal, pericardial) occur, treatment with Cathflo Activase should be stopped and the drug should be withdrawn from the catheter.

Infections

Cathflo Activase should be used with caution in the presence of known or suspected infection in the catheter.

Hypersensitivity

Hypersensitivity, including urticaria, angioedema and anaphylaxis, has been reported in association with use of Cathflo Activase. Monitor patients treated with Cathflo Activase for signs of hypersensitivity and treat appropriately if necessary.

Adverse Reactions

In clinical trials, the most serious adverse events reported after treatment were sepsis, gastrointestinal bleeding, and venous thrombosis.

Please see Indication and Important Safety Information on first page. Please see full Prescribing Information below for additional Important Safety Information.

References: 1. Cathflo [prescribing information]. Genentech USA, Inc. **2.** Infusion Nurses Society. Infusion therapy standards of practice. *J Infus Nurs.* 2021;44 (suppl 1):S1-S224. **3.** Camp-Sorrell D, ed. *Access Device Standards of Practice for Oncology Nursing.* 4th ed. Oncology Nursing Society; 2017. **4.** McKnight S. Nurse's guide to understanding and treating thrombotic occlusion of central venous access devices. *Medsurg Nurs.* 2004;13(6):377-382. **5.** Haire WD, Herbst SF. Consensus conference on the use of alteplase (t-PA) for the management of thrombotic catheter dysfunction. *J Vasc Access Devices.* 2000:1-8. **6.** Criddle LM. Ask the experts. *Crit Care Nurse.* 2007;27(3):78-81. **7.** Cummings-Winfield C, Mushani-Kanji T. Restoring patency to central venous access devices. *Clin J Oncol Nurs.* 2008;12(6):925-934.

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Downloadable Instructions:
Cathflo.com

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VASCULAR ACCESS DEVICE REMOVAL

- The clinical need for each VAD is assessed daily for acute inpatient settings and during regular assessment visits in other settings, such as the home, outpatient facility, or skilled nursing facility.
- VADs are removed when clinically indicated (e.g., unresolved complication, discontinuation of infusion therapy, or when no longer necessary for the plan of care)
- VADs are not removed based solely on length of dwell time, because there is no known optimal dwell time.
- Remove if no longer included in the plan of care or if not used for 24 hours or more.
- Remove PIVCs and midline catheters in pediatric and adult patients when clinically indicated, based on findings from site assessment and/or clinical signs and symptoms of systemic complications
- Implement precautions to prevent air embolism during removal of CVADs including, but not limited to
- Place the patient in a supine flat or Trendelenburg position
- Instruct the patient to perform a Valsalva maneuver at the appropriate point during catheter withdrawal.
- After removal, apply digital pressure with a sterile dry gauze pad at and just above the insertion site until hemostasis is achieved by using manual compression.
- Apply an air-occlusive dressing to the access site for at least 24 hours for the purpose of occluding the skin-to-vein tract and decreasing the risk of retrograde air emboli.
- Assess the removed catheter to ensure it is fully intact, after planned or inadvertent CVAD removal. If a retained fragment is suspected, notify the provider immediately.

SUBCUTANEOUS INFUSION THERAPY

Subcutaneous infusion therapy is a technique whereby fluids or medications are infused into the subcutaneous tissue via small gauge needles inserted into the abdomen, arms, back or thighs.

The subcutaneous route may be used to infuse isotonic solutions for treatment of dehydration, continuous opioid infusions for pain management, non-vesicant neoplastic agents, certain antibiotics, diuretics, antiemetics, immunoglobins, endocrine medications, gastrointestinal medications, monoclonal antibodies, and other therapies/medications as prescribed.

Subcutaneous infusion offers several advantages over intravenous infusion, including ease of administration, lower cost, and lack of potential serious complications.

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Infusion Site Information

Instruct patient to call the pharmacist if site irritation or leakage occurs during multiple infusions.

Patients should be assessed after each infusion for leakage or irritation at site.

- Throughout treatment patient needs will change.
  - Weight changes may require longer or shorter needle lengths.
  - Over time needle length may need changed, without weight loss or gain.
    - Instruct patient to call their pharmacy if site irritation or leakage occurs for more than 1 infusion.
    - It is normal to need to change needle length after a year or several years of therapy.

Redness, irritation and itchiness at infusion site.

- Advise the patient to not scratch
- Topical Benadryl cream (thin layer)
- Pre-medicate with antihistamine
  - Physician order required

Lump or soreness at infusion site

- Cool compress will help absorption of SCIG product.
  - May need to repeat a few times

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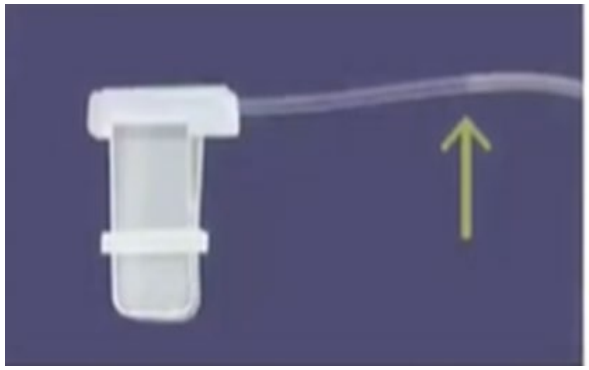
SCIG Needle Placement & Site Selection

- 2-inchs between sites and from umbilicus.
- New sites should be at least 1 inch from previous administration sites.
- Rotate sites with each infusion.
- Rotate site used for **continuous** medication administration every 2 to 7 days.
- Rotate site used for hydration every 24-48 hours or after 1.5 to 2 liters has infused.
- Do NOT check blood return.
- Dry prime to prevent skin irritation and leakage.
- Prime with immunoglobulin product or fluid to be administered.



SUBCUTANEOUS SITE SELECTION

CONSIDER PATIENT'S MOBILITY, COMFORT AND SITE PREFERENCE

Select areas with intact skin and adequate subcutaneous tissue

Abdomen (at least 2 inches from umbilicus)

Deltoid

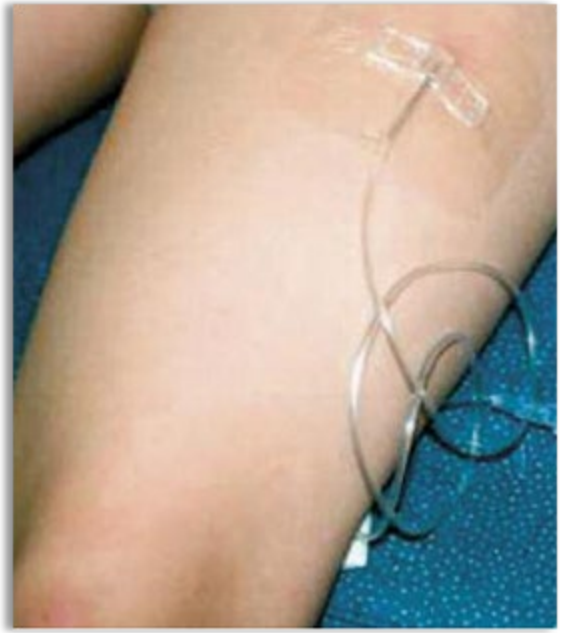
Flank

Hips

Thighs

Subcutaneous Needle Placement

- 2-inchs between sites if using more than one needle and from umbilicus.
- Rotate sites with each infusion.
- Check needle placement **if indicated** on the package insert. Aspirate the SC infusion access device to confirm the absence of a blood return prior to medication administration.
- Check needle placement by gently pulling back on the plunger of the attached syringe and monitor for any blood return in the tubing.
- If blood is seen in the tubing, remove and discard the needle. Prepare a new infusion site and insert a new subcutaneous needle.
- Cleanse the skin. Cleanse entire area with antiseptic swab, not only individual insertion sites.
- Insert needle (already primed).
- Apply occlusive dressing over needle insertion site.



Subcutaneous Needle Selection

Length

- 4mm
- 6mm
- 9mm
- 12mm
- 14mm

A longer needle may be needed if there is leakage at the puncture site.

Needle must me long enough to be seated in the subcutaneous tissue, but not long enough to reach the muscle.

Infusion into the muscle or skin tissue will cause pain and irritation.

Bifurcations

- 1 needle
- 2 needles
- 3 needles
- 4 needles
- 5 needles
- 6 needles
- 8 needles

The volume of medication to be infused determines the number of infusion sites required.

Volume per site is based on patient weight and product.

- On average each can accommodate 10-20mls/hour of SCIG.
  - Hyqvia allows for larger volume infused per site.
    - Can accommodate up to 150-300ml/site depending on patient weight.
- Subcutaneous absorption is 3-5ml/hr
- Pediatric and low BMI patients have lower volume limits.

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IV Administration Modes

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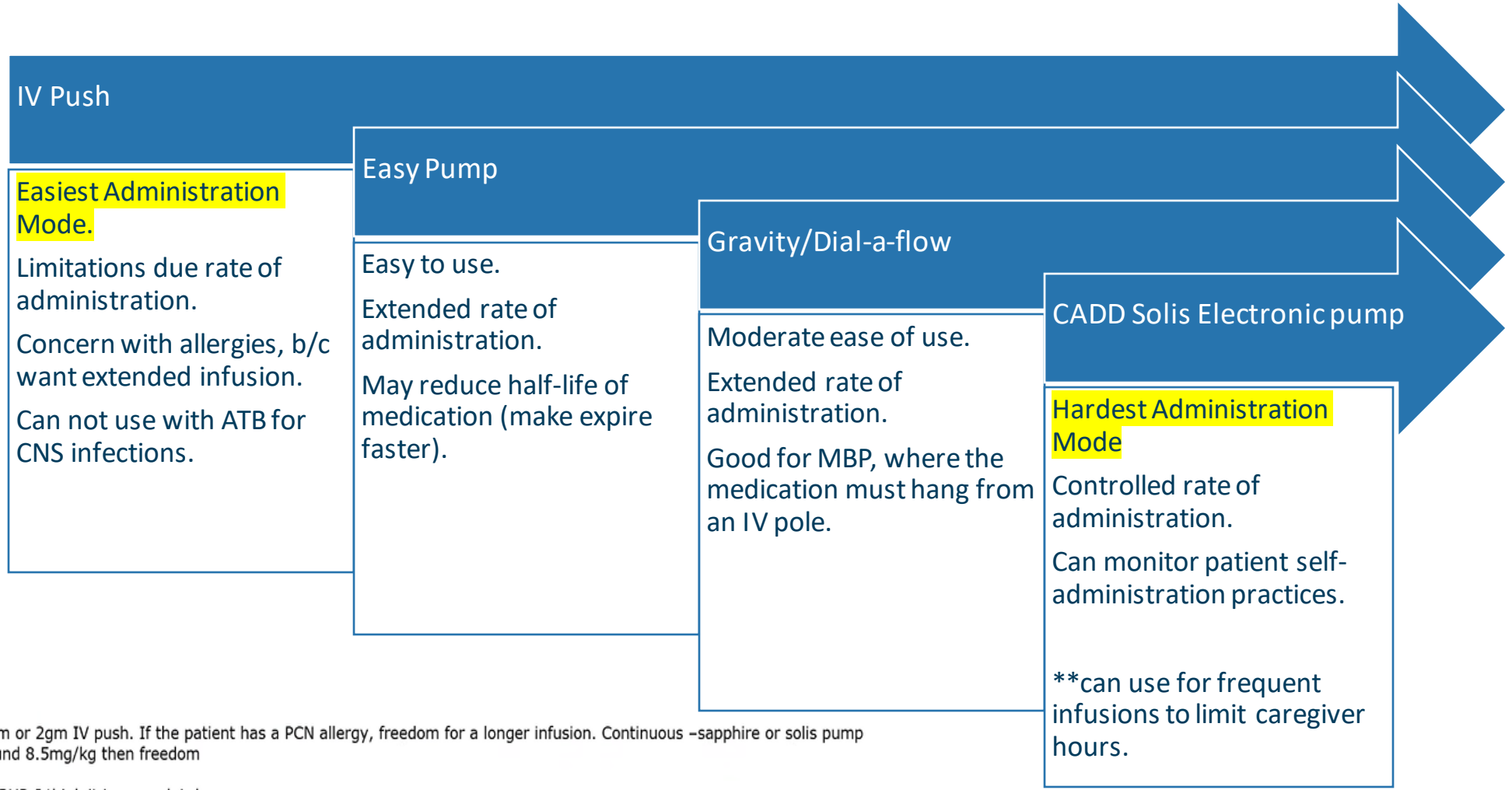
Mode of Administration



Cefazolin/Cefepime/Rocephin 1gm or 2gm IV push. If the patient has a PCN allergy, freedom for a longer infusion. Continuous –sapphire or solis pump
Daptomycin IVP for doses < around 8.5mg/kg then freedom
Ertapenem Mini bag plus
Meropenem Mini bag plus, short BUD I think it is around 4 days.
piperacillin-tazobactam Freedom pump, May use Sapphire/Solis for intermittent with a daily bag change. EZ pump for continuous.
BUD

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IV Push

Easiest for the patient

Administer IV push medication at the rate specified in the prescribed order or as directed on the product label. Typically, over 2-4 minutes.

Follow with an appropriate volume of 0.9% sodium chloride flush at the same injection rate to ensure entire dose reaches the bloodstream and to prevent a bolus of medication.

Check compatibility of IVP medication with solutions or medications in primary continuous infusion, if present.

ELASTOMERIC DEVICE

Non-electronic pump that allows patients to remain ambulatory during infusions.

Rate of infusion is determined by the device selected.

Primarily used for antibiotic administration.

Easier to use for patients with dexterity issues.

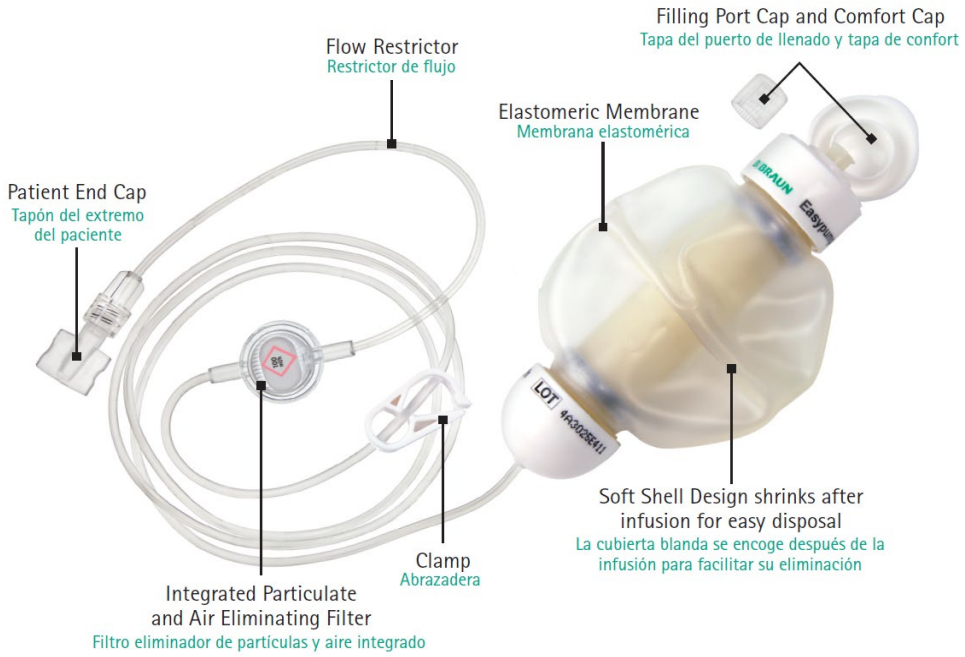
Allow medication to warm to room temperature for 6-12 hours, as noted on the Plan of Treatment.

Calibrated to work at room temperature (69.4 – 76.6 degrees F).

- May infuse too slow if cooler than 69.4F
- May infuse too fast if warmer than 76.6 F

Flow Restrictor is calibrated to work at 88F

- Should have close contact with the patient's skin during infusion.
- Calibrated to work at the level of the IV catheter
- Do not hang or set on floor



Gravity Infusion

Straight tubing set with IV bag hung from an IV pole.

Drip rate conversion tables on teaching guides.

Regular straight tubing set

Filtered straight tubing set

Drip rates can be found on patient teaching guides.

$$\text{IV Drip Rate } (\textit{gtt/min}) = \frac{\text{Volume } (\textit{mL})}{\text{Time } (\textit{minutes})} \times \text{Drop Factor } (\textit{gtt/mL})$$

Rate ordered: 100ml/hr = 100ml/60min -=1.67ml/min
Drop factor = 20gtt/ml
1.67 x 20 = 33.33 gtt/min

CONVERSION TABLE FOR 20 DROP PER ML TUBING
ML/HR → DROPS/MINUTE

ML/HOUR	DROPS/ MINUTE
30	10
45	15
60	20
75	25
90	30
99	33
105	35
114	38
120	40
126	42
135	45
144	48
150	50
165	55
180	60
195	65
210	70
225	75
240	80
250	83
255	85

CONVERSION TABLE FOR 10 DROP PER ML TUBING
ML/HR → DROPS/MINUTE

ML/HOUR	DROPS/ MINUTE
6	1
12	2
18	3
24	4
30	5
36	6
42	7
48	8
54	9
60	10
66	11
72	12
78	13
85	14
90	15
96	16
102	17
108	18
114	19
120	20
126	21
132	22
144	24
150	25
180	30
198	33
204	34
210	35
240	40
252	42

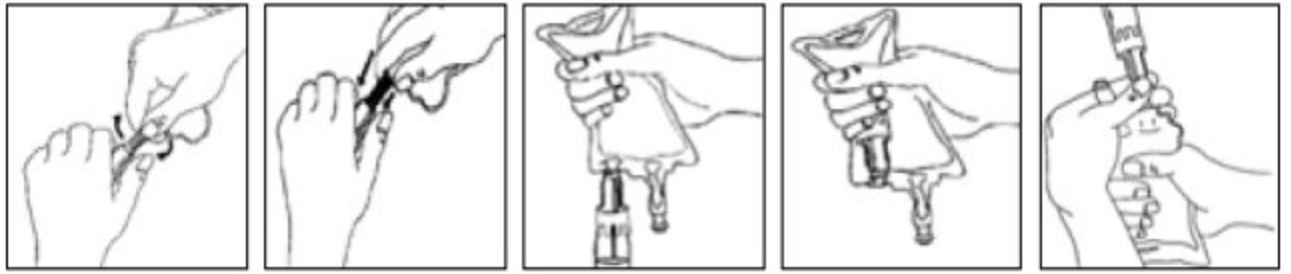
Reference Chart of Drops per Minute

For use with Flow Regulator or Gravity Infusion.

IV Tubing Drop Factor	Desired Hourly Rate: ML / HR																IV Tubing Drop Factor
	20	25	30	50	60	70	75	80	100	110	120	125	130	150	175	200	
10 DROP/ML	3	4	5	8	10	11	12	13	16	18	20	21	22	25	30	34	10 DROP/ML
15 DROP/ML	5	6	7	12	15	17	18	20	25	27	30	31	32	38	44	50	15 DROP/ML
20 DROP/ML	6	8	10	16	20	22	24	26	32	36	40	42	44	50	60	68	20 DROP/ML
60 DROP/ML	20	25	30	50	60	70	75	80	100	110	120	125	130	150	175	200	60 DROP/ML
IV Tubing Drop Factor	Drops Per Minute																IV Tubing Drop Factor

In-Home Compounding System: Mini-Bag Plus, Vial-Mate & AddEASE

- **Always use with filtered tubing and hanging from a pole**
- **These compounding systems contain air in bags and cannot be placed on the pouch**
- **If on a pump, it will need to be pole mounted**
  - Partial dose given on a pump
- Usually given via gravity method
- Tubing change every 24 hours



IV Line Filters

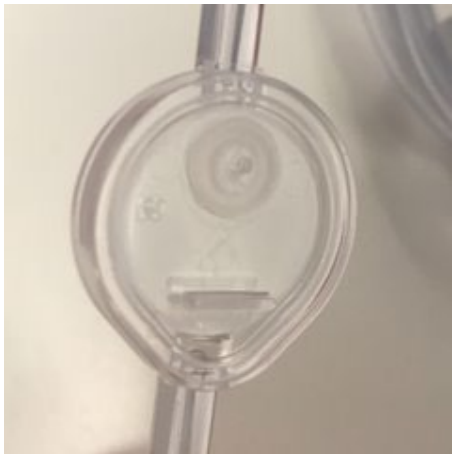
An IV-line filter is a membrane in the tubing set designed to prevent particulates and air bubbles from being administered.

Filters Components:

- Inlet allows fluid to enter the filter compartment.
- Fluid then fills the vented side, allowing air to be removed.
- Filter membrane becomes wet and prevents air and particulates to flow through the tubing. Works like a strainer.
- Fluid flow to patient side for administration.

Follow manufacturer's direction for proper priming techniques(inverted/non-inverted) to allow the fluid to fill the air-vent side first, then saturating the membrane and before filling the patient side.

- The new **PALL filter** must be primed upright, with the beveled-end (arrow) pointing up—do not invert **PALL filter during priming.**



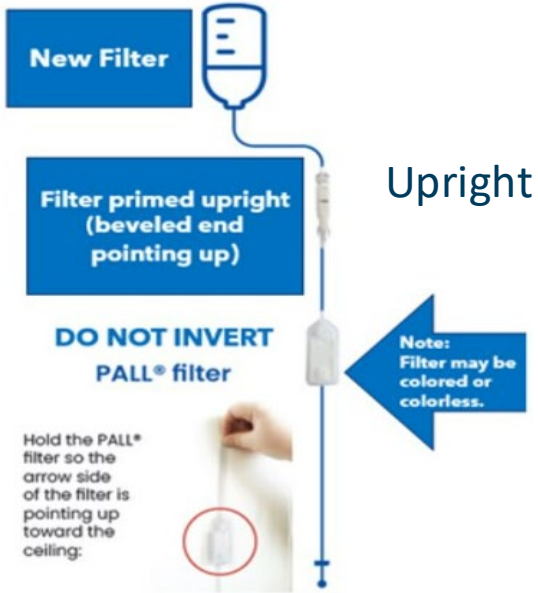
Common filter membrane sizes:

0.2 micron
- For medications compounded in the home.
- Most frequently used to filter particulates.

1.2 micron
- Usually for TPN lipids.
- Allows larger molecules to pass to the patient.

Arrow to point up during priming.

Inverted



Upright

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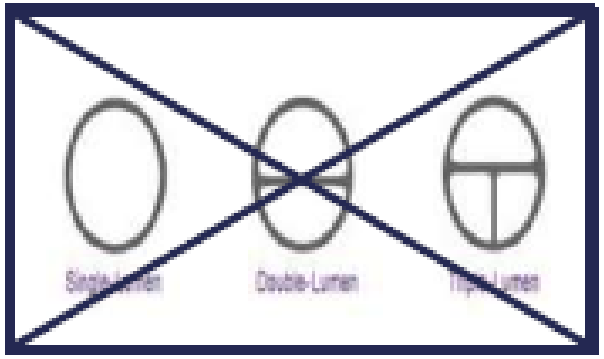
Y-sites

IV-line connector or extension to provide a second access point for IV tubing to connect to the IV catheter.

Medication is y-sited and infused into the same lumen.

Always confirm medication compatibility before use.

- Pharmacist will verbally or in writing communicate y-site compatible medications.
- Document pharmacist y-site recommendations with name of pharmacist.



Y-sites are different from lumens.

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CADD Solis Pump

Allow medication to warm to room temperature for 2-4 hours, as noted on the Plan of Treatment.

Rechargeable Battery: Plug in pump for 4 hours each day to fully charge rechargeable battery

- Can use 4 AA batteries if unable to charge pump battery

Always power up before attaching tubing cassette

- Listen for series of beeps and self-check before attaching the tubing cassette
- This will prompt "Reset RES VOL?"

Always prime on its side, with the lever side down to prevent "Air In Line" alarms

Arrives pre-programmed

Programmed to run continuous or intermittent

Commonly used for antibiotics, chemo, hydration, IVIG, narcotics, and specialty infusions

Key Code for Lock Screen: 201 or 617

Clinician Code for Bolus/Set up: 997

Pump will be delivered programed with the patient's orders. Always confirm pump setting against orders prior to starting the pump

- 4 – AA batteries or Rechargeable battery – charge pump 4 hours each day with AC adaptor.

CADD Solis

Prime on side with lever side DOWN

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- Remind patients pumps must be returned to the pharmacy when therapy is completed.
- Pumps are not disposable!
- The Pharmacy will arrange UPS pickup for return.

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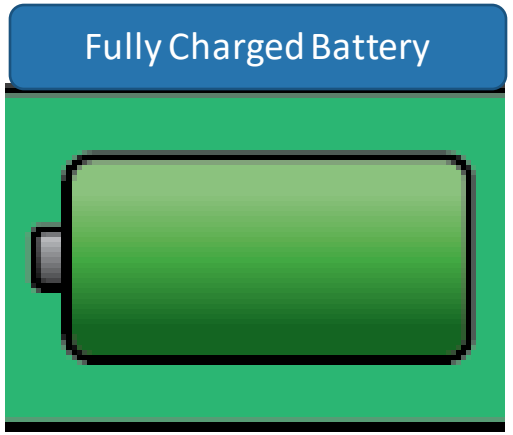
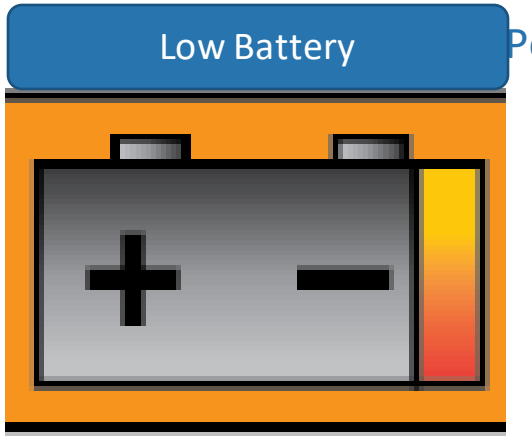
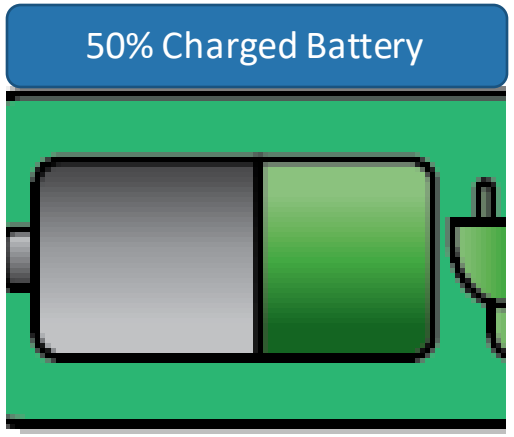
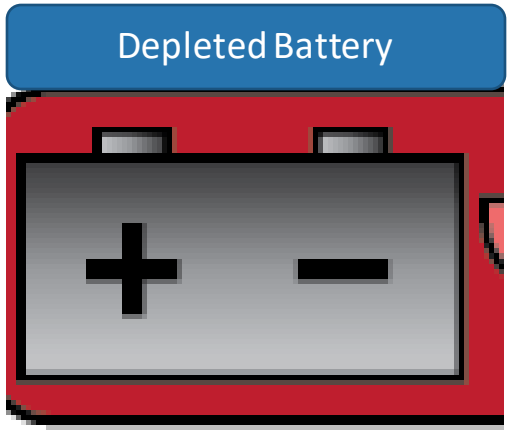
CADD Solis Battery Use



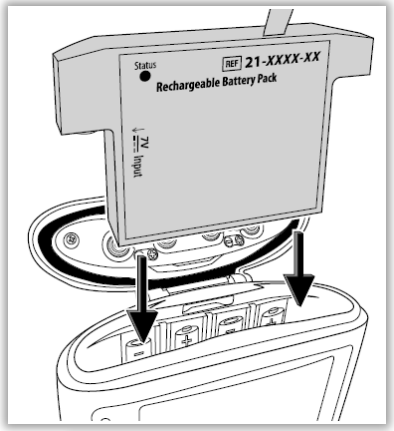






Powered by Battery

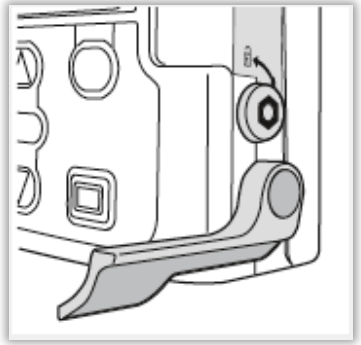
- 4 – AA Batteries
  - Remove batteries between infusions
  - Replace batteries when:
    - Low Battery
    - Depleted battery
- Rechargeable Battery
  - Plug in pump for a minimum of 4 hours each day, to maintain battery charge. An AC adapter can be used as a power source or to recharge the rechargeable battery.



ATTACHING THE CASSETTE

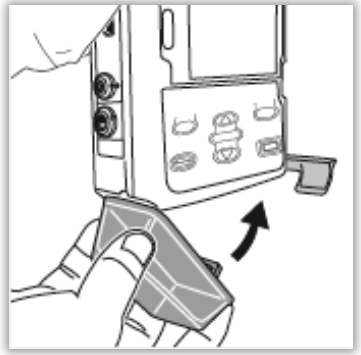
Switch the pump on, press and hold the power switch. The pump carries out self-tests and sounds six beeps when the tests are complete.

Clamp the tubing, make sure the cassette latch is unlocked and open the cassette latch to 90 degrees.



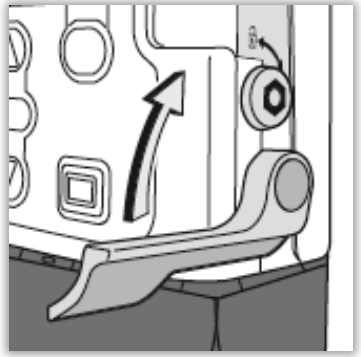
Insert the cassette hooks into the hinge pins on the bottom of the pump.

Without holding the cassette latch, push up on the cassette until it firmly clicks into place.



Lift the cassette latch up into the closed position.

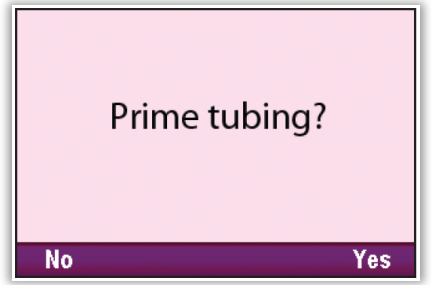
Insert the pump key and turn it clockwise to lock the cassette.

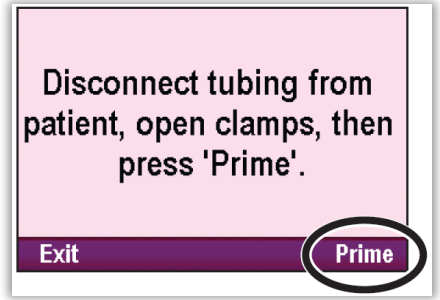


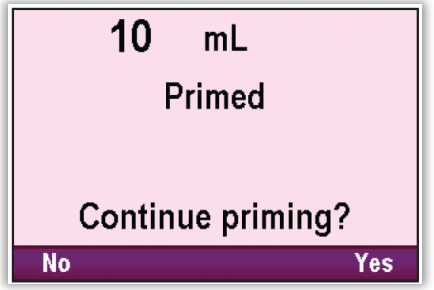
PRIME TUBING

Prime the tubing before connecting it to the patient's infusion set

1. When a cassette is attached after the pump is powered on, a "Prime Tubing?" screen always appears
2. Select Yes
3. Unlock the keypad, if required
4. If you have not already done so, disconnect the tubing from the patient, open the clamps and select Prime
5. Stop priming at any time by selecting Stop Priming. Priming automatically stops after 10 mL are primed. Continue priming as needed.







CADD SOLIS PRIMING

Always prime on its side, with the lever side down to prevent “Air In Line” alarms

Prime with LEVER SIDE DOWN

CADD Solis – Resetting the Reservoir Volume

The reservoir volume setting indicates the amount of fluid contained in the reservoir. Once this number is set, the pump keeps track of how much fluid has been delivered and adjusts the reservoir volume setting accordingly.

Always power up before attaching tubing cassette

Listen for series of beeps and self check before attaching the tubing cassette

To reset the reservoir volume after attaching a new cassette:

1. The pump displays a question asking if you wish to reset the volume to the default amount. If this screen does not appear, the reservoir volume may already be reset.

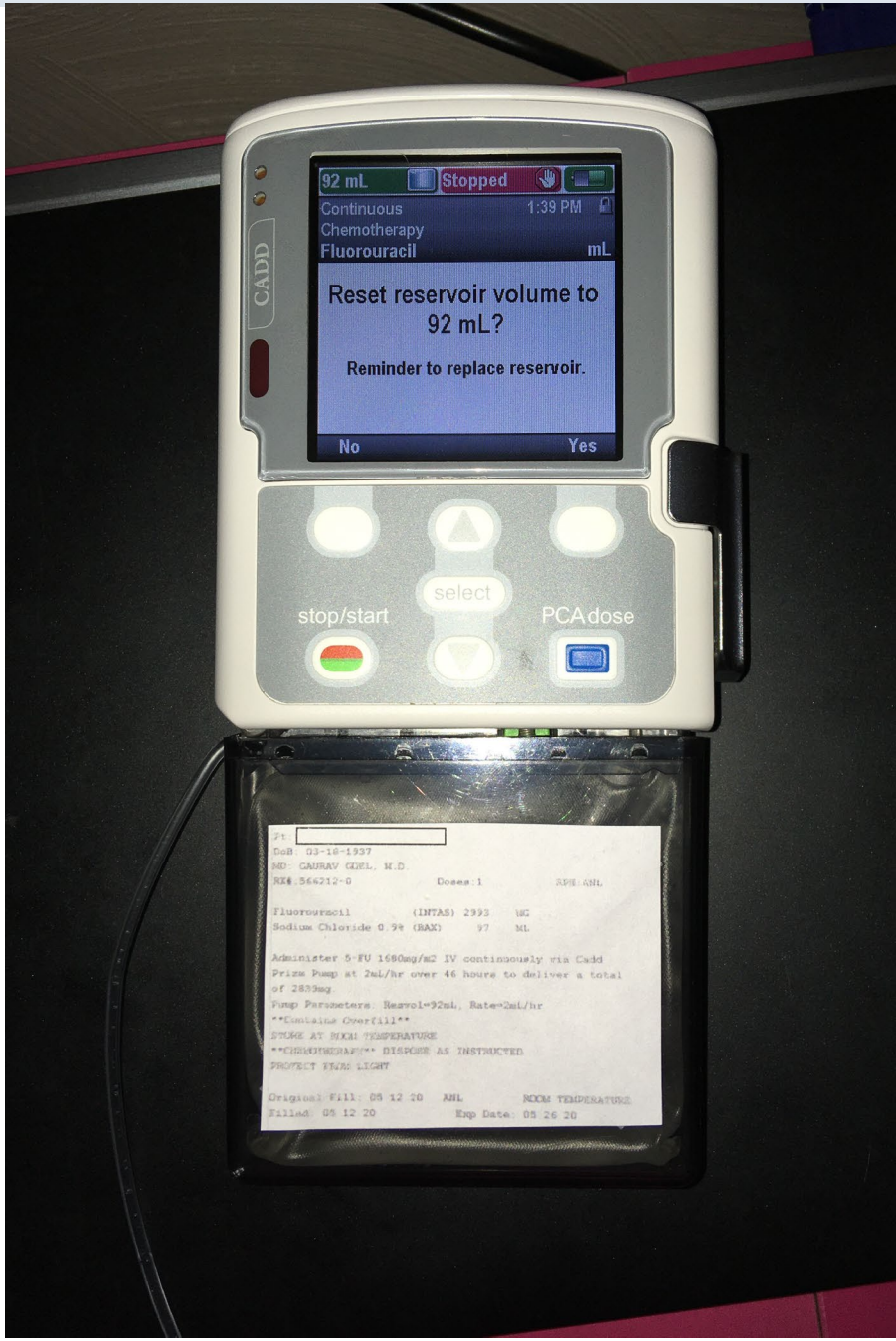
2. Select Yes to reset the volume and infusion. Select No to keep the reservoir volume at the current setting.

To reset the reservoir volume without changing the cassette:

1. Stop the pump if it is running

2. In the Tasks menu, press ▲ or ▼ until Reset Reservoir Volume is highlighted, and then press Select

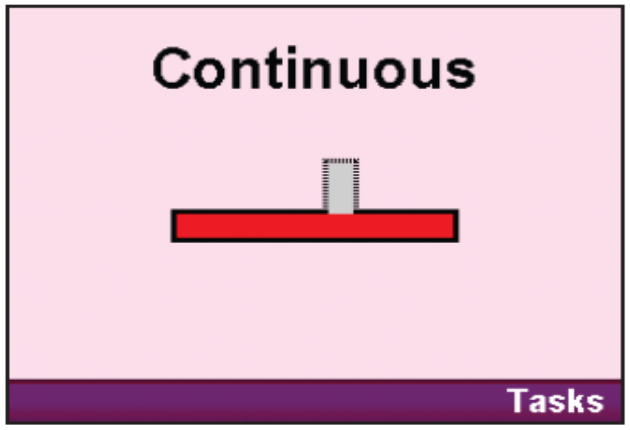
3. The pump displays a screen asking you to confirm that you want to reset the reservoir volume. Select Yes.



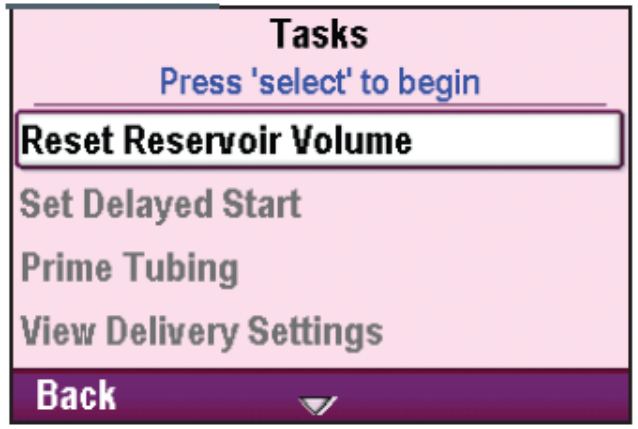
CADD SOLIS

Resetting Reservoir Volume

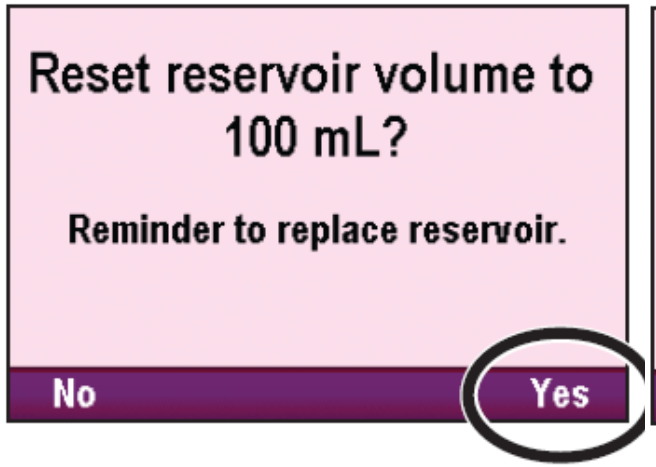
Press the soft button under Task



Press Select with Reset Reservoir Volume highlighted

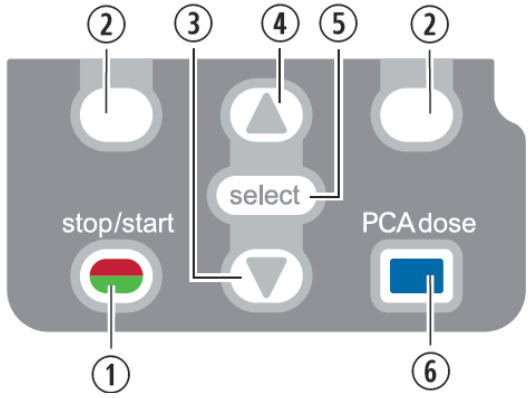


Press the soft button under Yes



Pump will reset

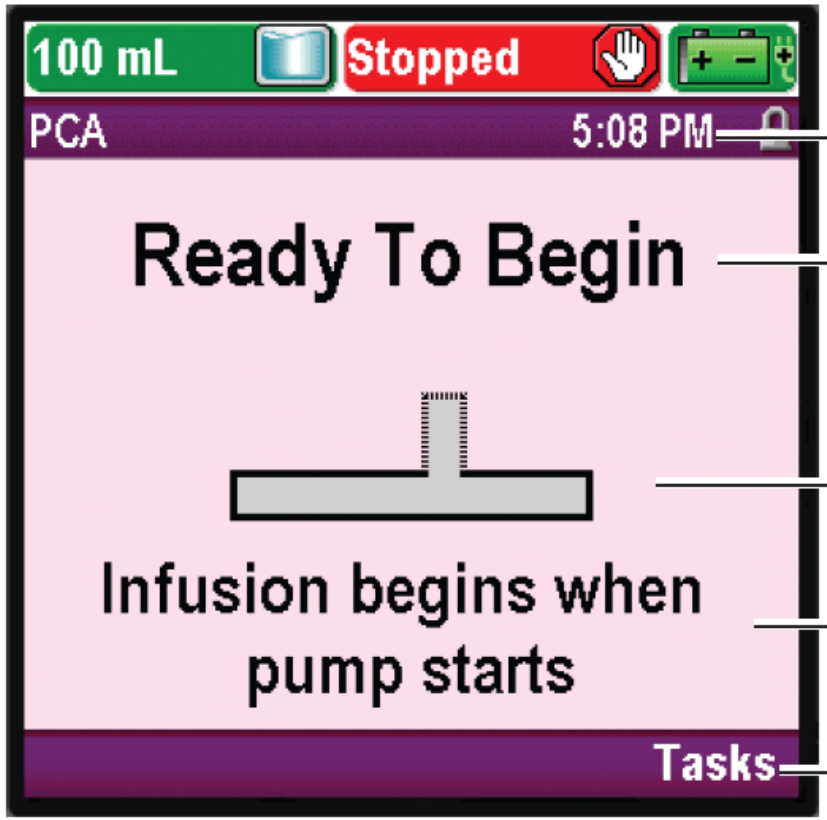
START THE PUMP



1. stop/start
2. soft keys
3. scrolls down
4. scrolls up
5. select

Infusion begins when the pump starts. When the pump is running, “Running” appears on the status bar, the graphic on the home screen is green, and the green indicator light flashes.

1. Press Stop/start
2. When “Start Pump?” appears, select Yes
3. The pump begins running. The red “Stopped” message in the status bar changes to a green “Running” message, and “Infusion is starting now…” appears briefly on the screen.



Stopping the CADD Solis Pump

1. Press STOP/START.
   Pump displays Stop Pump?

2. Press Yes.
   Pump displays Pump is Stopping.

3. Clamp the tubing and disconnect from patient.

4. Unlock the cassette latch and remove cassette.

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High Volume Tubing

250.1- 500 ml/hr

Low Volume Cassette

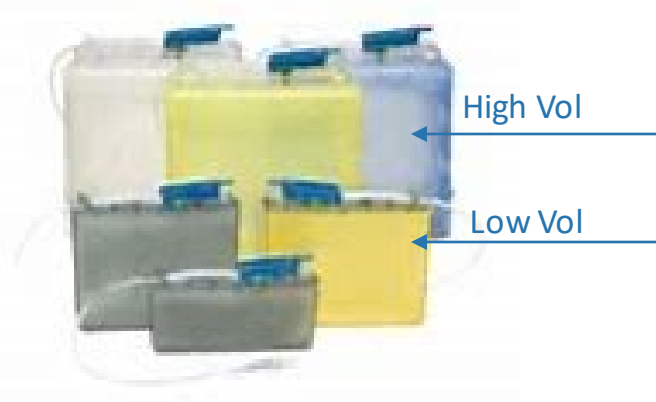
0.1-250 ml/hr

Low Volume Tubing

0.1-250 ml/hr

Variety of Cassettes

Low and High Volume



CADD Solis Tubing and Cassettes

Tubing changes: Intermittent Infusions – every 24 hours

Continuous Infusions – Mondays, Wednesdays and Fridays only

Video Resources

Video tour of outside of pump

https://youtu.be/E9xmBJ4qMKg

Battery use video

https://www.youtube.com/watch?v=ensxR-Qw7r4&list=PLW3_3QzmcLTxRW91c7NuFCagVFJX0XL2-&index=23

Pump use demonstration

https://www.youtube.com/watch?v=vBkg1c9gU_Y&list=PLW3_3QzmcLTxRW91c7NuFCagVFJX0XL2-&index=20&t=8s

PCA infusions

https://youtu.be/vzyx6KufPmE

Product Label

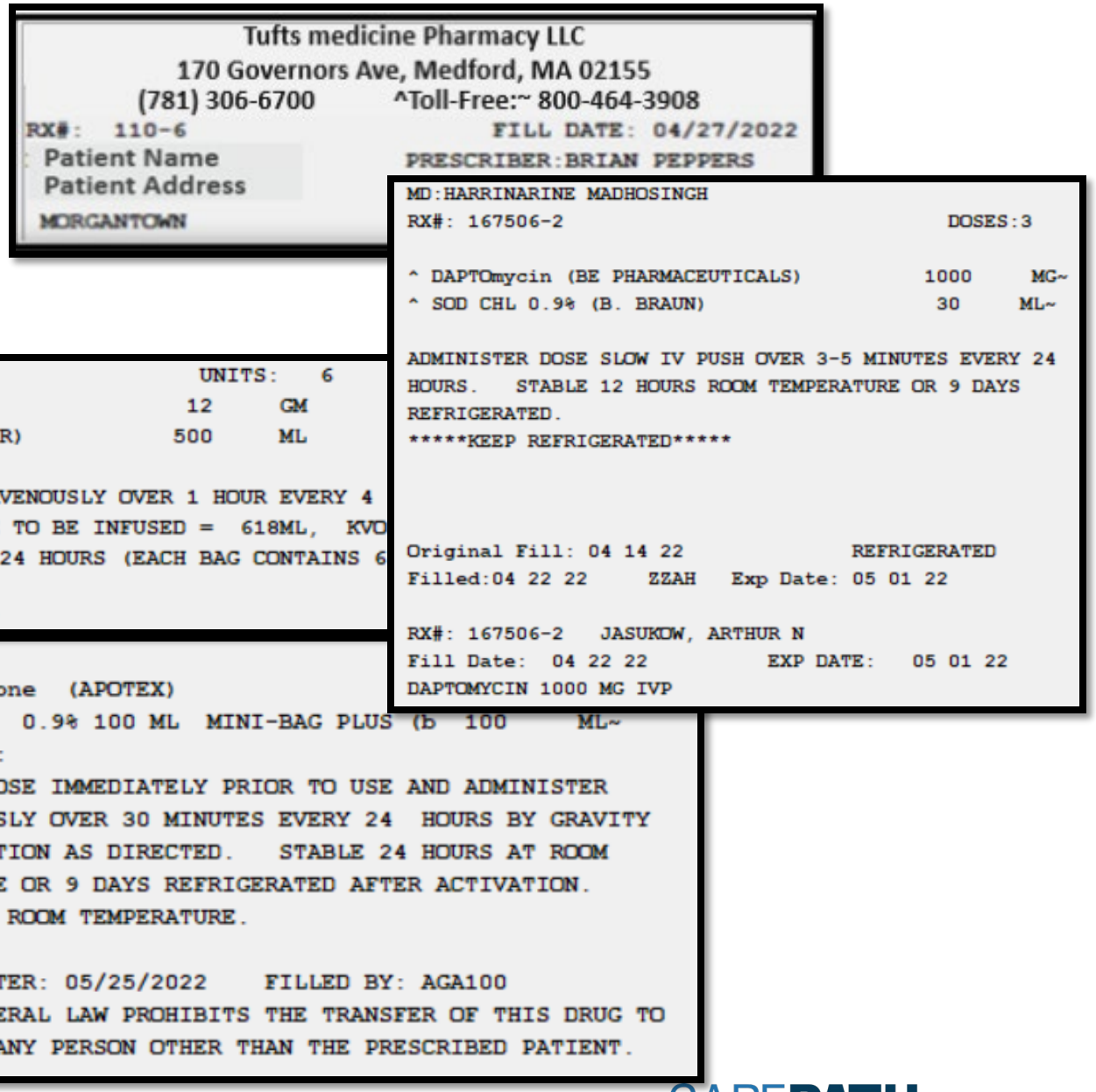
Product label to be reviewed with each dose or bag change.

Pump settings to be reviewed on the pump with each dose or bag change.

Pharmacy contact information at the top of the product label.

Product label components to review:

- Patient name
- Medication name
  - Dose
  - Diluent name and volume
- Administration instructions
  - Plan language instructions
  - Pump parameters
    - To be verified on pump with each bag change.
  - How often to change the bag if continuous
- Storage instructions
  - Including how long to warm to room temperature if refrigerated.
- Expiration date



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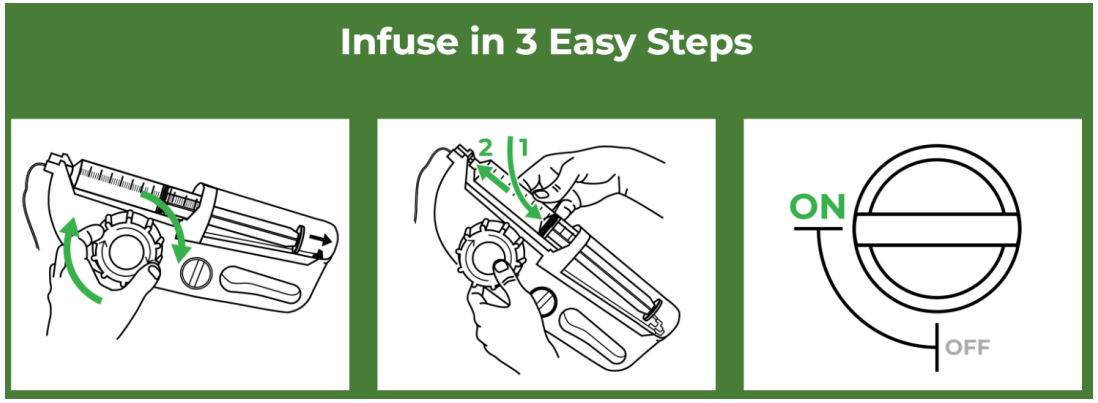
Subcutaneous infusions will be administered via CADD Solis or the Freedom60 pumps

Freedom 60 Syringe pump

Rate is controlled by Tubing – identified on both packaging and tubing clamp (i.e., F240 = 240ml/hr.)

- Disc on tubing secures the syringe into the pump
- Patients often confuse tubing with the IV extension tubing
- Change tubing every 24 hours



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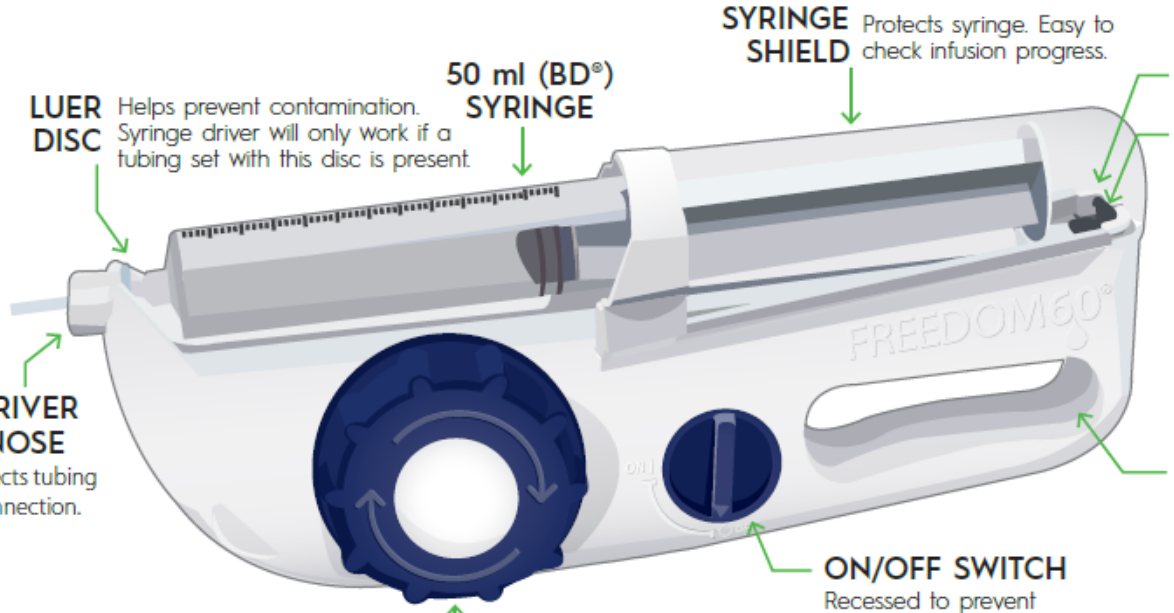
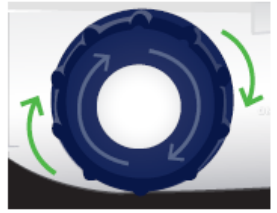
FREEDOM60®
Syringe Infusion System

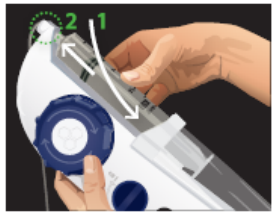


1 Wind



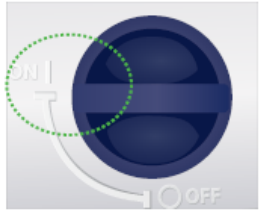
Wind knob until black tab is at end of its track.

2 Load



Load prepared syringe.

3 Go



Switch ON and go!

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precision
FLOW RATE TUBING™

Flow Rate vs Time Chart

Syringe Volume	1ml/hr	2ml/hr	30ml/hr	45ml/hr	60ml/hr	120ml/hr
5	5 hrs.	2 hrs. 30 min.	10 min.	6 min. 42 sec.	5 min.	2 min. 30 sec.
10	10 hrs.	5 hrs.	20 min.	13 min. 18 sec.	10 min.	5 min.
15	15 hrs.	7 hrs. 30 min.	30 min.	20 min.	15 min.	7 min. 30 sec.
20	20 hrs.	10 hrs.	40 min.	26 min. 42 sec.	20 min.	10 min.
25	25 hrs.	12 hrs. 30 min.	50 min.	33 min. 18 sec.	25 min.	12 min. 30 sec.
30	30 hrs.	15 hrs.	60 min.	40 min.	30 min.	15 min.
35	35 hrs.	17 hrs. 30 min.	70 min.	46 min. 42 sec.	35 min.	17 min. 30 sec.
40	40 hrs.	20 hrs.	80 min.	53 min. 18 sec.	40 min.	20 min.
45	45 hrs.	22 hrs. 30 min.	90 min.	60 min.	45 min.	22 min. 30 sec.
50	50 hrs.	25 hrs.	100 min.	66 min. 42 sec.	50 min.	25 min.
55	55 hrs.	27 hrs. 30 min.	110 min.	73 min. 18 sec.	55 min.	27 min. 30 sec.
60	60 hrs.	30 hrs.	120 min.	80 min.	60 min.	30 min.

IV Antibiotic Therapies

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MEDICATION	Infusion Period	Usual Frequency	Delivery Method Option 1	Delivery Method Option 2	Delivery Method Option 3
Ampicillin *	30 MIN	Q4H-6H-8H	ELASTOMERIC	CADD PUMP	GRAVITY
Ampicillin/Sulbactam (Unasyn)*	30 MIN	Q4H-6H-8H	ADD A VIAL	ELASTOMERIC	CADD PUMP
Cefazolin (Ancef)	IVP 5 MIN, 30 MIN	Q6-8H	IVP	ELASTOMERIC	CADD PUMP
Cefepime (Maxipime)	IVP 5 MIN, 30 MIN	Q8-12H	IVP	ELASTOMERIC	ADD VIAL/CADD PUMP
Ceftazidime (Fortaz)	IVP 5 MIN, 30MIN	Q8H	ELASTOMERIC	IVP (4 days)	ADD A VIAL
Ceftriaxone (Rocephin)	IVP 5 MIN, 30MIN	Q12-24H	ELASTOMERIC	IVP	ADD A VIAL
Ceftolozane/tazobactam(Zerbaxa)*	60 MIN	Q8H	ELASTOMERIC	PIGGYBACK	
Cefuroxime (Ceftin)	IVP 5 MIN, 30 MIN	Q6-8H	IVP	ELASTOMERIC	CADD PUMP
Ciprofloxacin (Cipro)	60 MIN	Q12-24H	PIGGYBACK	ELASTOMERIC	
Ceftazidime (Fortaz)	IVP 5 MIN, 30MIN	Q8H	ELASTOMERIC	IVP (4 days)	ADD A VIAL
Ceftriaxone (Rocephin)	IVP 5 MIN, 30MIN	Q12-24H	ELASTOMERIC	IVP	ADD A VIAL
Ceftolozane/tazobactam(Zerbaxa)*	60 MIN	Q8H	ELASTOMERIC	PIGGYBACK	
Cefuroxime (Ceftin)	IVP 5 MIN, 30 MIN	Q6-8H	IVP	ELASTOMERIC	CADD PUMP
Ciprofloxacin (Cipro)	60 MIN	Q12-24H	PIGGYBACK	ELASTOMERIC	

Common Home Antibiotic Therapies

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Common Antibiotic Lab Orders

Standard	Trough levels monitored
CBC with diff	Vancomycin
CMP	Gentamicin
*ESR (optional)	Tobramycin
*CRP (optional)	Amikacin
**CPK (daptomycin only)	

Troughs to be drawn immediately prior to next dose due (or within 30 minutes of next dose due).

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IV Antibiotic Therapies

First Dosing Considerations: The first dose will be administered by an RN trained to respond to life-threatening hypersensitivity or anaphylactic reactions. Patients to be monitored for 30 minutes after the infusion. Patients requiring a first dose in the home setting will be assessed on a case-by-case basis. Screening criteria will include but is not limited to:

- ❑ Severe or multiple medication allergies
- ❑ History of allergy to medication in the same class
- ❑ Multiple, complex comorbidities
- ❑ Potential risk factors for ADR's: diabetes, cardiac, pulmonary, renal and hematologic abnormalities, blood type, current infections/sepsis, neurological issues, history of thromboembolic events
- ❑ Patient and prescriber preference
- ❑ Access to EMS/911
- ❑ Availability of a caregiver

IV Hydration Therapy

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IV Hydration Therapies

May be ordered daily, only specific day of the week and/or in conjunction with TPN

May be ordered PRN

- As needed for symptoms
- To replace high output ostomies
- Poor PO tolerance

Can be administered subcutaneously, but typically ordered IV.

Often will have electrolytes added, called customized hydration.

MEDICATION	Infusion Period	Usual Frequency	Delivery Method Option 1	Delivery Method Option 2	Delivery Method Option 3
Hydration (IV fluids)	VARIABLE	VARIABLE	GRAVITY	CADD PUMP	>40meq K-PUMP

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IV Inotropic Therapy

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Inotropic Therapies

Inotropic agents

Milrinone (Primacor)

Dopamine (Intropin)

Dobutamine (Dobutrex)

Weight based dosing/ordering

mcg/kg/min

Dosing weight to be written on the order. Do not change infusion rate based on current weight.

Positive Inotropic Agents

Treatment of end-stage congestive heart

Synthetic catecholamines which directly stimulate beta-1 receptors in the heart to increase myocardial contractility and stroke volume

Goal of therapy is to improve cardiac output without increasing the heart rate or mean arterial pressure

Used to as bridge to cardiac transplantation, palliative care and improved quality of life.

Medicare patients must meet qualification diagnosis criteria.

Inotropic Therapy

Patient Monitoring

Serum creatinine

Liver function tests

CBC and electrolyte panel

I/O's, including weight

EKG

Blood pressure

Heart rate and rhythm

Weight

CHF Care

Best Practice

Prime extension tubing with medication.

Do NOT flush the Milrinone line to prevent blousing - unless the lumen needs troubleshooting.

Typically has a DL catheter for use.

Typically send 2 pumps, to be rotated to ensure a backup pump is always in the home and functional.

Patients often have a lifevest due to vasoactive nature of positive inotropes, to prevent sudden cardiac death.

Can infuse peripherally for up to 96 hours.

IV and SC Pain Management

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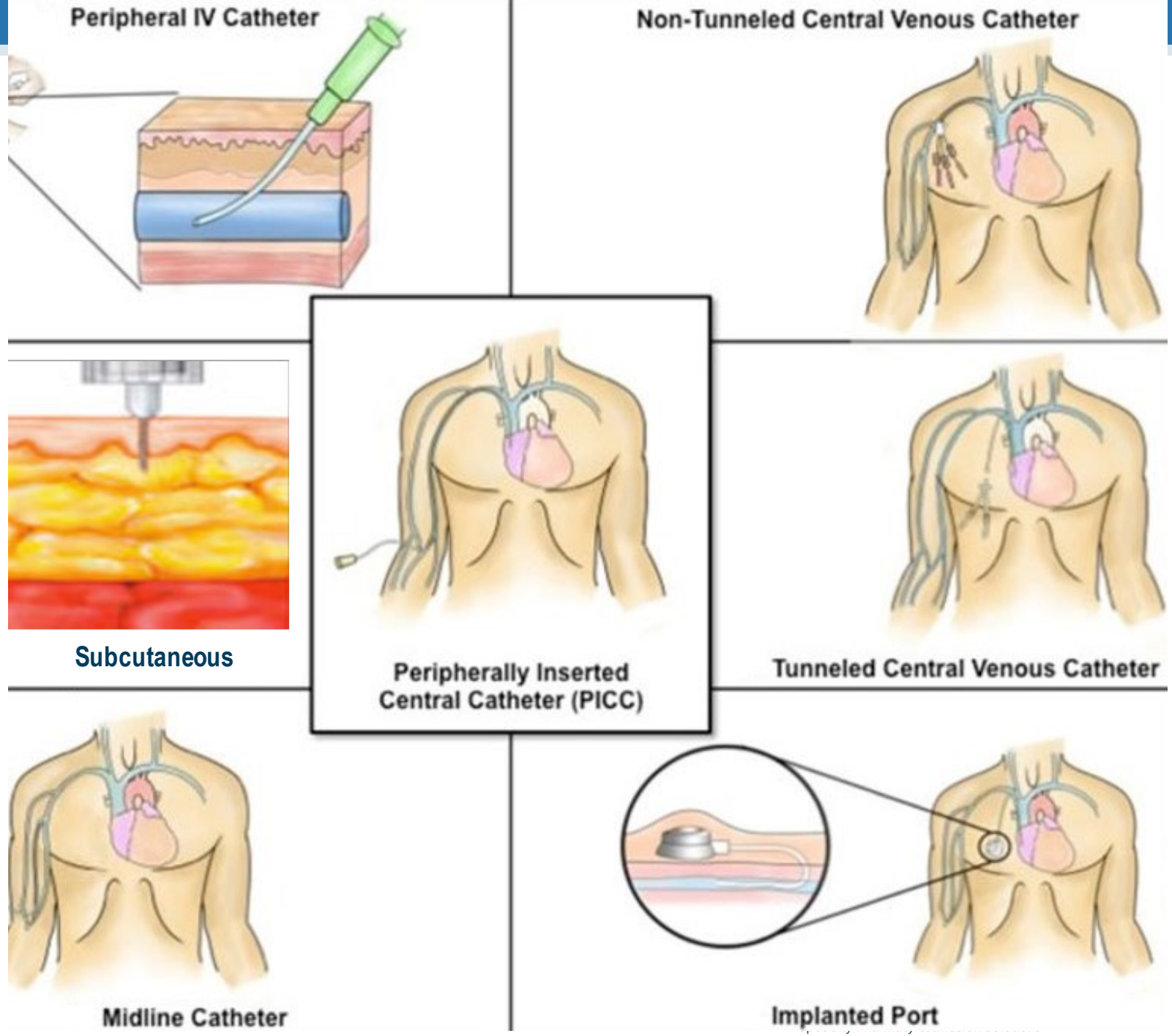
Patient-Controlled Analgesia (PCA)

Patient-controlled analgesia (PCA) is a method of pain control that gives patients the power to control their pain. In PCA, a computerized pump called the patient-controlled analgesia pump, which contains pain medication as prescribed by a doctor, is connected directly to a patient's intravenous (IV) line or subcutaneous line.

The pump is set to deliver a constant or intermittent dose of pain medication. Additional doses of medication can be self-administered as needed by having the patient press a button.

Administration Routes

- Subcutaneous
- Peripheral
- Midline
- PICC
- Non-tunneled central
- Tunneled central
- Implanted Ports



CADD Solis Tubing and Cassettes

Low Volume Tubing

0.1-250 ml/hr

Low Volume Cassette

0.1-250 ml/hr

PCA will not operate with High Volume Cassettes

Tubing changes: PCA - weekly

Must use Low Volume Cassettes

CADD Solis –PCA Infusions

Keypad Code (201 or 617) is used by most pharmacies to modify and review patient-specific parameters

PCA Delivery Modes:

- **Continuous rate**, infusion of analgesia at a constant, programmed rate.
- **PCA dose**, a demand dose activated by the patient
- **Clinician bolus**, a dose activated by the clinician

Clinician Code (997) is used by most pharmacies to modify most advanced task settings, format the time and date, change delayed start and priming security options, select new protocols and deliver a CLINICIAN BOLUS.

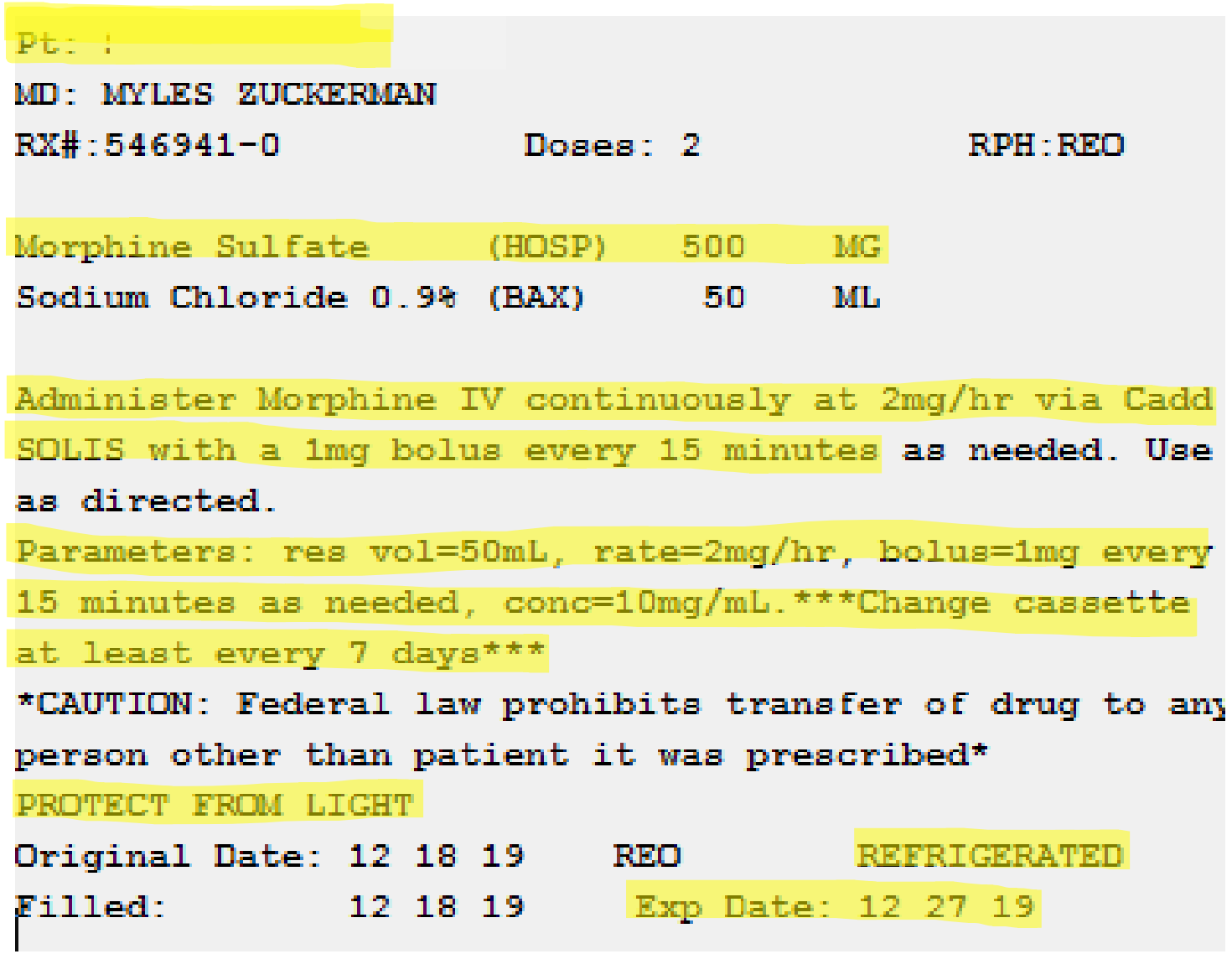
Typically compounded in a puncture proof cassette

Cassette will be locked into place to prevent removal from the pump

A PCA key will be delivered with the pump

Bolus administration

- By PCA button on the front of pump
- By bolus cord
- When in use, deactivates PCA button on the front of the pump



```
Pt: :
MD: MYLES ZUCKERMAN
RX#:546941-0          Doses: 2          RPH:REO

Morphine Sulfate     (HOSP)    500     MG
Sodium Chloride 0.9% (BAX)      50     ML

Administer Morphine IV continuously at 2mg/hr via Cadd
SOLIS with a 1mg bolus every 15 minutes as needed. Use
as directed.
Parameters: res vol=50mL, rate=2mg/hr, bolus=1mg every
15 minutes as needed, conc=10mg/mL.***Change cassette
at least every 7 days***
*CAUTION: Federal law prohibits transfer of drug to any
person other than patient it was prescribed*
PROTECT FROM LIGHT
Original Date: 12 18 19    REO        REFRIGERATED
Filled:        12 18 19     Exp Date: 12 27 19
```

Product Label

Product label to be reviewed with each dose or bag change.

Pump settings to be reviewed on the pump with each dose or bag change.

Product label components to review:

- Patient name
- Medication name and dose in bag or cassette
- Administration instructions / Pump parameters
- Storage instructions
- Expiration date

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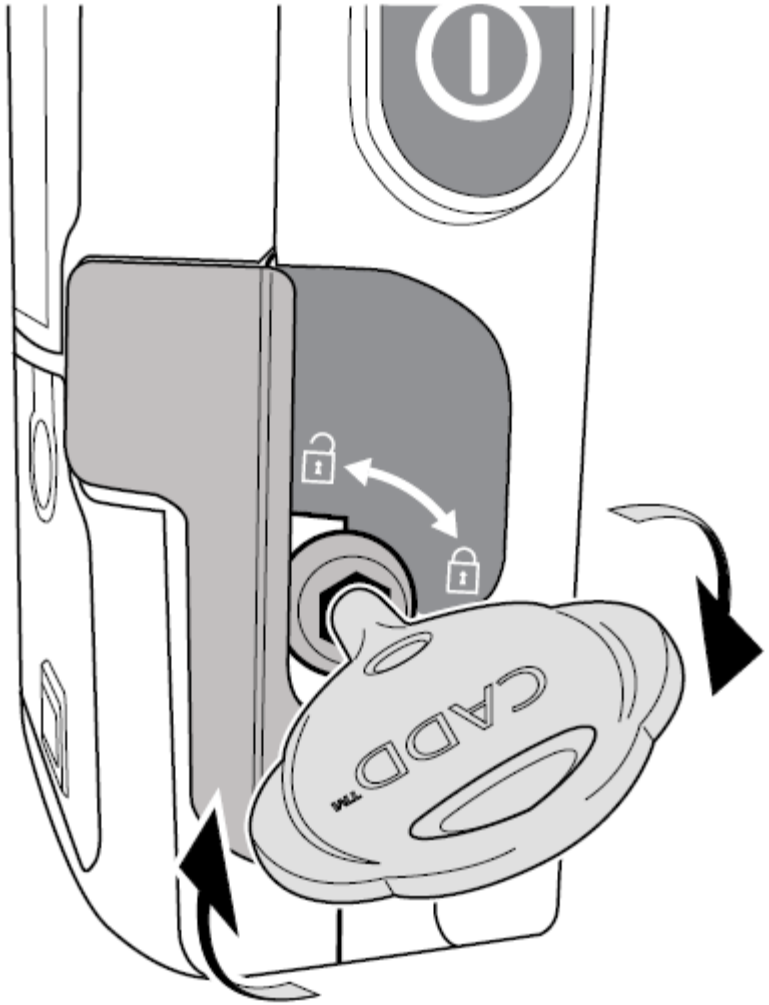
LOCKING CASSETTE INTO PLACE

Lock the cassette by inserting the pump key into the cassette/key lock and turning it clockwise to the locked position. “Cassette Locked” appears briefly in the pump display.



CADD Solis PCA Video Library

Solis Administration https://youtu.be/z5WPP_nlUUl

Solis Exterior Pump Tour https://youtu.be/E9xmBJ4qMKg

Solis PCA Administration https://youtu.be/vzyx6KufPmE

Solis PCA Clinician Bolus https://youtu.be/ZFskRUYh4QA

Solis Re-set Reservoir Volume https://youtu.be/7HJShhXTx9M

Solis Battery & Charging https://youtu.be/ensxR-Qw7r4

Prism SC PCA https://youtu.be/9m-288bg2qI
Prism PCA Bolus https://youtu.be/iyxcgxiu-MU

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SCIG: Subcutaneous Immunoglobulin

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What is Immunoglobulin?

Immunoglobulin (Ig) is

- Derived from the plasma of screened, paid, and volunteer donors.
    - Plasma from thousands of donors are combined and used to manufacture each batch of an Ig product (from 1,000 – 60,000 donors per batch)
    - The FDA now requires at least two independent and complementary viral reduction steps for all Ig products
- A component of the blood that is responsible for transporting nutrients, hormones, and proteins throughout the body.
- Different types of Ig molecules play different roles within the immune system. The body depends on these molecules to act as antibodies to fight against foreign substances (also known as antigens).
- The primary component of Ig products is immunoglobulin G (IgG).

Ig therapy is used for replacement therapy in immunodeficiency diseases and for immunomodulatory effects in autoimmune and inflammatory disorders.

SCIG:

Subcutaneous Immunoglobulin

The primary component of Ig products is immunoglobulin G (IgG). Brands of Ig can differ in IgG monomer, dimer, and aggregate concentrations, IgA and IgM content, stabilizers, additives, and levels of impurities. Because of these differences, products cannot be used interchangeably or mixed together. Human immune globulin therapy is used for the treatment of immunodeficiency, prophylaxis for infectious diseases and in the management of inflammatory and autoimmune disorders. Human immune globulin is infused into the subcutaneous tissue via small gauge needles inserted into the abdomen, arms, back or thighs.

Subcutaneous infusion offers several advantages over intravenous infusion, including ease of administration, lower cost, and lack of potential serious complications.

Immunoglobulin Indications

Primary Immunodeficiency (PID)

Secondary Immunodeficiency (SID)

- Inborn Errors of immunity affecting antibodies.
- Chronic lymphocytic leukemia (CLL)
- Reduced immune function after stem cell transplant

Chronic inflammatory demyelinating polyneuropathy (CIDP)

Myasthenia gravis

Gillian-Barre syndrome

Immune thrombocytopenia (ITP)

Autoimmune-hemolytic-anemia (AIHA)

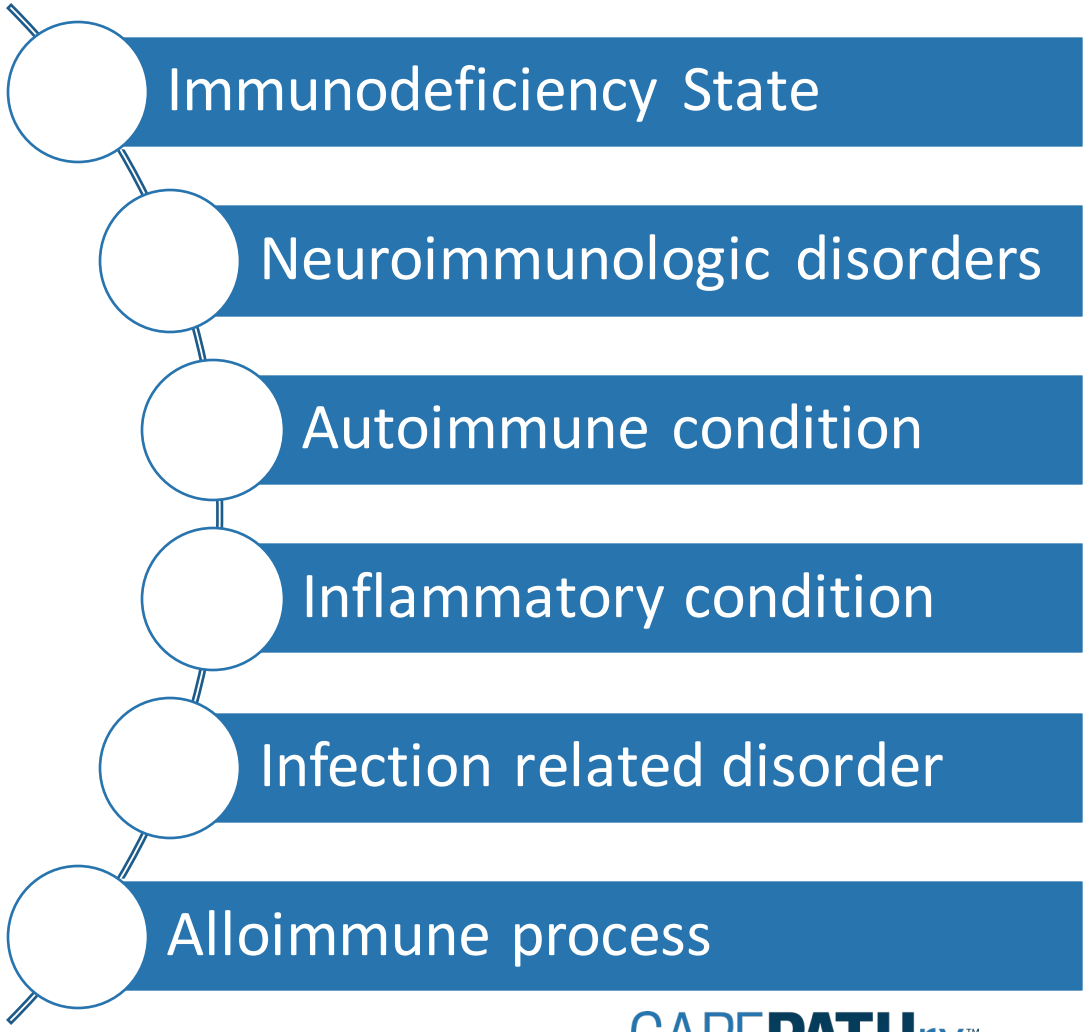
Kawasaki-disease

Toxic shock syndrome

Measles postexposure prophylaxis

Hemolytic disease of the fetus & newborn (HDFN)

Antibody mediated organ transplant rejection



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Primary Immunodeficiency Disorders (PID)

Primary immunodeficiency disorders — also called primary immune disorders or primary immunodeficiency — weaken the immune system, allowing infections and other health problems to occur more easily.

Many people with primary immunodeficiency are born missing some of the body's immune defenses or with the immune system not working properly, which leaves them more susceptible to germs that can cause infections

Researchers have identified more than 300 forms of primary immunodeficiency disorders.

Signs

One of the most common signs of primary immunodeficiency is having infections that are more frequent, longer lasting or harder to treat than are the infections of someone with a typical immune system. You may also get infections that a person with a healthy immune system likely wouldn't get (opportunistic infections).

Signs and symptoms of primary immunodeficiency can include:

- Frequent and recurrent pneumonia, bronchitis, sinus infections, ear infections, meningitis or skin infections
- Inflammation and infection of internal organs
- Blood disorders, such as low platelet count or anemia
- Digestive problems, such as cramping, loss of appetite, nausea and diarrhea
- Delayed growth and development
- Autoimmune disorders, such as lupus, rheumatoid arthritis or type 1 diabetes

Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)

Chronic inflammatory demyelinating polyneuropathy (**CIDP**) is an acquired autoimmune disease of the peripheral nervous system characterized by progressive weakness and impaired sensory function in the legs and arms. It involves the nerve roots and is considered an autoimmune disorder destroying myelin, the protective covering of the nerves.

Symptoms

- Typical early symptoms are "tingling" (sort of electrified vibration or paresthesia) or numbness in the extremities, difficulty walking
- Frequent (night) leg cramps
- Loss of reflexes (in knees)
- Muscle fasciculations
- “Vibration" feelings
- Loss of balance
- General muscle cramping
- Nerve pain or burning pain in extremities
- Diminished or absent deep-tendon reflexes
- Muscle weakness

SCIG Preparations Approved for Use in the United States

Product	Route	Manufacturer	Indications
Cutaquig 16.5%	SC	Octapharma Pharmazeutika Octapharma USA	Primary humoral immunodeficiency
Cuvitru 20%	SC	Takeda	Primary humoral immunodeficiency
Hizentra 20%	SC	CSL Behring	Primary humoral immunodeficiency Chronic inflammatory demyelinating polyneuropathy
HyQvia 10%	SC	Takeda	Primary humoral immunodeficiency
Xembify	SC	Grifols	Primary humoral immunodeficiency

Product	Route	Manufacturer	Indications
Gammagard Liquid 10%	IV/SC	Takeda	Primary humoral immunodeficiency (IV/SC) Multifocal motor neuropathy (IV)
Gammaked 10%	IV/SC	Kedrion Biopharma	Primary humoral immunodeficiency (IV/SC) Idiopathic thrombocytopenic purpura (IV) Chronic inflammatory demyelinating polyneuropathy (IV)
Gamunex-C 10%	IV/SC	Grifols	Primary humoral immunodeficiency (IV/SC) Idiopathic thrombocytopenic purpura (IV) Chronic inflammatory demyelinating polyneuropathy (IV)

Different brands of IgG are NOT interchangeable due to their unique formulations.
The patient can only receive the ordered brand of immunoglobulin.
Other brands may cause side effects or not be indicated for the patient's disease process.

IG PRODUCT CONSIDERATIONS (CONTINUED)

SCIG products are available as 10% and 20% solutions. The administered volume of a 10% solution is twice that of a 20% solution, and while it may be better tolerated in some patients, the greater volume necessitates more SC infusion sites or more frequent administration. Rate of infusion and volume per site varies among SCIG products, and patient tolerability should always be taken into consideration.

DIABETIC CONSIDERATIONS

Stabilizers are used in the purification process of viral inactivation of Ig to avoid the formation of Ig aggregates. Stabilizers used include sugars (eg, sucrose, maltose, and glucose) and polyols (eg, sorbitol).

Ig products containing glucose should be avoided in diabetic patients when feasible, as they can potentially raise serum glucose levels. Additionally, products containing maltose as a stabilizer should be used carefully in diabetic patients.

Some blood glucose monitoring systems (BGMSs),lack specificity for detecting glucose and may detect maltose, galactose and xylose as glucose giving a falsely elevated glucose level which could lead to the administration of insulin, resulting in hypoglycemia

IG PRODUCT CONSIDERATIONS (CONTINUED)

HYDRATION

Hydration, administered either orally or intravenously, is commonly employed in patients (if the additional fluid is not contraindicated), as it can help reduce many common mild or moderate ADRs. For oral hydration, 1 to 2 L in the 23 hours prior to infusing, as well as additional hydration during the infusion, are recommended. Post infusion oral hydration is also recommended. For intravenous hydration, 5% dextrose (D5W) or 0.9% sodium chloride (NS) is most commonly administered prior to and/or during the infusion of IVIG. Some brands of IVIG are not compatible with certain IV fluids, in which case those fluids should not be administered concurrently with Ig products through the same IV line. Additionally, if IV hydration with an incompatible solution is given prior to an IVIG infusion, the line should be flushed with a compatible solution prior to administering IVIG.

IgA CONTENT

IVIG products contain IgA in varying amounts.

Rare but severe anaphylactic reactions to Ig products were most likely to occur in patients who were severely deficient in IgA (< 1.2 mg/dL) and had anti-IgA antibodies of the IgE type.

IG PRODUCT CONSIDERATIONS (CONTINUED)

RECOMBINANT HUMAN HYALURONIDASE

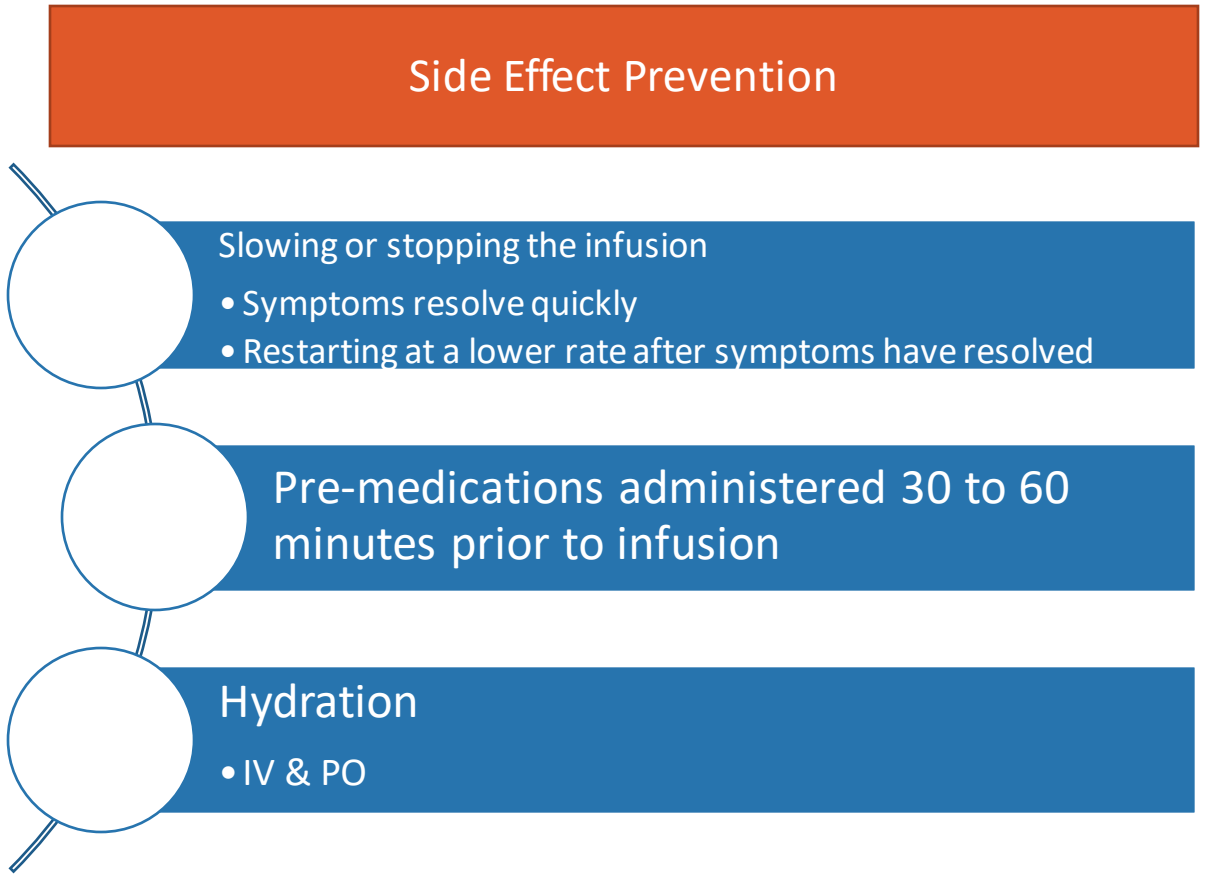
IGHy uses recombinant human hyaluronidase to transiently increase the permeability of the SC tissue, allowing up to 600 mL of the Ig (10% solution) to be administered per infusion site. If IGHy is being utilized, it is important that the recombinant human hyaluronidase be administered first and the Ig product be started within approximately 10 minutes.

Immunoglobulin Side Effects

- Headache
- Fever
- Fatigue
- Chills
- Flushing
- Dizziness
- Hives
- Wheezing
- Myalgias and arthralgias
- Chest tightness
- Nausea
- Vomiting
- Rigors
- Back pain
- Chest pain
- Muscle cramps
- Changes in blood pressure
- Urticaria, pruritus, rash

Most Common Infusion Site Reactions:

infusion site erythema (redness), infusion site pain, infusion site swelling (puffiness), infusion site bruising, infusion site nodule, infusion site pruritus (itching), infusion site induration (firmness), infusion site scab, infusion site edema



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Benefits of Subcutaneously administered IG.

- Premedication is usually not required with SCIG.
- Patients self-administer SCIG after they are taught.
- SCIG administration causes few serious systemic adverse events.
    - SCIG is also tolerated by most patients who had previous serious systemic reactions .
    - Systemic reactions occur in less than 3% of SCIG patients.
- SCIG given weekly (or more frequently) provides more even, physiologic serum IgG levels and avoids the low trough levels occurring near the end of the three- or four-week dosing period of IVIG.
    - Fatigue, myalgias, and arthralgias (sometimes called "wear-off" effects) are not usually reported with traditional SCIG.

Continued Benefits of Subcutaneously administered IG.

- The ability to self-administer SCIG at home improves the patient's sense of autonomy and frees him/her from trips to a medical facility.
    - Reduces exposure to nosocomial infections.
- SCIG infusions may be particularly useful in patients for whom venous access is problematic and circumvents the need for implantable venous access devices

First Dosing in the Home

Considered safe with the below criteria:

- Previous infusion of IVIG without severe systemic reaction
- Absence of severe or multiple medication allergies
- Baseline CBC and CMP within normal limits

Special consideration for first dosing in the home with a documented history of:

- Renal disease or complications
- Thromboembolic events
- Cardiovascular disease
- Multiple, complex comorbidities
- Anti-neutrophil antibodies and migraines
- Pulmonary edema
- IG naïve (No previous IVIG or SCIG)

First dosing should occur in the **clinic** in the presence of:

- IgA or anti-IgA antibodies
- Thrombocytopenia
- Bleeding disorders, including hemophilia
- Skin disorders or acute irritation/injury
- BMI < 18.5 (low percent body fat or malnourished)
- Patient or provider prefers first dose in clinic

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RISKS ASSOCIATED WITH Ig THERAPY

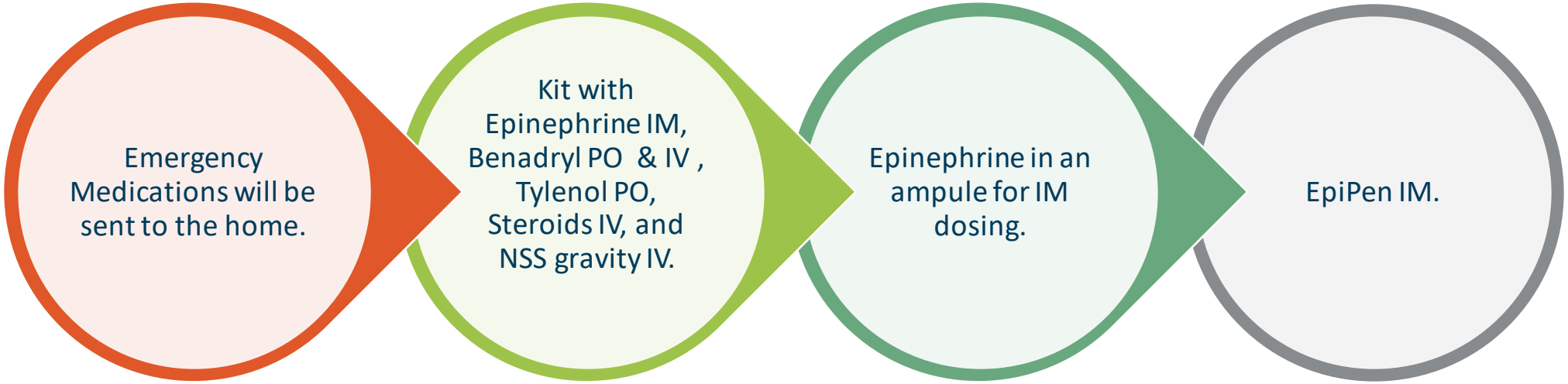
- Risk of Renal Dysfunction and Acute Renal Failure
- Risk of Thromboembolic Events
- Risk of Anaphylaxis—IgA Content
- Risk of Viral Transmission (very low risk)
- Systemic Reactions
- Anaphylactic Reactions
- Headache and/or Hypotension/Hypertension During the Infusion
- Hemolysis/Hemolytic Anemia

Intolerance & Hypersensitivity Reactions

Hypersensitivity and anaphylactic reactions are rare.

Each batch of Ig product is pooled from a different set of donors, and therefore different plasma makes up the product.

- Reactions can occur with any infusion, even with no previous symptoms.



Immunoglobulin Storage & Handling

Most immunoglobulin products for administration come as a liquid, only one product comes in a lyophilized powder (Gammagard S/D).

The medication should be stored according to instructions on the accompanying product label. (Room temperature </= 77 degrees F); (Refrigerated 36-46 degrees F). Ig products should never be frozen. If refrigerated, Ig products should be brought to room temperature prior to infusion.

Do not microwave or heat the medication, as this may cause the immunoglobulin protein to become compromised.

Be sure to avoid any vigorous mixing or shaking of the vial. Extra foam can damage the product.

If your medication comes as the powder, it will need to be mixed with sterile water for injection per product label.

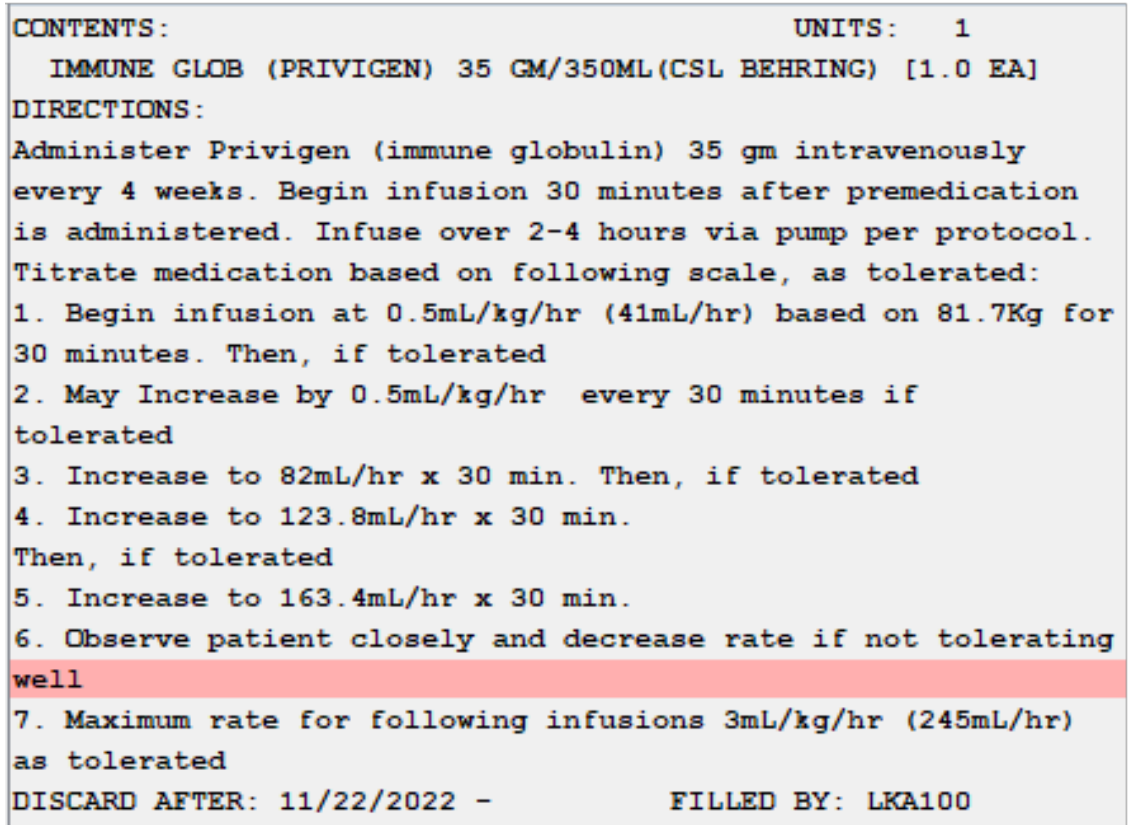
Product Label

Product label to be reviewed with each dose or bag change.

Pump settings to be reviewed on the pump with each dose or bag change.

Product label components to review:

- Patient name
- Medication name
  - Amount in bag/cassette
  - Diluent name and volume
  - Can calculate concentration
- Administration instructions
  - Plan language instructions
  - Pump parameters
    - To be verified on pump with each bag change.
  - How often to change the bag if continuous
- Storage instructions
  - Including how long to warm to room temperature if refrigerated.
- Expiration date



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CONTENTS:                                          UNITS:   1
  IMMUNE GLOB (PRIVIGEN) 35 GM/350ML(CSL BEHRING) [1.0 EA]
DIRECTIONS:
Administer Privigen (immune globulin) 35 gm intravenously
every 4 weeks. Begin infusion 30 minutes after premedication
is administered. Infuse over 2-4 hours via pump per protocol.
Titrate medication based on following scale, as tolerated:
1. Begin infusion at 0.5mL/kg/hr (41mL/hr) based on 81.7Kg for
30 minutes. Then, if tolerated
2. May Increase by 0.5mL/kg/hr  every 30 minutes if
tolerated
3. Increase to 82mL/hr x 30 min. Then, if tolerated
4. Increase to 123.8mL/hr x 30 min.
Then, if tolerated
5. Increase to 163.4mL/hr x 30 min.
6. Observe patient closely and decrease rate if not tolerating
well
7. Maximum rate for following infusions 3mL/kg/hr (245mL/hr)
as tolerated
DISCARD AFTER: 11/22/2022 -          FILLED BY: LKA100
```

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Supplemental Product Labels

Pharmacy Name
Pharmacy Address
Pharmacy Phone Number

RX#: 15-0 FILL DATE: 11/22/2021

PRESCRIBER: Ordering Provider Name

Patient Name
Patient Address

WV 26169

CONTENTS: UNITS: 10
SODIUM CHLORIDE 0.9% 10ML SYRINGE (BD) 10 ML
DIRECTIONS:
FLUSH WITH 3ML 0.9% SODIUM CHLORIDE BEFORE AND AFTER IV DOSE ADMINISTRATION.
STORE AT ROOM TEMPERATURE.
^NO LAB DRAW FROM LINE UNLESS APPROVED BY PHYSICIAN~
DISCARD AFTER: 11/22/2022 FILLED BY: LKA100
FEDERAL LAW PROHIBITS THE TRANSFER OF THIS DRUG TO ANY PERSON OTHER THAN THE PRESCRIBED PATIENT.

CONTENTS: UNITS: 1
SOLU-MEDROL (PFIZER) 62.5 MG
ACETAMINOPHEN 325 MG TABLET (MAJOR) 650 MG
DIPHENHYDRAMINE 25MG CAPSULE (MAJOR) 50 MG
DIRECTIONS:
Administer acetaminophen 650mg orally prior to PRIVIGEN administration as premed.
Activate and infuse Methylprednisolone 62.5mg IV over 3-5 minutes prior to PRIVIGEN administration as premed.
Administer diphenhydramine 50mg capsule orally prior to PRIVIGEN administration as premed.
STORE AT ROOM TEMPERATURE.
^NO LAB DRAW FROM LINE UNLESS APPROVED BY PHYSICIAN~
DISCARD AFTER: 11/22/2022 FILLED BY: LKA100
FEDERAL LAW PROHIBITS THE TRANSFER OF THIS DRUG TO ANY PERSON OTHER THAN THE PRESCRIBED PATIENT.

CONTENTS:MAB-EMERGENCY MEDS UNITS:1
DIRECTIONS:
IN CASE OF ADVERSE DRUG REACTION:
Administer Acetaminophen 650mg ONCE. Administer Diphenhydramine 50mg (1ml) IV over 2-5 minutes ONCE or diphenhydramine 50mg capsule by mouth ONCE and activate and administer hydrocortisone 100mg IV ONCE. Epinephrine 0.5mg/0.5ml IM and may repeat ONCE in 5-15 minutes. If symptoms are rapidly progressing or continue NOTIFY PHYSICIAN

Pharmacy Remote Patient Monitoring

Before each delivery the pharmacist, or pharmacy representative, will assess patient standard assessment questions.

1. Is the infusion being infused safely and with appropriate technique?
2. Is the patient experiencing side effects?
3. Is the patient experiencing ware-off effects?
4. Obtain an accurate inventory of medication and supplies in the home (and what is needed).

The pharmacist may delivery multiple does in the same delivery, depending on dosing schedule.

Side effects and wear-off symptoms will be reported to the physician with order change suggestion.

These types of communication may in some cases delay your delivery.

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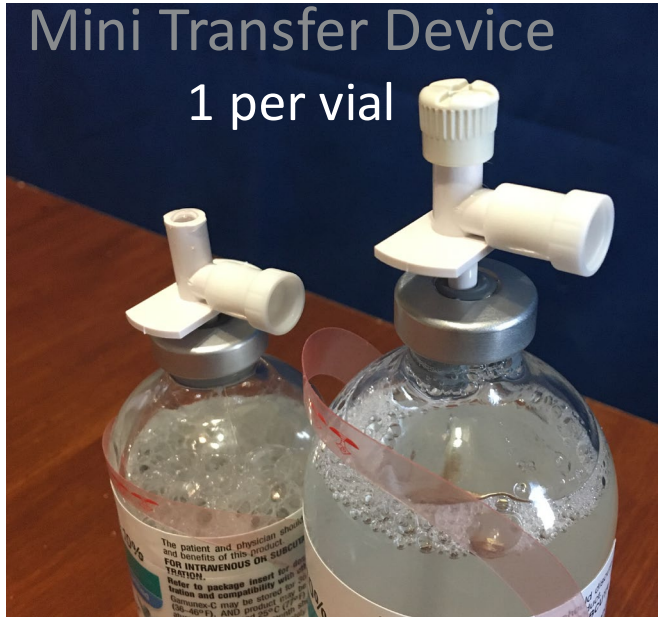
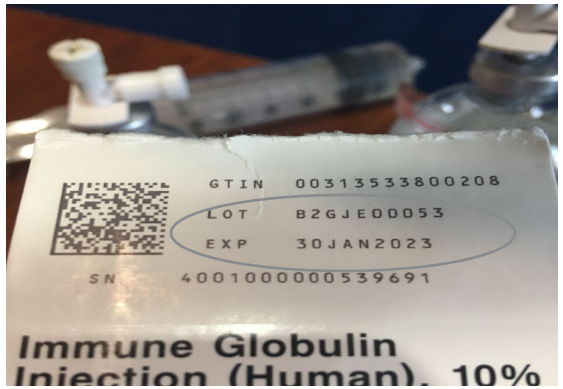
SCIG Product Preparation in the Home

Compound in the home.

- **Compound immediately prior to infusing dose.**
  - Has a very short half-life, stability is short.





- Withdraw all vials into syringe (or bag) for infusion.
- When inverted, the Mini transfer device vent will allow air to fill the glass bottle.
- No need to inject air into the vial.

Always document the lot number and expiration date located on the top of the medication box.

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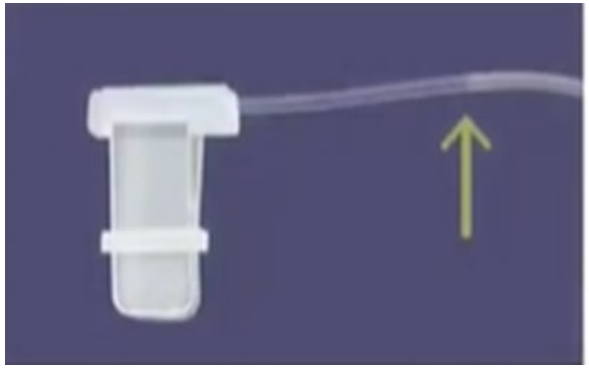
SCIG Needle Placement & Site Selection

- Subcutaneous locations as previously noted.
- 2-inchs between sites and from umbilicus.
- Rotate sites with each infusion.
- Dry prime to prevent skin irritation and leakage (SCIGand IGHy only).
- Prime with immunoglobulin product.
- For IGHy, sites are limited to the middle or upper abdomen and front of upper thighs.
- For SCIG, up to 8 sites (review individual product labeling) can be used simultaneously for SCIG infusions (at least 2 inches apart).
- For IGHy, up to 2 sites.
- For SCIG, the 2016 INS Infusion Therapy Standards of Practice state: “Aspirate the SC infusion access device to confirm the absence of a blood return prior to medication and fluid administration.” Despite this standard, two SCIG manufacturers no longer requires aspiration for blood return in the product labeling.
- Check needle placement **if indicated** on the package insert by gently pulling back on the plunger of the attached syringe and monitor for any blood return in the tubing.
- If blood is seen in the tubing, remove and discard the needle. Prepare a new infusion site and insert a new subcutaneous needle.



Subcutaneous Needle Selection

Length

- 4mm
- 6mm
- 9mm
- 12mm
- 14mm

A longer needle may be needed if there is leakage at the puncture site.

Needle must be long enough to be seated in the subcutaneous tissue, but not long enough to reach the muscle.

Infusion into the muscle or skin tissue will cause pain and irritation.

Bifurcations

- 1 needle
- 2 needles
- 3 needles
- 4 needles
- 5 needles
- 6 needles
- 8 needles

The volume of SCIG to be infused determines the number of infusion sites required.

Volume per site is based on patient weight and product. On average each can accommodate 10-20mls/hour of SCIG.

Pediatric and low BMI patients have lower volume limits.

Hyqvia allows for larger volume infused per site.

Can accommodate up to 150-300ml/site depending on patient weight.

Special Considerations

- Colostomy
  - Less sites available for rotation
  - Insertion site contamination/infection
- Thin / low BMI
  - Less sites to rotate
  - Shorter needles
- Leakage or bleeding
  - Limit moving during infusions
  - Leave needle in longer after infusion complete
- Blood thinners
  - Leave in longer after infusion complete
  - Leave band aide on longer than an hour after the infusion is complete.
  - Reduce moving during infusion.

When infusion sites are limited, you may need to contact the Pharmacist to determine if the SCIG dose is safe to infuse with less infusion sites.

Freedom60 Pump

- Syringe pump
- Rate is controlled by Tubing – identified on both packaging and tubing clamp
  - F30 = 30ml/hr
  - F45 = 45ml/hr
  - F60 = 60ml/hr

Rate and tubing size will be determined by the pharmacist

- **Disc on tubing secures the syringe into the pump**
  - Do not confuse with IV extension tubing

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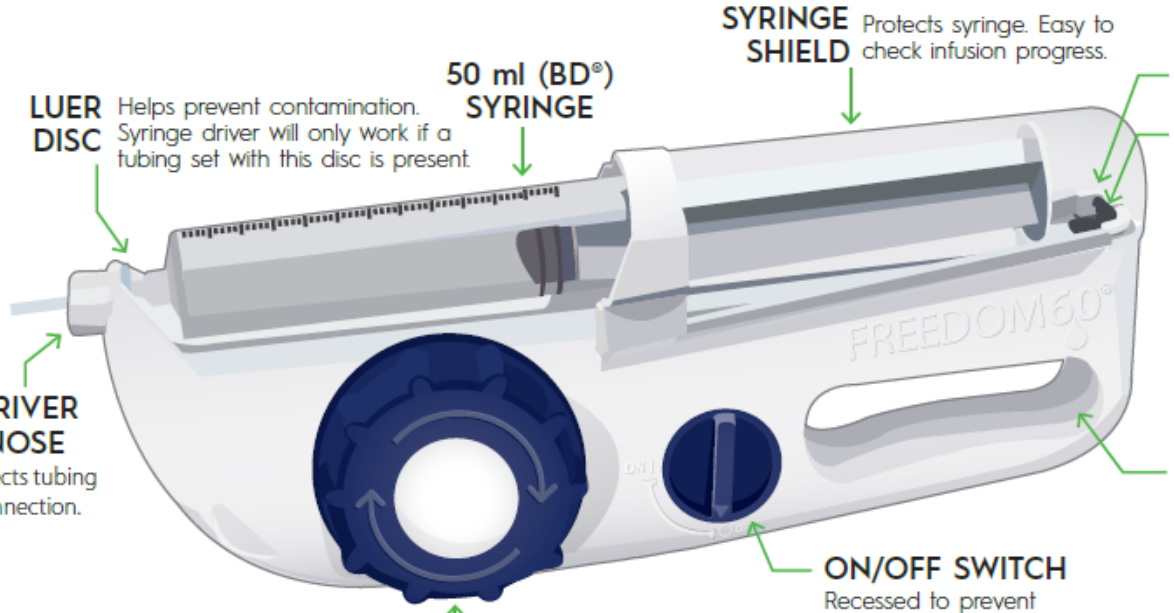
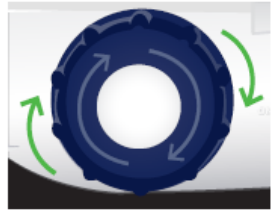
FREEDOM60®
Syringe Infusion System

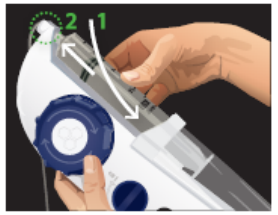


1 Wind



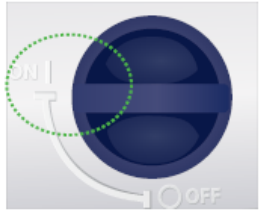
Wind knob until black tab is at end of its track.

2 Load



Load prepared syringe.

3 Go



Switch ON and go!

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SCIG Infusion Completion

- Turn pump off
- Leave needles in skin for additional 5 minutes, to permit additional absorption time.
  - Reduces leakage & irritation
  - Less bleeding
  - Less pain
- After removing needles, place band aid or gauze over puncture sites.
  - Leave covered for 1 hour after infusion
- Dispose of needles in sharps container

Infusion Site Information

Instruct patient to call the pharmacist if site irritation or leakage occurs during multiple infusions.

Patients should be assessed after each infusion for leakage or irritation at site.

- Throughout treatment patient needs will change.
  - Weight changes may require longer or shorter needle lengths.
  - Over time needle length may need changed, without weight loss or gain.
    - Instruct patient to call their pharmacy if site irritation or leakage occurs for more than 1 infusion.
    - It is normal to need to change needle length after a year or several years of therapy.

Redness, irritation and itchiness at infusion site.

- Advise the patient to not scratch
- Topical Benadryl cream (thin layer)
- Pre-medicate with antihistamine
  - Physician order required

Lump or soreness at infusion site

- Cool compress will help absorption of SCIG product.
  - May need to repeat a few times

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Peripheral IV (PIV) Placement and Care

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Peripheral Catheters

- Easily inserted
- Frequent assessments and to be removed/changed upon unresolved complications or no longer necessary for therapy.
- There must be documentation of close monitoring of site, VAD patency, skin and vein integrity.
- May be inserted by RN or LPN in the home.
- Safely removed in the home by RN, LPN and in some cases by the patient or caregiver.

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INS PIV Standards

	INS Standards
Change Site	When complications can not be resolved (no longer patent, redness, swelling tenderness or other s/s of complication.
Assessment	Frequently MUST instruct the patient to assess when the nurse is not in the home.
Alcohol Caps	N/A with proper antiseptic technique.

PIV Catheter Placement Supplies

Gloves

Single-use tourniquet

Short peripheral catheter with safety device

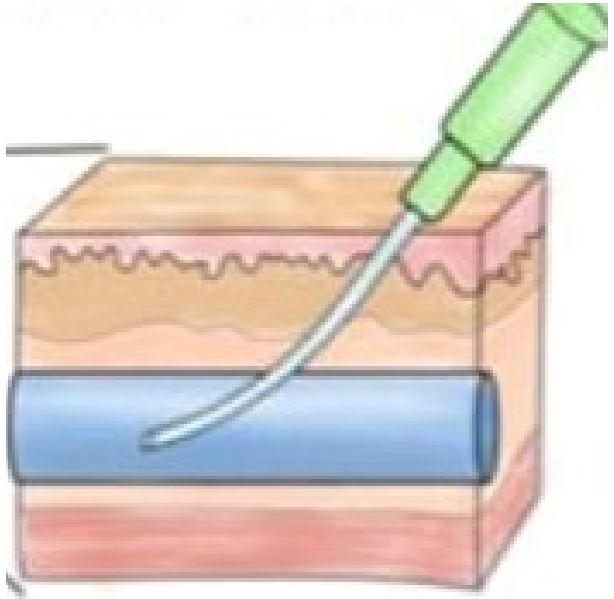
Antiseptic pads (chlorhexidine-based, povidone-iodine, or alcohol)

Sterile 10-mL prefilled syringe

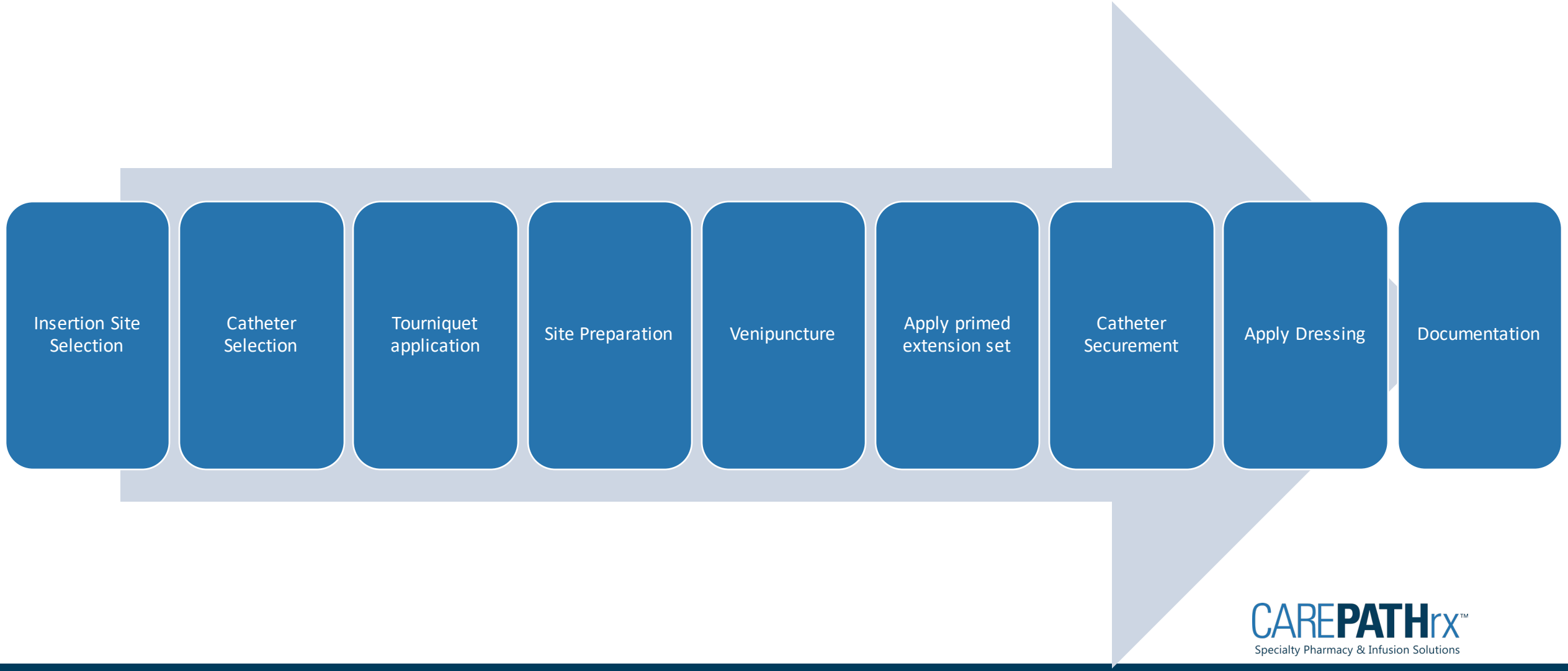
Transparent semipermeable dressing

Short extension set (7- 8 inches)

Commercial IV insertion kits come with or without an IV access device.



PIV Insertion Steps



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Catheter Selection

- Use the smallest gauge short peripheral catheter as possible because peripheral catheters larger than 20G are more likely to cause phlebitis.
  - The pharmacy will send 22G and 24G needles.
- Use the shortest catheter length that will fully canulate the vein.
  - The pharmacy will send ¾ inch catheters.

Apply Tourniquet

Apply a tourniquet to upper extremity to dilate the veins and assess veins.

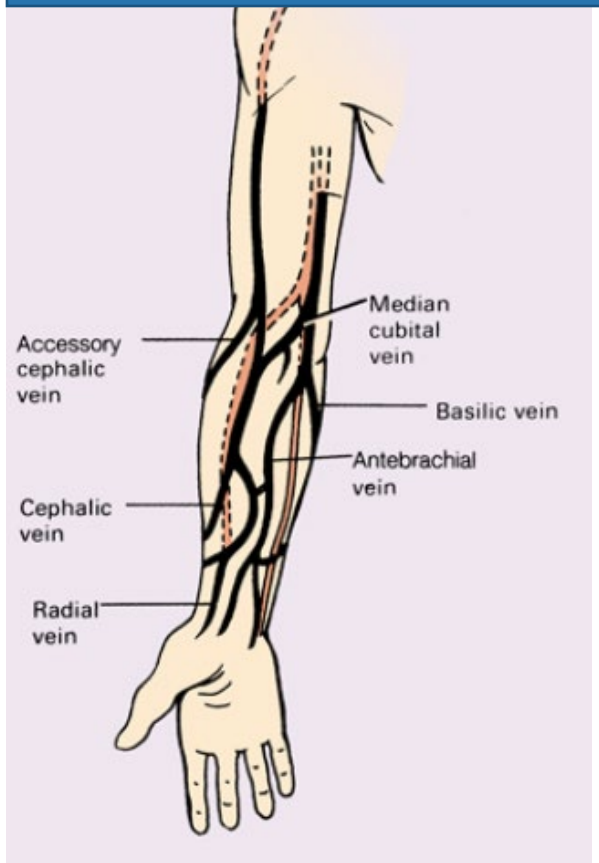
Apply the tourniquet loosely (or do not use) in patients who bruise easily, are at risk for bleeding, have compromised circulation or fragile skin.

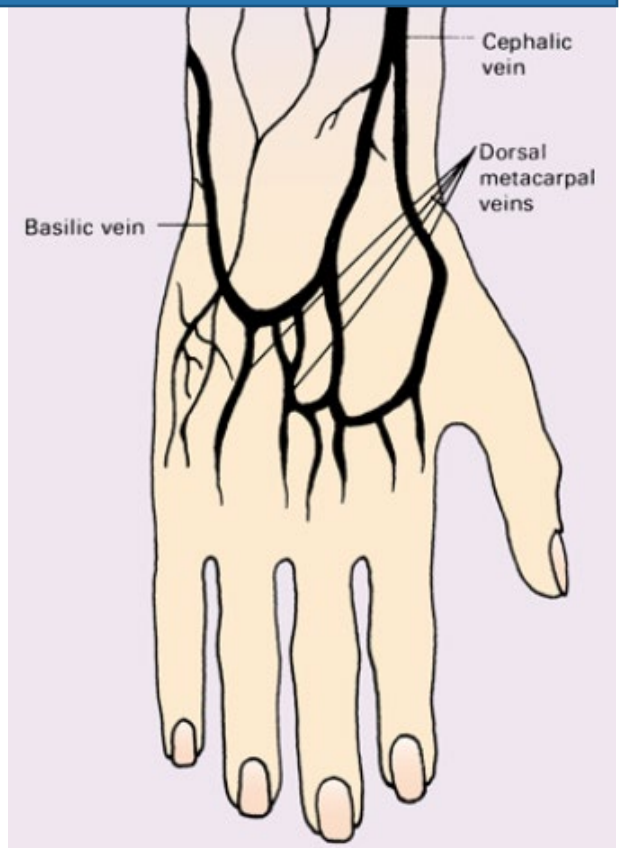
Check for a pulse distal to the tourniquet location, to ensure it is not too tight.

Release the tourniquet for site preparation for canulation.

Select Insertion Site

Use veins on the dorsal and ventral surfaces of the upper extremities, including the metacarpal, cephalic, basilic, and median veins.





Preferred site selection:

- Use non-dominant arm/hand when possible.
- Each successive cannulation proximal to previous attempt.
- Choose site with more subcutaneous and skeletal support for better device stabilization.
- Allow patient input for site selection.
- Use non-affected extremity (i.e., no lymph node dissection, flacidity, edema or wound).
- Avoid ventral side of wrist (painful).

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Assessing Veins for Insertion Site

- Lightly palpate the vein with the index and middle fingers of your nondominant hand to assess vein condition.
- If the vein feels hard or ropelike, select another vein.
- If the vein is easily palpable but not sufficiently dilated, place the extremity in a dependent position for several seconds or lightly stroke the vessel downward.
- If you've selected a vein in the arm or hand, tell the patient to make a fist and open and close it several times and lightly stroke the vein downward.
- Apply dry heat, if necessary, to increase the likelihood of successful catheter insertion.

Site Preparation

- Remove the tourniquet during site preparation and replace before venipuncture.
- If the intended insertion site is visibly soiled, first clean with soap.
- Clip hair around the insertion site if needed to facilitate dressing application after catheter insertion.
- Administer a topical anesthetic, if indicated and prescribed to reduce pain and anxiety, 30 minutes prior to venipuncture.
- **Elder alert:** Friction form antiseptic cleansing may irritate or damage skin.

Inserting Short PIV

- Perform hand hygiene again, before donning gloves for venipuncture.
- Use of antiseptic no-touch technique (ANTT) to reduce the risk of vascular catheter–associated infection.
- Reapply the tourniquet.
- Preparing the site with an antiseptic.
- Adhere to ANTT during catheter insertion.
- Anchor the vein by stretching the sin taut below/distal the puncture site with your non dominate hand to stabilize the vein.
- Alert the patient before inserting the PIV.
- Insert the short PIV on top of vein at a 10-15 degree angle.
- Puncture the skin and anterior vein wall, watching for blood flashback in the catheter chamber.
- Continue to hold the skin taught, and advance the catheter by using the push-off tab to separate the catheter from the needle stylet. Advance the catheter into the vein. Do not touch the catheter hub to avoid contamination.
- Release the tourniquet.
- Activate the device's safety mechanism, following the manufacturer's instructions for use.
- Always Inspect all IV equipment and supplies prior to use.

Applying Extension Set, Dressing and securement

- Prime the IV administration set with saline prior to attaching to the IV catheter.
  - Do not prime if drawing labs from newly PIV catheter.
- Attach the tubing by compress the patient's skin well above the catheter tip to stop blood flow and connection the extension set to the catheter hub and tighten the luer lock.
  - Ensure the luer lock is not contaminated by the patient’s skin.
- Perform a vigorous mechanical scrub of the extension tubing hub for at least 30 seconds using an antiseptic pad. Allow it to dry completely for 60 seconds.
- Apply a transparent dressing over in the insertion site.
- Curl the extension tubing and secure with tape.
- Secure the extension tubing with tape.
- Label the dressing with the current date & initials.

Documentation

Document in the EHR:

- Date & time
- Gauge and length on catheter
- Number of attempts
- Insertion site
- Preparation of skin and ANTT technique followed.
- Device functionality (patent)
- Patient's tolerance of procedure
- Teaching provided to patient and family and their understanding.
- Provider order and reason for PIV insertion (IV mediation administration).

Assessing Catheter Patency

Perform a vigorous mechanical scrub of the extension tubing hub for at least 30 seconds using an antiseptic pad. Allow it to dry completely for 60 seconds.

While maintaining sterility of the syringe tip, attach a prefilled saline flush to the extension set hub.

Unclamp the catheter and slowly aspirate to confirm blood return for proper placement. If you don't obtain a blood return, take steps to locate an external cause of obstruction.

Once placement is confirmed, flush the PIV slowly with saline. Do not forcibly flush the device.

Remove and discard the syringe.

Perform a vigorous mechanical scrub of the extension tubing hub for at least 30 seconds using an antiseptic pad. Allow it to dry for 60 seconds before administering medication.

Special Considerations

Each RN may make no more than two attempts at insertion.

Immediately stop and remove catheter if the patient reports symptoms of paresthesia, such as radiating electrical pain, tingling, burning, prickly feeling, severe pain and numbness. Document the details of the patient's report of symptoms in the medical record.

Improper insertion technique during peripheral IV catheter insertion can cause vascular catheter–associated infection, hematoma, bleeding, nerve damage, and inadvertent arterial access.

Patient Education

Education the patient to :

- Examine the site
- Notify the nurse if notices redness, swelling, or discomfort.
- Notify the nurse if dressing becomes wet.
- Notify the nurse if the infusion stops, slows or the pump alarms.

Enteral Therapy

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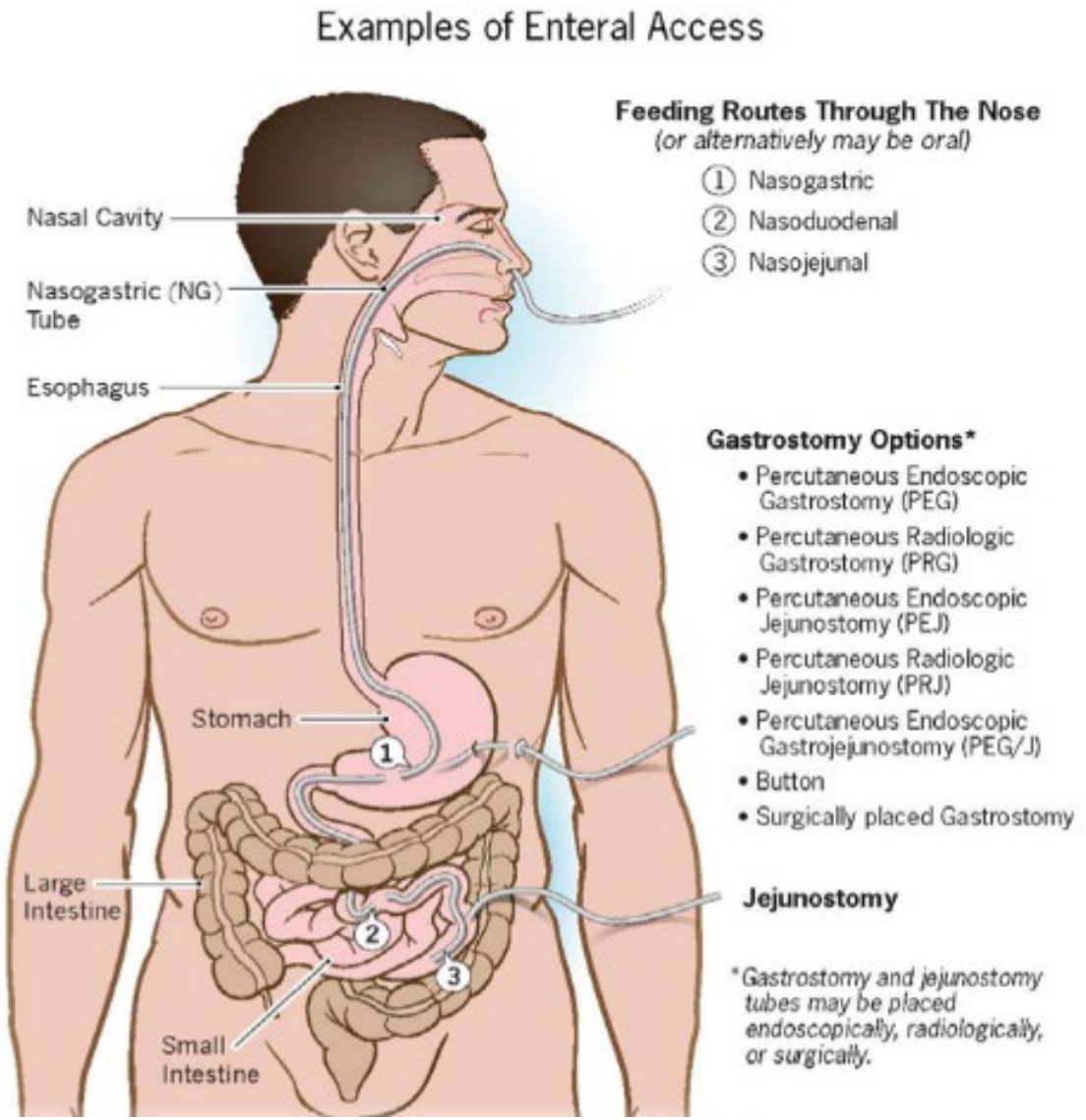
ENTERAL NUTRITION

Enteral nutrition refers to a method of feeding that uses the gastrointestinal (GI) tract to deliver nutrition and calories use of a tube (tube feeding). There are many reasons for enteral nutrition including GI disorders such as bowel obstruction, short bowel syndrome, Crohn's disease and ulcerative colitis; as well as certain cancers or with dysphagia in stroke patients.

During the short term, a patient might be fed with a tube entering the nose into the stomach (nasogastric tube). For longer use, a tube entering the stomach from outside the abdomen (a gastrostomy tube) might be appropriate.



Nasogastric: tube passes through the nose, down the throat and esophagus and ends in the stomach
Gastrostomy: tube is inserted directly in the stomach
Jejunostomy: tube is surgically inserted into the jejunum, the middle section of the small intestines

Patient Teaching Guides

- Teaching Guides are included in the first delivery at SOC
- Step-by-step instructions on how to administer medications
  - Supplies
  - Set up
  - Administration
  - Clean up

PATIENT EDUCATION

Enteral Feeding via Enteralite® Infinity® Pump

7-01-044

Properly administering your medication at home is important to your safety. In the event of an emergency, call 911.

NOTE: We recommend cleaning your pump on a routine basis, weekly. Failure to do so may increase chances of pump alarming improperly. The following instructions are the manufacturers guidelines for how to do so: **Pump may be cleaned with warm, soapy water (standard dish soap) and a nonabrasive sponge or soft cloth. Use a cotton swab to clean pathways of cassette receptacle and to remove teal silicon residue from pump wheel roller pins. Rinse pump by holding under a stream of warm water. Then, dry with a clean cloth.**

SUPPLIES:

- ENTERALITE Infinity Pump
- Enteralite® Infinity® pump bag (Feed Set) **(CHANGE FEEDING BAG EVERY 24 HOURS)**
- 60 cc. Syringe for flushing
- Formula
- Backpack (if applicable) or IV pole

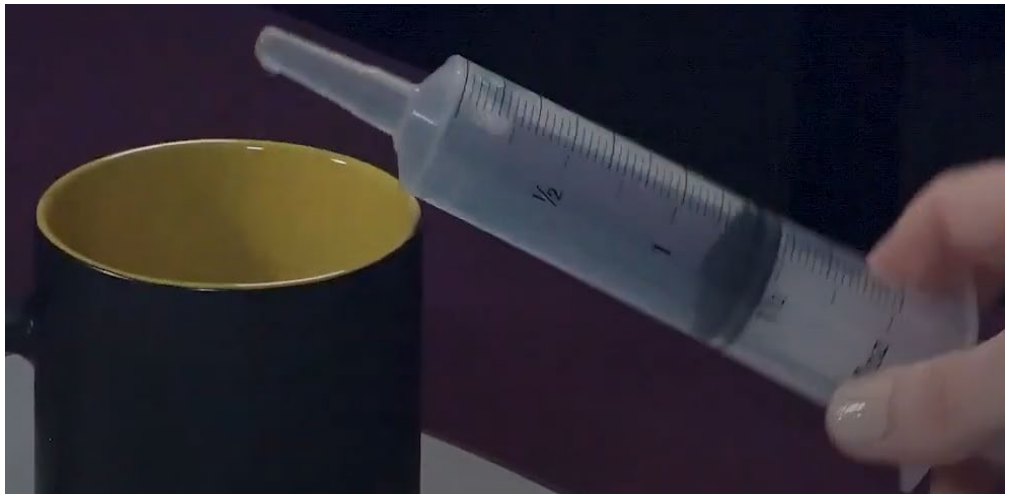
PROCEDURE:

1. Clean work area. Wash hands thoroughly for at least 20 seconds. Gather supplies.
2. Hold bag upright and pour in formula. Close cap securely. **NOTE: ONLY 8 HOURS OF FORMULA SHOULD BE POURED INTO BAG AT A TIME, FOR ADULTS. ONLY 4 HOURS OF FORMULA FOR PEDIATRIC.**
3. Open pump door, loop tubing around wheel and set cassette into pump. Close pump door.
4. Press and hold **ON/OFF** key for 1.5 seconds to turn pump on. After running the self test, the display will now show the last programmed rate.
5. To adjust rate, press **(+)** or **(-)** key until required rate is displayed, per your plan of treatment.
6. Remove protective cover from purple barbed adapter.
7. To prime, press and hold the **PRIME** key until fluid has filled the tubing.

Formula Storage

Unopened	Opened Liquid formula	Opened Cans of powdered formula
• Room Temperature • Dry area • No direct sunlight • Until expiration date	• Can be stored in the refrigerator according to manufacture recommends. • 24-48 hours • This included reconstituted powered formula.	• Room Temperature • Dry area • No direct sunlight • Lid on securely • Until 1 month after opening

Free Water Flushes



Free water boluses will be ordered by the provider

- Volume to be given
- Frequency of bolus

Free water boluses are to be given during normal awake hours only.

- If a patient requires around the clock free water bolus scheduling, they should be on the Kangaroo Joey-pump FEED and FLUSH mode.

Tubing

- Bags are to be changed daily
- Formula hang time at room temperature
  - 8 hours for adult
  - 4 hours for pediatric and neutropenic patients

EnteraLite Infinity Feeding set

Kangaroo Joey Feed and Flush set

Kangaroo Joey Feeding set

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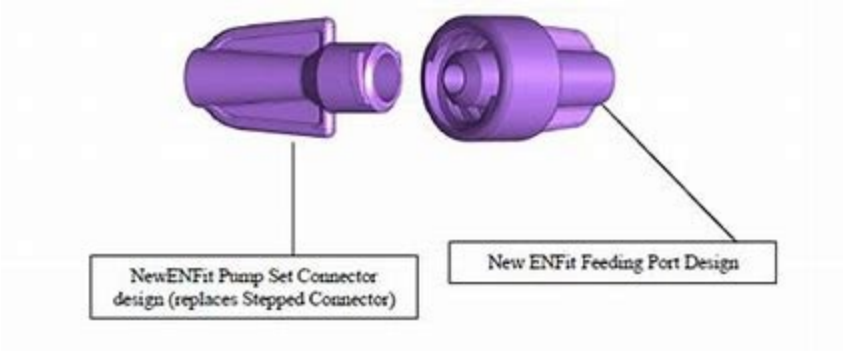
Traditional Tubes &ENFit Tubes



Specific syringes and tubing sets connect to traditional and ENFit tubes.

Many health systems are transitioning to ENFit feeding tubes.

Supplies

Piston Syringes

- Rinsed with water after each use
- Changed weekly

Lopez Valves & Dale Ace Connectors

- Change monthly or PRN for occlusions.
- Not needed but makes flushing easier.

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EnteraLite Infinity Pump

Change feeding bag every 24 hours.

Formula hang time

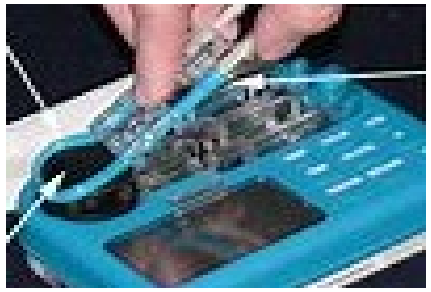
- 8 hours for adults
- 4 hours for pediatric and neutropenic patients

Open formula can be stored in the refrigerator for up to 24 hours.

Rate/Dose button to set pump

- Rate – the rate the formula infuses
- Dose – the amount of formula to infuse
    - INF Mode – push the + button until INF appears for infinity feeding.

Clean under door with damp cloth or run under water, with pump turned off and unplugged.



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Step by step programing

Press ON/OFF
Make sure RATE is displayed in the lower left corner of the screen.

Press the + and – buttons to adjusts the feeding rate.

Press RATE/DOSE, and make sure DOSE is displayed at the bottom of the screen.

- Dose is the feeding volume (volume to be infused).

Press the + and – buttons to adjust the volume to be fed.

- If feed volume is controlled by formula in the feeding bag increase the dose to INF (increase all the way up to 3000 then into INF).
  - If the dose does not go into INF, must clear the Feed Interval.

Link to Operator's Manual:
MOOG ENTERALITE INFINITY OPERATOR'S MANUAL Pdf Download | ManualsLib

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2. DIRECTIONS FOR USE

Recommendation for First Use:

Since battery may not be fully charged when pump is first received, it is recommended that battery be charged for 6 hours prior to operating on battery power (*see Page 18 for additional information*).

Priming and Loading the Disposable Set

Step 1:

- **If you are using the Infinity Safety Screw Spike Set with a vented bottle or pre-filled bag**

  Remove protective cover from tip, then insert tip into formula exit port of container. If using the Infinity Safety Screw Spike Set, secure the tip by tightly screwing threaded components together. (*Figure 2-1*).

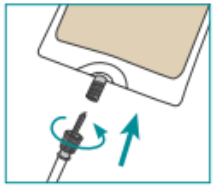


Figure 2-1 Screw Tip onto Container

- **If you are using the 500ml or 1200ml disposable set:**

  Hold bag upright and pour in feeding solution (*Figure 2-2*). Close cap securely.

Figure 2-2 Fill Bag

NOTE: Blenderized or aggressively mixed solutions may have foam. If using this type of solution, allow it to sit for 10 to 15 minutes before pouring into bag. This will reduce the chance of an alarm due to air in the tubing.

Step 2:
Remove protective cover from transitional stepped connector. If using pole clamp, protective cover may be placed in the groove on back of clamp (*Figure 2-3*).

NOTE: If set is to be used with a carry pack, all air must be removed from bag and tubing. **Continue to step 3 for instructions on removing air**. If set is to be hung above pump, i.e. on an IV pole, **you may skip to step 4**.

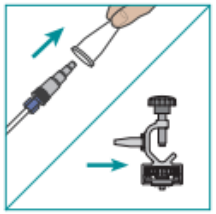


Figure 2-3 Remove Cover from Transitional Stepped Connector / Place Cover on Pole Clamp

Step 3:
Turn bag upside down and gently squeeze. Tilt bag as needed to to evacuate air through tubing port (*Figure 2-4*).

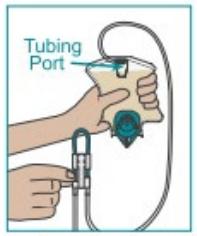


Figure 2-4 Squeeze Bag

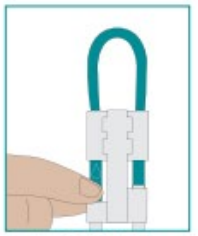


Figure 2-5 Pinch Tubing

Step 4:
Gently pinch teal colored tubing **below** "💧" symbol. Hold this position until air is removed from tubing. Gently squeeze bag at same time to assist fluid flow. If fluid does not flow, pinch pressure may be too strong. (*Figure 2-5*).

NOTE: Inside the teal colored tubing, below the "💧" symbol is the in-line occluder. The in-line occluder is the built-in anti free-flow valve. By pinching tubing gently, the tubing moves away from the in-line occluder allowing fluid to flow (*Figure 2-6*). It is important to only pinch the tubing below the "💧" symbol to avoid damaging the in-line occluder.

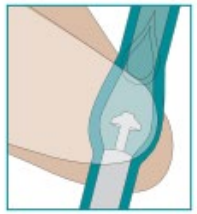


Figure 2-6 Tubing Segment Being Pinched

Figure 2-7 Tubing Segment Being Punctured by Fingernail

NOTE: Be extremely careful to pinch tubing using only the flat, soft part of your finger. Do not use fingernails when pinching tubing; doing so may puncture the delivery set (*Figure 2-7*). If you suspect that the delivery set has been punctured, please discard and use a new set.

NOTE: Air may also be removed from tubing using the pump's priming feature. See step 7 for instructions on using the priming feature.

Step 5:
Loop silicone tubing around pump wheel stretching lightly. Place cassette into pump (*Figure 2-8*). **Close pump door** (*Figure 2-9*).

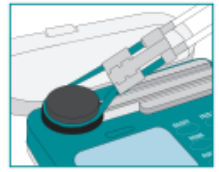


Figure 2-8 Seat Cassette

NOTE: See pages 33-34 for pump use with a backpack.

Step 6:
Press and hold **ON/OFF** key for 1.5 seconds to turn pump on. While pump runs through a self test, display will light and an audible alarm will sound as pump displays the nine digit serial number three digits at a time for one second each. The display will then show the letter 'R' followed by a number, which is the software revision.

Figure 2-9 Close Pump Door

Next, all segments of display will be shown for 2 seconds. **Verify all display segments and symbols are active.**

The self test is complete and pump will then display last programmed rate and will be in pause mode.

If any air is still in the tubing, continue to Step 7 to use pump prime feature.

Figure 2-10 Priming Indication

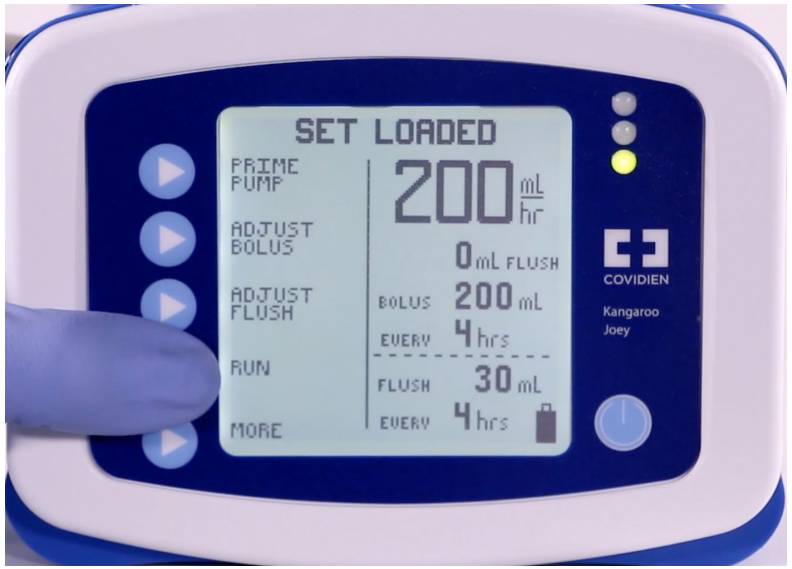
Step 7:
Press and hold **PRIME** key. Alarm will sound once and pump will begin pumping at an approximate rate of 700 ml/hr. Display will read "TO STOP LET GO" (*Figure 2-10*). Once all air is removed from tubing, release key. Pump will stop, display will revert to last programmed rate, and pump will be in pause mode.

NOTE: Occlusion and air in line alarms are disabled while priming.

For pump operation instructions:

- For a Single Feeding Example: go to *Page 10*.
- For an Interval Feeding Example: go to *Page 13*.

Kangaroo Joey Pump



Change feeding bag every 24 hours.

Formula hang time

- 8 hours for adults
- 4 hours for pediatric and neutropenic patients

Open formula can be stored in the refrigerator for up to 24 hours.

EZMode (continuous – EZ by battery image)

- Only adjust rate

Continuous/Intermittent

- Feed, Volume & Intervals as ordered

Feed and Flush Mode

•Adjusted Feed Settings

- To run continuously - Volume to infuse (VTBD) = 0ml
- Adjust Flush Settings

Clean under door with damp cloth, when pump is turned off and unplugged.

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KANGROO JOEY

3 DIFFERENT MODES

(1) CONTINUOUS MODE

The Continuous feeding mode will deliver the enteral nutrition at a steady rate, either until the programmed volume has been delivered or until the supply has been exhausted. A feed and flush set can also be used in this mode, enabling the pump to be programmed to automatically flush the feed line and to deliver the optimal amount of nutrition and pre-programmed hydration, helping to ensure patients stay well-nourished and perfectly hydrated.

(2) INTERMITTENT MODE

The Intermittent feeding mode delivers boluses of enteral nutrition at programmed time intervals. The bolus volume and feed rate are also programmed. A feed and flush set can also be used in this mode, enabling the pump to be programmed to automatically flush the feed line and to deliver the optimal amount of nutrition and pre-programmed hydration, helping to ensure patients stay well-nourished and perfectly hydrated.

(3) THE EZ MODE

The EZ Mode option is a limited, continuous mode only setting. It feeds non-stop (no Volume To Be Delivered (VTBD) option) at a rate 0-400mL/hr as defined by the user until manually stopped. (It has no bolus, flushing, run mode screen lock or autoresume capability and displays no history information.) A Feed and Flush Set can't be used in this mode.

Feed and Flush

The pump will alternate as programed to infuse formula and free water at the programmed intervals.

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Continuous Feed & Flush: step by step programing

Turn pump on (button at bottom right).

Press button for CLEAR SETTINGS.

Press button for ADJUST FEED.

- Press button for FEED RATE.
  - Adjust number for mL/hr.
  - Press button for ENTER.
- Press button for FEED VTBD (volume to be dispensed).
  - Adjust number for total mL of feeding.
  - Press button for ENTER.

Press button for ADJUST FLUSH.

- Press button for FLUSH VOLUME.
  - Adjust number for total mL of each flush.
  - Press button for ENTER
- Press button for FLUSH INTERVAL.
  - Adjust interval in hours for each flush.
  - Press button for ENTER.

Press DONE.

Press Done again.

Link to Operator's manual:

ManualsLib - Makes it easy to find manuals online! (usme.com)

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Pump Batteries & Charging

- Internal battery – charge pump 6 hours each day with AC adaptor

Kangaroo Joey

- Internal battery – charge pump 6 hours each day with AC adaptor.

EnteraLite Infinity

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Backpack

Moog backpack For INFINITY pump. This pack holds the Infinity enteral feeding pump with either a 500ml or 1200ml feeding bag. Also included in this pack is a pocket that may be used to hold an ice pack.

COMPLICATIONS

Nutrition delivered by enteral tubes can cause the following complications:

- food entering the lungs (called aspiration)
- constipation
- diarrhea
- improper absorption of nutrient
- nausea, vomiting, dehydration
- electrolyte abnormalities
- high blood sugar
- vitamin and mineral deficiencies,
- decreased liver proteins

- Feeding tubes inserted through the nose, such as nasogastric or nasoenteric tubes, can cause irritation of the nose or throat, acute sinus infections, and ulceration of the larynx or esophagus.
- Feeding tubes inserted through the skin of the abdominal wall, such as gastrostomy or jejunostomy tubes, can become clogged (occluded) or displaced, and wound infections can occur.

Thank you for participating!

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