

## **IV CLASS TWO AND ADVANCED CURRICULUM**

**2 HOUR CLASS TO BE GIVEN EVERY 3 WEEKS CAN ACCOMMODATE 6 STUDENTS**

- 1. Portacath Access and deaccess**
  - a. Access
  - b. Blood Draw
  - c. Flush
  - d. Deaccess
- 2. Subcutaneous Administration via Pump**
- 3. Basic Care of Pumps (pump set up and troubleshooting)**

Ambulatory-Cadd Legacy, Cadd Prism,

- 4. Documentation**
  - Site assessment
  - Flushes
  - Insertion
  - PCA pump use

**Hands on for Pumps and Access and Deaccess of Port**

they may be asked to troubleshoot over the phone in the middle of the night.

Complications can include; s/s of infection such as fever chills, redness or drainage at site, fluid and electrolyte imbalances and glucose imbalances.

\* A Portacath or Port is a surgically implanted silicone catheter and a stainless steel or hard plastic portal, with either a single or double self sealing septum To access a port first wash hands and assemble supplies: VAD kit, alcohol wipes, non-coring needle and needleless cap. You should have a single saline syringe in a sterile wrapper which you need to drop on you kit with your needle and cap. I will show the technique we use if you don't have a sterile saline

Wash hands, open kit don mask, explain procedure to patient

Drop needle, cap and sterile saline onto sterile field.

Palpate site to locate septum then don sterile gloves. Prepare syringes with 10cc NS ( remove air from syringe)

Place sterile cap on needle and prime with saline then close clamp

Cleanse port site with alcohol then povidone swabs starting at center in circular motion to about 4 "out and allow to dry ( take 2 minutes ). If kit comes with Chloraprep swab wipe site over and over for 30 seconds & allow to dry ( 30 seconds ), no circles necessary but use good friction

Palpate port and stabilize with thumb and forefinger of non-dominant hand Insert needle firmly and straight into the center of port until the needle touch bottom of chamber. Open slide clamp and flush with 2cc NS

Pull back on syringe and note blood return then flush with rest of saline.

If drawing bloods you may draw your discard with an extra tube and dispose of in the sharps container then attach tubes to draw needed blood

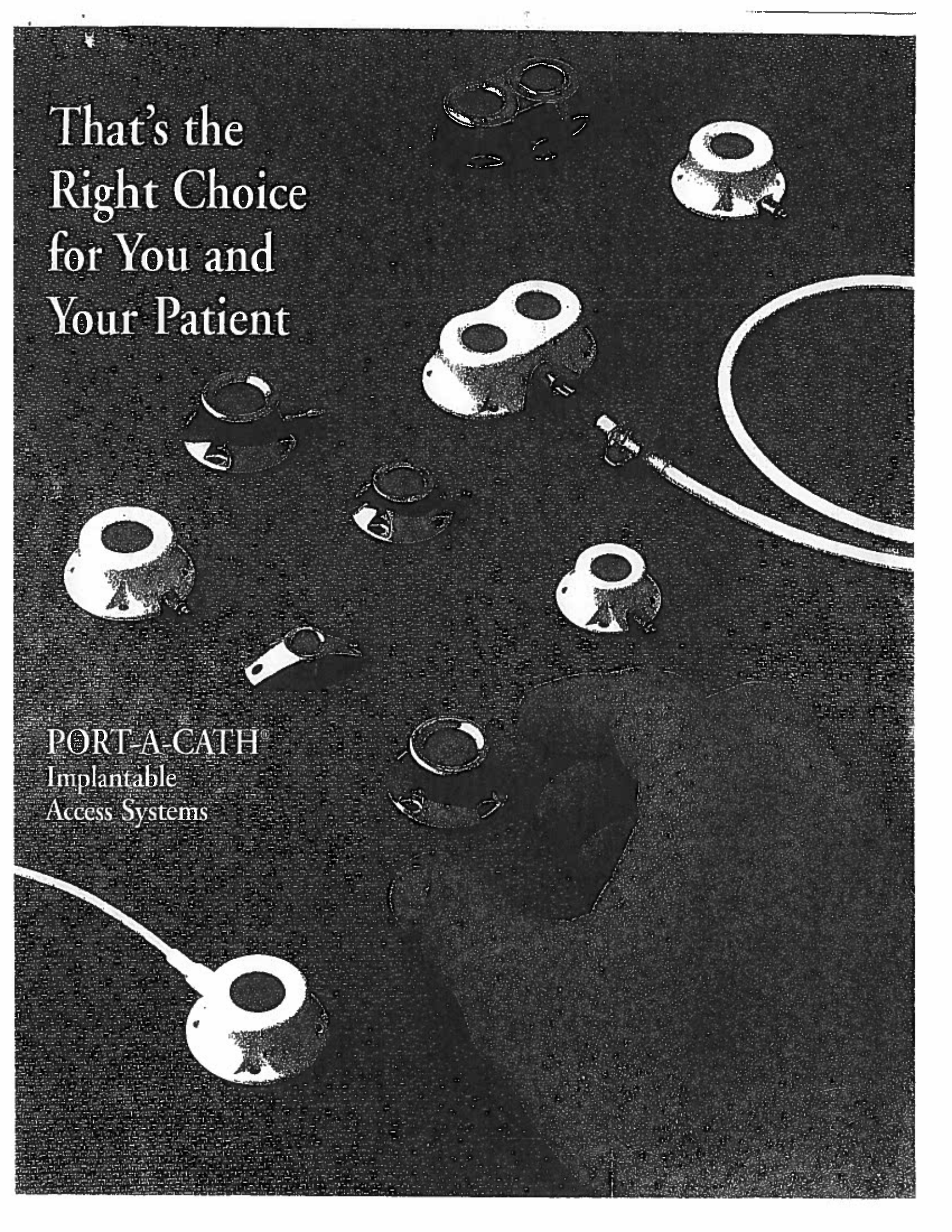
Now you must flush with 20 cc NS and then 5cc 100unit/cc heparin or heparin per MD orders

If not drawing blood after flushing with 20cc NS, flush with 5cc heparin per MD orders and deaccess if no treatment is needed at this time, To deaccess hold gauze at site and remove needle carefully all needle systems have a safety mechanism for your protection and discard needle in sharps container. Leave 2x2 in place and document the entire procedure.

If IV therapy is ordered through port you must put a transparent dressing over Port and date and sign. After you flush with saline you may then start your IV therapy as ordered by the MD.  
See handout for troubleshooting Ports

That's the  
Right Choice  
for You and  
Your Patient

PORT-A-CATH®  
Implantable  
Access Systems



# Troubleshooting\*

## DIFFICULTY FLUSHING PORTAL

### Signs and Symptoms

- High resistance is felt when aspirating blood
- Pink-tinged color to aspiration fluid
- Unable to withdraw blood from catheter, but flushing may or may not be possible

### Possible Causes

- Catheter tip may be wedged in smaller vessel or up against vessel wall
- Catheter may be kinked
- Needle may not be inserted completely or is too short
- Catheter may be occluded because of drug precipitate, fibrin formation at catheter tip, or intraluminal clot

### Possible Solutions

- Reposition patient's head and shoulders
- Insert needle until bottom of portal is felt or reaccess using appropriate length needle
- Using 10-ml or larger syringe, flush with normal saline, alternating between irrigation and aspiration
- Consider thrombolytic administration

## PAIN UPON PORTAL PALPATION

### Signs and Symptoms

- Redness, tenderness or swelling at or around portal site or along catheter tract
- Skin is warm to touch
- May or may not see drainage at insertion site

### Possible Causes

- Portal pocket or catheter insertion site infection
- Vein irritation
- Needle may have pulled out of septum; fluid may be infusing into tissue

### Possible Solutions

- Check for drainage or discharge at insertion site; if present notify physician
- Check patient for other signs or symptoms of infection, such as fever and chills; if present notify physician
- Re-evaluate site care regimen and implantation procedure

## OCCLUSION OR HIGH PRESSURE ALARM

### Signs and Symptoms

- High pressure alarm during I.V. therapy delivery when using infusion pump
- Elastomeric device or gravity system does not show reduction in initial volume, or reduction in volume is slower than normal

### Possible Causes

- Clamps may be closed on tubing and/or extension set
- Catheter tip may be wedged in smaller vessel or up against vessel wall
- Catheter may be kinked
- Needle may not be inserted completely or is too short
- Catheter may be occluded because of fibrin formation at catheter tip, intraluminal clot, or drug precipitate

### Possible Solutions

- Open clamps on tubing
- Reposition patient's head and shoulders
- Insert needle until bottom of portal is felt or reaccess using appropriate length needle
- Consider changing infusion pump, tubing or elastomeric device
- Using 10-ml or larger syringe, flush with normal saline, alternating between irrigation and aspiration
- Consider thrombolytic administration

## MOISTURE AT OR AROUND INSERTION SITE

### Signs and Symptoms

- Damp or saturated dressing
- Noticeable amount of fluid collecting under dressing
- Swelling under dressing
- Fluid leaking from portal site upon palpation

### Possible Causes

- Dressing exposed to excessive moisture
- Connection between injection cap and Luer hub may be loose
- Needle may be displaced
- Needle may have been inserted in surrounding tissue instead of septum
- Septum integrity may have been compromised and fluid is leaking from portal

### Possible Solutions

- Inquire about patient's recent activity
- Tighten injection cap and Luer hub connection
- Verify that needle is non-siliconized
- Insert needle until bottom of portal is felt or reaccess using appropriate length needle
- Aspirate blood to determine correct needle placement

\*Troubleshooting procedures apply to PORT-A-CATH® venous and arterial systems only

1-800-426-2448 U.S. & Canada  
+1 651-628-7000 Outside U.S.

www.deltec.com

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### **Subcutaneous Access Devices:**

Medications given via the subcutaneous route are usually given continuously. The rate is controlled by using an ambulatory pump. The infusion is usually a slow, steady rate which allows the body to absorb just the right amount of drug each hour.

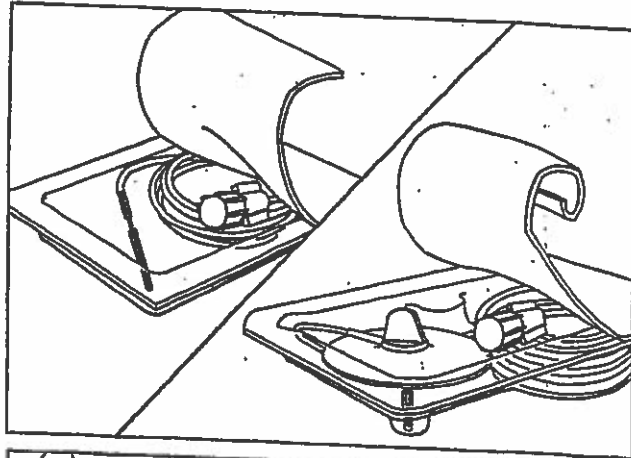
The needle used is very thin and short, allowing it to puncture the subcutaneous layer of the body. The common areas used are upper arms, thighs, abdomen and sometimes the buttocks.

#### **Procedure-**

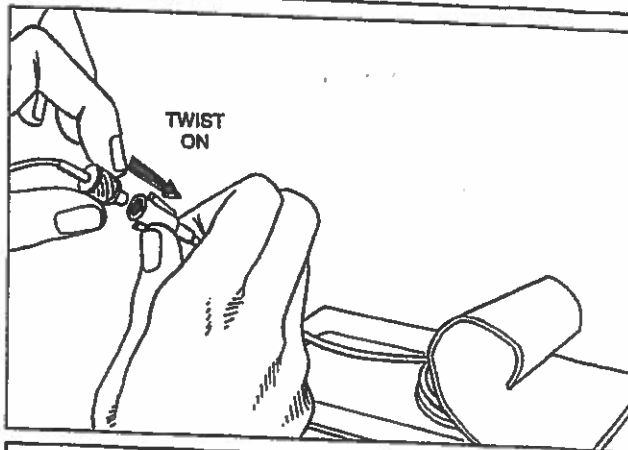
- ✓ Wash hands and explain procedure to the pt.
- ✓ Inspect the med for correct drug, expiration date, container intact, solution discolored or any precipitate.
- ✓ Attach tubing to med container.
- ✓ Open the subcutaneous needle package. Remove protective cover from the tubing end of needle and attach this end to the tubing of the med container.
- ✓ Flush air out of tubing, if cassette tubing not filled use prime button on pump.
- ✓ Select the site for the needle, avoid bony, swollen and bruised areas as well as near joints.
- ✓ Cleanse the area with alcohol and then PVP swabsticks using a circular motion. Allow to dry 30 seconds.
- ✓ Pinch the skin and insert needle firmly into skin.
- ✓ Cover needle with tegaderm and tape tubing for security.
- ✓ Turn on pump to begin infusion.
- ✓ In your packet of handouts there is a **site rotation chart** you may use to teach the pt. the site should be changed q 3 days or sooner if problems. Teach the pt. to check site q 8 hours if redness or leaking rotate site. Teach pt. how to troubleshoot the pump and when to call the agency. The pt. may cover site with saran wrap or tegaderm to shower-change dsg. if wet.

## Subcutaneous Needle Insertion Continued

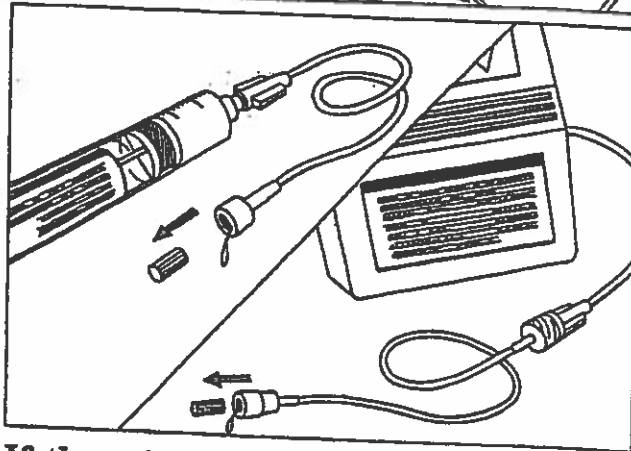
4. Open the subcutaneous needle package.



5. Remove the protective cover from the tubing end of the needle and attach this end to the tubing of the medication container.



6. Fill the entire length of tubing removing all air bubbles. To fill a medication "cassette tubing" follow the pump instructions provided by your nurse.



7. Select the skin site for needle insertion. Avoid bony, swollen and bruised areas of the skin as well as areas near joints.

**If there is a change in the condition of your skin, call your home care nurse.**

## **Your Subcutaneous Access Device Continued**

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The subcutaneous route of administration is used when the desired effect of the medication your doctor wants you to receive is not adequate using pills or injections. Medications given by the subcutaneous route are usually given continuously, around-the-clock. The rate of drug delivery is controlled using a small infusion pump. Even though the volume of drug you use is small, the drug has been concentrated and is very strong. Constant drug delivery assures that the right amount of the drug reaches your body at the right time for maximum effect. Your Critical Care Systems nurse will teach you and your family how to select your insertion site, insert the small, subcutaneous needle and use the infusion pump.

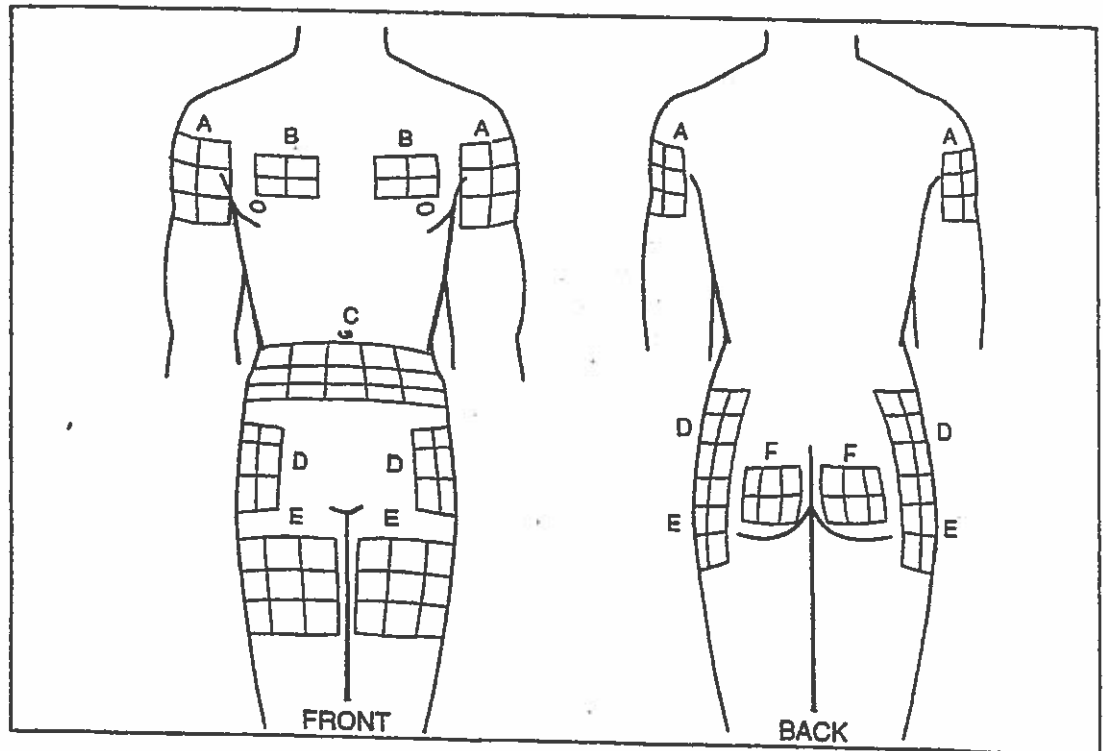
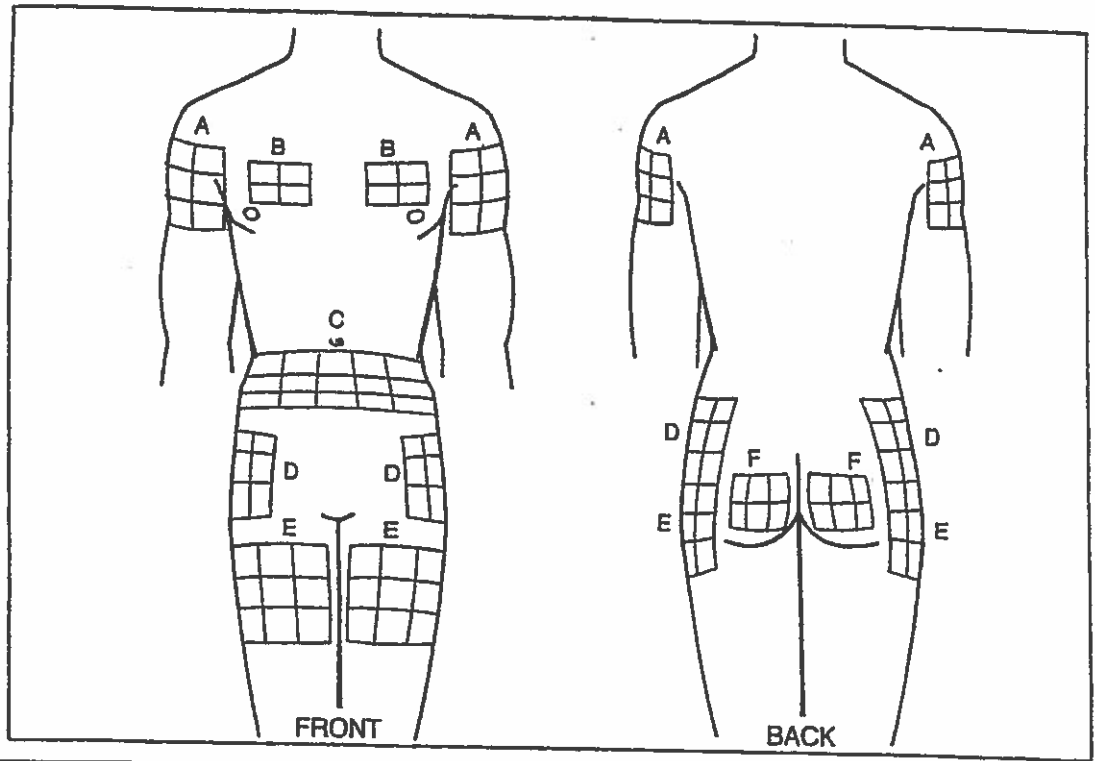
### **Remember . . .**

- Inspect your subcutaneous needle insertion site every eight hours during infusion.
- Rotate the insertion site at least every three days. Use the Site Rotation Chart as a guide. Avoid bony, swollen and bruised areas of skin and areas near joints.
- Change the insertion site whenever the site looks red, is tender to touch or is leaking fluid. If bruising or bleeding occurs, or if an old insertion site remains red longer than 24 hours, call your Critical Care Systems nurse.
- Change the dressing or tape over your subcutaneous needle whenever it is loose, soiled or wet.
- The needle and insertion site may be covered with plastic wrap and tape for bathing. While bathing, set the infusion pump in a plastic bag in a safe place next to the bathtub.

Pg 1



# Site Rotation Chart For Subcutaneous Needle Insertion Continued

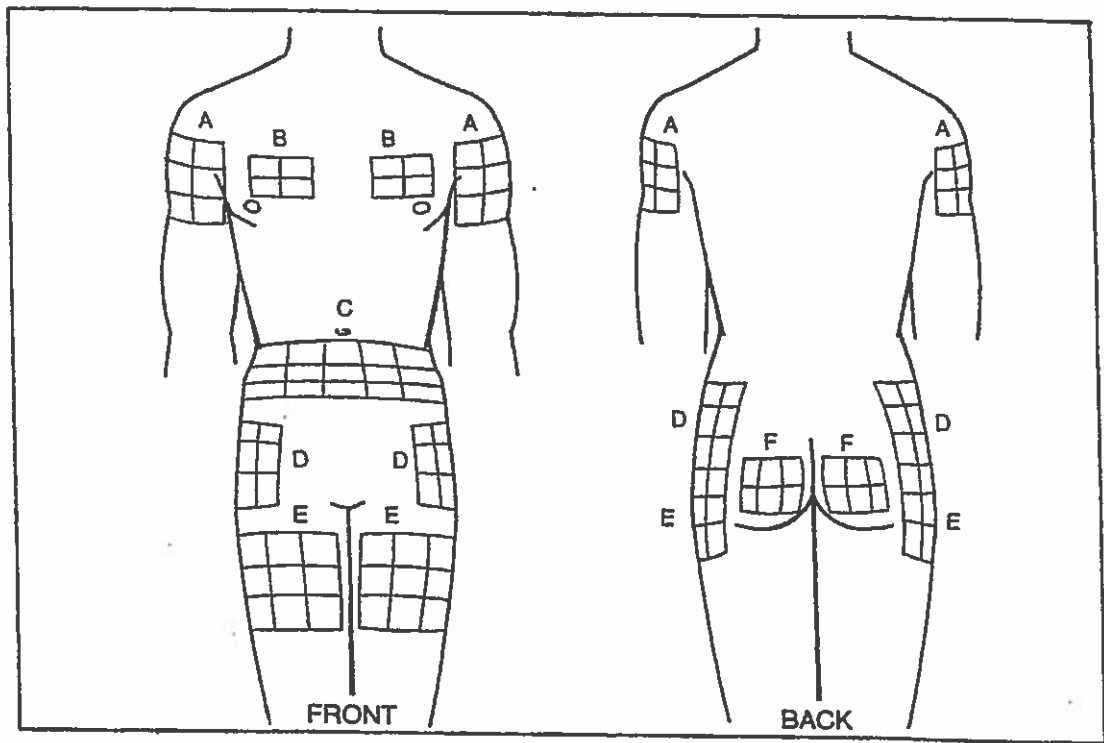


# Site Rotation Chart For Subcutaneous Needle Insertion

- Rotate your insertion site at least every 3 days or as directed by your nurse.
- Insert a new needle 1-2 inches away from a recently used site.
- Any of the blocked areas on the diagram below may be used for subcutaneous needle insertion. Do not use areas that are bruised, swollen or leaking fluid.

A = upper arms                      D = hips  
B = top of breast                  E = thighs, front and side  
C = abdomen                        F = buttocks

- Put an X in the box that corresponds to the used insertion site on your skin. Try not to reuse this site for at least 3 days.



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## Infusion Therapy – Cadd Legacy and Cadd Prism Pumps

### Considerations:

1. Use 2 patient identifiers
2. This procedure is for administering a medication using an ambulatory pump
3. Ambulatory pump may be used on a midline or a central line
4. For patient controlled analgesia specific physician orders must include:
  - a. Medication and dose
  - b. Name and amount of diluent
  - c. Route of Administration
  - d. If programmed in Mg or ML
  - e. Basal rate
  - f. Bolus rate
5. Before hooking up pump:
  - a. Inspect cassette/bag for correct patient name, medication, dose expiration date, separation or particulate matter
  - b. Review all parameters such as medication, concentration, basal rate, bolus rate, amount given, bolus doses attempted and delivered
  - c. Clear the amount given, bolus attempted and dose delivered at least once a week
  - d. Call physician or pharmacist if any questions or concerns about med, pump, or rate of infusion
6. Instruct patient/caregiver on management and storage of meds and supplies
7. Tubing is changed with each cassette/bag change
8. Follow manufacturer's directions for preparing tubing and connecting to pump

### **Cadd Legacy Plus:**

#### **Equipment**

Pump

Medication cassette/bag (at room temp)

Alcohol wipes

Key

2 AA batteries

#### **Procedure:**

1. Assess patient's pain
2. Wash hands and clean work area
3. Gather your equipment
4. Check the infusion site for redness, tenderness, swelling or drainage
5. Stop the pump by holding the start/stop button until 3 --- appear
6. Disconnect from completed infusion
7. Unscrew the medication tubing from cap or SC needle
8. Close the clamp on the used medication cassette/bag
9. Unlatch the medication cassette/bag from the pump using the key
10. Have patient or caregiver discard the used medication cassette/bag
11. Change the batteries on the pump
12. Insert the new medication reservoir hooks into the hinge pins on the pump
13. Place pump upright on a hard surface

14. Using the key, push in and turn the lock until full locked on
15. Open all clamps
16. Clean the cap on IV or remove SC needle from packaging
17. Reconnect your medication to the IV cap or SC needle
18. If an SC needle is used, prefill needle and tubing with the medication in the pump
19. With Reservoir Volume on the screen press the Enter/Clear button until total volume appears
20. Start the pump by holding the Start/Stop button until the 3 - - - disappear
21. Review parameters once again as they scroll through

#### **Changing Medication doses for Cadd Legacy Plus:**

1. Hold stop button down until 3 - - - appear and pump screen says Stopped
2. Hit lock button
3. Scroll to lock level 0 and hit enter
4. Enter Code 63 and hit enter again
5. Screen will return to Stopped
6. Hit next button until continuous rate shows
7. Change the rate to the desired rate and press Enter
8. Hit next to get to bolus dose,
9. Change rate if needed and hit Enter
10. Hit next to see doses per hour
11. Change if needed and hit Enter
12. Hit lock button and scroll to lock level 2 hit enter
13. Enter code 63 and hit enter again check to be sure it is in lock level 2 so no changes can be made
14. Continue to hit next button and review all parameters to ensure accuracy
15. Hit Start/Stop and hold until it says run It will once again run through the parameters
16. Check pump before you leave to make sure it says run

#### **Cadd Prism Pump:**

##### **Equipment:**

Pump

IV medication cassette/bag (at room temp)

Saline flushes if needed (not for PCA line)

Alcohol wipes

Coin or key for PCA

Sharps container

9 volt battery

##### **Procedure:**

1. Assess patient's pain if PCA
2. Wash hands and clean work area
3. Gather your equipment
4. Check the infusion site for redness, tenderness, swelling or drainage
5. Stop the pump by pressing the start/stop button
6. Disconnect from completed infusion
7. Unscrew the medication tubing from cap or SC needle

8. Close the clamp on the used medication cassette/bag
9. Unlatch the medication cassette/bag from the pump using the coin or key
10. Have patient or caregiver discard the used medication cassette/bag if PCA
11. Change the batteries on the pump and wait for pump to complete self test
12. Insert the new medication reservoir hooks into the hinge pins on the pump
13. Place pump upright on a hard surface
14. Using the coin or key, push in and turn the lock until full locked on
15. Open all clamps
16. Clean the cap on IV or remove SC needle from packaging
17. Reconnect the medication to IV cap or SC needle
18. If an SC needle is used, prefill needle and tubing with medication in the pump
19. Screen will say press next to continue
20. Pump will ask if you want to change reservoir volume press Y for yes
21. If needed pump will ask if you want to prime tubing If yes press the Y button lift finger and hold Y button until tubing is full ( Be sure pump is not attached to patient when priming)
22. Pump will ask if you want to start the pump
23. Review the parameters of pump before starting and be sure pump is in lock level 2
24. Wipe cap with alcohol if IV
25. Flush IV line if you are not using PCA
26. Attach pump to cap and hit Y for yes to start pump
27. If using SC needle clean site with antiseptic pinch skin and place needle straight in to skin
28. Cover needle and site with tegaderm
29. Start the pump by pressing Y, It will once again complete the self test
30. While pump is running the green light will flash

#### Changing medication doses for Cadd Prism:

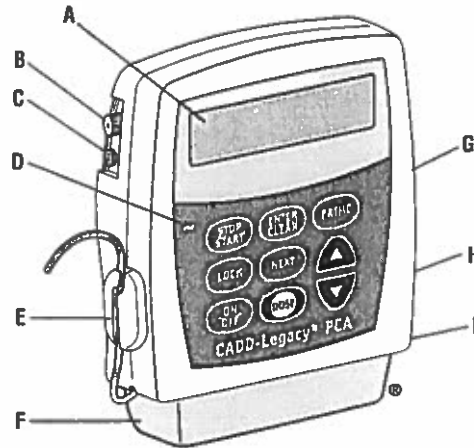
1. Stop the pump by hitting start/ stop button
2. Hit the lock button
3. Scroll to lock level 0
4. Enter Code 61
5. Hit lock button again
6. Screen will return to stopped hit next until basal rate appears
7. Change rate to desired rate and press enter
8. Hit next to get to bolus dose
9. Change rate if needed and hit enter
10. Hit next to see doses per hour
11. Change doses per hour if needed and hit enter
12. Hit lock button and scroll to lock level 2
13. Hit lock button and enter code 61
14. Hit lock button again
15. Hit the next button and check all parameters to ensure accuracy
16. Hit Start/Stop button it will once again run through the parameters
17. Green light will be flashing if running

# CADD-Legacy<sup>®</sup>

PCA



Infusion Pump  
Model 6300

## Quick Reference Card for Clinicians Lock Level 0 (LLO)



- A Display shows programmed values and messages
- B AC Adapter Jack used to plug in AC Adapter
- C Accessory Jack used to plug in Remote Dose Cord
- D Indicator Light Indicates AC power in use
- E Air Detector
- F Cassette (part of reservoir or administration set that attaches to pump)
- G Threaded Mounting Hole for use with Polemount Bracket Adapter (back of pump)
- H Battery Compartment (back of pump)
- I Cassette Lock attaches cassette to pump (side of pump)

### KEYPAD

STOP/START	Stops and starts the infusion
ENTER/CLEAR	Enters or clears displayed value
PRIME	Fills tubing with fluid
LOCK	Displays or changes Lock Level (security level)
NEXT	Advances to next programming screen
 	Increases or decreases displayed values or scrolls through menu items
ON/OFF	Turns the pump on or off (low power)
DOSE	Delivers demand dose

Read the entire Operator's Manual before operating the CADD-Legacy<sup>®</sup> ambulatory infusion pump. Failure to properly follow warnings, cautions and instructions could result in death or serious injury to the patient.

**WARNING:** This Quick Reference Card should be used by clinicians only. Do not permit patients to have access to this card, as the information would allow access to all programming and operating functions.

Assistance with the CADD-Legacy<sup>®</sup> PCA pump is available to clinicians 24-hours-a-day by calling (800) 426-2448 in the U.S.A. and Canada.

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Smiths Medical MD, Inc.  
St. Paul, MN 55112 USA

**Customer & Clinical Services:**

**1-800-426-2448 U.S.A. & Canada**

**www.smiths-medical.com**

PROGRAMMING / SET-UP SEQUENCE	
<p>Batteries must be installed; pump must be stopped and in LLO.            NOTE: Value Not Saved is displayed if a value is scrolled and ENTER/CLEAR is not pressed. Press NEXT to continue programming.</p>	
<p><b>WARNING:</b> If the pump is dropped or hit, inspect it for damage. Do not use a pump that is damaged or is not functioning properly.</p>	
Main Screen	Press NEXT.
Enter Reservoir Volume	1. Press $\Delta$ or $\nabla$ to select desired Reservoir Volume. 2. Press ENTER/CLEAR. 3. Press NEXT.
Enter Units	4. Press $\Delta$ or $\nabla$ to select desired units. 5. Press ENTER/CLEAR. 6. Press NEXT.
Enter Concentration	<p>NOTE: This screen does not appear if programming in milliliters.</p> 7. Press $\Delta$ or $\nabla$ to select desired Concentration. 8. Press ENTER/CLEAR. 9. Press NEXT.
Enter Continuous Rate	10. Press $\Delta$ or $\nabla$ to select desired Continuous Rate (select the upper limit if the program will be adjusted in LL1). 11. Press ENTER/CLEAR. 12. Press NEXT.
Enter Demand Dose	13. Press $\Delta$ or $\nabla$ to select desired Demand Dose (select the upper limit if program will be adjusted in LL1). 14. Press ENTER/CLEAR. 15. Press NEXT.
*Enter Dose Lockout	<p><b>WARNING:</b> When you enter a new value, any lockout time in effect will be cleared. A demand dose could be requested immediately upon starting the pump, resulting in over-delivery.</p> 16. Press $\Delta$ or $\nabla$ to select desired Demand Dose Lockout. 17. Press ENTER/CLEAR. 18. Press NEXT.
Enter Doses Per Hour	<p>NOTE: This screen will only appear if you have programmed a demand dose and dose lockout is less than 1 hour.</p> 19. Press $\Delta$ or $\nabla$ to select desired Doses Per Hour. 20. Press ENTER/CLEAR. 21. Press NEXT.
*Clear Doses Given	22. Press ENTER/CLEAR to clear the value for the number of Doses Given. The display will show 0. 23. Press NEXT.
*Clear Doses Attempted	24. Press ENTER/CLEAR to clear the value for the number of Doses Attempted by the patient. The display will show 0. 25. Press NEXT.
Clear Given (ml, mg, mcg)	26. Press ENTER/CLEAR to clear the Given value. The display will show 0.00. 27. Press NEXT.
Verify Air Detector Status	28. Verify the setting is correct. (To change setting, see Biomed Functions section.) 29. Press NEXT.
*These screens will appear only if you have programmed a demand dose.	

PROGRAMMING / SET-UP SEQUENCE (CONTD.)	
Verify Upstream Sensor Status	30. Verify the setting is correct. (To change setting, see Biomed Functions section.) 31. Press NEXT.
Verify Programming	32. Press NEXT repeatedly to review program.
To Operate in LL1 with Upper Limits, Decrease Continuous Rate and/or Demand Dose	<p>If pump will be operated in LL1 to allow adjustment of Continuous Rate and/or Demand Dose (up to the maximum entered in LLO):</p> 33. Change lock level to LL1. 34. Press NEXT to go to Continuous Rate or Demand Dose screen. 35. Press $\nabla$ to select desired starting value. 36. Press ENTER/CLEAR.

PUMP OPERATIONS	
Change the Lock Level	1. Stop the pump. 2. Press LOCK. 3. Press $\Delta$ or $\nabla$ until desired lock level appears. 4. Press LOCK or ENTER/CLEAR. 5. Press $\Delta$ or $\nabla$ until the lock level code appears. 6. Press LOCK or ENTER/CLEAR.
Stop the Pump	1. Press and hold STOP/START until (-----) appears on the display. 2. Release STOP/START key. STOPPED will appear on the display when the pump is stopped.
Start the Pump	1. Press and hold STOP/START until (-----) disappears from the display. 2. Release STOP/START key. RUN will appear on the display when the pump is running.
Prime the Fluid Path	<p>Pump must be stopped and in LLO or LL1.  <b>WARNING:</b> Do not prime the fluid path with the tubing connected to a patient as this could result in over delivery of medication or air embolism.</p> 1. Press and hold PRIME until the word PRIME appears on the display, along with (-----). 2. Release the PRIME key. 3. Press and hold PRIME until priming appears on the screen. Continue priming until the fluid path is free of air. 4. Press NEXT to return to the main screen.
Reset the Reservoir Volume	1. Stop the pump. 2. Press NEXT to display the Reservoir Volume screen. 3. Press ENTER/CLEAR to reset the value to previously programmed amount.
Turn the Pump On	1. Press and hold ON/OFF until pump beeps and powers up.
Turn the Pump Off	1. Press and hold ON/OFF until (**** ****) appears on the display. 2. Release ON/OFF key. 3. The screen will go blank as the pump goes into a lower power state.
Change the Batteries	1. Stop the pump. 2. Push down and hold the arrow button on the battery door while sliding the door off. Remove and discard old batteries. <b>IMPORTANT:</b> Always stop pump before removing batteries. 3. Install new batteries, matching polarities shown on the pump. Replace battery door and close. 4. Start the pump. <p><b>WARNING:</b> If a gap is present anywhere between the battery door and the pump housing, the door is not properly latched. If the battery door becomes detached or loose, the batteries will not be properly secured which could result in loss of power or nondelivery of drug.  <b>WARNING:</b> Do not use rechargeable NiCad or nickel metal hydride (NiMH) batteries. Do not use carbon zinc ("heavy duty") batteries.</p>