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|---|---|---|---|
| **TITLE:** | **CADD Pump Infusions for Surgical and Palliative Patients: Subcutaneous and Intravenous** | | |
| **Manual/Policy#:** | Patient Care Services II-M-4 | **Division:** | AGH |
| **Original Issue:** | June 2016 | **Issued by:** | VP Patient/Resident Services & CNE<br>Pharmacy & Therapeutics Committee |
| **Previous Date Reviewed:** | June 2016 | **Approved by:** | Medical Advisory Committee |
| **Last Date Reviewed:** | May 2019 | **Cross Reference(s):** | •II-P-1 Peripheral IV Therapy<br>•III-N-10 Narcotic, Controlled Drugs and Targeted Substances<br>•II-M-9 Independent Double Check of medications Associated with Risk<br>•II-M-8 High Alert Medication Management<br>•II-M-13 Medication Administration |

## 1. POLICY STATEMENT:

**1.1.** The CADD®-Solis Pump will be used in this facility for the administration of all patient controlled use of intravenous and subcutaneous infusions and medications. The pump library is maintained by pharmacy and includes soft and hard dose limits. The library is reviewed when the P&P is reviewed or when additional medications are added to the pump library.

**1.2.** A Practitioner's order is required to establish narcotic and fluid administration for the patient prior to the initiation of a CADD pump for both surgical and palliative patients. Medication orders must include:

- The drug
- The route
- The continuous rate (if applicable)
- PCA (breakthrough) doses
- PCA lockout (time between doses)
- Maximum dose limit per hour

Note: A new physician order is required for each dosage change.

Anaesthetists in AGH will use the "Intrathecal Epidural IV PCA Anaesthetists Orders" to establish a new CADD pump infusion for post op pain control.

**1.3.** Care of a patient receiving medication via CADD pump may be carried out by a Registered Nurse or Registered Practical Nurse or Anaesthetist, who has received sufficient education to become competent on the CADD®-Solis pump. It is the responsibility of the staff member to maintain their skills and knowledge related to CADD pump use.

**1.4.** Hand hygiene will always be performed before and after palpating insertion sites, inserting or accessing a subcutaneous catheter, dressing an insertion site or discontinuing a site.

**1.5.** As the Almonte General Hospital does not have sterile compounding facilities the drug required must be ordered from an external supplier. Morphine for post-op CADD infusion will be kept in stock in the strength of 1mg/mL. The pharmacy department must be notified a minimum of 3 business days prior to pump initiation for HYDROmorphone.

**1.6.** On units where CADD pumps where post-op PCA will be used Naloxone (Narcan) is available for overdose or adverse events.

**1.7.** In the event of a pump failure and no other pumps are available, a back-up medication order is to be obtained.

**1.8. Contraindications**

**1.8.1.** Practitioners may want to re-consider the use of a CADD pump narcotic delivery if the patient has an allergy to Morphine, they do not have enough subcutaneous tissue for a subcutaneous infusion if requested, the patient is receiving heparin or low molecular weight heparin, the patient has anticoagulation or clotting disorders or if the patient is not medically stable.

**1.9. Staff Education**

**1.9.1.** Education is provided to all physician and nursing staff prior to setting up and monitoring the CADD pump. Staff is encouraged to review the CADD Solis pump training at the Smiths-Medical education website. The registration code will be provided.

**1.9.2.** Staff will be considered to have completed training when they are able to demonstrate all the items on the CADD®-Solis Training Checklist.

**1.10. Patient Education**

**3.10.1.** Assess the patient/family-caregiver's readiness and ability to learn and manage the pump.

Include the family-caregiver when providing teaching as appropriate

Assess the patient's and caregiver's level of understanding related to:

- Delivering a bolus dose of medication
- The desired effect of the medication
- Adverse effects of the medication
- Operation of the pump
- Evaluating the effectiveness of the medication
- Assessment of the injection site

Provide the patient and/or family with the CADD® Patient Information brochure related to pain management and PCA use

## 2. SCOPE:

This policy applies to all Almonte General Hospital Health Care Providers involved in the use of CADD pumps for medication infusions for both surgical and palliative pain management.

## 3. GUIDING PRINCIPLES:

Patients who require pain management after surgery, for intractable pain symptoms during end of life care or for independent, comfortable palliation should be considered for CADD drug delivery to allow improved pain control. The CADD pump drug delivery by subcutaneous or intravenous infusion allows the patient to receive a programmed continuous infusion of analgesic and/or allows them to self-administer breakthrough doses when the pain is not controlled.

The purpose of this policy is to establish a protocol for the administration of narcotic delivery using the CADD®-Solis 2100 pump delivery system either by subcutaneous or intravenous route.

## 4. DEFINITIONS:

**4.1.** ***Continuous Ambulatory Delivery Device (CADD) Pump:*** provides a pre-set dose of medication via continuous intravenous or subcutaneous infusions at a constant rate and /or allows patients to self-administer a pre-set bolus dose of medication at specific time intervals.

**4.2.** ***Independent Double Check***: An independent double check is a process in which a second practitioner verifies the patient identity and the prescribing and administration of High Alert medication. Such verification can be performed in the presence or absence of the first practitioner. In either case, the most critical aspect is to maximize the independence of the double check by ensuring that the first practitioner does not communicate what he or she expects the second practitioner to see, which would create bias and reduce the visibility of an error (ISMP, 2016).

**4.3.** ***PCA***: Patient Controlled Analgesia

## 5 PROCEDURE:

### 5.1 Safety Considerations:

**5.1.1** Refer to the CADD®-Solis Ambulatory Infusion Pump Operators manual for direction on set up, operation and troubleshooting.

**5.1.1** **Ensure pump settings are cleared before programing settings for a new patient.** When turned on the pump will ask “Do you want to start a new patient?” Press yes or no as appropriate.

**5.1.2** Do not leave the pump unattended while it is unlocked. There will be a small picture of a lock in the top right hand corner of the screen that will indicate if the pump is locked or not. The pump will automatically lock on the home screen after 30 seconds.

**Unlock the pump using clinician Code: 997. Pressing the “Task” button twice after programming, will automatically lock the keypad.**

**5.1.3** Patient controlled demand doses must be initiated by the patient if post op; palliative patients may be provided a bolus by the family/caregiver or nurse as required.

**5.1.4** A separate cassette or bag will be used for each medication delivered as continuous subcutaneous infusion. Although medications are often

compatible, this practice is problematic for medication titration and can increase the risk of subcutaneous site irritation.

**5.1.5** Independent double checks must be completed by a second RN or RPN:

a) At the time of initial programming

b) At each subsequent setting change

c) When changing the medication cassette

**5.1.6** When post op patients are transferred to the unit, PACU nurses will double check the PCA settings with the receiving nurse. The PACU nurse will clear the pump prior to bringing the patient to the unit.

**5.1.7** The pump has rechargeable batteries that will last for 500 discharge cycles. Keep the pump plugged in whenever possible to prevent battery discharge. The battery will fully charge in 4 hours or less. The back light will stay on when the pump is plugged in.

### 5.2 Management of CADD pump from outside AGH

**5.2.1** ER visits: Do NOT disconnect the CADD pump in ER until the patient is admitted. The infusion may be stopped if required.

**5.2.2** On Admission to AGH: Discontinue the CADD pump as soon as possible after admission and change to an AGH pump. If the patient is admitted after hours and an AGH pump or cassette is not available you may use the community CADD pump until an AGH cassette is available. Use the patient's own CADD cassette drugs if available and the patient agrees to their use.

### 5.3 Discharge from Acute Care

**5.3.1** AGH CADD pumps will not be sent home with discharged patients. Home and Community Care in the Champlain LHIN will be consulted to set up a CADD pump for home use prior to discharge.

### 5.4 Procedure:

**5.4.1** Obtain a CADD pump from storage if the medication has not already been initiated. Obtain the drug cassette and extension tubing with air eliminating filter for palliative patients or medication bag and spiked tubing set with air eliminating filter for post op patients. Pharmacy will supply the cassettes and medication bags. If the patient is admitted from home with a pump and supplies, and the PCA is initiated after hours, supplies from home may be used.

**Remember to clear settings on the machine before starting a program on a new patient.**

**5.4.2** PROGRAM PUMP PRIOR TO ADDING CASSETTE. See CADD®-Solis VIP Quick Reference Card (Appendix A) for instructions on powering on the pump, attaching the cassette or cartridge, priming the tubing and programming.

**5.4.3** Perform the first check (independent double check) of pump settings after the first RN or RPN has programmed the pump. The independent double check must include:

- Confirm patient identity using 2 patient identifiers.
- Correct drug
- Concentration
- Dose
- Pump settings
- Confirm and verify physician order

If the second RN or RPN must change settings they can 'select' the item to be changed and show the first RN or RPN the changes they are making.

**5.4.4** After the cassette is attached, the pump will ask "Prime Tubing?" Prime the tubing prior to connecting to the patient. Hold the air eliminating filter upright while priming to insure that it fills with liquid from the bottom up.

**5.4.5** Attach the tubing to the patient as close to the insertion site as possible.

**5.4.6** Carefully insert the remote dose cord for patient bolus dose. Insert straight in without turning.

**5.4.7** Monitor the patient and record assessments using the appropriate PCA Flowsheet. There are two types of flowsheets:

- IV PCA and Continuous Medication Administration Flowsheet
- CADD SQ Medication Administration Flowsheet

**5.5 Roles and Responsibilities:**

**5.5.1. The RN or RPN** will perform a baseline nursing assessment of the patient before initiation of a CADD pump and document findings on the CADD pump Medication Administration Flowsheet or in Cerner for unit nurses with electronic documentation. The nursing assessment will include:

- Vital signs
- O2 saturation
- Level of sedation
- Pain scale
- Nausea scale

Independent double checks will also be performed at all points of transition: admission, transfer and discharge, and leaving and returning from pass.

**Notify pharmacy as soon as possible when there are new orders for CADD pump PCA.**

**5.5.2.** Establish or access a subcutaneous or intravenous line and secure. Choose appropriate subcutaneous site that are free of lesions, skin breakdown or edema. See Appendix B. There should be no blood return in a subcutaneous access device. Document the insertion and ongoing care in the patient MAR in the electronic health record.

**5.5.3.** Perform the second check (of the independent double check) of pump settings at the point of initial set up and points of transition.

**5.5.4.** Connect the CADD administration set to the subcutaneous or IV access.

**5.5.5. An RN** will be required to initiate and discontinue CADD pump infusions for acute post-op patients. An RN may also be required to assume care of patients experiencing over sedation, especially if there is respiratory depression.

**5.5.6. General Duties for Caring for a Patient with a CADD pump:**

**5.5.6.1.** Review the program at the beginning of each 8 hour shift to ensure correct settings. Nurses are expected to include the following steps within the review:

- Concentration of medication in mg or mcg/mL.
- Rate of infusion in mg/hour or mcg/hr.
- Demand dose (bolus or breakthrough dose) in mg/mcg.
- Dose lockout (the amount of time that must elapse between demand doses).
- Subcutaneous site for redness, edema or tenderness
- Reservoir volume.
- The amount of medication given since the screen was last cleared.
- Tubing kinks

***Note: the dose graph will only report the last 8 hours. The event log will hold approximately 24 days of data with typical usage.***

5.5.6.2. An RN or RPN is expected to reassess the patient post initiation of the CADD pump at frequencies listed below:

Follow up assessment for post-surgical patients are completed on PCA initiation, with change in drug, dose or reservoir or with a change in patient status:

- every 15 minutes X 1 hour and then
- every 1 hour X 4 hours and then
- every 2 hours and PRN
- Include pain, sedation and nausea scale.

Patient assessment for palliative patients shall be completed at the practitioner's discretion or:

- on initiation of the pump
- 60 minutes after initiation of therapy and then
- Every 4 hours X 2 and then
- Every 12 hours and PRN

Stopping all assessments should be considered for palliative PCA.

5.5.6.3. The infusion site is to be assessed a minimum of once a shift for signs of redness, swelling, induration, hardness, or leakage at the site. Rotate the administration site every 72 hours or as required using nursing discretion.

5.5.6.4. Cassettes or mini bags must be changed if there are less than 3 mL remaining.

5.5.6.5. The tubing or extension tubing is to be changed every 72 hours, when there is a change in a drug concentration, or immediately if the sterile integrity of the closed system has been compromised.

5.5.6.6. Do NOT clear the pump after assessments or at shift change.

5.5.6.7. Monitor for alarms and trouble shoot as necessary referring to the CADD®-Solis Quick Reference Card (Appendix A)

### 5.6. Care and Cleaning of CADD®-Solis Pump

**5.6.2.** The following solutions may be used to clean the pump and accessories, unless otherwise specified:

| | |
|---|---|
| Soap Solution | Benzalkonium chloride concentrate (0.13%) |
| Glutaral concentrate, USP (2%) | 10% solution of household bleach (one part household bleach to nine parts water) |
| Alcohol, USP (93%) | Isopropyl alcohol, USP (99%) |
| Chlorhexidine gluconate (4%) | PDI Super Sani-Cloth® |
| Madacide, MADA medical | Virex II made by Johnson Wax |
| Coerage Spray and Coverage HB Plus by Steris | CaviCide® by Metrex |
| Quik Fill Compac (A-456-N) by Airkem | |

**Caution**: Do not immerse the pump in cleaning fluid or water. Do not allow the solution to soak into the pump, accumulate on the keypad, or enter the battery compartment, USB port, remote dose cord jack, or power jack areas. Moisture buildup inside the pump may damage the pump.

**5.6.3.** Do not clean the pump with acetone, other plastic solvents, or abrasive cleaners, as damage to the pump may occur.

**5.6.4.** Do not get the pump wet as it is not waterproof. If the pump does get wet, dry it with a towel and assess whether a battery change is required.

**5.6.5.** Do not expose the pump to radiation, ultrasound or magnetic fields. Please disconnect the pump for the period of time required to complete any of these examinations.

### 5.7. Discontinuing PCA

**5.7.2.** Stop the pump, clamp the tubing and disconnect it from the patient. Remove the subcutaneous or intravenous catheter if ordered.

**5.7.3.** Record the amount infused and the amount to discard. Turn the pump off

**5.7.4.** Any AGH drug cassette medication left over will be disposed of as per the Narcotic, Controlled Drug and Targeted Substances policy

**5.7.5.** Discard tubing in appropriate discard container

**5.7.6.** Remove the batteries. Wipe the CADD pump with approved disinfectant and return to storage closet.

**REFERENCES:**

Cambridge Memorial Hospital (October 2015). Ambulatory Infusion Pumps – CADD Solis®. *Interdisciplinary Clinical Manual*, 14-37.

Capital Health (January 2012). CADD Ambulatory Infusion Pump: Care of a Patient Receiving Medication Via. *Interdisciplinary Clinical Policy and Procedure Manual*, CC-80-011.

Independent Double Checks (n.d.). In Institute for Safe Medication Practices Dictionary online. Retrieved from: https://www.ismp-canada.org/definitions.htm

Saskatchewan Health Authority (March 2018). Subcutaneous Therapy – Intermittent and Continuous – Adult & Pediatric. *Saskatchewan Health Authority Policies and Procedures*, I.D.Number: 1074

North York General Hospital (December 2016). Computerized Ambulatory Drug Delivery – Patient Controlled Analgesia (CADD®-PCA) midazolam for Palliative Sedation Therapy. *North York General Hospital Policy Manual*, II-645.

Queensway Carleton Hospital (2013). *CADD Pump (Computerized Ambulatory Drug Delivery): Continuous Intravenous Medication Infusion for Palliative Care*, Nursing Policy and Procedure, Manual.

**7. APPENDICES:**

**Appendix A:** CADD®-Solis VIP Quick Reference Card for Clinicians

**Appendix B:** Recommended subcutaneous infusion sites

**See Common Drive for documentation forms.**

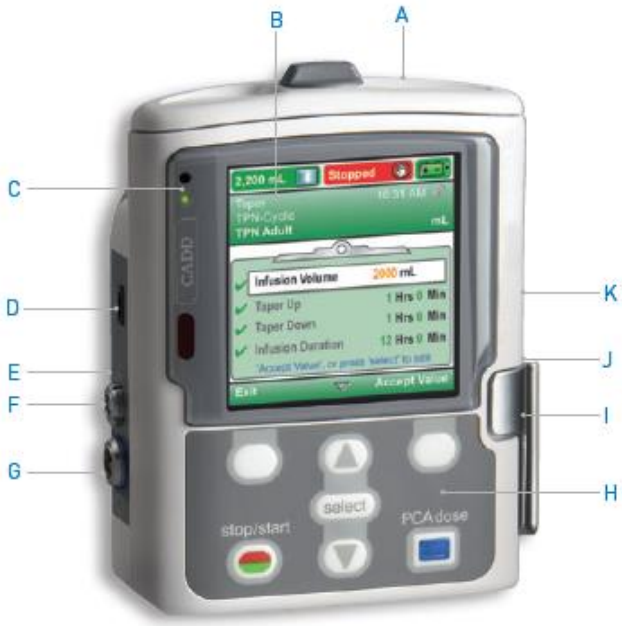
## Evaluation

This policy will be reviewed every 3 years or as equipment changes.

**Appendix A**

smiths medical

cadd




# CADD®-Solis VIP

## Ambulatory Infusion Pump

Quick Reference Card for Clinicians

A. Battery Compartment
B. Display
C. Indicator Lights
D. USB Port
E. Blue AC Power Light
F. AC Power Jack
G. Remote Dose Cord Jack
H. Keypad
I. Cassette Latch
J. Cassette/Keypad Lock
K. Power Switch

### Screensaver

The screensaver allows the pump to conserve battery power when not in an edit mode or if no keypad buttons have been pressed for 30 seconds. The pump displays a blank screen. Press any button on the keypad to turn on the display, except the PCA dose key when in PCA mode.

### Blue Text

Blue text that appears on the screen provides further instructions for that particular screen.

### Insert Batteries

1. Open the battery compartment and insert four AA batteries matching the + and – markings inside the battery compartment, or insert a rechargeable battery pack
2. Close the compartment cover when the batteries are in place

### Power On

1. Press and hold the power switch
2. The pump carries out self-tests and sounds six beeps when the tests are complete
3. Home screen is displayed

### Unlocking the Pump

*With the code*

1. Press ▲ or ▼ until the first digit of the code is shown
2. Press Select to advance to the next digit
3. Repeat with the second and third digits then press Select or Accept Value

*With the key*

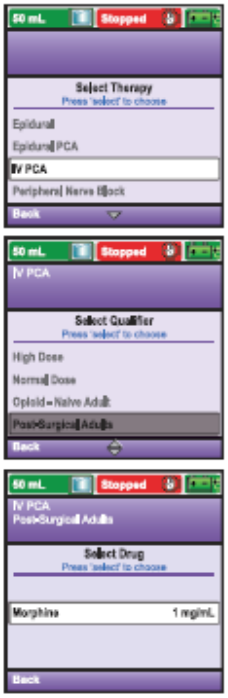
1. Insert into the lock and turn counterclockwise

## Setting up the Pump for a New Patient

1. Insert a fresh set of four AA batteries or a rechargeable battery pack
2. Press and hold the power switch to turn the pump on
3. Pump displays the home screen
4. Select Tasks, then View Advanced Tasks, then Start New Patient
5. The next screen informs you that completing this task will overwrite all delivery settings

**Note:** To edit individual settings rather than starting a new patient or protocol, see Editing Individual Delivery Settings.

6. Press continue to unlock the keypad using the security code or the pump key
7. Select the therapy - press ▲ or ▼ to highlight the desired therapy and press Select
8. Select the qualifier - press ▲ or ▼ to highlight the desired qualifier and press Select
9. Select the drug - press ▲ or ▼ to highlight the desired drug and press Select
10. Confirm and review the settings – press Yes if the information is correct and Review to continue
11. Carefully check the patient specific parameters. Press Accept Value on each parameter, or press Select to change
12. When you have finished the review, press Next to continue




## Editing Individual Delivery Settings

The delivery settings are patient-specific parameters of a therapy that are directly related to the drug being infused and can be edited within limits established in the protocol.

To view and edit delivery settings:

1. Stop the pump if it is running
2. In the Tasks menu, press ▲ or ▼ until View Delivery Settings is highlighted, then press Select
3. Press ▲ or ▼ until the desired setting is highlighted, then press Select
4. If requested, unlock the keypad
5. Press ▲ or ▼ until the desired value appears on the screen, then select Save

Change any additional settings by scrolling through the remaining delivery settings and press Select to edit each setting as necessary.

**Note:** Editing individual delivery settings in Step or Taper mode will reset the infusion back to the beginning.

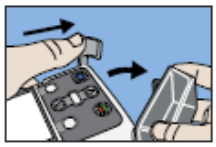
## Attaching a Cassette

1. Clamp the tubing and open the cassette latch
2. Insert the cassette hooks into the hinge pins on the bottom of the pump. Swing the cassette to the latch position
3. Place the pump upright on a firm, flat surface, and press down on the latch side of the pump so the cassette fits tightly against the pump
4. Lift the cassette latch into the closed position. If you experience resistance when lifting the cassette latch handle, do not force the latch. If the pump doesn't latch easily, unlatch the cassette and repeat the process

5. Verify the cassette is attached properly. Looking from left to right, the top of the cassette should line up evenly with the bottom of the pump and be securely attached. If an uneven gap exists, unlatch the cassette and repeat the process
6. To lock the cassette, insert the pump key into the lock and turn it clockwise into the locked position

## Removing a Cassette

1. Make sure the pump is stopped and clamp the tubing
2. If the cassette is locked, insert the pump key and the turn the lock counterclockwise into the unlocked position
3. Push down on the cassette latch until the cassette detaches



## Resetting the Reservoir Volume

### *After attaching a new cassette*

1. The screen displays Reset reservoir volume to XX mL? Select Yes to reset the volume or No to keep the volume at the current setting

### *Without changing the cassette*

1. Stop the pump if it is running
2. In the Tasks menu, press ▲ or ▼ to highlight Reset Reservoir Volume and press Select
3. The screen displays Reset reservoir volume to XX mL? Select Yes to reset the volume

## Priming the Tubing

Ensure that the pump is stopped, the tubing is disconnected from the patient, and the tubing clamps are open.

### *After changing a cassette*

1. If a cassette is attached after the pump is powered on, a Prime Tubing? screen will appear. Select Yes (unlock the keypad if required)
2. Select Prime
3. Select Stop Priming when the air is removed or the delivery will stop at 10mL (or 20mL if a high volume set is attached)

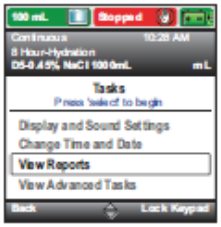
### *No cassette is changed*

1. In the Tasks menu, press or to highlight Prime Tubing and press Select (unlock the keypad if required)
2. Select Prime
3. Select Stop Priming when the air is removed or the delivery will stop at 10mL (or 20mL if a high volume set is attached)

## Reports

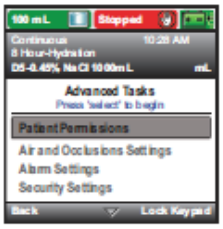
Reports can be viewed at any time, with the pump running or stopped.

1. In the Tasks menu, press ▲ or ▼ to highlight View Reports and press Select
2. Press ▲ or ▼ to highlight the desired report and press Select
3. Press Back to return to the Select Report menu and then Back again to return to the Tasks Menu




## Patient Permissions

Stop the pump if it is running. In the Advanced Tasks menu, press ▲ or ▼ to highlight Patient Permissions and press Select.




### *Priming security on/off*

Setting this value to off allows patients to prime the tubing without having to enter a security code.

1. In the Patient Permissions menu, press ▲ or ▼ to highlight Priming Security On/Off and press Select
2. Unlock the keypad
3. Press ▲ or ▼ to set the security to on (security code required) or off (no security code required) and select Save

### *Delayed start security on/off*

Setting this value to off allows patients to set delayed starts without having to enter a security code.

4. In the Patient Permissions menu, press ▲ or ▼ to highlight Delayed Start Security On/Off and press Select
5. Unlock the keypad
6. Press ▲ or ▼ to highlight on (security code required) or off (no security code required) and select Save

## Alarms

### *System Fault Alarm*

An unrecoverable error may have occurred, such as a hardware or software fault. The amber indicator light is on along with a two-tone alarm and a red screen. To clear the alarm, remove power from the pump.


### *High Priority Alarm*

The pump pauses or stops if it is running. The pump screen is red and the alarm continues until a key is pressed or the condition that triggered it goes away.


### *Medium Priority Alarm*

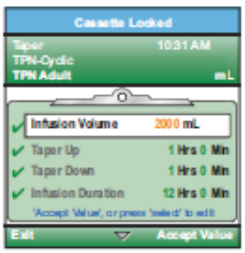
The pump does not stop if it is running. The pump screen is amber and the alarm continues until a key is pressed or the condition that triggered it goes away.


### *Low Priority Alarm*

The pump does not stop if it is running. The pump screen is blue and the alarm continues for five seconds or until a key is pressed or the condition that triggered it goes away.


### *Informational Message*

The pump does not stop if it is running. The message appears in the status bar. The alarm continues for five seconds and may be silent, requiring no acknowledgement.




## Troubleshooting

### *Screen is blank and alarm is sounding*

**Alarm Priority High.** The pump was delivering and the batteries were removed or the battery door was opened. The pump has lost power and is no longer delivering. Clear the alarm by turning the pump back on, or the alarm will stop after the power has been off for a minimum of two minutes.

### *Air-in-line detected. Press "acknowledge" then prime tubing*

**Alarm Priority High.** The air detector has detected air in the fluid path. The pump was delivering and is now stopped and will not run. Select Acknowledge to clear the alarm. If the fluid path contains air bubbles, close the clamps, disconnect the fluid path from the patient, then prime the tubing to remove the air and restart the pump.

### *Battery depleted. Pump stopped.*

**Alarm Priority High.** If the AC adapter is attached, select Acknowledge to clear the alarm. Remove the batteries and install four new AA batteries or a rechargeable battery pack. To start delivery, good batteries must always be installed even when an external source of power is connected. If appropriate, restart the pump.

### *Battery low. Replace battery.*

**Alarm Priority Low.** Select Acknowledge to clear the alarm, or it will automatically clear after five seconds. Recharge or change the rechargeable battery pack or replace the four AA batteries soon.

### *Downstream occlusion. Clear occlusion between pump and patient.*

**Alarm Priority High.** The pump has detected high pressure, which may be resulting from a downstream blockage, kink in the fluid path, or a closed tubing clamp. Delivery pauses and resumes if the occlusion is removed. Remove the obstruction or select Stop Pump to silence the alarm for two minutes, then remove the obstruction and restart the pump.

### *Reservoir volume low*

**Alarm Priority Medium or Low.** The priority depends on how the alarm is programmed in Admin Settings. The level of fluid in the reservoir is low. Select Acknowledge to clear the alarm and prepare to install a new reservoir, if appropriate.

## Troubleshooting continued

*Reservoir volume is zero. Pump stopped.*

**Alarm Priority High.** The reservoir volume has reached 0.0 mL. The pump will stop and not run. Select Acknowledge to clear the alarm. Attach a new reservoir and reset or edit the value of the reservoir volume, if appropriate.

*Upstream occlusion. Clear occlusion between pump and reservoir.*

**Alarm Priority High.** Fluid is not flowing from the fluid container to the pump, which may be due to a kink, closed clamp, or air bubble in the tubing between the fluid container and pump. Delivery is paused and will resume if the occlusion is removed. Remove the obstruction to resume operation. The alarm will clear when the occlusion is removed. You must acknowledge this alarm after it clears if it has occurred and cleared more than three times with 15 minutes.

Customer and Clinical Services
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**www.smiths-medical.com**
Find your local contact information at
www.smiths-medical.com/customer-support

**MPAUCA-1461**

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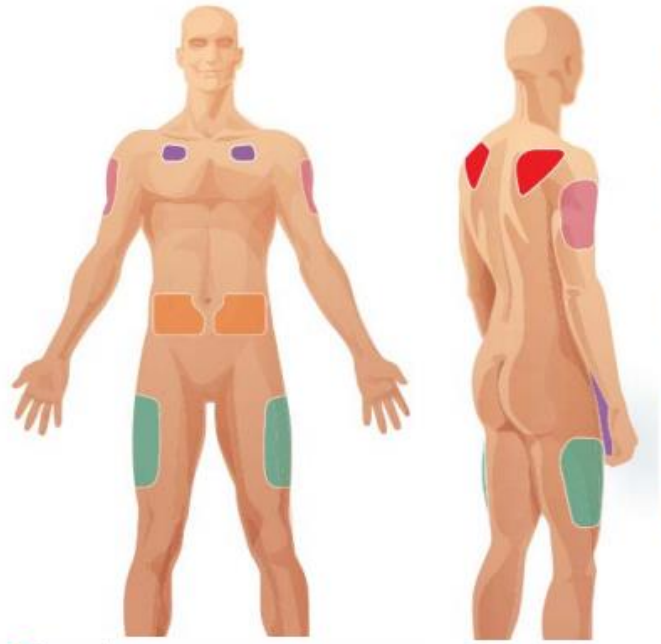
**Appendix B**

## Recommended Subcutaneous Infusion Sites



**Upper Back (Scapula)**
Use when other sites unsuitable or client confused/restless

**Subclavicular Area**
Avoid when client:
- has lung disease
- is active (risk of pneumothorax)

**Upper Arms**
Avoid if possible for HDC

**Abdomen**
Avoid in presence of tense abdominal pressure

**Thighs**
Best location for HDC

- Scapula
- Subclavicular chest Wall
- Anterior abdominal wall
- Anterior aspect of the upper arms
- Anterior aspects of the thighs

***Note:*** ***The following areas should be avoided when inserting subcutaneous access for either intermittent or continuous use:***

- *Areas that have too little subcutaneous tissue*
- *2" (5 cm) diameter around umbilicus*
- *Skin folds or clothing lines (i.e. waistline)*
- *Breast tissue*
- *Areas with bony prominences*
- *Tumor sites*
- *Sites that have been recently irradiated*
- *Sites with induration, inflammation or infection present*
- *Areas with lymphedema, edema or ascites*
- *Areas with broken skin, bruises, masses, abrasions, moles, burns or scar tissue*
- *Area in close proximity to central lines*

Saskatchewan Health Authority, 2018 Subcutaneous therapy - intermittent and continuous – adult & pediatric, https://www.saskatoonhealthregion.ca/about/NursingManual/1074.pdf