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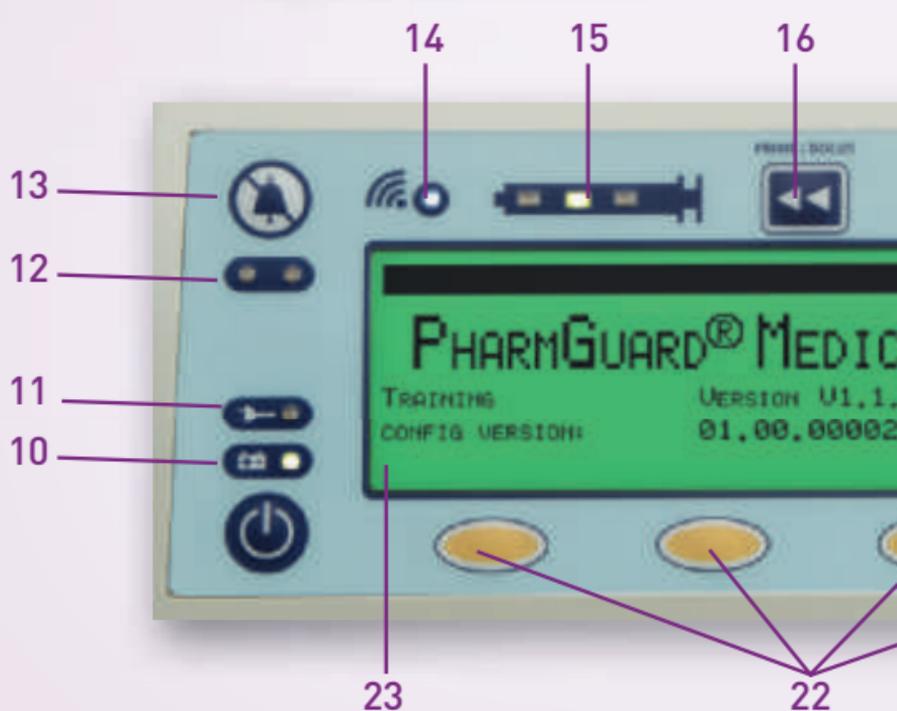
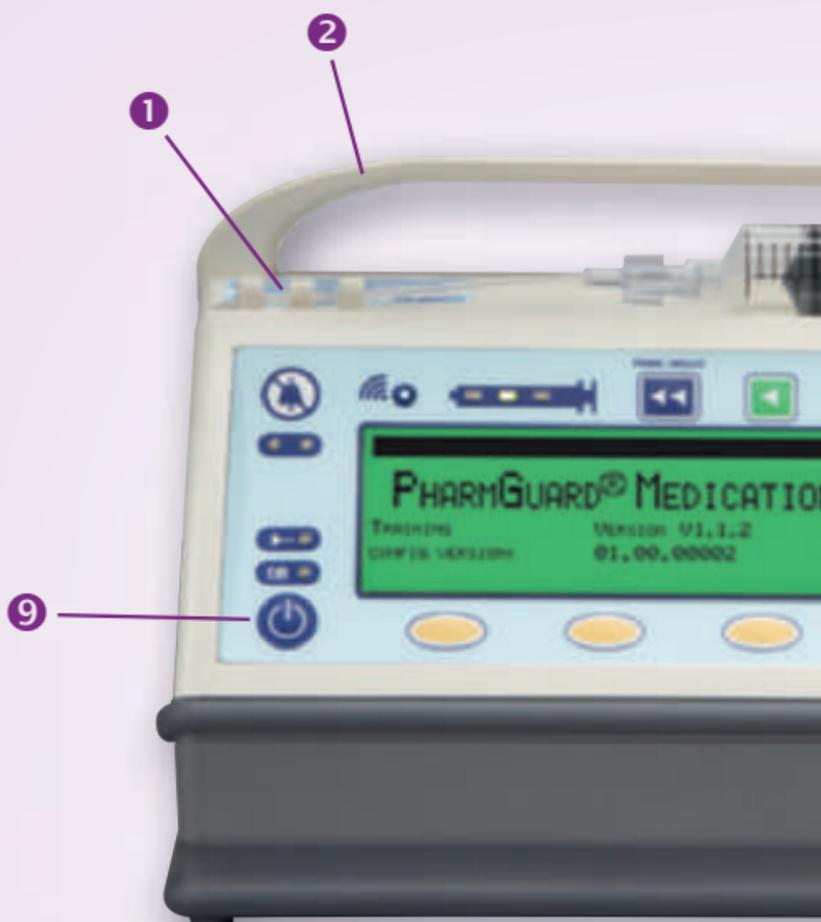
Quick Reference Card

## Medfusion® 4000 Syringe Infusion Pump



**medfusion**<sup>TM</sup>

# Medfusion® 4000 Syringe Infusion Pump



- 1 Tubing Holders
- 2 Carrying Handle
- 3 Syringe Barrel Clamp
- 4 Syringe Barrel Flange Clip
- 5 Syringe Plunger Holders
- 6 Syringe Plunger Driver
- 7 Syringe Plunger Release Lever
- 8 AC Power Connection Port  
(on back of pump)
- 9 Power Key
- 10 Battery Indicator
- 11 AC line indicator



- 12 Alarm indicator
- 13 Alarm Silence Key
- 14 Communicating indicator
- 15 Infusing Indicators
- 16 Prime/Bolus Key
- 17 Start Key
- 18 Stop Key
- 19 Lock Indicator
- 20 Numeric Keypad
- 21 Back Key
- 22 Menu Keys (Soft Keys)
- 23 Display

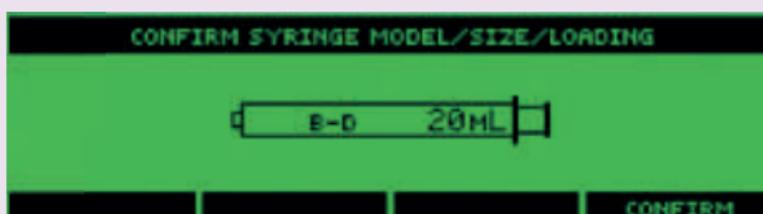
## Power On

Press Power Key **9** to switch on the pump. Observe the self-test. Do not move the syringe plunger driver or otherwise manipulate the pump until the profile selection screen appears.

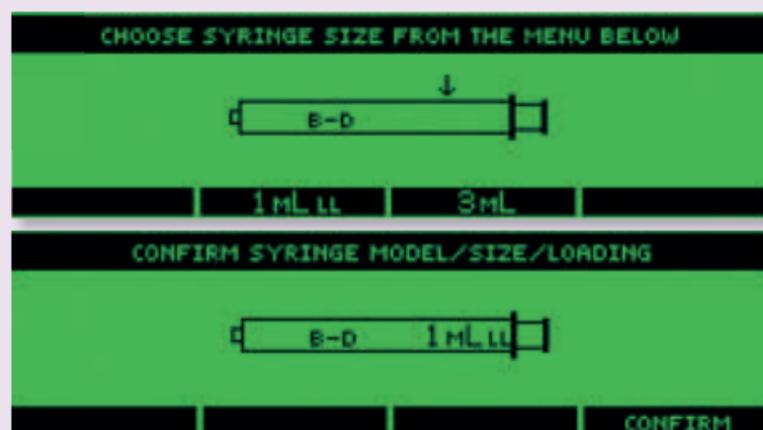
**Note:** Connect pump to a power source **8** or check the battery meter after system self-tests are completed.

## Load Syringe (Refer to pump diagram)

1. Lift the syringe barrel clamp **3** and swivel it away – rest it on the handle **2**.
2. Squeeze the syringe plunger release lever **7** on the syringe plunger driver **6** and pull it out gently to extend it all the way outward.
3. Load the syringe onto the pump. Make sure the flange on the syringe barrel is secure in the syringe barrel flange clip **4**.
4. Squeeze the syringe plunger release lever on the end of the syringe plunger driver and gently advance the plunger driver toward the syringe plunger.
5. Once it is flush with the syringe plunger, release the lever, so that both syringe plunger holders **5** close around the syringe plunger.
6. Turn and lower the barrel clamp onto the barrel of the syringe.
7. Verify that the correct syringe model and size are displayed and select Confirm.



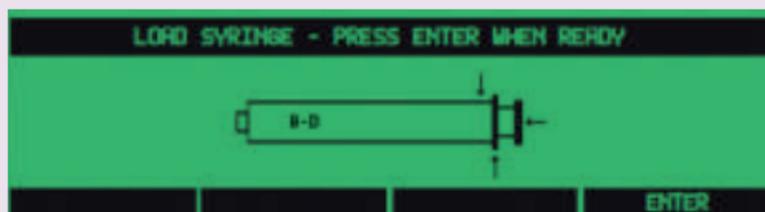
8. Thread the tubing through the tubing holders **1**
- Some syringes may have similar outer dimensions, despite being different sizes (for example, BD<sup>®</sup> 1mL Luer Lok<sup>™</sup> and 3mL syringes), or even different models. In these cases, the pump will display options, requiring you to select the correct syringe size actually in use. Always verify that the syringe model shown is what you are actually using. Verify the correct syringe size when prompted and select Confirm.



## Syringe Loading/Troubleshooting

If syringe is incorrectly loaded, the pump displays arrows to show the problem:

- ↑ Check flange clip
- ← Check plunger driver
- ↓ Check barrel clamp

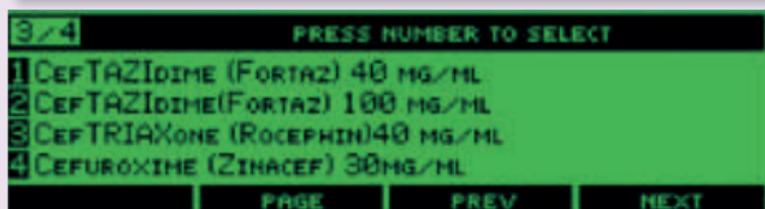
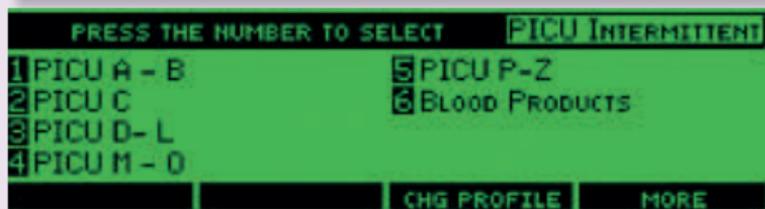
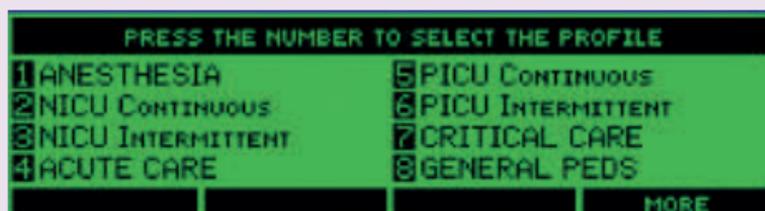


## Program an Infusion

- Select profile
- Select category
- Select drug program
- Program infusion parameters
- Prime pump and administration set
- Confirm all settings
- Press start
- Options soft key can be selected for additional programming choices

**Note:** Never prime any syringe while tubing is connected to a patient.

**Note:** For timed infusions, a time entry will be required. An option to perform a flush could be prompted when the main infusion is complete.



## Program a Loading Dose

- Program the infusion
- Select Options soft key
- Select loading dose
- Program loading dose parameters
- Confirm all settings
- Start the loading dose

- Loading dose will begin and main infusion will start automatically when loading dose is complete



## Program a Bolus Dose

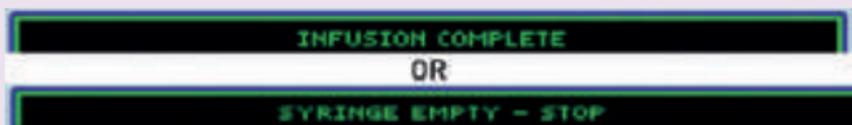
- Program the infusion
- Start the infusion
- Select Prime/Bolus key or the Options soft key
- Program bolus dose parameters
- Confirm bolus dose settings
- Start the bolus dose
- Main infusion will resume automatically when bolus dose is complete



*Prime/Bolus key Options soft key*

## Program a Flush

- Infusion Complete or Syringe Empty – Stop displays and the pump will alarm.



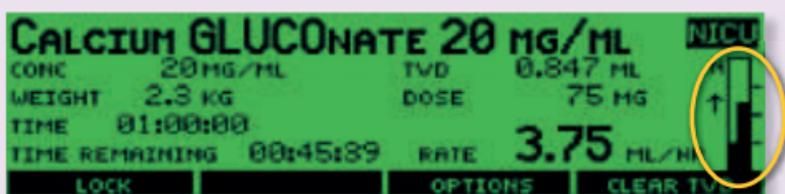
- Press Alarm Silence key.
- Begin Flush Setup screen appears.



- Select YES if the infusion is complete/syringe empty and the clinician desires to start the Flush process. Ensure the tubing is clamped and remove the empty infusion syringe and replace it with the flush syringe. Select the syringe model and size of the flush syringe. Enter the flush volume and press Enter.
- Select NO if the infusion is not complete and an additional syringe is required and return to the infusion programming screen.

The rate of the flush will default to the same rate of the previous infusion. If Flush Time is enabled in the software, the “Confirm Same Rate” prompt will display with the option (Yes or No) to infuse flush at the same rate as previous infusion.

**FlowSentry™ Pressure Monitor and Occlusion Detection** are two separate features in the pump that have separate algorithms, but work together to alert the clinician quickly about an increase in pressure within the infusion line. When pressure increases to the FlowSentry™ monitor sensitivity setting, the pump may trigger a pressure increasing or an occlusion alarm. A change in pressure can occur with more viscous solutions or positional IV access.



**Override Occlusion Settings** is a way to adjust the settings for the current infusion. This can be done by selecting the Options soft key, and selecting Override Occl Limit.

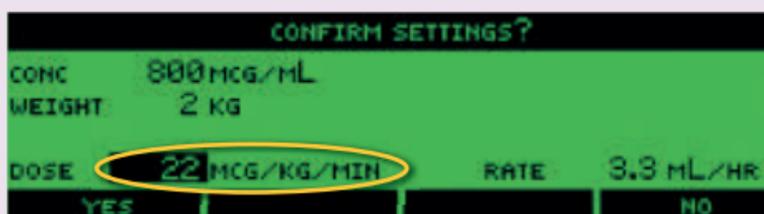
The current setting will be highlighted.

The choices are:

1. Very Low – Most Sensitive (the occlusion alarm will be triggered quickly) - approx. 4 psi
2. Low - approx. 8 psi
3. Normal - approx. 12 psi
4. High – Least Sensitive (the occlusion alarm will be triggered slowly) - approx. 16 psi



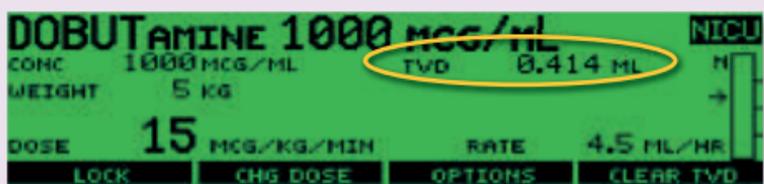
**Reverse Highlight** occurs when a value was entered outside of the soft limits for any of the parameters while programming an infusion. An example of how this may look for a value that was overridden for a dose is shown below.



### **TVD is Total Volume Delivered**

It appears on the screen while the infusion is running. TVD is the total volume delivered to the patient, accumulated over multiple drug programs and infusions, and it will continue to accumulate until Clear TVD (or Clear Totals) is pressed or pump is turned off. It is useful information for documentation of total fluid delivery to a patient.

**Note:** *The priming volume is not included in the TVD.*



*The examples provided were designed to serve as visual tools for the clinician using the Medfusion® 4000 syringe pump. These features may or may not display on your pump, depending on how your particular institution customized the medication safety software.*

*For detailed instructions, specifications, warnings, and additional information on the Medfusion® Model 4000 pump and PharmGuard® medication safety software, please refer to the Operator's Manual.*

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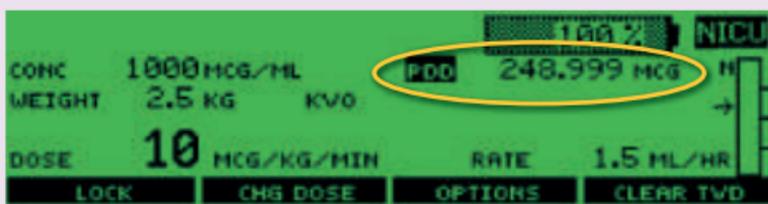
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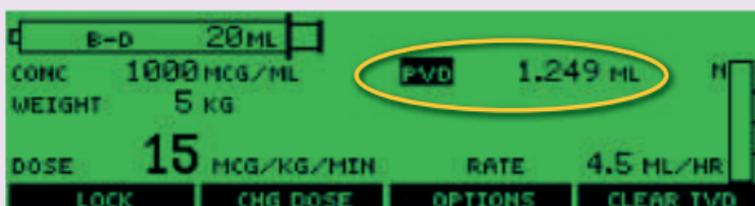
## PDD is Programmed Dose Delivered

For this option to occur, it must be enabled in the PharmGuard® Toolbox software. It is available by selecting Change to Dose under the Options soft key selection. PDD is the accumulative dose delivered to the patient for the current infusion only. It is automatically cleared when the infusion ends and the pump is returned to the Main menu and can be cleared by pressing Clear Totals. It is only available for continuous weight-based infusion modes when a dose has been programmed. This total includes the loading and/or bolus dose and the dose delivered for that infusion. It is useful for documentation of the specific medication dosing delivered to a patient.



## PVD is Programmed Volume Delivered

It appears briefly on the screen while the pump is paused, or by pressing the Back key. PVD is the accumulative volume delivered to the patient for the current infusion only. It is automatically cleared when the infusion ends and the pump is returned to the Main menu and can be cleared by pressing Clear Totals. This display totals the boluses, loading dose, and normal delivery volumes. It is useful for documentation of specific volume of medication delivered to a patient.



## Quick Library Programming

Quick Library is an option that can be set up in a Configuration from the PharmGuard® Toolbox medication safety software.



- With a Quick Library, starting an infusion can be as quick as Profile – Drug Selection – Start Infusion.
- Should a user need to change the dose or the patient’s weight that was pre-entered, using the soft keys can enable them to do so.

## Communicating Indicator

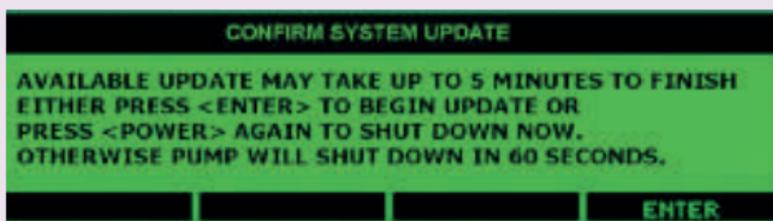


The Communicating indicator (blue) is on whenever the pump is communicating with the PharmGuard® Server using wireless or wired interface. There is no audible tone associate with communications. During normal network operations the light may periodically turn on and off. The Communicating indicator has no affect on clinical operations of the pump.

## Accept new Configuration/Library

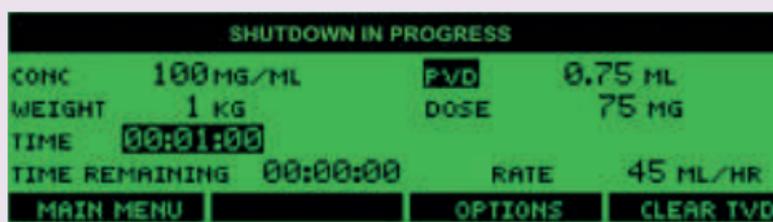
When powering off the pump, if an update to the pump is available, the message displayed below will appear.

Upon selection of the Enter soft key, the update will begin. Do not press the power key during the update process. The pump will power off on its own when the update is complete.



## Power Off

When powering off the pump, if no updates to the pump are available, the message “Shutdown in Progress” will appear briefly on the pump display prior to completing power off.



## Program Options

Provide options that affect the **current infusion only**. The options available depend on the options that have been enabled for the profile and which have been customized for use in the medication safety software. Any options in use for a current infusion return to the default selection whenever the pump is powered off, or whenever the program is returned to the Main Menu prior to the beginning of the next infusion.

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**Bolus Dose:** Ability to allow a specific bolus dose or volume to be delivered (option can be programmed prior to starting, during an infusion, or when infusion is stopped). Dose will be programmed and delivered in the parameters of that specific infusion. Bolus dose must be enabled for the specific drug for this feature to appear on the pump.

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**Delayed Start:** Ability to pre-program an infusion then postpone the start for a programmed interval of time (option to program only available prior to starting an infusion, or when infusion is stopped). Delayed Start mode begins after entering the time parameters. The pump will automatically start the infusion at the end of the delayed start time. The infusion can be started at any time during delayed start by pressing the Start key.

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**Loading Dose:** Ability to allow a specific loading dose or volume to be delivered (option to program only available prior to starting an infusion, or when infusion is stopped). Dose will be programmed and delivered in the parameters of that specific infusion. Loading dose must be enabled for the specific drug for this feature to appear on the pump and will be delivered before the start of the main infusion.

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**Periodic Callback Alarm:** Allows programming of an alarm to be generated at a programmed period of time. It can be set in either hours or minutes (option can be programmed/changed prior to starting, during an infusion, or when infusion is stopped). The maximum allowable time is 8 hours.

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**Standby:** Allows pre-programming of an infusion then postponing the start for a programmed interval of time while maintaining the programmed settings until the infusion is started. Standby mode begins after entering the time parameters. Do not press the start key until it is time to start the infusion. The pump does not automatically start at the end of the standby period. The pump will sound an alarm notifying the clinician that Standby mode has ended. The infusion can be started at any time during standby by pressing the start key.

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**Volume Limit:** Allows a specific volume limit to be determined for an infusion (option to program only available prior to starting an infusion, or when infusion is stopped). Once the pump has delivered the volume limit, the pump will alarm and stop. This is only available for continuous infusions.

**KVO:** Ability to allow a KVO (Keep Vein Open) rate to be delivered between infusions (option to program only available prior to starting an infusion or when infusion is stopped). A volume limit must be programmed for KVO to function. KVO rates are determined by the minimum flow rate for the syringe currently being used and the current infusion rate, whichever is less.

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**Override Alarm Loudness:** Ability to override the profile selection for a specific infusion (option can be programmed prior to starting, during an infusion, or when infusion is stopped). Able to select from a higher or lower volume. The alarm cannot be totally disabled.

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**Override Occlusion Limit:** Ability to override the profile selection for a specific infusion (option can be changed prior to starting, during an infusion, or when infusion is stopped). Able to select from a higher or lower value.

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**Disable/Enable FlowSentry™:** Ability to override the profile selection for a specific infusion (option can be changed prior to starting, during an infusion, or when infusion is stopped). Will either disable or enable FlowSentry™ pressure monitor.

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**Disable/Enable Near Empty Tone:** Ability to override the profile selection for a specific infusion. Will either disable or enable Near Empty tone (option can be changed prior to starting, during an infusion, or when infusion is stopped). If the tone is disabled, no audible alarm tone will occur. However, the message "Syringe Near Empty" will display, the alarm indicator light will illuminate, the display screen backlight will oscillate between bright and dim and the infusion will continue.

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**Disable/Enable Volume Empty Tone:** Ability to override the profile selection for a specific infusion (option can be changed prior to starting, during an infusion, or when infusion is stopped). Will either disable or enable Syringe Volume Near Empty tone. If the tone is disabled, no audible alarm tone will occur. However, the message "Syringe Volume Near Empty" will display, the alarm indicator light will illuminate, the display screen backlight will oscillate between bright and dim and the infusion will continue.

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**Change to Dose/Change to Volume:** Ability to have one or the other display on the pump during infusions (option can be changed prior to starting, during an infusion, or when infusion is stopped). PVD is an acronym that means Programmed Volume Delivered. PDD is an acronym that means Programmed Dose Delivered.