For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support.
Notes:
ICU Medical MedNet™ Meds™
User Guide

Reference 16037-92-03

**IMPORTANT**

Refer to this guide for proper use, warnings, and cautions associated with the installation and upgrade of the ICU Medical MedNet™ Meds™ Software performed by the ICU Medical Service Team. Please contact your sales representative for any questions associated with installing and configuring the ICU Medical MedNet™ Meds™ Software. The help files included with the ICU Medical MedNet™ Meds™ software are provided as reference only. Please read this entire guide before using the ICU Medical MedNet™ Meds™ Software.

Please also read the ICU Medical Release Notes before using the ICU Medical MedNet™ Meds™ Software.

**Intended Use**

The ICU Medical MedNet™ Medication Management Suite (MMS) is intended to facilitate networked communication between MMS compatible computer systems and MMS compatible Infusion pumps. The MMS provides trained healthcare professionals with the capability to send, receive, report, and store information from interfaced external systems, and to configure and edit infusion programming parameters.

The MMS is intended to provide a way to automate the programming of infusion parameters, thereby decreasing the amount of manual steps necessary to enter infusion data. All data entry and validation of infusion parameters is performed by a trained healthcare professional according to physician's orders.

For a list of ICU Medical MedNet™ compatible devices approved for your country with their software versions; for assistance with ICU Medical MedNet™ and ICU Medical MedNet™ Meds, or to access the knowledge-based articles, contact:

in the USA
The ICU Medical Technical Support Center
1-800-241-4002

outside the USA
The local ICU Medical Sales office

From our ICU Medical website, you can access the MedNet User Guides in the support section under System Operating Manuals and Technical Service Manuals.
## Change History

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<td>IFU0000070 (02, 2019-07)</td>
<td>Updated footer in Table of Contents. Updated minimum system requirements in Chapter 1.</td>
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*Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.*
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<table>
<thead>
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<th>Standards or Regulations</th>
<th>Reference</th>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
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<td><img src="image" alt="Date of Manufacture - the date when the software build was completed" /></td>
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<td>5.1.3</td>
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<td>Catalogue or Product List Number</td>
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<td></td>
</tr>
<tr>
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<td>Consult the instructions for use provided electronically in the software</td>
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</tr>
<tr>
<td><img src="image" alt="Caution - Consult the instructions for use for precautions and warnings (in yellow)" /></td>
<td>Caution - Consult the instructions for use for precautions and warnings (in yellow)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="CAUTION: Federal (USA) law restricts this device to sale by or on the order of a doctor or other licensed practitioner" /></td>
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Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
Chapter 1: Introduction

ICU Medical MedNet™ is a server-based safety software product intended for use in healthcare facilities by trained healthcare professionals to provide valuable bedside guidance by managing IV infusion information with compatible ICU Medical infusion systems. The ICU Medical MedNet™ suite of software also includes a separate application, ICU Medical MedNet™ Meds™.

ICU Medical MedNet™ software enhances safety at the point of care with highly customizable drug libraries that guides users and help to protect patients by alerting to hard and soft, upper and lower dosing limits intended to help prevent infusion errors. These limits are based on a hospital’s specific IV administration practices.

ICU Medical MedNet™ software reduces manual programming steps by providing the option to allow pharmacy settings to flow directly into the compatible infusion pumps through the IV EHR Interoperability solution. ICU Medical MedNet™ software connects the pharmacy validated medication order with the infusion pump and the patient’s electronic health record (EHR), providing the opportunity for automated programming of the infusion pump.

ICU Medical MedNet™ software generates more than 20 different reports based on data, settings, and changes that are automatically collected from the compatible infusion pumps. The generated reports help to turn data into actionable data to provide visibility to clinical practice. Depending on the EHR system capability, automated documentation in the EHR is also supported by ICU Medical MedNet™.

ICU Medical MedNet™ software packages consist of the components listed below. The specific components available to you will depend on your institution’s license.

**ICU Medical MedNet™ Administrator™** provides the ability to manage system users, infusers, drug library downloads, infuser software updates, access points, and other configurations.

**ICU Medical MedNet™ Connect™** establishes the connectivity between the ICU Medical MedNet™ server and the infusers. It incorporates ethernet and wireless components permitting ICU Medical MedNet™ Meds™ and ICU Medical MedNet™ Administrator™ to exchange information with infusers.

**ICU Medical MedNet™ Integrator™** provides interfaces to a hospital’s enterprise level applications and serves as the conduit for the exchange of data between infusers, the ICU Medical MedNet™ server, and a variety of hospital information systems.

**ICU Medical MedNet™ Meds™** provides functionality to the pharmacy for the definition and management of medications, drug libraries, clinical care areas, and infuser configurations.

**ICU Medical MedNet™ Performance™** delivers data from the ICU Medical MedNet™ server into reports designed for asset management as well as clinical assessment of ICU Medical MedNet™ use with selectable options to best meet the needs of the user.

**ICU Medical MedNet™ Programmer™** takes medication dispensing orders from the Bar Code Medication Administration (BCMA) system and translates them into operational commands which automatically populate settings on the infuser. For more information, see **ICU Medical MedNet™ Software User Guide**, Appendix B.
Terminology

This document uses the following conventions:

- References to specific values are approximations only, unless otherwise indicated.
- The terms “ICU Medical MedNet™ Software” and “the Software” are used interchangeably throughout this manual.

**Note:** Illustrations and screen representations are for illustrative purposes only and may vary from the actual software. Your computer’s display settings may affect screen representations.

**Note:** The ICU Medical MedNet™ user interface uses “Auto-Documentation” as an alternative name for Infusion Documentation, and Auto-Programming” as an alternative name for Smart Pump Programming.

General Warnings and Cautions

The following conventions are used in this user guide to denote warnings or cautions:

- **CAUTION:** Contains information that could prevent product damage or hardware failure. Failure to observe a caution could result in patient or user injury.

- **WARNING:** Warning messages contain special safety emphasis and must be observed at all times. Failure to observe a warning message is potentially life threatening.

- **CAUTION:** Federal (USA) law restricts this device to sale by or on the order of a physician or other licensed practitioner.

For incidences in a Member State of the European Union (or states that recognize European Union Medical Device Regulations), serious incidences should be reported to ICU Medical, Inc. at www.icumed.com, or contact your local ICU Medical representative.

For incidences in a Member State of the European Union (or states that recognize European Union Medical Device Regulations), serious incidences should also be reported to the competent authority of the Member State where the incident occurred.
Computer Management and Security

- Except for virus data files (typically called “dat” files), do not install upgrades, service packs, or patches to non-ICU Medical software, except as authorized by ICU Medical.
- Do not enable automatic updates to operating systems on computers on which ICU Medical MedNet™ Software is installed.
- Ensure that procedures are in place for backing up and restoring data, and that administrators can successfully restore data from earlier backups.
- Ensure that the network on which ICU Medical MedNet™ Software is used has effective security procedures in place, including physical and network access control.
- Ensure that user passwords are protected.
- Ensure a backup power supply (uninterrupted power source) is available to prevent critical data loss.

**Important:** We highly recommend that you regularly backup and purge your database. A database can grow to a large size that will affect the performance of your ICU Medical MedNet™ system.

Although we suggest to purge a database every four years at a minimum, if you have more than 2,000 infusers it would be wise to consider doing so more often.

**Note:** It is your organization’s responsibility to assure a safe, validated, and functioning environment. This includes providing proper training of hospital staff, protecting systems, controlling medical devices from cyber-security threats, and performing maintenance on hardware. Your IT department should also provide physical security for PCs and server hosts.

Handling Infusers

- Refer to the System Operating Manual for the applicable infuser for warnings and cautions before handling the infusers.
- Use care when handling connectors and cables.
- Avoid twisting or bending cables and connectors.
- Ensure compliance to IEC 60601-1-1 for connecting accessories to medical devices.

**Note:** The infusion devices compatible with ICU Medical MedNet will display selectable options based on your licensing and ICU Medical's compatibility matrix.

Transferring Data

- Ensure that only one instance of the ICU Medical MedNet™ Meds™ software is running on a computer at a time.
Minimum System Requirements

The ICU Medical MedNet™ system is installed by a highly trained ICU Medical Service team. Please consult with the ICU Medical Service team for information regarding the preparation of servers and interfacing with 3rd party systems.

The following minimum system requirements are for the ICU Medical MedNet™ program, including the ICU Medical MedNet™ Software and ICU Medical MedNet™ Meds™.

Important: The ICU Medical MedNet™ Software has been developed and tested using the hardware components and software application versions described below. To ensure support, the minimum hardware configurations listed below must be met.

In virtual environments, reserve a minimum of 100 GB of storage. Depending on the infuser type and number of infusers, the storage requirements may grow to 1 TB over the product’s expected lifecycle.

Distributed SQL Environment

Important: Recommended for Auto-Programming (Smart Pump Programming) and IHE-based client solutions for optimum performance.

For a distributed environment when ICU Medical MedNet software is on one machine and the ICU Medical MedNet database is physically located on another machine, you will need the following:

- A server* to house the ICU Medical MedNet Software (Server 1)
- A server* to house the ICU Medical MedNet Database (SQL) software (Server 2)

Note: For HMSS Server: Hex (6) Core Intel Xeon Processor (e.g. X5675) - 3.0 GHz or better and For SQL Server: Quad (4) Core Intel Xeon Processor (e.g. X5675) - 3.0 GHz or better

Each machine should meet the following requirements:

- 12 GB RAM (6 GB allocated to ICU Medical MedNet HMSS Service)
- Redundant power supply
- SAS hardware RAID 1+0 controller card (minimum recommended RAID level 1+0)
- Reserved database disk space (see Recommended Disk Space table)
- (4) 1 TB 15K-RPM 6-Gb/s SAS disk drives or better
- 120 GB Hard Drive for operating system
- Dual Gigabit Ethernet NICs with link aggregation support
- Internet Protocol version 4 (IPv4)
- Backup capability

Note: *Install the software described below, including the Microsoft updates on each of the two servers. Security updates can be downloaded from the Microsoft website.
Full Server

This configuration is to support up to 500 infusers when using the following minimum configuration:

**Hardware**
- Quad Core Intel Xeon processor - 3.0 GHz or better
- 12 GB RAM
- Redundant power supply
- SAS hardware RAID controller card (minimum recommended RAID level 1+0)
- (4) 250 GB 15K-RPM 6-Gb/s SAS disk drives or better
- 120 GB Hard Drive for operating system
- Dual Gigabit Ethernet NICs with link aggregation support
- Internet Protocol version 4 (IPv4)
- Backup capability

Mini Server

This configuration is to support 100 infusers when using the following minimum configuration:

**Hardware**
- Dual Core Intel Xeon processor - 3.0 GHz or better
- 12 GB RAM
- Redundant power supply
- (2) 250 GB 15K-RPM 6-Gb/s SAS disk drives or better
- Dual Gigabit Ethernet NICs, with link aggregation support
- Internet Protocol version 4 (IPv4)
- Backup capability

**Note:** We recommend this configuration for test servers.
Recommended Disk Space

The recommended disk space for the MedNet™ database is dependent on the type and count of infusers connected to MedNet™. ICU Medical recommends having at least enough disk space to store 4 years' worth of infuser data.

<table>
<thead>
<tr>
<th>Pump Configuration</th>
<th>1 Infuser per Year</th>
<th>500 Infusers per Year</th>
<th>1000 Infusers per Year</th>
<th>2000 Infusers per Year</th>
<th>4000 Infusers per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LifeCare PCA</td>
<td>40 MB</td>
<td>20 GB</td>
<td>40 GB</td>
<td>80 GB</td>
<td>160 GB</td>
</tr>
<tr>
<td>Plum A+ 13.x</td>
<td>40 MB</td>
<td>20 GB</td>
<td>40 GB</td>
<td>80 GB</td>
<td>160 GB</td>
</tr>
<tr>
<td>Plum 360 15.x</td>
<td>250 MB</td>
<td>125 GB</td>
<td>250 GB</td>
<td>500 GB</td>
<td>1 TB</td>
</tr>
<tr>
<td>Q Core SapphirePlus 14.x</td>
<td>250 MB</td>
<td>125 GB</td>
<td>250 GB</td>
<td>500 GB</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: If the recommended disk space is 80 GB per year, 4 years of data would require 320 GB of disk space, which would reside on a RAID 1+0 setup, requiring 640 GB of disk space.

Wireless Connectivity

Depending on wireless connectivity, the Plum 360 and SapphirePlus infusers can generate extra data that gets stored in the database, e.g. log messages. Therefore, we highly recommend monitoring the disk usage during the first few months of deployment to determine the rate of disk space consumption.

Software for ICU Medical MedNet server

- Microsoft Windows 10, or
  - Microsoft Windows Server 2012 R2, or
  - Microsoft Windows Server 2016
- Microsoft SQL Server 2014 Standard Edition with Service Pack 3, or
  - Microsoft SQL Server 2016 Standard Edition with Service Pack 2
- Microsoft Internet Explorer 11 or Microsoft Edge
- Adobe Acrobat Reader DC
- The ICU Medical MedNet Software
- The ICU Medical MedNet Meds software

Important: We strongly recommend the use of a virus checking software. However, we suggest you consider ignoring scanning directories where the datafiles reside or to ignore MDF and LDF type files. Updates or changes to the antivirus software after installation could affect ICU Medical MedNet server performance.

Tip: Please consult the ICU Medical Technical Support Center’s article Configuring Antivirus Software on an ICU Medical MedNet server.
**Microsoft Updates**

Please contact the ICU Medical Technical Support Center for a list of Microsoft updates that have been validated with ICU Medical MedNet™.

**Important:** The above configurations are for licensable features of ICU Medical MedNet including Auto-Programming (Smart Pump Programming), Auto-Documentation (Infusion Documentation) and Enhanced Asset Tracking via the ICU Medical MedNet Clinical Integration Interface.

Calling the ICU Medical MedNet GetPumpStatus and GetMatchingPumps clinical Integration interfaces to retrieve information from the ICU Medical MedNet server should occur on a low frequency to avoid overwhelming the server and interrupting normal operations.

**Client Computers**

The Client is used to host the web browser. Most computing is done on the server but display and processing of 500 or more infusers may need significant client side memory as well.

**Hardware**

- Network adapter (Ethernet or Wi-Fi)

**Software (Web Browser Access to ICU Medical MedNet Server)**

- Microsoft Windows 10, or
  Microsoft Windows Server 2012 R2, or
  Microsoft Windows Server 2016
- Microsoft Internet Explorer 11 or Microsoft Edge
- Adobe Acrobat Reader DC
ICU Medical MedNet™ Meds™

**Hardware**
- Network adapter (Ethernet or Wi-Fi)

**Software**
- Microsoft Windows 10, or
  - Microsoft Windows Server 2012 R2, or
  - Microsoft Windows Server 2016
- Microsoft Internet Explorer 11 or Microsoft Edge
- Adobe Acrobat Reader DC
- ICU Medical MedNet Meds software

**Additional Non-ICU Medical Software**
- Java Runtime Environment 1.8.0_202
- Q Core Mediator for use with SapphirePlus 14.5

**General Notes**

It may only be necessary to install anti-virus software once, at the end of the entire installation process, to ensure system safety; if there is any question, consult with your System Administrator regarding advisability of when to perform this step.

Illustrations and screen representations are for illustrative purposes only and may vary from the actual software. Your computer display may affect screen representation.

Some features and infuser types described in this document are enabled by the software license agreement. Your license may not enable all of these features and infuser types.

ICU Medical MedNet is intended to communicate with multiple compatible infuser types. Some infuser types may not be available in a country or region, and references in this guide are not intended as a promotion of those infuser types. For a list of infuser types available in your country or region, please refer to the ICU Medical MedNet Device Compatibility Matrix available through the Technical Support Center.
Chapter 2: Logging In and Out

Logging In

To log into the ICU Medical MedNet Meds software:


2. Enter your user ID and a strong password into the appropriate fields. Each field must be between 8 and 20 characters.

   **Note:** ICU Medical MedNet Meds enforces a strong password. A strong password is at least eight characters, including at least one number, one symbol, and mixed-case characters.

3. Click **Log In**. The ability to log in, and to finalize a worksheet as described in Finalizing Worksheets on page 65, ensure the application was installed successfully.

   **Important:** As a protection against cyber attacks, and if you do not have administration privileges, five missed logins will result in the application being inaccessible. You will then need to contact the System Administrator to reset the password. If the System Administrator is locked out after five missed logins, the application will be inaccessible for five minutes after which the System Administrator can attempt to log in again.
Logging Out and Exiting

To log out of ICU Medical MedNet Meds software:

1. Click Log Out.

2. Click Yes.
3. Click Exit.

4. Click Yes.

**Note:** You will be automatically logged out of the application after 60 minutes of inactivity.
Overview

The configuration view allows you to set either English (United States) or any licensed language. Once you make a selection, the software will display all information in that language.

Libraries associated with a language will be viewed, edited, imported or finalized in that language option.

For English (United States), the date format is displayed as mmddyyyy, and the distal pressure unit is psi.

Depending on the country selected, the date format could be displayed as follows:

- dd/mm/yy
- dd/mm/yyyy
- dd/mmm/yy
- dd/mmm/yyyy

and the distal pressure unit as either mmHg or psi.

You will need to navigate to the Configuration tab and make your selection.

Click **Save** and the appropriate language will be applied immediately.

**Note:** The language selected in ICU Medical MedNet Meds will automatically apply to the ICU Medical MedNet Software.
Certificate Management

**Important:** You must install certificates before you can use the ICU Medical MedNet Meds application with your ICU Medical MedNet server. These certificates are used to secure communication between the ICU Medical MedNet Meds application and your ICU Medical MedNet server.

The ICU Medical Technical Support Center or your local ICU Medical representative can help create and install these certificates.

Following are the ICU Medical MedNet supported certificate formats:

**Suitable for Import:**

<table>
<thead>
<tr>
<th>Format</th>
<th>Encoding</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>X.509</td>
<td>Yes</td>
<td>Certificate only (no private key)</td>
</tr>
<tr>
<td>PKCS #7</td>
<td>Yes</td>
<td>Certificate chain only (no private key)</td>
</tr>
<tr>
<td>PKCS #8</td>
<td>Yes</td>
<td>Private key only (no certificate)</td>
</tr>
<tr>
<td>PKCS #12</td>
<td>Yes</td>
<td>Certificate with private key</td>
</tr>
</tbody>
</table>

ICU Medical MedNet Meds can import password and non-password protected private keys.

The following three files must be installed:

- CA certificate - .cer file
- MedNet (HMSS) certificate (without private key) .cer file
- DLE (ICU Medical MedNet Meds) certificate (with private key) password-protected .p12 file

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
Importing Certificates

You will need to create the certificates and .p12 files.

<table>
<thead>
<tr>
<th>DLE certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>CA.cer</td>
</tr>
<tr>
<td>HMSS.cer</td>
</tr>
<tr>
<td>DLE.p12</td>
</tr>
</tbody>
</table>

**Initial installation of certificates:**

When you first install MedNet Meds, you will need to import each certificate into the application one at a time. That is:

- CA.cer
- HMSS.cer
- DLE.p12

1. From the Certificate Management view, select **Import**.
2. Using the **Browse...** button, locate the certificate to be imported.
   - Once located and highlighted, click **Open** and the File to Import will be populated with the certificate location.
   - Enter a description
   - For the .p12 file only: enter its password
     
     Click **Import**.

3. From the **Active Certificate** field, select the DLE.p12 certificate from the drop-down list.

4. Click **Save**.

5. Restart the application.

**Important:** After the initial installation of the certificates, do **not import** any certificate for any subsequent installation of the application or when using the application on a separate computer. Instead, verify the certificate exists in Certificate Management by selecting the certificate, clicking **Save**, then restarting the application.
Additional Information:

You can export a certificate to a specified location. For certificates with private key (.p12), you will need to provide a password and confirm the password when performing the export.

You can only have one single active certificate selected at a given point of time.

You can delete unused certificates from the Active Certificate drop-down list.
Notes:
Chapter 4: Medication List

Overview

The Medication List is the list of medications used by the hospital; it contains important data elements used in the development of drug libraries for the infusers used in your hospital.

In this chapter, you will learn how to create, import, and manage the Medication List. The chapters that follow contain detailed information on developing a drug library.

Note: When a user is in the Medication List, no other user can be in the Medication List or any library. Each library allows only one user at a time. When you are using a library, no other user can be in the Medication List.

Identifying medications in the Medication List

The Medication List requires each medication to have an External identifier (ID). The External ID is especially important if your ICU Medical MedNet system is integrated with another system that sends programming information to the infuser. The External ID is used to assure a match between the medication sent by the sending system and the medication rule set used by the ICU Medical MedNet software.

Considerations for assigning an External ID

If ICU Medical MedNet is to be integrated with another system (such as a BCMA system) that sends programming information to the infuser (medication, concentration, rate, etc.), each generic name in the Medication List must have a unique External ID. This External ID must be also be used by the sending system (in this case, the BCMA system). This allows, for example, all dopamine products, such as amps, vials, and syringes, to be represented as a single entry in the Medication List referring to the generic name “dopamine.” The corresponding generic level External ID number will vary depending on the BCMA system integrated to ICU Medical MedNet, for example, catalog code or Multum ID for Cerner Millennium, etc. Your Pharmacy Consultant will work with you to create the correct file for your implementation.

If ICU Medical MedNet is not to be integrated with another hospital system that sends programming information to the infuser, all that is required is that each item in the Medication List has a corresponding External ID. In this case, you may want to have various manufacturers or package sizes of the same medication represented in the Medication List. Each generic name can appear multiple times as long as each has its own unique External ID. Numeric sequences or charge master identifiers can be used for this purpose.

How External ID is used in Drug Libraries

When a drug library is developed, certain rules (listed below) that involve the External ID are enforced.

Within a drug library, for medication entries in a Clinical Care Area (CCA):

1. There can be only one rule set for each combination of External ID and Concentration.
2. There can be only one rule set for each combination of Displayed Name and Concentration.

These rules enable both the ICU Medical MedNet software and the infuser software to positively identify the specific medication rule set in the drug library.

Import a Medication List

A Medication List file may be imported into ICU Medical MedNet Meds multiple times. Each import file should contain all medications that can be infused even if they have been imported previously.

Formatting the CSV file

Importing a Medication List involves the creation of a Comma Separated Value (.csv) file containing the medication information. Your pharmacy system may support creating a file in this format or in a similar format that can be manipulated in Excel. The file can have 12 columns as specified below, if importing an entire Medication List. However, if you want to edit only the External ID and Generic Names, you can do it through the Export feature as described in Export a Medication List.

a. The first line of the file is ignored by the Medication List Import function. It should contain the field names in the table below.

b. Each subsequent line in the file should include one medication entry per line.

c. Each subsequent line in the file must include data in the External ID and Generic Name fields.

Note: External ID and Generic Name are the only fields in which data is required.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Field Type</th>
<th>Number of Characters allowed¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>External ID</td>
<td>String</td>
<td>20</td>
</tr>
<tr>
<td>NDC</td>
<td>String</td>
<td>20</td>
</tr>
<tr>
<td>Generic Name</td>
<td>String</td>
<td>100</td>
</tr>
<tr>
<td>Brand Name</td>
<td>String</td>
<td>100</td>
</tr>
<tr>
<td>Strength</td>
<td>Numeric</td>
<td>20</td>
</tr>
<tr>
<td>Strength Units</td>
<td>String</td>
<td>25</td>
</tr>
<tr>
<td>Volume</td>
<td>Numeric</td>
<td>20</td>
</tr>
<tr>
<td>Volume Units</td>
<td>String</td>
<td>25</td>
</tr>
<tr>
<td>Therapeutic Class ID</td>
<td>String</td>
<td>20</td>
</tr>
<tr>
<td>Therapeutic Class Description</td>
<td>String</td>
<td>200</td>
</tr>
<tr>
<td>Dosage Form ID</td>
<td>String</td>
<td>20</td>
</tr>
<tr>
<td>Dosage Form Description</td>
<td>String</td>
<td>200</td>
</tr>
</tbody>
</table>

¹ Comma (,), angle bracket (<>), and double-quote (") characters are not permitted within fields in the import file.
The Medication List can be created as a spreadsheet and saved in .csv format to be imported. An example of a 12-column spreadsheet containing the medication list information is as follows:

<table>
<thead>
<tr>
<th>External ID</th>
<th>INDC</th>
<th>Generic Name</th>
<th>Brand Name</th>
<th>Strength</th>
<th>Unit</th>
<th>Volume</th>
<th>Thera. Class ID</th>
<th>Therapeutic Class Description</th>
<th>Dosage Form</th>
<th>Form Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>1738</td>
<td>00173-E029-38</td>
<td>RABITIDE</td>
<td>ZENAC</td>
<td>50</td>
<td>MG</td>
<td>2</td>
<td>ML</td>
<td>1.2, 12</td>
<td>INSTAMERE NEAMIQUE</td>
<td>YV</td>
</tr>
<tr>
<td>2003</td>
<td>07206-004G-05</td>
<td>RASPAIDE</td>
<td>RASPAIDE</td>
<td>5</td>
<td>MG</td>
<td>1</td>
<td>YV</td>
<td>0.2</td>
<td>FURTHER ETHICAL RASPAIDE</td>
<td>YV</td>
</tr>
<tr>
<td>2009</td>
<td>00990-260P-00</td>
<td>RHIM (M)</td>
<td>GRIMED</td>
<td>GRIMED</td>
<td>1000</td>
<td>NCG</td>
<td>44</td>
<td>ML</td>
<td>0.84</td>
<td>DRESS</td>
</tr>
<tr>
<td>2409</td>
<td>05040-0311-00</td>
<td>RAMPON</td>
<td>RAMPON</td>
<td>600</td>
<td>MG</td>
<td>1</td>
<td>YV</td>
<td>0.84</td>
<td>RAMPON</td>
<td>YV</td>
</tr>
<tr>
<td>12</td>
<td>50000-0300-15</td>
<td>REFOREN</td>
<td>REFOREN</td>
<td>50</td>
<td>MG</td>
<td>5</td>
<td>ML</td>
<td>12.26</td>
<td>RENALINE PAIN</td>
<td>YV</td>
</tr>
<tr>
<td>2412</td>
<td>09160-0023-77</td>
<td>RIFAMOXINE BSR</td>
<td>RIFAMOXINE</td>
<td>30</td>
<td>MG</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>RENALINE PAIN</td>
<td>YV</td>
</tr>
<tr>
<td>32</td>
<td>00070-0309-19</td>
<td>RIFAPRAV</td>
<td>RIFAPRAV</td>
<td>5</td>
<td>NCG</td>
<td>1</td>
<td>YV</td>
<td>0.84</td>
<td>RENALINE PAIN</td>
<td>YV</td>
</tr>
<tr>
<td>410</td>
<td>00400-8699-02</td>
<td>SODIUM BICARBONATE</td>
<td>SODIUM BICARBONATE</td>
<td>50</td>
<td>HEQ</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>1518</td>
<td>00400-8625-02</td>
<td>SODIUM BICARBONATE</td>
<td>SODIUM BICARBONATE</td>
<td>50</td>
<td>HEQ</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>559</td>
<td>00400-8561-15</td>
<td>SODIUM CHLORIDE 0.9%</td>
<td>SODIUM CHLORIDE 0.9%</td>
<td>50</td>
<td>HEQ</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>659</td>
<td>00400-8468-12</td>
<td>SODIUM CHLORIDE 0.9%</td>
<td>SODIUM CHLORIDE 0.9%</td>
<td>50</td>
<td>HEQ</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>659</td>
<td>00400-8469-09</td>
<td>SODIUM CHLORIDE 0.9%</td>
<td>SODIUM CHLORIDE 0.9%</td>
<td>50</td>
<td>HEQ</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>612</td>
<td>00400-8225-02</td>
<td>SUCRONE</td>
<td>SUCRONE</td>
<td>50</td>
<td>HEQ</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>1662</td>
<td>00700-1614-03</td>
<td>SULFA AND PHENjoining</td>
<td>SULFA AND PHENjoining</td>
<td>10</td>
<td>HEQ</td>
<td>5</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>3339</td>
<td>00020-0871-26</td>
<td>TETRACUMOLIN</td>
<td>TETRACUMOLIN</td>
<td>3</td>
<td>GM</td>
<td>1</td>
<td>YV</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>569</td>
<td>00300-0303-09</td>
<td>TOBAMOCIN</td>
<td>TOBAMOCIN</td>
<td>1.2</td>
<td>GM</td>
<td>1</td>
<td>YV</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
<tr>
<td>4401</td>
<td>00300-0306-95</td>
<td>TORMAYON</td>
<td>TORMAYON</td>
<td>30</td>
<td>MG</td>
<td>2</td>
<td>ML</td>
<td>0.84</td>
<td>SODIUM BICARBONATE</td>
<td>YV</td>
</tr>
</tbody>
</table>

Considerations for the Medication List Import File in CSV format

Save the file to .csv format. Extracts from information systems are commonly Excel files, tab-separated files, or pipe-separated files. Each of these can be saved as a CSV file using Excel.

Remove any rows or columns in the CSV file that do not contain required data. Ensure there are 12 columns.

Evaluate the information provided to determine how the fields provided can map to the import file specifications.

a. Is there an identifier for each drug that can be used for External ID?
b. Does each drug have a Generic Name that contains only the generic name (without strength, volume, or dosage form)?
c. Are Therapeutic Class ID and Description provided?
   Therapeutic Class MUST have an ID. The Description is optional. (If only a Description is supplied, use the same information for ID and Description. Copy the Description column to the ID column.)
d. Is there data for Dosage Form ID and Description?
   Dosage Form MUST have an ID. The Description is optional. (If only a Description is supplied, use the same information for ID and Description. Copy the Description column to the ID column.)

Remove medications that cannot be infused on a pump from the list.

Format the columns in the file to match the import file specifications.

a. Ensure that all columns are present and are named correctly (even if there is no data contained in them).
b. Ensure that columns are in the proper order.
c. Remove special characters (commas, left and right angle brackets, and double quote characters).

In Excel, from the Edit menu, you may use the Find/Replace option.

- Find comma character, replace with blank.
- Find left angle bracket character, replace with left parenthesis
- Find right angle bracket character, replace with right parenthesis
- Find double quote character, replace with single quote
Final check:
   a. Sort file by External ID.
   b. A particular External ID should only appear in one row in the file.
   c. Ensure that each medication has data in both the External ID and Generic Name columns.
   d. A Generic Name can appear multiple times in the file with different External IDs.

**Importing the Medication List**

**Important:** Importing the Medication List replaces any medications already in the list. Complete instructions are provided in the next segment, *Working with the Medication List* section on page 24.

Once the file has been formatted as described above:

1. From the Medication List view, select **Import**.

   ![The File to Import screen displays.

   2. Navigate to the location of the Medication List to import.

   ![Navigate to the location of the Medication List to import.](image)
3. **Click Select.** A pop-up window displays a preview of changes to the Medication List. Medications that are being added are displayed in green. If the Medication List currently contains medications, you will see medications that are being deleted displayed in red and medications that are being updated displayed in blue.

4. If satisfied with the preview, click **OK**.

5. To prevent the import, click **Cancel**.

6. If you selected **OK**, a message confirming the import displays.

7. **Click OK.**

**Note:** It is not possible to undo the import of the medication list once it has been completed.
Working with the Medication List

Importing a Medication List file completely replaces the existing list. Any medication entries in a Worksheet that are associated with medications that are no longer in the medication list must be deleted or reassigned to a new medication before the Worksheet can be finalized.

The following table summarizes the behavior when a new medication list is imported when there are already medications present in the list:

<table>
<thead>
<tr>
<th>Medication present in the Medication List</th>
<th>Medication present in Import File</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td>Removed</td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td>Updated</td>
</tr>
<tr>
<td>N</td>
<td>Y</td>
<td>Added</td>
</tr>
</tbody>
</table>

For LifeCare PCA Worksheets, the user will be prompted to delete any protocols associated with medications that have been deleted when the worksheet is opened.
Medication List View

The Medication List view displays:

- Generic Name
- Brand Name
- External ID
- Strength
- Volume
- Dosage Form
- Received/Updated
- Status

You can filter the medications displayed by:

- active medications

with

- any generic name or External ID
- generic names beginning with (any character)
- External IDs beginning with (any character)
Add a Medication

1. Click the **Medications** tab.

2. Click **Add**.

3. Enter the medication name into the **Generic Name** field. This is a mandatory field.

4. Enter the Brand Name (optional field).

5. Enter the **External ID**. This is a mandatory field.
6. Enter the following optional information, if needed:
   - NDC (National Drug Code)
   - Strength - Amount and Unit
   - Volume - Amount and Unit
   - Therapeutic Class Code and Description (click on a row in the table to select)
   - Dosage Form Code and Description (click on a row in the table to select)

**Note:** The contents of the Therapeutic Class and Dosage Form tables are determined by the information in the Medication List import file.

Status, Source, Created On, Last Edited On, and Last Edited By, will be filled automatically after the medication has been added.

**Important:** Generic names cannot contain the special characters greater than (>), less than (<), ampersand (&), double quotes ("), and single quotes (‘).

7. Click **Save**.
Edit a Medication

1. From the Medication List view, highlight the medication you want to edit.

2. Click Edit.

3. Make the changes needed.

4. Click Save.
Delete a Medication

To Delete a Medication that is not used in a Drug Library:

1. From the Medication List view, highlight the medication to be deleted.

2. Click Delete.

   The Delete Medication screen displays.

3. Click Delete.
The confirmation screen indicates the medication is not used in any drug library.

4. If you still wish to delete the medication, click **Yes**.

**To Delete a Medication that is used in a Drug Library:**

1. From the Medication List view, highlight the medication to be deleted. The Delete Medication pop-up displays.
2. Click **Delete**. The pop-up indicates the Drug Libraries that contain the medication.
3. After reading the message, if you still wish to delete the medication, click **Yes**.
Export a Medication List

By selecting Export, you can export a file to a location of your choice.

1. From the Medication List view, select Export.

The Select Export File Content screen displays.

2. Select All Medication Fields or Only External ID and Generic Names.

   **Note:** Selecting to export only the external ID and Generic Names allows you to edit those two fields and then re-import them into the Medication List.

3. Click OK. The Export to File screen displays.
4. Select a location for the export of the Medication List.

5. Enter a file name.

Note: The medication list can only be exported in .csv (comma separated value) and XML formats. If you selected to export only the External ID and Generic Name you must export in .csv format.

6. Click Save.

Editing an Exported External ID and Generic Name File

1. Select the .csv file you have exported and right-click to access Notepad or similar program.
2. Right-click on the name of the file and using Notepad or similar program, edit by adding a new External ID, and new Generic Name between commas.

![Notepad](image)

3. From the File menu, select **Save**.
   
   You can now import this edited file into the Medication List.
Medication List Report

1. You can select to either:
   a. Save the report in .html format to a selected location by clicking **Save to File**, or
   b. Print a report of the data currently being displayed in the Medication List view by clicking the **Print** button.

2. The appropriate window displays:

   ![Save to File](image1)
   ![Print](image2)

   Make your selections.

3. Click **Save** or **Print**.
Chapter 5: The Library Directory

Overview

A drug library is a collection of medication names, rule sets, Clinical Care Areas (CCAs), and infuser settings. ICU Medical MedNet Meds software stores drug libraries in three ways:

- Worksheets
- Active Libraries
- Archived Libraries

A Worksheet is a library that has not yet been approved (finalized) for transfer to infusers. You can store multiple Worksheets in the database; however, you may only edit one Worksheet at a time.

An Active library is a Worksheet that has been finalized. (To learn more about finalization, see Finalizing Worksheets section on page 65.) Once a Worksheet has been finalized, no more changes can be made to it. Only an Active library can be transferred to infusers. Only one Active library per infuser type can exist at a time in the ICU Medical MedNet Meds software database.

An Archived library is a previously Active library that has been deactivated for transfer to infusers. Archived libraries can be copied but cannot be edited or downloaded to infusers.

Unless otherwise specified (for example, “Active library”), the term library used alone refers to Worksheets and to both Active and Archived libraries.

Finalizing is the process of converting a Worksheet into an Active library.

When adding a Worksheet, you need to set up CCA names, infuser settings, and medication entries in order to create a complete library.

You can create Worksheets and libraries in the following ways:

- By creating new, blank Worksheets
- By copying existing libraries, Archived libraries, or Worksheets
- By importing special files that ICU Medical MedNet Meds software is able to convert into a Worksheet
The Library Directory view lists the active library for each infuser type, all Worksheet libraries, and all archived libraries in the database. The following information is displayed in the Library Directory view:

<table>
<thead>
<tr>
<th>Library Directory</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Library ID</td>
<td>A field automatically assigned by the system when a Worksheet is created</td>
</tr>
<tr>
<td>Infuser Type</td>
<td>Licensed infusers</td>
</tr>
<tr>
<td>Drug Library</td>
<td>The name you entered when you created the library</td>
</tr>
</tbody>
</table>
| Library Status    | Categorized as one of the following:  
  • Worksheet  
  • Active  
  • Archive |
| Date Modified     | The date and time the drug library was last modified |
| Date Finalized    | The date and time the drug library was finalized |
| Infuser Library Version | The finalization date, software version, and Drug Library ID that was assigned to the library when it was created |
| Library Notes     | Additional information about a drug library entered by the user |

1 The library name cannot be edited after the library is created.  
2 This field is blank if the drug library is a Worksheet.  
3 The finalization date is represented in Greenwich Mean Time (GMT), not local time.

### Library Directory Conventions

The Library Directory uses the following conventions:

- You may sort all columns in the Library Directory view in either ascending or descending order by clicking on the column heading.
- You may use the vertical and horizontal scroll bar(s) to scroll to an entry.
- When you highlight an entry on the Library Directory view, buttons or features that are not available appear as “grayed” or disabled.
Step-by-Step Procedures

The following section provides step-by-step procedures that enable you to manage the Library Directory. In this section you will learn how to do the following:

- Navigate to the Library Directory list view
- Create, edit, and add a note to a Worksheet
- Delete Worksheets and archived drug libraries
- View a drug library
- Copy a drug library
- Import a drug library
- Export a drug library

To navigate to the Library Directory list view, do the following:

1. Double-click the ICU Medical MedNet Meds software icon on the Windows desktop.
2. Enter your User ID and Password.

Note: In order to log in to the application and perform the procedures in this chapter, you must have the appropriate access privileges.

3. Click Log in.

   The Library Directory view appears.

Note: You will not see any entries in the list until you create a Worksheet or import a library.
Create a Worksheet


   ![Library Directory View](image)

   The Create Worksheet screen appears.

   ![Create Worksheet Screen](image)

2. From the **Infuser Type** drop-down list, select an infuser type.

3. In the **Drug Library** field, type a name for the library.

4. Enter a Note, if desired, for the library.

   **Note:** Your note may contain information such as “For P & T Review” or other helpful hints to keep you organized as you build the library.

5. Click **OK**.

   The Create Worksheet screen closes and your entry appears in the Library Directory view.

   ![Library Directory View with Entry](image)
Edit a Worksheet

2. Click **Edit**.
3. Make desired changes.
4. Click **Close**.

Your modification is saved and the Library Directory view displays.

**Note:** Additional information on editing worksheets can be found in the infuser-specific chapters:
- Chapter 9: Plum A+ and Plum 360 Medication Entries, on page 127
- Chapter 10: LifeCare PCA Medication Entries, on page 201
- Chapter 12: SapphirePlus Medication Entries, on page 233

For LifeCare PCA only:

If you attempt to edit a drug library that contains a protocol which is referring to a medication that has been deleted from the medication list, the following pop-up screen will display.

1. Click **Delete**.

The protocol will be removed and you will be able to edit the Worksheet.

**Note:** In order to open the Worksheet, you must first delete the protocol.
Delete a Worksheet or Archived Drug Library

You may delete a Worksheet or Archived drug library from the Library Directory. When you delete a library, it is permanently removed from the system.

To delete a Worksheet or Archived drug library, do the following:

1. On the Library Directory view, highlight a Worksheet or Archived drug library.
2. Click **Delete**.
   
   The Delete Library screen opens.

**Important:** By deleting a library, you remove it from the system permanently. You may want to ensure that your system has recently been backed up before deleting a drug library.

3. Click **OK**.
   
   The Worksheet or library is permanently deleted and the Library Directory view appears.
**View a Drug Library**

2. Click **View**.
   
   The Drug Library Management view appears.

**Note:** You cannot make changes when viewing a library.

**Helpful Hint:** If you hover the mouse pointer over any medication entry in the Master Drug Formulary, a “tool tip” displays the medication’s generic name and concentration as well as the CCAs to which it has been assigned (see below). The tool tip will disappear after 5 seconds.

3. Click **Close** to return to the Library Directory view.
Copy an Archived Library, Active Library, or Worksheet

In order to facilitate creating or updating a drug library, you may copy Active or Archived drug libraries as well as Worksheets. When you copy a drug library, all medication rule sets, infuser settings, and CCA settings are included. The copied drug library appears as a new entry on the Library Directory view.

1. On the Library Directory view, highlight the desired drug library entry.
2. Click **Copy**.
   The Copy Library screen opens.

3. In the **Drug Library** field, type the name of the new drug library as you wish it to appear on the Library Directory view.

   **Note:** You may enter information into the **Notes** field, if needed.

4. Click **OK**.
   Your drug library is copied. The new Worksheet appears on the Library Directory view.

   **Note:** Copying is allowed only between libraries for the same infuser type. Although SapphirePlus 13.x is not supported, you can create and/or use a SapphirePlus 13.x drug library worksheet to copy or export to the SapphirePlus 14.x infuser. However, the SapphirePlus 13.x library cannot be downloaded to the SapphirePlus 14.x infuser.
Add or Edit Notes to a Worksheet.

2. Click Notes.

The Notes screen opens.

Note: The Infuser Type and Drug Library fields cannot be edited.

3. Type the note or edit text in the Notes field.
4. Click OK. The note is saved and appears in the Library Notes field of the Library Directory.

Note: The Notes field cannot be modified after a drug library is finalized.
Chapter 5: The Library Directory

Step-by-Step Procedures

Export an Archived Library, Active Library, or Worksheet

Note: Only users with the appropriate login privileges are able to export files.

You can export the rule sets from Worksheets, Archived libraries, and Active libraries as XML (Extensible Markup Language) files.

Note: If the exported XML file is modified, it cannot be re-imported into ICU Medical MedNet Meds.

You can also export a Worksheet, Archived library, or Active library as a Comma Separated (CSV) file. CSV filenames end in “.csv.” The file can be used to view rule sets in Microsoft Excel.

Note: Comma Separated files cannot be re-imported into ICU Medical MedNet Meds.

When exporting a Worksheet, Archived library, or Active library, only medication entries that have been assigned to CCAs will be exported; medication entries that are listed only in the Master Drug Formulary are not exported.

The Master Infuser and CCA Settings are included in exported XML files. When a LifeCare PCA Worksheet is exported in the CSV format, the bar code values will appear to begin with a single quote (‘) character if the file is viewed in Microsoft Excel.

Note: Protocols are not exported with an XML file for a LifeCare PCA Drug Library. Protocols must be manually re-entered after a PCA Drug Library is imported back into ICU Medical MedNet Meds.

You may export a drug library to an external location on your network or hard drive.

1. On the Library Directory view, highlight the desired drug library.
2. Click Export.
The Export Library screen opens.

3. Click **Browse**.

![Export Library Screen](image)

4. In the **File Name** field, type in a path and file name to use for the exported file.
5. Select either **XML Files** or **Comma Separated Files (CSV)** from the drop-down list.
6. Click **OK**.

   The Export Library screen closes. The drug library is exported to the desired location.
Import a Drug Library

You may import a drug library from an XML file created by ICU Medical MedNet Meds. When you import a drug library, it becomes a Worksheet. The software fully validates the data ranges, precision, and relationships before adding imported data to the database.

1. From the Library Directory view, click Import.

The Import Library screen opens.

2. In the Import From screen area, select the Infuser Type that corresponds to the library you are importing.

3. In the File Name: field, type in the path and file name of the drug library you wish to import.

   Helpful Hint: You may search for the file name and path by clicking Browse and navigating to the desired file.

4. In the Import To screen area, select the Infuser Type that corresponds to the library you are importing.

5. In the Drug Library field, type in a name for the imported library, as you would like it to appear on the Library Directory view.

   Note: You may enter information into the Notes field, if needed.

6. Click OK.
The Import Library screen closes and the newly imported Worksheet appears on the Library Directory view.

**Note:** A Drug Library that contains one or more Medication Entries referring to a medication which is not in the Medication List will be imported. In order for the library to be finalized, all medication entries will need to be assigned to a medication in the Medication List.

If the file you are attempting to import contains unusable data, the software displays an error message and does not import the file.

**Important:** If you make changes to an exported XML file, the file cannot be imported.
Chapter 6: Drug Library Management

Overview

The Drug Library Management view allows you to create, edit, and delete safety limits for medication entries used by the infusers. The safety limits established are then incorporated directly by the rule sets used in the drug library.

The Drug Library Management view displays when you open a Worksheet or an Active or Archived library. This view consists of two panes that display the target and source medication lists associated with individual CCAs and the Master Drug Formulary. As a CCA is created, medications that have been assigned to it will be displayed in the Target List pane at the top of the view. The complete list of medications available in the Master Drug Formulary is displayed in the Source List pane at the bottom of the view. The Master Drug Formulary is the comprehensive list of medications and rule sets defined for use in a Drug Library.

The drop-down list in each pane displays the CCAs that have been defined for the library. The active functions (buttons) available in the Drug Library Management view will vary depending on the type of library you have opened and whether or not a CCA is selected. Functions that are not available from this view will be grayed out.

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
To create and complete a drug library suitable for transfer to an infuser, you will need to:

- Define the desired CCAs.
  
  See: Chapter 8: Setting Up CCAs, on page 101

- Create the medication entries.
  
  See: Chapter 9: Plum A+ and Plum 360 Medication Entries, on page 127
  
  See: Chapter 10: LifeCare PCA Medication Entries, on page 201
  
  See: Chapter 12: SapphirePlus Medication Entries, on page 233

- Arrange the medication list in the desired order.
  
  See: Changing the Display Order of Medication Entries, on page 54

- Create protocols for the LifeCare PCA infuser - Optional.
  
  See: Chapter 11: Setting Up LifeCare PCA Protocols, on page 221

- Define the Master Infuser setting.
  
  See: Chapter 13: Master Infuser Setup, on page 265
Drug Library Management Conventions

The Drug Library Management view uses the following conventions:

- The fields in the Target List and Source List panes are identical.
- The list grid includes a moveable split bar located after the fourth column. The remaining columns scroll under the first three.
- The Target List and Source List panes include a read-only field that displays the total number of medications in a selected list.
- All columns are re-sizeable and may be sorted in ascending or descending order by clicking on the column header.
- The view includes a read-only bottom status bar that displays the Library Name, Infuser, Status, Modified [date], Mode, and User.
- Commas (,) double quotes (“”) and angle brackets (< >) are considered invalid characters and cannot be used in a name.

Managing Drug Libraries

The following procedures enable you to manage drug libraries for each infuser. The data that you see in the target and source panes will be different for each infuser and is consistent with the medication entry for the infuser.

Target List Procedures

- Viewing Medication Entries in a CCA
- Removing Medication Entries from a CCA
- Changing the Display Order of Medication Entries

Source List Procedures

- Viewing Medication Entries in the Master Drug Formulary
- Copying Medication Entries from One CCA to Another
- Deleting Medication Entries from the Master Drug Formulary

General Procedures

- Finalizing Worksheets
- Closing Worksheets

CAUTION: In the case of an auto-program, if the ICU Medical MedNet™ Software is unable to locate a matching rule set, the order will be sent to the infuser under “No Drug Selected” (infuser- and CCA-dependent) and the order data will be transmitted to the infuser. No Rule Set Limits will be available for this order. If the order is a partial auto-program, the remaining parameters will be manually programmed. See the specific infuser operating manual for additional information.
Viewing Medication Entries in a CCA

1. From the Library Directory view, highlight a Worksheet.
2. Click Edit or View.
   The Drug Library Management view opens.
3. From the Target List, select the CCA containing the medication entry you want to view.
4. Select the medication entry.
5. From the Target List, click View.
6. When you are finished viewing the medication entry, click Close.
Removing Medication Entries from a CCA

**Note:** Only users with the appropriate login privileges are able to add and remove medication entries from CCAs.

1. From the Library Directory view, open a Worksheet for editing.
2. From the Target List, select the CCA containing the medication entry you want to remove.
3. Select the medication entry to remove.
4. From the Target List, click **Remove**.
5. At **Confirm Remove from CCA**, click **Remove**.

**Note:** You can delete one medication at a time from the Master Drug Formulary or you can delete several at a time by highlighting them, using the shift key or control key, and deleting them.
Changing the Display Order of Medication Entries

**Note:** Only users with the appropriate login privileges are able to change the display order of medication entries.

**Important:** The order in which the medications appear in the target list panel may not be the order in which the medications will appear on the infuser.

To change or view the order in which medication entries are displayed:

1. From the Target List, select a CCA.
2. Click **Arrange CCA List**.
3. Select the medication entry you want to move.

**Helpful Hint:** You can select multiple medications to move by highlighting them.

4. Click **Move Up** or **Move Down** to position the selected medication entries.
5. Repeat for all medication entries as needed.
6. Click **Save**.

Medication entries newly added to a CCA are placed at the bottom of the assigned medications list.
Sorting the medication entries within a CCA:

1. From the Library Directory view, open a Worksheet for editing.
2. On the Drug Library Management view, select a CCA from the Target List.
3. Click **Arrange CCA List**.

4. On the pop-up that appears, from the **Sort By** list, select the primary sorting criteria from the list. The selection will vary according to the infuser.

5. From the **Then By** list, select the secondary sorting criteria, if desired.
6. Click **Sort by**.
For the Plum 360, the **Sort By:** button gives you the option to sort by the Displayed Name in either ascending or descending order. Medication entries with the same Displayed Name will remain together. (See the ICU Medical MedNet Software Device Compatibility Matrix to determine the availability of the Plum version(s). The matrix is available through your Technical Support Center.)
Viewing Medication Entries in the Master Drug Formulary

To view a medication entry in the Master Drug Formulary:

1. Select **Master Drug Formulary** as the source location.

   ![Source List: Master Drug Formulary]

   *Helpful Hint:* If you hover your mouse pointer over any medication entry in the Master Drug Formulary, a “tool tip” displays the medication’s generic name and concentration as well as the CCAs to which it has been assigned. The tool tip will disappear after 5 seconds.

2. Select the medication entry you want to view.

3. From the Source List, click **View**.

   ![Source List: View Rule Set]

4. When you are finished viewing, click **Close**.

   *Helpful Hint:* If you are viewing an Active or Archived library, you may also double-click the medication entry to view it.

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Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
Keeping or Clearing Rule Sets for Medication Entries

1. Highlight a medication entry with existing rule sets, in either the Source List Master Drug Formulary or Target List.
2. Click **Edit**.

The selected medication entry displays with its rule sets.
3. Click Select.

At this point, you will be able to either apply the current Rule Set to another medication or select the medication highlighted and clear its current Rule Set.
4. If you click **Select Medication and CLEAR Current Rule Set**, a confirmation message displays: **Rule set will be reset to default values.**

5. Click **OK** and the medication entry selected displays but the rule set fields are now empty.

6. You can now fill in the new rule set and then click **Save and Close** when satisfied or use the **Cancel** button.

7. If you want to keep the rule set of the medication entry highlighted but want to apply that rule set to another medication:
   - Highlight the “new” medication entry

   **Helpful Hint:** To select the medication, you can use the scroll bar or type the first letter(s) of the medication or the entire name next to **Show generic names beginning with**. You can also find the medication by external ID if you use the drop-down button and select to show the medication using the **External ID**, then entering the External ID.
   - Click **Select Medication and KEEP Current Rule Set**
   A confirmation message displays: **Review rule set values before saving this rule set.**

8. Click **OK**.

9. The new entry displays. Click **Save and Close** if the entry is to your satisfaction. If not, use the **Cancel** button.
Copying Medication Entries to one or more CCAs

1. Select the target CCA to which you want to copy a medication entry.

2. Select the Master Drug Formulary or Source CCA from which you want to copy a medication entry (either the Master Drug Formulary or another CCA).

3. Select the medication entries you want to copy from the source CCA.

   **Helpful Hint:** You may select multiple entries by clicking the first medication entry you want to copy, and holding the shift key while clicking the last medication entry you want to copy. Add or remove medications from the group you have selected by using the Control key.

4. Click **Copy to Target CCA**.
5. Verify you have selected the correct medication entries.

![Image of Confirm Copy to CCA dialog box]

6. Click **Copy** to copy the selected medication entries to the target CCA.

**Note:** The maximum number of medication entries in a CCA is 25 for a LifeCare PCA, and 150 for the Plum A+. For certain Plum infusers licensed for Drug Library Size Level 2, a CCA can contain up to 400 medication entries. (See the ICU Medical MedNet Software Device Compatibility Matrix to determine the availability of the Plum version. The matrix is available through the Technical Support Center).

**Note:** Duplicate or conflicting medication entries cannot be copied.
Deleting Medication Entries from the Master Drug Formulary

**Note:** Deleted medication entries are permanently removed from the Master Drug Formulary and from all CCAs in which they appear.

Only users with the appropriate login privileges are able to delete medication entries from the Master Drug Formulary.

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, select the medication entry you want to delete.
3. Click **Delete**.
4. From the Source List: Delete Rule Set window, click **Delete**.
5. A confirmation message displays listing all affected CCAs. Click **OK** to permanently remove the selected medication entry from the Master Drug Formulary and all CCAs in which it appears.

**Note:** You cannot delete the "No Drug Selected" entry from a Plum A+ Master Drug Formulary, or any CCA.
Finalizing Worksheets

Note: Before finalizing a Worksheet, we recommend that a qualified person such as a hospital pharmacist or a multidisciplinary committee of clinicians review the drug library for accuracy, per hospital policy.

Only users with the appropriate login privileges are able to finalize a Worksheet.

Certificates are required in order to finalize drug libraries.

To finalize a Worksheet:

Note: The Generic Name and External ID of a medication entry must be present in the Master Drug Formulary for the Worksheet to be finalized.

1. From the Drug Library Management view, click **Finalize**.

Note: A drug library for a Plum 360 15.x cannot be finalized if the size of the drug library binary file is greater than 3MBs. To reduce its size, consider removing CCAs, medications, or rule sets from the library.

Once the finalization process begins, it cannot be stopped or undone.

2. Click **OK** to finalize the Worksheet.

3. A progress bar appears briefly.
**Important:** If your network connection is lost during the finalization process, copy the library that was being finalized, and then finalize the library.

**Note:** Finalization may require several minutes for large libraries. A message may display if the library does not finalize successfully within 20 minutes.

4. A pop-up confirms that the Worksheet has been finalized successfully.

![Finalize Library](image)

5. Click **OK**.

   The Date Finalized displays in the Library Directory.

### Closing Worksheets

**To close a Worksheet:**

1. From the Drug Library Management view, click **Close**.

   You will be returned to the Library Directory view.

**Note:** When you close a worksheet, that worksheet is saved.
Chapter 7: ICU Medical MedNet Meds Reports

Overview

The ICU Medical MedNet Meds Reports view allows you to create and print reports on drug libraries for the licensed infusers. For individual report details, refer to the report by name later in this chapter.

**Note:** For information about the ICU Medical MedNet Software reports, see Chapter 16: Reports in the ICU Medical MedNet Software User Guide.

Report Conventions

The following conventions are common to all reports:

- Users with the appropriate logon privileges have access to the Reports View.
- Drop-down lists display all valid selections.
- Fields appear blank when no data is available.

Report Details

Reports may span multiple pages and are navigable using the vertical and horizontal scroll bars.

All Drug Library reports display the following information:

<table>
<thead>
<tr>
<th>Licensed Infusers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
</tr>
<tr>
<td>Drug Library</td>
</tr>
<tr>
<td>Infuser Type</td>
</tr>
<tr>
<td>Date Finalized</td>
</tr>
<tr>
<td>Library State</td>
</tr>
</tbody>
</table>

Additional details will vary depending on the infuser you select, as described later in this chapter. The reports will also reflect the date format and distal pressure specific to the configuration you selected.

**Note:** The structure of reports from ICU Medical MedNet Meds cannot be altered or configured by the user.
To display the Reports page:

1. Open a Worksheet or library. (For instructions on opening a Worksheet or library, see Chapter 5: The Library Directory on page 35)

2. Click the Reports tab.

3. Select a report from the Choose a report drop-down list.
   The report selection will vary depending on the infuser, as described further in this chapter.
Plum A+ and Plum 360 Drug Library Reports

The following reports are available:

- Drug Library
- CCA Drug Library
- Master Infuser & CCA Settings

Plum 360 Drug Library

This report displays detailed information on all medications in the Plum 360 Master Drug Formulary.

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Displayed Name</th>
<th>Concentration (nr Container Volume)</th>
<th>Rule Set</th>
<th>Clinical Use</th>
<th>Dosing Unit</th>
<th>L/LFL</th>
<th>L/SSL</th>
<th>U/HUL</th>
<th>External ID</th>
<th>Therapeutic Class</th>
<th>Class ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>Acetaminophen</td>
<td>100 mg/200 mL</td>
<td>Full</td>
<td>NOT SPECIFIED</td>
<td>mL/hr</td>
<td>1</td>
<td></td>
<td></td>
<td>EXPI-002</td>
<td>class_Donor_02</td>
<td>class_02</td>
</tr>
</tbody>
</table>

Piggyback delivery allowed: Yes

Allow piggyback to interrupt this infusion: Yes

Assigned CCAs: SH

Aloe vera (Aloe vera) | Aloe vera (Aloe vera) | 1.2 grams/200 mL | Full | NOT SPECIFIED | mL/hr | 1 | | | EXPI-008 | class_Donor_06 | class_06 |

Piggyback delivery allowed: Yes

Allow piggyback to interrupt this infusion: Yes

Assigned CCAs: SH

No Drug Selected

Piggyback delivery allowed: Yes

Allow piggyback to interrupt this infusion: Yes

Assigned CCAs: SH
Plum 360 15.1x and 15.2x Drug Library

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Concentration (or Container Volume)</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Concentration LHL (Plum 15.2x)</td>
<td>Concentration Lower Hard Limit if entered</td>
</tr>
<tr>
<td>Concentration UHL (Plum 15.2x)</td>
<td>Concentration Upper Hard Limit if entered</td>
</tr>
<tr>
<td>Rule Set Groups</td>
<td>The type of rule set created for the medication. Includes full, limited, and label only</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>The dosing unit selected for the medication</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit - the lower limit that cannot be overridden</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit - the upper limit that cannot be overridden</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication entry</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID number for the therapeutic class</td>
</tr>
<tr>
<td>Piggyback delivery allowed (Plum 15.1x)</td>
<td>Indicates whether this option was selected</td>
</tr>
<tr>
<td>Piggyback mode allowed when delivered on Line B (Plum 15.2x)</td>
<td>Indicates whether this option was selected</td>
</tr>
<tr>
<td>Allow piggyback to interrupt this infusion</td>
<td>Indicates whether this option was selected</td>
</tr>
<tr>
<td>Default Line B Mode (Plum 15.2x)</td>
<td>Indicates whether Piggyback or Concurrent</td>
</tr>
<tr>
<td>Clinical Use</td>
<td>The clinical use attributed to the medication</td>
</tr>
<tr>
<td>Maximum Dose</td>
<td>Indicates the maximum dose when entered</td>
</tr>
<tr>
<td>Enable Bolus</td>
<td>Indicates whether this option was selected</td>
</tr>
<tr>
<td>Maximum Bolus Amount</td>
<td>The maximum bolus amount selected for the medication entry</td>
</tr>
</tbody>
</table>
### Plum 360

<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Advisory (Plum 15.2x)</td>
<td>Indicates any clinical advisory, if provided</td>
</tr>
<tr>
<td>KVO Continue Rate (Plum 15.2x)</td>
<td>Indicates whether KVO or Continue Rate was selected</td>
</tr>
<tr>
<td>Dose Limits</td>
<td>The medication’s dose unit and its specified limits</td>
</tr>
<tr>
<td>Time Limits</td>
<td>The medication’s time-based unit and its specified limits</td>
</tr>
<tr>
<td>Dose Rate Limits (Plum 360 with Bolus only)</td>
<td>Indicates the allowable non-time-based limits selected for the medication entry</td>
</tr>
<tr>
<td>Bolus Limits (Plum 360 with Bolus only)</td>
<td>Indicates the bolus limits for amount, time, and dose rate</td>
</tr>
</tbody>
</table>

1. When the rule type is Limited, this field displays the container volume

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
Plum A+ Drug Library

This report displays detailed information on all medications in the Plum A+ Master Drug Formulary.

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Displayed Name</th>
<th>Concentration (or Container Volume)</th>
<th>Rule Sets</th>
<th>Dosing Unit</th>
<th>LHL</th>
<th>LSL</th>
<th>USL</th>
<th>UHL</th>
<th>External ID</th>
<th>Therapeutic Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALBUMIN 25%</td>
<td>ALBUMIN 25%</td>
<td>_ml</td>
<td>Limited</td>
<td>mL/hr</td>
<td>009</td>
<td>424</td>
<td></td>
<td></td>
<td></td>
<td>BLOOD DERIVATIVE</td>
</tr>
<tr>
<td>DOPAMINE 400 MG-D5</td>
<td>DOPAMINE 400 MG-D5</td>
<td>_mcg / _ml</td>
<td>Full</td>
<td>mcg/kg/hr</td>
<td>5</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>BETA-ADRENERGIC</td>
</tr>
<tr>
<td>FENTANYL</td>
<td>FENTANYL</td>
<td>1000 mcg / 20 mL</td>
<td>Full</td>
<td>mcg/hr</td>
<td>300</td>
<td>653</td>
<td></td>
<td></td>
<td></td>
<td>OPIATE AGONISTS</td>
</tr>
<tr>
<td>HEPARIN 25 000 UNITS-D5</td>
<td>HEPARIN 25 000 UNITS-D5</td>
<td>25000 units / _ml</td>
<td>Full</td>
<td>units/hr</td>
<td>200</td>
<td>1642</td>
<td></td>
<td></td>
<td></td>
<td>ANTAGOULANTS</td>
</tr>
</tbody>
</table>

**Plum A+**

<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Concentration (or Container Volume)¹</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Rule Sets</td>
<td>The type of rule set created for the medication. Includes full, limited, and label only</td>
</tr>
</tbody>
</table>

¹: This field concatenates the medication amount, medication unit, diluent amount, and diluent unit.
### Plum A+

<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosing Unit</td>
<td>The dosing unit selected for the medication</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit - the lower limit that cannot be overridden</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit - the upper limit that cannot be overridden</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication entry</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID number for the therapeutic class</td>
</tr>
</tbody>
</table>

1 When the rule type is Limited, this field displays the container volume.

---

*Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.*
Plum 360 - CCA Drug Library

This report shows each CCA along with its associated medication entries. CCAs are listed in the order in which they are created.

Plum 360 15.1x - CCA Drug Library

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
Plum 360 15.2x - CCA Drug Library

<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Concentration (or Container Volume)</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Rule Set Groups</td>
<td>The type of rule set created for the medication. Includes full, limited, and label only</td>
</tr>
<tr>
<td>Concentration LHL (Plum 15.2x)</td>
<td>Concentration Lower Hard Limit if entered</td>
</tr>
<tr>
<td>Concentration UHL (Plum 15.2x)</td>
<td>Concentration Upper Hard Limit if entered</td>
</tr>
<tr>
<td>Clinical Use (Plum 360 only)</td>
<td>The clinical use attributed to the medication</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>The dosing unit selected for the medication</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit - the lower limit that cannot be overridden</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit - the upper limit that cannot be overridden</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>Medication Entries</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication entry</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID number for the therapeutic class</td>
</tr>
<tr>
<td>Piggyback delivery allowed (Plum 15.1x)</td>
<td>Indicates whether this option was selected</td>
</tr>
<tr>
<td>Piggyback mode allowed when delivered on Line B (Plum 15.2x)</td>
<td>Indicates whether this option was selected</td>
</tr>
<tr>
<td>Default Line B Mode</td>
<td>Indicates whether Piggyback or Concurrent was selected</td>
</tr>
<tr>
<td>Allow piggyback to interrupt this infusion</td>
<td>Indicates whether this option was selected</td>
</tr>
<tr>
<td>Maximum Dose</td>
<td>Indicates the maximum dose when entered</td>
</tr>
<tr>
<td>Clinical Advisory (Plum 15.2x)</td>
<td>Indicates any clinical advisory, if provided</td>
</tr>
<tr>
<td>KVO Continue Rate (Plum 15.2x)</td>
<td>Indicates whether KVO or Continue Rate was selected</td>
</tr>
<tr>
<td>Dose Limits</td>
<td>The medication’s dose unit and its specified limits</td>
</tr>
<tr>
<td>Time Limits</td>
<td>The medication’s time-based unit and its specified limits</td>
</tr>
<tr>
<td>Dose Rate Limits (Plum 360 with Bolus only)</td>
<td>Indicates the allowable non-time-based limits selected for the medication entry</td>
</tr>
<tr>
<td>Bolus Limits (Plum 360 with Bolus only)</td>
<td>Indicates the bolus limits for amount, time, and dose rate</td>
</tr>
</tbody>
</table>

1 When the rule type is Limited, this field displays the container volume.
Plum A+ - CCA Drug Library

This report shows each CCA along with its associated medication entries. CCAs are listed in the order in which they are created.

<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Concentration (or Container Volume)</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Rule Sets</td>
<td>The type of rule set created for the medication. Includes full, limited, and label only</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>The dosing unit selected for the medication</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit - the lower limit that cannot be overridden</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit - the upper limit that cannot be overridden</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication entry</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID number for the therapeutic class</td>
</tr>
</tbody>
</table>

1 When the rule type is Limited, this field displays the container volume
Plum 360 Master Infuser and CCA Settings (Plum 15.1x)

This report displays detailed information on all Plum 360 master infusers and active CCA settings.
### Plum 360 15.1x

<table>
<thead>
<tr>
<th><strong>Master Infuser Settings</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue Rate</td>
<td>The default delivery rate the infuser switches to after a therapy completes: KVO or programmed rate</td>
</tr>
<tr>
<td>Callback Notification</td>
<td>The default callback setting: Yes or No</td>
</tr>
<tr>
<td>Deliver Together</td>
<td>The default deliver together method: Piggyback or Concurrent</td>
</tr>
<tr>
<td>Force Pump to Accept Drug Library Power Down</td>
<td>To automatically install a new Medication Library upon infuser restart. The default is No.</td>
</tr>
<tr>
<td>Auto-program Rejection Reason Timeout (seconds)</td>
<td>The amount of time a rejection reason appears on the infuser</td>
</tr>
<tr>
<td>Maximum Standby Time (hours)</td>
<td>The period of time the infuser waits before beginning a therapy</td>
</tr>
<tr>
<td>Default Clinical Use</td>
<td>The default clinical use message that will replace “Not Specified” fields in the rule set</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CCA Settings</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>CCA Name</td>
<td>The CCA name</td>
</tr>
<tr>
<td>Service Line</td>
<td>The service line name</td>
</tr>
<tr>
<td>BSA</td>
<td>The minimum and maximum value</td>
</tr>
<tr>
<td>Patient Height</td>
<td>The minimum and maximum patient height</td>
</tr>
<tr>
<td>Patient Weight</td>
<td>The minimum and maximum patient weight</td>
</tr>
<tr>
<td>Distal Occlusion Pressure</td>
<td>The default and maximum setting</td>
</tr>
<tr>
<td>Occlusion Pressure Auto-Reset</td>
<td>The occlusion pressure auto-resets</td>
</tr>
<tr>
<td>Distal Occlusion Auto-Reset</td>
<td>The distal occlusion auto-resets</td>
</tr>
<tr>
<td>Delayed Start</td>
<td>The default delay start setting: Enabled or Disabled</td>
</tr>
<tr>
<td>Standby</td>
<td>The default setting to Enable or Disable standby before the beginning of a therapy</td>
</tr>
<tr>
<td>Maximum Dose Rate (mL/hr)</td>
<td>The maximum delivery rate</td>
</tr>
</tbody>
</table>

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
Plum 360 Master Infuser and CCA Settings (Plum 15.2x)

This report displays detailed information on all Plum 360 master infusers and active CCA settings.
### Master Infuser Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Callback Notification</td>
<td>The default callback setting: Yes or No</td>
</tr>
<tr>
<td>Default Line B Mode for No Drug Selected</td>
<td>The default delivery method: Piggyback or Concurrent</td>
</tr>
<tr>
<td>Force Pump to Accept Drug Library Power Down</td>
<td>To automatically install a new Medication Library upon infuser restart. The default is No.</td>
</tr>
<tr>
<td>Auto-program Rejection Reason Timeout (seconds)</td>
<td>The amount of time a rejection reason appears on the infuser</td>
</tr>
<tr>
<td>Maximum Standby Time (hours)</td>
<td>The period of time the infuser waits before beginning a therapy</td>
</tr>
<tr>
<td>Default Clinical Use</td>
<td>The default clinical use message that will replace “Not Specified” fields in the rule set</td>
</tr>
</tbody>
</table>

### CCA Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCA Name</td>
<td>The CCA name</td>
</tr>
<tr>
<td>Service Line</td>
<td>The service line name</td>
</tr>
<tr>
<td>BSA</td>
<td>The minimum and maximum value</td>
</tr>
<tr>
<td>Patient Height</td>
<td>The minimum and maximum patient height</td>
</tr>
<tr>
<td>Patient Weight</td>
<td>The minimum and maximum patient weight</td>
</tr>
<tr>
<td>Distal Occlusion Pressure</td>
<td>The default and maximum setting</td>
</tr>
<tr>
<td>Occlusion Pressure Auto-Reset</td>
<td>The occlusion pressure auto-resets</td>
</tr>
<tr>
<td>Distal Occlusion Auto-Reset</td>
<td>The distal occlusion auto-resets</td>
</tr>
<tr>
<td>Delayed Start</td>
<td>The default delay start setting: Enabled or Disabled</td>
</tr>
<tr>
<td>Standby</td>
<td>The default setting to Enable or Disable standby before the beginning of a therapy</td>
</tr>
<tr>
<td>Maximum Dose Rate (mL/hr)</td>
<td>The maximum delivery rate</td>
</tr>
<tr>
<td>Maximum VTBI</td>
<td>The maximum Volume To Be Infused</td>
</tr>
<tr>
<td>KVO Continue Default for No Drug Selected and Label Only Medication</td>
<td>KVO or Continue Rate</td>
</tr>
</tbody>
</table>
Plum A+ Master Infuser and CCA Settings

This report displays detailed information on all Plum A+ master infusers and active CCA settings.

<table>
<thead>
<tr>
<th>Master Infuser Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue Rate</td>
<td>The default delivery rate the infuser switches to after a therapy completes: KVO or programmed rate</td>
</tr>
<tr>
<td>Callback Notification</td>
<td>The default callback setting: Yes or No</td>
</tr>
<tr>
<td>Delay Start</td>
<td>The default delay start setting: Yes (Enabled) or No (Disabled)</td>
</tr>
<tr>
<td>Deliver Together</td>
<td>The default deliver together method: Piggyback or Concurrent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCA Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCA Name</td>
<td>The CCA name</td>
</tr>
<tr>
<td>Service Line</td>
<td>The service line name</td>
</tr>
<tr>
<td>Default Occlusion Pressure</td>
<td>The default minimum pressure that will cause the infuser to report an occlusion alarm</td>
</tr>
<tr>
<td>Minimum Patient Weight</td>
<td>The minimum patient weight allowed in the CCA</td>
</tr>
<tr>
<td>Maximum Patient Weight</td>
<td>The maximum patient weight allowed in the CCA</td>
</tr>
<tr>
<td>Maximum Rate</td>
<td>The maximum delivery rate allowed in the CCA</td>
</tr>
</tbody>
</table>
LifeCare PCA Drug Library Reports

The following reports are available for the LifeCare PCA infuser:

- Drug Library
- CCA Drug Library
- Master Infuser & CCA Settings
- LifeCare PCA Master Protocol

LifeCare PCA Drug Library

This report displays detailed information on all medications in the LifeCare PCA Master Drug Formulary.

![LifeCare PCA Drug Library Report](image-url)
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Container Concentration</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Bar Code</td>
<td>The bar code(s) associated with the medication entry. Up to five bar codes are possible</td>
</tr>
<tr>
<td>Rule Set Groups</td>
<td>Dosing limits defined for the medication. Dosing limits can be defined for Loading Dose, Continuous Rate, PCA Dose, and Dose Limit</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit - the lower limit that cannot be overridden</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit - the upper limit that cannot be overridden</td>
</tr>
<tr>
<td>Time Interval</td>
<td>Period of time over which the Dose Limit is evaluated</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID for the therapeutic class</td>
</tr>
</tbody>
</table>
LifeCare PCA CCA Drug Library

This report provides information on all medication entries assigned to a specific CCA.

**Note:** This report lists CCAs in the order in which they were created.
<table>
<thead>
<tr>
<th><strong>LifeCare PCA</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medication Entries</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Container Concentration</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Bar Code</td>
<td>The bar code(s) associated with the medication entry. Up to five bar codes are possible</td>
</tr>
<tr>
<td>Rule Set Groups</td>
<td>Dosing limits defined for the medication. Dosing limits can be defined for loading dose, continuous rate, PCA dose, and dose limit</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit - the lower limit that cannot be overridden</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit - the upper limit that cannot be overridden</td>
</tr>
<tr>
<td>Time Interval</td>
<td>Period of time over which the Dose Limit is evaluated</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID for the therapeutic class</td>
</tr>
</tbody>
</table>
LifeCare PCA Master Infuser & CCA Settings

This report displays detailed information on the LifeCare PCA master infuser and CCA settings.

<table>
<thead>
<tr>
<th>Drug Library</th>
<th>Infuser Type</th>
<th>Date Finalized</th>
<th>Library State</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCA-7X-001</td>
<td>LifeCare PCA 5 x/7 x</td>
<td>Jun 20 2019 11:45AM</td>
<td>Active</td>
</tr>
</tbody>
</table>

**Master Infuser Settings**

<table>
<thead>
<tr>
<th>Nurse Call Relay Contacts</th>
<th>Purge Capability</th>
<th>PCA Tone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normally Open</td>
<td>Enabled</td>
<td>Different Accept/Reject tones</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>History Format</th>
<th>Clock Format</th>
<th>Alarm Sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &amp; 24 hours</td>
<td>12-hour Clock</td>
<td>Alarm 1</td>
</tr>
</tbody>
</table>

**CCA Settings**

<table>
<thead>
<tr>
<th>CCA Name: ESS</th>
<th>Service Line: Emergency services</th>
</tr>
</thead>
</table>

| Minimum Lockout Interval: 5 | Maximum Lockout Interval: 120 |

<table>
<thead>
<tr>
<th>No.</th>
<th>Protocol Name</th>
<th>Medication</th>
<th>Delivery Mode</th>
<th>PCA Dose</th>
<th>Continuous Rate</th>
<th>Lockout Interval</th>
<th>Dose Limit</th>
<th>Time Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No Protocols defined for this CCA
### LifeCare PCA

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Master Infuser Settings</strong></td>
<td></td>
</tr>
<tr>
<td>Nurse Call Relay Contacts</td>
<td>Open or closed</td>
</tr>
<tr>
<td>Purge Capability</td>
<td>Enabled or disabled</td>
</tr>
<tr>
<td>PCA Tone</td>
<td>Status of acceptance and rejections tones</td>
</tr>
<tr>
<td>History Format</td>
<td>Formats available for CCA history</td>
</tr>
<tr>
<td>Clock Format</td>
<td>Clock format setting</td>
</tr>
<tr>
<td>Alarm Sounds</td>
<td>Alarm sounds settings</td>
</tr>
<tr>
<td><strong>CCA Settings</strong></td>
<td></td>
</tr>
<tr>
<td>CCA Name</td>
<td>Name of CCA</td>
</tr>
<tr>
<td>Service Line</td>
<td>Name of service line</td>
</tr>
<tr>
<td>Minimum Lockout Interval</td>
<td>Minimum lockout interval for CCA</td>
</tr>
<tr>
<td>Maximum Lockout Interval</td>
<td>Maximum lockout interval for CCA</td>
</tr>
<tr>
<td><strong>Protocol</strong></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Number of protocol</td>
</tr>
<tr>
<td>Protocol Name</td>
<td>Name of protocol</td>
</tr>
<tr>
<td>Medication</td>
<td>Name of medication</td>
</tr>
<tr>
<td>Delivery Mode</td>
<td>Delivery mode setting for CCA</td>
</tr>
<tr>
<td>PCA Dose</td>
<td>PCA Dose for amount of medication</td>
</tr>
<tr>
<td>Continuous Rate</td>
<td>Continuous dose rate per hour</td>
</tr>
<tr>
<td>Lockout Interval</td>
<td>Lockout interval setting</td>
</tr>
<tr>
<td>Dose Limit</td>
<td>Dose limit in mg or mcg</td>
</tr>
<tr>
<td>Time Interval</td>
<td>Time intervals for the Dose Limit</td>
</tr>
</tbody>
</table>
LifeCare PCA Master Protocol

This report displays detailed information on each master protocol for the LifeCare PCA infuser.

<table>
<thead>
<tr>
<th>No.</th>
<th>Protocol Name</th>
<th>Medication</th>
<th>Delivery Mode</th>
<th>PCA Dose</th>
<th>Continuous Rate</th>
<th>Lockout Interval</th>
<th>Dose Limit</th>
<th>Time Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Morphine PCA</td>
<td>Morphine (EXT_ID_072) 30 mg / 30 mL</td>
<td>PCA + Continuous</td>
<td>1 mg</td>
<td>1 mg/hr</td>
<td>15 minutes</td>
<td>20 mg</td>
<td>4-hours</td>
</tr>
<tr>
<td>2</td>
<td>Pentazocine (EXT_ID_094) 300 mg / 30 mL</td>
<td>PCA + Continuous</td>
<td>10 mg</td>
<td>2 mg/hr</td>
<td>15 minutes</td>
<td>20 mg</td>
<td>4-hours</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Protocol</td>
<td>Details for each protocol in the library's Master Protocol List</td>
</tr>
<tr>
<td>No.</td>
<td>Number of protocol</td>
</tr>
<tr>
<td>Protocol Name</td>
<td>Name of protocol</td>
</tr>
<tr>
<td>Medication</td>
<td>Displayed name of medication</td>
</tr>
<tr>
<td>Delivery Mode</td>
<td>Delivery mode for each protocol</td>
</tr>
<tr>
<td>PCA Dose</td>
<td>PCA dose for each protocol</td>
</tr>
<tr>
<td>Continuous Rate</td>
<td>Continuous rate for each protocol in medication unit per hour format</td>
</tr>
<tr>
<td>Lockout Interval</td>
<td>Lockout interval for each protocol</td>
</tr>
<tr>
<td>Dose Limit</td>
<td>Dose limit for each protocol</td>
</tr>
<tr>
<td>Time Interval</td>
<td>Time interval for each protocol</td>
</tr>
</tbody>
</table>
SapphirePlus Drug Library Reports

The following reports are available for the SapphirePlus infuser:

- Drug Library
- CCA Drug Library
- Master Infuser & CCA Settings

SapphirePlus Drug Library

This report displays detailed information on all medications in the SapphirePlus Master Drug Formulary.
### SapphirePlus

<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Concentration or Container Volume Volume</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Rule Set Groups</td>
<td>The types of rule sets created for the medication: Dose Rate, and Bolus</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>The dosing unit selected for the medication</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit (cannot be overridden)</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit (cannot be overridden)</td>
</tr>
<tr>
<td>Other Settings</td>
<td>Includes Dose Rate Limits, Time Limits (SapphirePlus 14.5 only), Enable Bolus (or Disabled), Bolus Units, Bolus Limits, and Maximum Bolus Amount</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID for the therapeutic class</td>
</tr>
<tr>
<td>Therapies</td>
<td>Basic (Continuous), Piggyback (Secondary), Multistep</td>
</tr>
<tr>
<td>Delivery at End of Infusion</td>
<td>Delivery at end of Infusion setting for each medication. Default KVO rate (mL/hr)</td>
</tr>
<tr>
<td>Minimum and Maximum</td>
<td>Weight range for patients</td>
</tr>
<tr>
<td>Enable Automatic Patient Lockout</td>
<td>Prevents patient from accessing infuser settings</td>
</tr>
<tr>
<td>(SapphirePlus 14.5 only)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
SapphirePlus CCA Drug Library

This report provides information on all medication entries assigned to a specific CCA.
### SapphirePlus

<table>
<thead>
<tr>
<th>Medication Entries</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displayed Name</td>
<td>The medication name that displays on the infuser</td>
</tr>
<tr>
<td>Concentration or Container Volume</td>
<td>Concatenation (combination) of medication amount, medication unit, diluent amount, and diluent unit</td>
</tr>
<tr>
<td>Rule Set Groups</td>
<td>The types of rule sets created for the medication: Dose Rate, and Bolus</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>The dosing unit selected for the medication</td>
</tr>
<tr>
<td>LHL</td>
<td>Lower Hard Limit (cannot be overridden)</td>
</tr>
<tr>
<td>LSL</td>
<td>Lower Soft Limit - the lower limit that can be overridden</td>
</tr>
<tr>
<td>USL</td>
<td>Upper Soft Limit - the upper limit that can be overridden</td>
</tr>
<tr>
<td>UHL</td>
<td>Upper Hard Limit (cannot be overridden)</td>
</tr>
<tr>
<td>Other Settings</td>
<td>Includes Dose Rate Limits, Time Limits (SapphirePlus 14.5 only), Enable Bolus, Bolus Units, Bolus Limits, and Maximum Bolus Amount</td>
</tr>
<tr>
<td>Assigned CCAs</td>
<td>CCAs to which the drug is assigned</td>
</tr>
<tr>
<td>Generic Name</td>
<td>The generic name of the medication</td>
</tr>
<tr>
<td>External ID</td>
<td>The ID number used to match an order to the medication entry in the drug library</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>Therapeutic class assigned to the medication entry</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID number for the therapeutic class</td>
</tr>
<tr>
<td>Therapies</td>
<td>Basic (Continuous), Piggyback (Secondary), Multistep</td>
</tr>
<tr>
<td>Delivery at End of Infusion</td>
<td>Delivery at end of infusion setting for each medication. Default KVO rate (mL/hr)</td>
</tr>
<tr>
<td>Minimum and Maximum</td>
<td>Weight range for patients</td>
</tr>
<tr>
<td>Enable Automatic Patient Lockout (SapphirePlus 14.5 only)</td>
<td>Prevents patient from accessing infuser settings</td>
</tr>
</tbody>
</table>
SapphirePlus Master Infuser & CCA Settings (14.0 and 14.5)

This report displays detailed information on all SapphirePlus Master Infuser and active CCA settings.
### SapphirePlus 14.0 and 14.5

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device-level Passwords</td>
<td>Device High Level password and Preprogram password settings</td>
</tr>
<tr>
<td></td>
<td>The default value is “Set.” “Set” indicates that the value has been set in</td>
</tr>
<tr>
<td></td>
<td>the master infuser setup. The passcode is not displayed</td>
</tr>
<tr>
<td>Reduced Access Passwords</td>
<td>Medium and Low Level passwords</td>
</tr>
<tr>
<td></td>
<td>The default value is “Set.” “Set” indicates that the value has been set in</td>
</tr>
<tr>
<td></td>
<td>the master infuser setup. The passcode is not displayed</td>
</tr>
<tr>
<td>Infuser Settings</td>
<td>Enable New Patient. Default value: Yes</td>
</tr>
<tr>
<td></td>
<td>Enable US Format (for date and time). Default value: Yes</td>
</tr>
<tr>
<td>Date/Time</td>
<td>Clock format as selected in Master Infuser Settings</td>
</tr>
<tr>
<td>(SapphirePlus 14.5 only)</td>
<td>Date Format as selected in Master Infuser Settings</td>
</tr>
<tr>
<td>CCA Name</td>
<td>Name of CCA</td>
</tr>
<tr>
<td>Service Line</td>
<td>Name of service line</td>
</tr>
<tr>
<td>Patient Limits</td>
<td>Minimum and maximum Patient Weight</td>
</tr>
<tr>
<td>(SapphirePlus 14.5 only)</td>
<td></td>
</tr>
<tr>
<td>Distal Occlusion Pressure</td>
<td>Default and maximum setting</td>
</tr>
<tr>
<td>Alarm Volume</td>
<td>Default level</td>
</tr>
<tr>
<td>Air In Line</td>
<td>Single Bubble Size, Accumulated Bubble Size, Accumulated Threshold</td>
</tr>
<tr>
<td></td>
<td>default levels</td>
</tr>
<tr>
<td>Occlusion Pressure Auto-</td>
<td>Default: Enabled</td>
</tr>
<tr>
<td>Restart</td>
<td></td>
</tr>
<tr>
<td>Far View Display</td>
<td>Enable Screen Saver</td>
</tr>
<tr>
<td>(SapphirePlus 14.5 only)</td>
<td>Dose, Rate, Volume Infused, Volume to be Infused, Time remaining and</td>
</tr>
<tr>
<td></td>
<td>Rotation interval (seconds)</td>
</tr>
<tr>
<td>Delivery Modes</td>
<td>Continuous and Multistep</td>
</tr>
<tr>
<td>Other Settings</td>
<td>Delayed start and standby, prime reminder, allow secondary, allow</td>
</tr>
<tr>
<td></td>
<td>preprogram calculate concentration, enable automatic patient lockout.</td>
</tr>
<tr>
<td></td>
<td>For SapphirePlus 14.0 only: Enable screen saver (Far View) and allow</td>
</tr>
<tr>
<td></td>
<td>repeat last infusion.</td>
</tr>
<tr>
<td>Delivery at End of Infusion</td>
<td>Delivery at End of Infusion (KVO or none), and default KVO rate, if KVO</td>
</tr>
<tr>
<td>(General)</td>
<td>was selected. (General applies to No Drug Selected only)</td>
</tr>
</tbody>
</table>

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolus (General) Default Level</td>
<td>Bolus Default level and rate for No Drug Selected</td>
</tr>
<tr>
<td>Prime Volume</td>
<td>Default level</td>
</tr>
<tr>
<td>Other</td>
<td>Maximum volumetric rate, and nearing end of infusion alarm</td>
</tr>
<tr>
<td>Primary Hard Limits</td>
<td>Maximum VTBI default level</td>
</tr>
<tr>
<td>Secondary Hard Limits</td>
<td>Maximum VTBI default level</td>
</tr>
<tr>
<td>Multistep Hard Limits</td>
<td>Maximum VTBI default level, and maximum Time default</td>
</tr>
<tr>
<td>Brightness</td>
<td>Default level</td>
</tr>
<tr>
<td>Inactivity Callback</td>
<td>Callback alarm after a period of inactivity</td>
</tr>
<tr>
<td>Key Press Volume</td>
<td>Default level</td>
</tr>
</tbody>
</table>

1 Begins on page two and contains information for each CCA
Printing Reports

To print a report:

1. Click the Reports tab.

2. Select the report to print from the drop-down list.

The report displays.

3. Click Print.

The Print menu displays. Make your selection.

4. Click Print.
To Save a Report

1. Select a report that you want to save.
2. Click **Save to File**.
3. Navigate to a location of your choice.
4. Type in a File name.
5. Click **Save** and the report will be saved in .html format.
Notes:
Chapter 8: Setting Up CCAs

Overview

Before you can assign medication entries to a clinical care area (CCA), you need to add a CCA to your Worksheet. Use the CCA Setup view to add a CCA to the Worksheet. You can create a maximum of 18 CCAs for the Plum A+ infuser, and 18 CCAs for the LifeCare PCA. ICU Medical MedNet Meds also supports SapphirePlus, and the Plum 360 that can each accommodate up to 40 CCAs. (See the ICU Medical MedNet Software Device Compatibility Matrix to determine the availability of the Plum version. The matrix is available through the Technical Support Center.)

The CCA Setup view allows you to:

• Create a new CCA and assign a Service Line to it
• Make changes to an existing CCA name and Service Line
• Remove an existing CCA
• View CCA names and Service Lines
• Arrange the order in which the CCA names display on the infuser
• Set up CCA-specific infuser settings

To display the CCA Setup view, open a Worksheet for editing and click the CCA Setup tab. (For instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35.)

Note: If you try to add a medication to a CCA that already has the maximum allowable medication entries, you will receive an error message. You will need to delete a medication from the CCA then add a new medication to the CCA in the Drug Library Management window.
Service Lines

Service Lines are used in reports to aggregate data across multiple CCAs or facilities. Each CCA is mapped to a Service Line. For example, a service line called **Surgical - adult** may be used to examine data from the CCAs Four West, Five North, and Five East in a single hospital.

The following Service Lines are available for use.

**Note:** You cannot edit or change the contents of the Service Line list.

- Ambulatory
- Anesthesia
- Behavioral health
- Bone marrow transplant
- Burn unit
- Ear, Nose & Throat
- Emergency services
- Endocrinology
- Eye
- Geriatric
- Hematology
- ICU - cardiac
- ICU - general
- ICU - medical
- ICU - neonatal
- ICU - pediatrics
- ICU - surgical
- Labor & Delivery
- Medicine - adult
- Medicine - neonatal
- Medicine - pediatric
- Multiple service line
- Obstetrics/gynecology
- Oncology - adult
- Oncology - pediatric
- Orthopedics
- Other specialty
- Outpatient Surgery
- Pain Management
- Rehabilitation
- Renal
- Short Stay
- Skilled nursing
- Special Procedures
- Surgical - adult
- Surgical - cardiovascular
- Surgical - pediatric
- Telemetry
- Transfusion Center
- Transplant
- Trauma
- Urology
Create a New CCA

1. Click the CCA Setup tab.
2. Click Add.

3. Enter the name of the new CCA.

   **Note:** Displayed Names and CCA Names do not allow either commas (,) or double-quotes ("). An underscore (_) cannot be used in SapphirePlus CCA names. The number of characters allowed in a CCA name varies for each type of infuser; Plum maximum: 29; LifeCare PCA maximum: 16; and SapphirePlus maximum 15. You cannot exceed the maximum characters.

4. Select a Service Line for your CCA from the drop-down list.
5. To exclude the CCA from the reports, place a check mark in the box next to **Exclude from clinical reports**.

   **Note:** Clinical reports include all reports except Asset Tracker, Asset Utilization, Event/Alarm Log, Infuser Status, and Software Download.

6. Enter a Note if desired.
7. Click **Save & Add Another** or **Save & Close**.
Edit a CCA

1. Click the CCA Setup tab.
2. Select the CCA you want to change.
3. Click Edit.
4. Edit the CCA Name, Service Line, and Notes if desired.
5. Click Save & Edit Next or Save & Close.

Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
**View a CCA**

1. Click the **CCA Setup** tab.
2. Select the CCA you want to view.
3. Click **View**.
4. When you are finished viewing, click **View Next** or **Close**.
Delete a CCA

1. Click the **CCA Setup** tab.
2. Select the CCA you want to delete.

3. Click **Delete**.
4. A pop-up window appears to confirm the deletion.
5. Click **Delete**.

The CCA is permanently deleted from the Worksheet.

**Note:** Medication entries assigned to the deleted CCA will remain in the Master Drug Formulary and any other CCAs to which they were assigned.
Change the Display Order of CCA Names

1. Click the CCA Setup tab.

2. Click Arrange CCA Names.

3. Select the CCA names you want to move.

4. Click Move Up and Move Down to reorder the list as desired.

5. Click Save when you are satisfied with the display order.

Helpful Hint: You may select multiple CCAs by selecting the first CCA you want to move, and then holding the shift key while clicking the last CCA you want to move.
Setting Up a Plum 360

Note: Only users with the appropriate login privileges are able to edit CCA infuser settings.

Each CCA is associated with specific infuser settings. For Plum 360 infusers that can support 40 CCAs, the following settings are supported: Patient Limits consisting of minimum and maximum body surface area (BSA); minimum and maximum patient height and weight; Alarm Settings for the default occlusion pressure; and Other Infuser Parameters relating to start and standby, and dose rates.

Note: The CCA settings apply to all medications in the CCA.

The Body Surface Area setting allows you to set a minimum to maximum range for the specific CCA.

The Minimum Patient Height setting allows you to set the minimum patient height allowed in the CCA.

The Maximum Patient Height setting allows you to set the maximum patient height allowed in the CCA.

The Minimum Patient Weight setting allows you to set the minimum patient weight allowed in the CCA.

The Maximum Patient Weight setting allows you to set the maximum patient weight allowed in the CCA.

The Default Occlusion Pressure setting allows you to select the pressure at which the infuser will sound the distal occlusion alarm. This setting is used as the default setting for the selected CCA and can be changed when programming the infuser.

The Distal Occlusion Pressure Auto-Reset setting allows you to set the number of times the infuser will resume an infusion automatically if a distal occlusion is cleared within 60 seconds of detection. If you leave the Auto-Reset at zero, the default setting, occlusion alarms will not be automatically reset.

The Delayed Start setting allows you to select this option in the CCA and in turn allows that option for the infuser.

The Standby setting allows you to select this option in the CCA and in turn allows that option for the infuser.

The Maximum Dose Rate is the maximum delivery rate allowed in the CCA.

Note: The Minimum Patient Weight, Maximum Patient Weight, and Maximum Dose Rate cannot be changed by the clinician when programming the infuser.

The Maximum VTBI (Plum 15.2x) is the maximum VTBI allowed in the CCA.
Following are the default CCA infuser settings:

- **Minimum BSA**: 0.012 (m²)
- **Maximum BSA**: 7.07 (m²)
- **Minimum Patient Height**: 7.5 cm
- **Maximum Patient Height**: 305 cm
- **Minimum Patient Weight**: 0.1 kg
- **Maximum Patient Weight**: 500 kg
- **Default Occlusion Pressure**: 6 psi (310 mmHg)
- **Distal Occlusion Pressure Auto-Reset**: 0
- **Maximum Dose Rate**: 999 mL/hr
- **Delayed Start**: Enabled
- **Standby**: Enabled

**Note:** When you create a new CCA, it contains the default infuser settings until you change them.

To set up CCA settings:

1. Display the CCA Setup view by opening a Worksheet for editing and clicking the **CCA Setup** tab (for instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).

2. Select a CCA from the CCA setup view.

3. Click the **CCA Settings** button.
4. Select the **Patient Limits** tab and edit the following information:
   - Minimum BSA (0.012 to 7.07)
   - Maximum BSA (0.012 to 7.07)
   - Minimum Patient Height (7.5 to 305 cm)
   - Maximum Patient Height (7.5 to 305 cm)
   - Minimum Patient Weight (0.1 to 500 kg)
   - Maximum Patient Weight (0.1 to 500 kg)

5. Select the **Alarm Settings** tab and edit the following information:
   - Distal Occlusion Pressure (1 psi to 15 psi or 52 mmHg to 776 mmHg)
   - Distal Occlusion Auto-Reset (0 to 10)
6. Select the **Other Infuser Parameters** tab.

   Plum 15.1x
   
   Plum 15.2x

7. Select to allow the **Delayed Start** and **Standby** settings (recommended).

8. Edit the **Maximum Dose Rate**.

   **Note:** No infusion in the CCA will be allowed to run at a rate faster than the Maximum Dose Rate value.

9. For the Plum 360 15.2x only: Edit the **Maximum VTBI**.

   **Note:** No infusion in the CCA will be allowed to have a VTBI greater than the Maximum VTBI.

10. For the Plum 360 15.2x only: Select either **KVO** or **Continue Rate** for No Drug Selected and Label Only Medications.

11. Click **Save & Continue** or **Save & Close**.
Setting Up a Plum A+ CCA

Note: Only users with the appropriate log in privileges are able to edit CCA infuser settings.

Each CCA is associated with specific infuser settings. These settings include: the default occlusion pressure, minimum and maximum patient weight, and maximum dose rate settings.

Note: The CCA settings apply to all medications in the CCA.

The Default Occlusion Pressure setting allows you to select the pressure at which the infuser will sound the distal occlusion alarm. This setting is used as the default setting for the selected CCA and can be changed when programming the infuser.

The Minimum Patient Weight setting allows you to set the minimum patient weight allowed in the CCA.

The Maximum Patient Weight setting allows you to set the maximum patient weight allowed in the CCA.

The Maximum Dose Rate is the maximum delivery rate allowed in the CCA.

Note: The Minimum Patient Weight, Maximum Patient Weight, and Maximum Dose Rate cannot be changed by the clinician when programming the infuser.

Following are the default CCA infuser settings:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Occlusion Pressure</td>
<td>6 psi (310 mmHg)</td>
</tr>
<tr>
<td>Minimum Patient Weight</td>
<td>0.1 kg</td>
</tr>
<tr>
<td>Maximum Patient Weight</td>
<td>500 kg</td>
</tr>
<tr>
<td>Maximum Dose Rate</td>
<td>999 mL/hr</td>
</tr>
</tbody>
</table>

Note: When you create a new CCA, it contains the default infuser settings until you change them.

To set up the Plum A+ CCA settings:

1. Display the CCA Setup view by opening a Worksheet for editing and clicking the CCA Setup tab (for instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).
2. Select a CCA from the CCA setup view.

3. Click the CCA Settings button.

4. Edit the following information:
   - **Default Occlusion Pressure** (1 psi to 15 psi or 52 to 776 mmHg). The Default Occlusion Pressure is the threshold for the distal occlusion alarm.

   **Note:** If your institution uses Plum A+ HB Hyperbaric infusers (version 13.5), refer to the infuser's System Operating Manual for this model's expanded default occlusion pressure range. The clinician is able to set the default occlusion pressure value while programming the infuser for hyperbaric use.

   - **Minimum Patient Weight** (0.1 to 500 kg)
   - **Maximum Patient Weight** (0.1 to 500 kg)
   - **Maximum Dose Rate** (0.1 to 999 mL/hr)

5. Click Save to save the settings in the selected CCA.
Setting Up a LifeCare PCA CCA

Note: Only users with the appropriate login privileges are able to edit CCA infuser settings.

The only CCA-specific infuser setting for the LifeCare PCA is the Lockout Interval. The lockout interval allows you to define the minimum and maximum lockout period between PCA doses. The interval you set will apply to all medication entries in the CCA.

The default values for the LifeCare PCA are:

- Minimum Default Lockout Interval (5 minutes)
- Maximum Default Lockout Interval (120 minutes)

Note: When you create a new CCA, it contains the default infuser settings until you change them.

Note: The limits on the lockout interval cannot be changed when programming the infuser.

To set up the LifeCare PCA CCA:

1. Display the CCA Setup view by opening a Worksheet for editing and clicking the CCA Setup tab (for instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).

2. Select a CCA from the CCA Setup view.

3. Click the CCA Settings button.

4. Edit the minimum and maximum lockout intervals (5–120 minutes) on the pop-up.

5. Click Save.
Setting Up a SapphirePlus CCA

**Note:** Only users with the appropriate login privileges are able to edit CCA infuser settings.

Each CCA is associated with specific infuser settings, including alarm capabilities for distal occlusion and air-in-line. Infuser parameters can also be set such as delivery at end of infusion.

**Note:** The CCA settings apply to all medications in the CCA.

The default CCA infuser settings are: Alarm Settings, Far View, and Other Infuser Parameters. When you create a CCA, the default settings are displayed. The SapphirePlus 14.5 also has settings for Patient Limits (Patient Weight).

**Note:** Settings with the term "default" before them in the above list can be changed on the infuser by the clinician programming the device, or an authorized technician. To see all functions that can be adjusted on the infuser, refer to the SapphirePlus operating manual.

To set up the SapphirePlus CCA:

1. Display the CCA Setup view by opening a Worksheet for editing and clicking the CCA Setup tab (for instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).
2. Select a CCA from the CCA Setup view.
3. Click the CCA Settings button.

CCA settings for the SapphirePlus 14.0 infuser are arranged in three tabs:

- Alarm Settings
- Far View
- Other Infuser Parameters

CCA settings for the SapphirePlus 14.5 infuser are arranged in four tabs:

- Patient Limits
- Alarm Settings
- Far View
- Other Infuser Parameters
1. For **Distal Occlusion Pressure**, do the following:
   - Select the default setting units (psi, mmHg, or bar)
   - Select a default setting from the drop-down list (psi can be in 0.5 psi increments with a range of 5.8 - 17.4; mmHg can be in 25 mmHg increments with a range of 300 - 900; bar can be in 0.1 increments with a range of 0.4 - 1.2).

2. Select a default setting for the **Alarm Volume**, either Minimum or Maximum.

3. For **Air-in-line**, select **Single Bubble Size** and **Accumulated** (Bubble Size and/or Threshold).
   - Single Bubble Size: The minimum bubble size to alarm for a single bubble
   - Accumulated Bubble Size: the size of the bubble that when detected will be added to the accumulated threshold. Only bubbles from the selected size and above will be added to the threshold.
   - Accumulated Threshold: The threshold from which the pump will alarm. Only bubbles from the selected size and above will be added to the threshold.

**Note**: Single Bubble Size and Accumulated Threshold cannot be both OFF. At least one of the selections must be ON. An accumulated air-in-line alarm can only occur if enough air is accumulated over a 15-minute period.
Examples:

With the following selected:

- Single bubble = 500 mcL
- Accumulated Bubble Size = 100 mcL
- Accumulated Threshold = 500 mcL

a. A single bubble of 500 mcL is detected. An air-in-line alarm is generated.

b. A bubble of 50 mcL is detected, no alarm would be generated as it is not equal to or greater than the configured Single Bubble Size.

   Additionally, nothing would be added to the Accumulated Threshold since the bubble size is less than the selected 100 mcL.

c. A bubble of 100 mcL is detected, this would not generate an alarm since the bubble size is less than 500 mcL. However, 100 mcL would be added to the Accumulated Threshold.

d. A bubble size of 400 mcL is detected. This would not trigger a Single Bubble Size alarm since it is less than the 500 mcL bubble size selected. However, since the bubble is greater than the selected Accumulated Bubble Size of 100 mcL, it would be added to the Threshold which would then total 500 mcL (the bubble size of 400 mcL + the selected 100 mcL). This would trigger an alarm since it met the Accumulated Threshold setting of 500 mcL.

4. You can select **Occlusion Pressure Auto-Restart** to be either the default **Enabled** or **Disabled**. If you select **Enabled**, the infusion will resume once the occlusion is cleared.

5. Click **Save & Continue** or **Save & Close**.

6. If continuing, select the **Far View** tab.
Far View

When checked, allows **Enable Screen Saver (Far View)** to be displayed.

![CCA Settings](image)

For additional CCA settings, select the **Other Infuser Parameters** tab.
Other Infuser Parameters

1. At Delivery Modes, select Continuous and/or Multistep. You must select at least one.

2. At Other Settings, select any or all of the following:
   - Delayed Start and Standby
   - Prime Reminder
   - Allow Repeat Last Infusion. To enable repeating an infusion using identical same settings.
   - Allow Pre-Program
   - Calculate Concentration
   - Enable Automatic Patient Lockout. This setting prevents patient access to settings.

3. At Delivery at End of Infusion (General), either select None/Stop, Continue Rate, or KVO. The Default KVO Rate is between 0.1 and 20 mL/hr. The selection made will represent the default settings for that CCA when there is no drug selected. This setting does not affect rule sets.

4. At Bolus (General), select the Default Level of either Off, Simple or Advanced. This default applies only when there is no drug selected and does not affect the rule sets. The rate can be set between 1 - 999 mL/hr with a default of 125 mL/hr.

5. At Prime Volume, allow the default of 20 mL or select from 2 - 25 mL.
6. At **Other**:
   a. Enter a **Maximum Volumetric Rate** can be selected from 0.1 - 999 mL/hr or leave the default at 999.
   b. From the drop-down list select the time interval to alert the user that an infusion is nearly complete. Choices are **Off, 1 minute, 3 minutes, 5 minutes and 10 minutes**.

   **Note:** For a multistep infusion, the **Nearing End of Infusion Alarm** occurs x minutes before treatment ends (if x = 10 and there are 7 steps of 5 minutes each, the message will appear after 25 minutes).

   For a continuous/secondary infusion, the **Nearing End of Infusion Alarm** occurs x minutes before the primary and secondary will be ended (if x = 10 and primary is 1 minute and secondary is 30 minutes the message will appear after 21 minutes).

7. At **Primary Hard Limits**, set **Maximum VTBI** from 1-9999 mL or leave the default at 9999.

8. At **Secondary Hard Limits**, set **Maximum VTBI** from 1-9999 mL or leave the default at 9999.

9. At **Multistep Hard Limits**, set **Maximum VTBI** from 1-9999 mL or leave the default at 9999. Select the **Maximum Time** from the 24-hour clock. The default is 24:00.

10. At **Brightness**, select the brightness level for the infuser from **On, Partial or Off**.

11. At **Inactivity Callback (Pump Unattended)**, set the Callback Alarm at **2 minutes, 5 minutes or 10 minutes**.

12. Select the default **Key Press Volume** level.

   **Note:** You can **Restore Default Values** by clicking on that button.

13. Click **Save & Close**.
SapphirePlus 14.5

Patient Limits

Select the Patient Weight:

- Minimum range 0.1-500 kg (0.1 kg is the default)
- Maximum range 0.1 - 500 kg (500 kg is the default)

Alarm Settings

1. For Distal Occlusion Pressure, do the following
   - Select the default setting units (psi, mmHg, or bar).
   - Type in a default setting (psi can be in 0.1 psi increments with a range of 1.5-17.4; mmHg can be in 1 mmHg increments with a range of 75 - 900; bar can be in 0.1 bar increments with a range of 0.1 - 1.2).

2. Select a default setting for the Alarm Volume, either Minimum or Maximum.
3. For **Air-in-line**, select **Single Bubble Size** and **Accumulated** (Bubble Size and/or Threshold).
   - Single Bubble Size: The minimum bubble size to alarm for a single bubble
   - Accumulated Bubble Size: the size of the bubble that when detected will be added to the accumulated threshold. Only bubbles from the selected size and above will be added to the threshold
   - Accumulated Threshold: The threshold from which the pump will alarm. Only bubbles from the selected size and above will be added to the threshold

**Note:** Single Bubble Size and Accumulated Threshold cannot be both OFF. At least one of the selections must be ON. An accumulated air-in-line alarm can only occur if enough air is accumulated over a 15-minute period.

**Examples:**

With the following selected:

- Single bubble = 500 mcL
- Accumulated Bubble Size = 100 mcL
- Accumulated Threshold = 500 mcL

a. A single bubble of 500 mcL is detected. An air-in-line alarm is generated.

b. A bubble of 50 mcL is detected, no alarm would be generated as it is not equal to or greater than the configured Single Bubble Size.

   Additionally, nothing would be added to the Accumulated Threshold since the bubble size is less than the selected 100 mcL.

c. A bubble of 100 mcL is detected, this would not generate an alarm since the bubble size is less than 500 mcL. However, 100 mcL would be added to the Accumulated Threshold.

d. A bubble size of 400 mcL is detected. This would not trigger a Single Bubble Size alarm since it is less than the 500 mcL bubble size selected. However, since the bubble is greater than the selected Accumulated Bubble Size of 100 mcL, it would be added to the Threshold which would then total 500 mcL (the bubble size of 400 mcL + the selected 100 mcL). This would trigger an alarm since it met the Accumulated Threshold setting of 500 mcL.

4. You can select **Occlusion Pressure Auto-Restart** to be either the default **Enabled** or **Disabled**. If you select **Enabled**, the infusion will resume once the occlusion is cleared.

5. Click **Save & Continue** or **Save & Close**.

6. If continuing, select the **Far View** or **Other Infuser Parameters** tab.
Far View

When **Enable Screen Saver (Far View)** is checked, the display choices become available.

You can select any or all of the following from the Far View Display:

- Dose
- Rate
- Volume Infused
- Volume to be Infused
- Time Remaining

At **Rotation Interval (seconds)**, you can select from 4 to 10 seconds, representing the interval at which your selection(s) will display. The default is 5 seconds.
Other Infuser Parameters

1. At **Delivery Modes**, select **Continuous** and/or **Multistep**. You must select at least one.

2. At **Other Settings**, select any or all of the following:
   - **Delayed Start and Standby**
   - **Prime Reminder**
   - **Allow Secondary**. Allows a secondary infusion.
   - **Allow Pre-Program**
   - **Calculate Concentration**
   - **Enable Automatic Patient Lockout**. This setting prevents patient access to settings.

**Important:** The **Delayed Start and Standby** functions are not available when initially starting an auto program; however, the Standby function will become available once an auto program has been started. See the SapphirePlus 14.5 user manual for complete information.

The **Delayed Start and Standby** options in the CCA settings must be enabled in order to be available during manual programming and, in the case of Standby, available once an auto program has been started.
3. At **Delivery at End of Infusion (General)**, either select **None/Stop, Continue Rate, or KVO**. The Default KVO Rate is between 0.1 and 20 mL/hr. The selection made will represent the default settings for that CCA when there is no drug selected. This setting does not affect rule sets.

4. At **Bolus (General)**, select the Default Level of either **Off, Simple** or **Advanced**. This default applies only when there is no drug selected and does not affect the rule sets. The rate can be set between 1 - 999 mL/hr with a default of 125 mL/hr.

5. At **Prime Volume**, allow the default of 20 mL or select from 2 - 25 mL.

6. At **Other**:
   a. Enter a **Maximum Volumetric Rate** can be selected from 0.1 - 999 mL/hr or leave the default at 999.
   b. From the drop-down list at **Nearing End of Infusion Alarm** select the time interval to alert that an infusion is nearly complete. Choices are **Off, 1 minute, 3 minutes, 5 minutes, 10 minutes, or 30 minutes**.

   **Note:** For a multistep infusion, the **Nearing End of Infusion Alarm** occurs x minutes before treatment ends (if x = 10 and there are 7 steps of 5 minutes each, the message will appear after 25 minutes).

   For a continuous/secondary infusion, the **Nearing End of Infusion Alarm** occurs x minutes before the primary and secondary will be ended (if x = 10 and primary is 1 minute and secondary is 30 minutes the message will appear after 21 minutes).

7. At **Primary Hard Limits**, set **Maximum VTBI** from 1-9999 mL or leave the default at 9999.

8. At **Secondary Hard Limits**, set **Maximum VTBI** from 1-9999 mL or leave the default at 9999.

9. At **Multistep Hard Limits**, set **Maximum VTBI** from 1-9999 mL or leave the default at 9999. Select the **Maximum Time** from the 24-hour clock. The default is 24:00.

10. At **Brightness**, select the brightness level for the infuser from **On, Partial** or **Off**.

11. At **Inactivity Callback (Pump Unattended)**, set the Callback Alarm at **30 seconds, 2 minutes, 5 minutes, or 10 minutes**.

12. Select the default **Key Press Volume** level.

   **Note:** You can **Restore Default Values** by clicking on that button.

13. Click **Save & Close**.
Notes:
Chapter 9: Plum A+ and Plum 360 Medication Entries

Overview

In this chapter, you will learn how to define clinical decision rules for medications in the Plum A+ and Plum 360 drug libraries. ICU Medical MedNet Meds software enables you to customize dose limits for medications used in drug libraries. You can customize clinical decision rules for up to the maximum number of clinical care areas (CCAs) in the hospital, and 150 (Plum A+) or 400 medication entries (Plum 360) in each CCA, depending on your licensing.

Medication entries can be created with one of three types of rule sets, described below.

- Full Rule Set: Medication entries configured with a medication name, a complete or partial concentration, a specific dosing unit, and corresponding dose rate limits.
- Limited Rule Set: Medication entries configured with a medication name, optional diluent volume, and rate limits.
- Label Only Rule Set: A Label Only rule set allows the clinician to see the medication name displayed on the infuser. There are no dosing limits associated with this rule set.

The display of the medication in the Drug List and the programming sequence for the clinician on the infuser will vary depending on the type of rule set defined in the drug library.

**Note:** The Clinical Use field (Plum 360 only) is an optional field and can be left blank. The default value of Clinical Use can be updated in the Master Infuser Setup. The Clinical Use field is intended to help the clinician choose the correct rule set so the proper limits are applied during infuser programming.

The Clinical Advisory (Plum 360 15.2x only) is used to provide additional information the clinician needs to consider when addressing medication administration according to the hospital's policy or practice.
Part 1: Plum 360

Defining Rule Sets

Full Rule Set

A Full rule set allows you to enter a complete concentration (for example, 250 mg/500 mL) or partial concentration (for example, 250 mg/_ mL, _mg/500 mL or, _mg/_mL). Creating a medication entry for the standard concentrations of any medication reduces the number of programming steps on the infuser for the clinician. At least one dosing limit value must be entered for each Full rule set.

Leaving the medication or diluent amounts blank allows the clinician to enter a non-standard concentration at the time of programming. Full rule sets defined with a partial concentration will require the clinician to enter the concentration values.
Limited Rule Set

A Limited rule set does not require a concentration to be defined. At least one dosing limit value must be entered for each Limited rule set. The Container Volume field is optional. When programming the infuser for a medication with a Limited rule set, the clinician enters only the rate, volume to be infused (VTBI), and duration.

Label Only Rule Set

A Label Only rule set allows the clinician to see the medication name displayed on the infuser. There are no dosing limits associated with a Label Only rule set. The clinician selects the dosing units during programming. If the dosing units are not mL/hr, the clinician also enters the concentration values.
Each type of rule set will create a different display for the medication in the Drug List on the infuser.

You can create medication entries by adding them to the Master Drug Formulary or by adding them directly to a CCA. Medication entries added to a CCA are automatically added to the Master Drug Formulary.

Within a CCA, no two medication entries may have exactly the same External ID and Concentration. Also, no two medication entries may have exactly the same Displayed Name and Concentration.

Within a CCA, a medication entry with a Displayed Name and a Concentration can have up to four Clinical Uses. Each Clinical Use can have up to four dosing units or a total of 16 possible dosing units for one medication in one CCA.

In the Master Drug Formulary, two medication entries may have the same display name, medication amount, medication unit, diluent amount, and dosing units, as long as one or more of the following limits are different:

- Lower soft limit (LSL)
- Lower hard limit (LHL)
- Upper soft limit (USL)
- Upper hard limit (UHL)

### Setting Dose Rate Limits

ICU Medical MedNet Meds allows you to define dose rate limits for both primary and secondary infusions. It is important that you understand how the dose rate limits function so please read this section carefully.

You can define upper and lower soft and hard limits as part of the rule set for each medication entry that you create in the library. As you configure the limits, the software enforces the following rule:

\[
Lower \text{ Hard Limit (LHL)} < Lower \text{ Soft Limit (LSL)} \leq Upper \text{ Soft Limit (USL)} < Upper \text{ Hard Limit (UHL)}
\]

#### Soft Limits

*Soft Limits* are dose rate limits that can be overridden when programming the infuser. When a value entered on the infuser is lower than the lower soft limit or higher than the upper soft limit, the infuser displays a soft limit override confirmation message. The infuser records soft limit alerts and the user’s response to the alert in its history logs.

For example, if the upper soft limit is set to 15 mL/hr and the clinician enters 16 mL/hr, the infuser will display a soft limit override alert. This alert notifies the clinician that the entry is outside the range of the soft limits set for that medication entry. The clinician can choose to continue programming using the override, or cancel the override and edit the value. Both the override and edit events are recorded separately in the infuser’s history log.
Hard Limits

*Hard limits* are dose rate limits that cannot be overridden; the infuser cannot be programmed with a rate that is lower than the lower hard limit or higher than the upper hard limit.

**Note:** The actual patient weight is not entered until the clinician programs the infuser. Therefore, ICU Medical MedNet Meds software cannot verify the validity of a lower limit when entering a weight-based medication entry. The infuser performs the final check when the clinician programs the infuser.

Bolus Limits (Plum 360 with Bolus)

*Bolus Limits* can be defined in three ways:

- **Pump Bolus Amount** allows you to define the pump bolus amount unit, set lower and upper limits, select the maximum bolus unit, and the maximum amount of medication that can be administered in a bolus.

- **Bolus Time Limits** allow you to define the time period over which a bolus can be administered. A minimum administration time for the bolus is defined as a lower limit, while a maximum administration time is defined as an upper limit.

- **Bolus Dose Rate Limits** allow you to define the rate at which a bolus can be administered.

**Note:** If defining Bolus Rules using weight-based or BSA-based units:

- The Bolus Dose Rate limits can be defined based on weight only if the Bolus Amount units are also based on weight.
- The Bolus Dose Rate limits can be defined based on BSA only if the Bolus Amount units are also based on BSA.
Medication Entry Rules and Conventions

The ICU Medical MedNet Meds software uses the following conventions for Plum A+ medication entries:

- Full or Limited rule sets require at least one hard or soft limit.
- You can create medication entries by adding them to the Master Drug Formulary or by adding them directly to a CCA. Medication entries added to a CCA Target List are automatically added to the Master Drug Formulary List.
- “Validity” messages appear in red at the bottom of the Rule Set window. When you enter a value that is not allowed, the message specifies the defined range for the field, or the reason the value is not permitted.
- You cannot use the following characters in the medication name: comma (,), less than (<), greater than (>), single quotes (‘), double quotes (“), and ampersand (&).
- Once you select a medication unit, the dosing unit field will display only the enabled unit type.
- The software prohibits invalid numeric entries and signals such with an audible “beep.”
- You may use the vertical and horizontal scroll bars to navigate to an entry.
- If you do not select or populate a required field, an error message appears.
- When you highlight an entry on the Drug Library Management list view, buttons or features that are not allowed appear as “grayed” or disabled.
- When you add a new medication in the Generic Name field of the rule set window, you may search for a medication by typing the first few characters of its generic name. The drop-down list will navigate to show any matching medications.
The Plum 360 Medication Rule Set

The Rule Set window shown in this section is used to configure a medication entry for the Plum 360 drug library.

Plum 360 15.1x

Plum 360 15.2x
Plum 360 with Bolus Enabled

Rule Set Fields

The following table lists the fields, a brief description, and allowed value range for the infuser.

Each medication entry must have a generic name and a displayed name; you cannot save a medication entry without a name in these fields. The number of characters in the displayed name is determined by how it is displayed on the infuser’s screen. Depending on character width, the maximum number of characters allowed in a displayed name can vary from 17 to 29.

To avoid potential confusion when creating medication entries, use only the medication name in the Displayed Name field and ensure that the External ID is identical to the External ID used in your institution’s formulary. Do not include the diluent as part of the medication name.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>This is the medication name from your Medication List. It is selected from</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td></td>
<td>the drop-down list and displays the External ID (the hospital's identifier</td>
<td></td>
</tr>
<tr>
<td></td>
<td>for a medication). Strength/Volume and Dosage Form display only if part of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>your Medication List.</td>
<td></td>
</tr>
<tr>
<td>Displayed Name</td>
<td>This is the name that will be displayed on the infuser.</td>
<td>• Varies depending on the character width</td>
</tr>
<tr>
<td></td>
<td>• Cannot be blank</td>
<td>• Varies depending on the character width</td>
</tr>
<tr>
<td></td>
<td><strong>Important:</strong> You cannot use the following characters in the displayed name:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>comma (,), less than (&lt;), greater than (&gt;), single quotation marks (‘),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>inverted commas (¨), and ampersand (&amp;.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The display font changes on the Plum A+ infuser for lengthy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>displayed names.</td>
<td></td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>The therapeutic class assigned to the medication entries.</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID number for the therapeutic class assigned to the medication entry.</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Allowable Range</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Medication Amount</td>
<td>Allows you to enter the medication amount in the units selected. The combination of medication amount, medication unit, and diluent amount creates the medication’s concentration.</td>
<td>For medication amounts in mcg, mg, grams, mEq, million units, or mmol: 0.1–9999 and “Blank” For medication amounts in units: 0.1–99999999 and “Blank”</td>
</tr>
<tr>
<td>Medication Unit</td>
<td>Allows you to select the unit of measure for your medication amount.</td>
<td>mcg, mg, grams, mEq, Million Units, mmol and units</td>
</tr>
<tr>
<td>Diluent Amount</td>
<td>Allows you to set the diluent amount associated with the medication entry. The diluent amount will vary depending on the container size, overfill, and volume of added solution.</td>
<td>• 0.1–9999 and “Blank”</td>
</tr>
<tr>
<td>Concentration LHL and UHL (Plum 15.2x)</td>
<td>Allows you to enter upper and lower limits for concentration in medication units/mL.</td>
<td>May be blank. If the concentration unit is in the grams, Million Units, mEq or mmol family: 0.001-99.999 in increments of 0.001 100-9999 in increments of 1 If the concentration unit is in the Units family: 0.001-99.999 in increments of 0.001 100-99999999 in increments of 1</td>
</tr>
<tr>
<td>Clinical Use</td>
<td>Allows you to enter a clinical use for the medication. If this field is blank for a medication, the value in the Master Infuser Setup Default Clinical Use field will display for the medication in the drug library.</td>
<td>0-29 alphanumeric characters. Wider characters such as “M” and “W” may reduce the total number of characters allowed.</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>Allows you to set the standard dosing unit for the medication. This will be the default value displayed on the infuser.</td>
<td>For complete dosing units, please consult your infuser’s System Operating Manual For the Plum 360 15.1x only: Time Limits and Dose Rate limits are available for either time-based, or non time-based units</td>
</tr>
<tr>
<td>LHL, LSL, USL, UHL for the medication Dosing Unit</td>
<td>Lower hard limit, lower soft limit, upper soft limit, upper hard limit. Allows you to set the upper and/or lower dose limits for the selected medication.</td>
<td>The units for the soft and hard limits are the same as the dosing units selected in the medication rule set</td>
</tr>
<tr>
<td>Maximum Dose Unit (Plum 15.2x)</td>
<td>Allows you to select the unit of measure for the maximum dose.</td>
<td>Units in the same family as the selected Dosing Unit.</td>
</tr>
<tr>
<td>Maximum Dose (Plum 15.2x)</td>
<td>Allows you to enter the maximum dose value for the medication.</td>
<td>For the allowable range, please consult your infuser's System Operating Manual.</td>
</tr>
<tr>
<td>Time Limits</td>
<td>Allows you to enter time limits for the medication.</td>
<td>0000:00 - 1500:00 hr:min</td>
</tr>
<tr>
<td>Dose Rate Unit for Dose Rate Limits</td>
<td>Allows you to select the unit for the dose rate limits.</td>
<td>For complete dose rate units, please consult your infuser's System Operating Manual.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Allowable Range</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>LHL, LSL, USL, UHL for the Dose Rate Limits</td>
<td>Lower hard limit, lower soft limit, upper soft limit, upper hard limit. Allows you to set the upper and/or lower dose rate limits for the selected medication.</td>
<td>The units for the soft and hard limits are the same as the Dose Rate Unit selected.</td>
</tr>
<tr>
<td>Clinical Advisory (Plum 15.2x)</td>
<td>Allows you to select or enter a clinical advisory for the medication.</td>
<td>0-60 alphanumeric characters and the following: <code>&lt;space&gt;</code>, exclamation point (!), hash (#), dollar sign ($), percent (%), left parenthesis (()), right parenthesis ()), asterisk (*), plus (+), comma (,), period (.), colon (:), semicolon (;), dash (-), forward slash (/) back slash (/), less than (&lt;), equal (=), greater than (&gt;), question mark (?), at sign (@), left bracket ([), right bracket (]), caret (^), underscore (_), apostrophe ('), left brace ({), right brace (}), vertical bar (</td>
</tr>
<tr>
<td>KVO Continue Default</td>
<td>Allows you to select the default KVO rate.</td>
<td>KVO or Continue Rate</td>
</tr>
<tr>
<td>Piggyback delivery allowed (Plum 15.1x)</td>
<td>Allows you to enable a piggyback infusion.</td>
<td>Checked to enable or Unchecked (does not allow the functionality)</td>
</tr>
<tr>
<td>Piggyback mode allowed when delivered on Line B (Plum 15.2x)</td>
<td>Allows you to set whether or not the medication can be delivered as a piggyback on Line B.</td>
<td>Checked to allow medication to be delivered as a piggyback on Line B or Unchecked to prohibit it. If checked, enables Default Line B Mode radio buttons.</td>
</tr>
<tr>
<td>Default Line B Mode (Plum 15.2x)</td>
<td>If Piggyback mode allowed when delivered on Line B is checked, allows you to set the default Line B mode.</td>
<td>Piggyback or Concurrent</td>
</tr>
<tr>
<td>Allow piggyback to interrupt this infusion</td>
<td>Allows you to configure whether this medication can be interrupted by a piggyback infusion.</td>
<td>Checked to enable or Unchecked (does not allow the functionality)</td>
</tr>
<tr>
<td>Enable Bolus (Plum 360 with Bolus)</td>
<td>Pump Bolus Amount Units, and Bolus Dose Rate Units are dependent upon the selection of the medication unit.</td>
<td>The medication unit selected will determine the allowable bolus units that can be selected from the available fields’ drop-down list.</td>
</tr>
</tbody>
</table>

Refer to your infuser's System Operating Manual for complete details and allowable range.
Step-by-step Procedures

The following section provides step-by-step procedures that will enable you to create and manage medication entries. In this section you will learn how to do the following:

- Add a medication entry with a Full rule set in a CCA
- Add a medication entry with a Limited rule set in a CCA
- Add a medication entry with a Label Only rule set in a CCA
- Edit a medication entry in a CCA
- View a medication entry in a CCA
- Remove a medication entry from a CCA
- Add a medication entry with a Full rule set the Master Drug Formulary
- Add a medication entry with a Limited rule set to the Master Drug Formulary
- Add a Label Only medication entry to the Master Drug Formulary
- Edit a medication entry in the Master Drug Formulary
- View a medication entry in the Master Drug Formulary
- Delete a medication entry from the Master Drug Formulary
- Copy a medication entry from the Master Drug Formulary to a Target CCA
Working with CCA Medication Entries (Plum 360)

**Note:** When adding medication entries to the Target List, both the selected CCA and the Master Drug Formulary are updated. When adding to the Source List, only the Master Drug Formulary is updated.

The maximum number of medication entries allowed in a CCA is 150-400 depending on your licensing.

In the Target List, the created medication entries are grouped by Displayed Name plus Concentration. If there is no grouping of medication entries with the same Displayed Name plus Concentration, the entry will go to the bottom of the list of medication entries.

Within the grouping there is a sorting

a. Clinical Use with the Default setting of Clinical Use topping the series
b. Each group in Alphabetical order
c. Dosing units

**To add a medication entry with a Full rule set in a CCA**

1. Select the desired CCA from the Target List drop-down list.

2. From the Target List, click **Add**.
3. Select the Generic Name of a medication.

**Note:** Selecting a generic name from the list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

**Note:** If the desired generic name is not in the **Generic Name** list, you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.

**Note:** The **Displayed Name** can be changed as desired; for example, to accommodate Tall Man lettering or another unique name. The maximum number of characters in a Displayed Name is determined by how it is displayed on the infuser screen. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.
4. Select **Full** (if not selected) from the **Rule Sets** drop-down list.

5. Enter a Medication Amount. Select a Medication Unit from the drop-down list and enter a Diluent Amount, if desired.

**Note:** For the Plum 15.2x, if no Medication Amount and/or Diluent Amount is entered you will have the option to enter Concentration Limits. You will also have the option to enter a Clinical Use, if desired (on this screen), as well as the option to enter piggyback information on the next screen, after clicking **Next**.

6. Place a check mark in the box next to Piggyback delivery allowed, if desired.

7. Place a check mark in the box next to Allow piggyback to interrupt this infusion, if desired.

8. Enter a Clinical Use, if desired.

9. Click **Next**.
10. Select the dosing unit from the drop-down list and enter the values for soft and hard limits. (You must specify at least one limit.)

When entering dosing unit, you will have the option of selecting time-based, or non-time based dosing units.

**Time-based dosing unit:**

If you select a dosing unit that is time-based, type the values for soft and hard limits. (You must specify at least one limit.) Time Limits and Dose Rate Limits fields will **not** be enabled at the same time and will be greyed out.

**Non time-based dosing unit:**

If you select a dosing unit that is non time-based, type the values for soft and hard limits. (You must specify at least one limit.)

The Time Limits fields and Dose Rate Limits become enabled. You will need to select either time limits or dose rate limits.

Time Limits is the default, using the format hhhh:mm with a maximum of 1500:00.

11. If you use Dose Rate Limits, use the drop-down to select a Dose Rate Unit and then specify at least one value for soft or hard limits.

**Note:** For the Plum 15.2x, you can enter a Clinical Advisory (optional) and indicate KVO Continue default from either KVO or Continue Rate (see screen below).

12. Click **Save & Add Another Rule Set**, or **Save & Close** to add the medication entry to the CCA.

or

If you have a Bolus enabled infuser, you can place a tick mark next to **Enable Bolus** if you want to set bolus dose limits for this medication (Optional).
For the Plum 360 with Bolus only

To Set a Bolus

a. Select the **Pump Bolus Amount Unit** from the drop-down list. (The allowable units are determined by the selection of Medication Unit.) Enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit.

Enter **Maximum Bolus Amount** and **Unit** if desired. These fields are enabled when the Bolus Amount Limits Unit is weight-based or BSA-based.

b. Enter the desired values for **Bolus Time Limits**: Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit.

c. Select the Bolus Dose Rate Limits from the drop-down list and enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit.

d. Click **Save & Close**.
To add a medication entry with a Limited rule set in a CCA

1. Select the desired CCA from the Target List drop-down list.
2. From the Target List, click Add.

3. Select the Generic Name of a medication.

**Note:** Selecting a generic name from the list automatically populates the Displayed Name, External ID, Therapeutic Class, and Class ID fields.

4. The Displayed Name can be changed as desired, for example, to accommodate Tall Man lettering or another unique name. The maximum number of characters in a Displayed Name is determined by how it is displayed on the infuser screen. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

5. Select Limited (if not selected) from the Rule Sets drop-down list.
6. Enter Container Volume, if desired.
7. Place a check mark in the box next to Piggyback delivery allowed, if desired.
8. Place a check mark in the box next to Allow piggyback to interrupt this infusion, if desired.

Note: For the Plum 15.2x, the fields for Piggyback will be in the next window after you click Next on this window.

9. Enter a Clinical Use, if desired.

10. Click Next.
11. Select the dosing unit from the drop-down list and enter the values for soft and hard limits. (You must specify at least one limit.)

When entering dosing unit, you will have the option of selecting time-based, or non-time based dosing units.

Time-based dosing unit:

If you select a dosing unit that is time-based, type the values for soft and hard limits. (You must specify at least one limit.) Time Limits and Dose Rate Limits fields will not be enabled at the same time and will be greyed out.
Non time-based dosing unit:

If you select a dosing unit that is non time-based, type the values for soft and hard limits. (You must specify at least one limit.)

The Time Limits fields and Dose Rate Limits become enabled. You will need to select either time limits or dose rate limits.

Time Limits is the default, using the format hhhh:mm with a maximum of 1500:00.

If you use Dose Rate Limits, use the drop-down to select a Dose Rate Unit and then specify at least one value for soft or hard limits.

12. Once you enter a value for Dosing Unit and dosing limit(s), you will be able to add three more dosing units, for a total of four dosing units for the selected medication entry with the same Displayed Name and Concentration.

You can add each selection by clicking the green plus “+” sign.

Note: A tab with red text denotes either incomplete or invalid dosing unit and/or dosing limits.
**Note:** For the Plum 15.2x, you can enter a Clinical Advisory (optional) and indicate KVO Continue default from either KVO or Continue Rate (see screen below).

13. Click **Save & Add Another Rule Set** or **Save & Close** to add the medication entry to the CCA.

or

If you have a Bolus enabled infuser, you can place a tick mark next to **Enable Bolus** if you want to set bolus dose limits for this medication. See **To Set a Bolus** section on page 142.

**To add a Label Only rule set medication entry in a CCA**

1. Select the desired CCA from the Target List drop-down list.

2. From the Target List, click **Add**.

3. Select the Generic Name of a medication.

**Note:** Selecting a **Generic Name** from the list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.
4. The **Displayed Name** can be changed as desired, for example, to accommodate Tall Man lettering or another unique name. The maximum number of characters in a Displayed Name is determined by how it is displayed on the infuser screen. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

5. Select **Label Only** from the **Rule Sets** drop-down list.

6. Place a check mark in the box next to **Piggyback delivery allowed**, if desired.

7. Place a check mark in the box next to **Allow Piggyback to interrupt this infusion**, if desired.

**Note:** For the Plum 15.2x, you can enter a Clinical Advisory (optional) and indicate Line B Default Mode.

8. Click **Next**.

9. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA. or

If you have a Bolus enabled infuser, you can place a tick mark next to Enable Bolus if you want to set bolus dose limits for this medication. See **To Set a Bolus** section on page 142.

**Note:** If the desired generic name is not in the **Generic Name** list, you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.
To edit a medication entry in a CCA

1. Select the CCA containing the medication entry you want to view from the Target List drop-down list.

2. From the Target List, select the medication entry you want to edit.
3. Click **Edit**.

   **Helpful Hint:** You can also double-click a medication entry to display the **Rule Set** dialog box.
4. Make changes as desired.

   **Note:** You cannot change the **Therapeutic Class** or **Class ID** when editing a medication entry in a CCA.

5. Click **Save & Close** to save changes.
**Note:** If the medication entry that is edited is assigned to only one CCA, the medication entry will also be updated with the same change in the Master Drug Formulary. If the medication entry that is edited is assigned to more than one CCA, a new medication entry will be created in the Master Drug Formulary.

**To view a medication entry in a CCA**

1. Select the CCA containing the medication entry you want to view from the Target List drop-down list.

2. From the Target List, select the medication entry you want to view.

3. Click **View**.

4. Click **Close** to exit the screen.
To remove a medication entry from a CCA

1. Select the CCA containing the medication entry you want to remove from the Target List drop-down list.

2. Select the medication entry you want to remove.
3. Click Remove.

4. At the confirmation to remove from the CCA, click Remove.
Working with the Master Drug Formulary (Plum 15.0x and Plum 15.1x)

The Master Drug Formulary can contain medication entries not assigned to a CCA, to facilitate later use. The total number of medication entries in the Master Drug Formulary for the Plum 360 infuser can either be 7,200 or 16,000, depending on your license.

**Note:** Bolus functionality mentioned in this section is only available in Plum 15.1x and later.

To add a medication entry with a Full rule set to the Master Drug Formulary

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.
4. Click **Select Medication**.

**Note:** The **Displayed Name** field cannot be left blank. The maximum number of characters in a medication name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

**Note:** If the desired generic name is not in the **Generic Name** drop-down list, you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.

5. Select **Full** (if not already selected) from the **Rule Sets** drop-down list.

6. Enter a **Medication Amount** (optional), select the **Medication Unit** and **Diluent Amount** (optional).

7. Select the dosing unit and type the values for soft and hard limits. (You must specify at least one limit.)

   **Time-based dosing unit:**

   If you select a dosing unit that is time-based, type the values for soft and hard limits. (You must specify at least one limit.) Time Limits and Dose Rate Limits fields will **not** be enabled at the same time and will begreyed out.
Non time-based dosing unit:

If you select a dosing unit that is non time-based, type the values for soft and hard limits. (You must specify at least one limit.)

The Time Limits fields and Dose Rate Limits become enabled. You will need to select either time limits or dose rate limits.

Time Limits is the default, using the format hhhh:mm with a maximum of 1500:00.

If you use Dose Rate Limits, use the drop-down to select a Dose Rate Unit and then specify at least one value for soft or hard limits.

8. Click Save & Add Another Dosing Unit or Save & Close to add the medication entry to the Master Drug Formulary.

or

If you have a Bolus enabled infuser, you can place a tick mark next to Enable Bolus if you want to set bolus dose limits for this medication. See To Set a Bolus section on page 142.

Note: When a medication entry is added to the Master Drug Formulary, it is not assigned to a CCA.
To add a Limited rule set medication entry to the Master Drug Formulary

1. Select **Master Drug Formulary** as the Source List.
2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry.

   **Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

4. Click **Select Medication**.

   **Note:** The **Displayed Name** field cannot be left blank. The maximum number of characters in a displayed name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.
Note: If the desired generic name is not in the **Generic Name** drop-down list, you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.

5. Select **Limited** from the **Rule Sets** drop-down list.

![Source List: Add Rule Set](image)

6. Type the **Container Volume** amount (optional).
7. Enter a **Clinical Use**, if desired (optional).
8. Select a dosing unit from the drop-down list and enter the values for soft and hard limits. (You must specify at least one limit.)
9. Click **Save & Add Another Dosing Unit** or **Save and Close**.

   or

   If you have a Bolus enabled infuser, you can place a tick mark next to Enable Bolus if you want to set bolus dose limits for this medication. See **To Set a Bolus** section on page 142.

**Note:** When a medication entry is added to the Master Drug Formulary, it is not assigned to a CCA.
To add a Label Only medication entry to the Master Drug Formulary

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.
Note: The **Displayed Name** field cannot be left blank. The maximum number of characters in a displayed name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

---

Note: If the desired generic name is not in the **Generic Name** drop-down list (or if no generic names appear in the list), you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.

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![Image of the Source List: Add Rule Set window](image)

4. Select **Label Only** from the **Rule Sets** drop-down list.
5. Place a check mark in the box next to **Piggyback delivery allowed**, if desired.
6. Click **Save & Add Another Rule Set** or **Save & Close** to add the medication entry to the Master Drug Formulary.

or

If you have a Bolus enabled infuser, you can place a tick mark next to Enable Bolus if you want to set bolus dose limits for this medication. See **To Set a Bolus** section on page 142.

---

Note: When a medication entry is added to the Master Drug Formulary, it is not assigned to any CCA.
To edit a medication entry in the Master Drug Formulary

1. Select **Master Drug Formulary** as the Source List.

   ![Master Drug Formulary Image]

2. From the Source List, select the medication entry you want to edit.

3. Click **Edit**.

   **Helpful Hint:** You can also double-click a medication entry to display the **Rule Set** dialog box.

4. Make changes as desired.

   ![Rule Set Image]

5. Click **Save & Close** to save changes.

   **Important:** Changing the dosing unit or medication unit will erase all previously entered limits.

   **Note:** When a medication entry is edited, the changes are reflected in the Master Drug Formulary and a confirmation pop-up displays the CCAs that are affected.
To view a medication entry in the Master Drug Formulary

1. Select Master Drug Formulary from the Source List.

2. From the Source List, select the medication entry you want to view.

3. Click View.

4. Click Close to exit the screen.
To delete a medication in the Master Drug Formulary

1. Select **Master Drug Formulary** from the Source List.

2. From the Source List, select the medication entry you want to delete.

3. Click **Delete**.
The following pop-up will display only if the medication entry is assigned to one or more CCA.

![Delete Medication Pop-up]

4. Click **OK**.
To copy to Target CCA

1. Select a medication entry from the Master Drug Formulary.

   **Note:** A Target List CCA must be selected before you can copy a medication entry to a Target CCA from the Master Drug Formulary.

2. Click **Copy to Target CCA**.

3. Click **Copy** on the **Confirm Copy to CCA** pop-up.
Working with the Master Drug Formulary (Plum 15.2x)

To add a medication entry in the Master Drug Formulary for the Plum 15.2x, you will have additional fields available in determining Dose Limits. You will also be able to enter a clinical advisory and set KVO Continue Default.

**Note:** The Dose Limits fields are the same whether you have a full or limited rule set.

To add a medication entry with a Full or Limited rule set to the Master Drug Formulary

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

4. Indicate Rule Sets from the drop-down field.

5. Enter the Concentration and Concentration Limits (if available).

6. Enter a **Clinical Use**, if you wish. This is an optional field.
7. Click **Select Medication**.

**Note:** The **Displayed Name** field cannot be left blank. The maximum number of characters in a displayed name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

**Note:** If the desired generic name is not in the **Generic Name** drop-down list, you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new Medication List via the Medication Import function of the ICU Medical MedNet Meds software.

8. Select a dosing unit. You will have the option of selecting time-based, or non-time based dosing units.

**Note:** The Maximum Dose Unit field is enabled when a Weight or BSA-Based Dosing Unit is selected.
**Time-based dosing unit:**

If you select a dosing unit that is time-based, type the values for soft and hard limits. (You must specify at least one limit.) Time Limits and Dose Rate Limits fields will **not** be enabled at the same time and will be greyed out.

**Non time-based dosing unit:**

If you select a dosing unit that is non time-based, type the values for soft and hard limits. (You must specify at least one limit.)

If you selected a Weight or BSA-Based Dosing Unit, then the **Maximum Dose Unit** field is enabled and will allow you to set the maximum dose unit from the drop-down list as well as set a **Maximum Dose** in the appropriate field.

9. In **Clinical Advisory**, you can either enter one or select from the drop-down list. This is an optional field.

10. Select the **KVO Continue Default**.

11. Select the **Piggyback mode allowed when delivered on Line B** checkbox, if desired.

12. Set the **Default Line B Mode** to Piggyback or Concurrent.

13. Select the **Allow piggyback to interrupt this infusion** checkbox, if desired.

14. Click **Save & Add Another Rule Set** or **Save & Close** to add the medication entry to the CCA.

   or

   If you have a Bolus enabled infuser, you can place a tick mark next to Enable Bolus if you want to set bolus dose limits for this medication. See **To Set a Bolus** section on page 142.

**Note:** When a medication entry is added to the Master Drug Formulary, it is not assigned to a CCA.
To add a Label Only medication entry to the Master Drug Formulary

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.
**Note:** The **Displayed Name** field cannot be left blank. The maximum number of characters in a displayed name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

**Note:** If the desired generic name is not in the **Generic Name** drop-down list (or if no generic names appear in the list), you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new Medication List via the Medication Import function of the ICU Medical MedNet Meds software.

4. Select **Label Only** from the **Rule Sets** drop-down list, if not already selected.

5. Place a check mark in the box next to **Piggyback mode allowed when delivered on line B**, if desired.

6. Set the **Default Line B** mode to Piggyback or Concurrent.

7. Place a check mark in the box next to **Allow piggyback to interrupt this infusion**, if desired.

8. Click **Save & Add Another Rule Set** or **Save & Close** to add the medication entry to the Master Drug Formulary.

or

If you have a Bolus enabled infuser, you can place a tick mark next to Enable Bolus if you want to set bolus dose limits for this medication. See **To Set a Bolus** section on page 142.

**Note:** When a medication entry is added to the Master Drug Formulary, it is not assigned to any CCA.
To edit a medication entry in the Master Drug Formulary

1. Select Master Drug Formulary as the Source List.

2. From the Source List, select the medication entry you want to edit.
3. Click Edit.

Helpful Hint: You can also double-click a medication entry to display the Rule Set dialog box.
4. Make changes as desired.
5. Click **Save & Close** to save changes.

**Important:** Changing the dosing unit or medication unit will erase all previously entered limits.

**Note:** When a medication entry is edited, the changes are reflected in the Master Drug Formulary and a confirmation pop-up displays the CCAs that are affected.
To view a medication entry in the Master Drug Formulary

1. Select **Master Drug Formulary** from the Source List.

2. From the Source List, select the medication entry you want to view.

3. Click **View**.

4. Click **Close** to exit the screen.
To delete a medication in the Master Drug Formulary

1. Select **Master Drug Formulary** from the Source List.

2. From the Source List, select the medication entry you want to delete.

3. Click **Delete**.
The following pop-up will display only if the medication entry is assigned to one or more CCA.

4. Click OK.

**To copy to Target CCA**

1. Select a medication entry from the Master Drug Formulary.

**Note:** A Target List CCA must be selected before you can copy a medication entry to a Target CCA from the Master Drug Formulary.

2. Click Copy to Target CCA.
3. Click **Copy** on the **Confirm Copy to CCA** pop-up.
Part 2: Plum A+

Defining Rule Sets

Full Rule Set

A Full rule set allows you to enter a complete concentration (for example, 250 mg/500 mL) or partial concentration (for example, 250 mg/_ mL, _mg/500 mL or, _mg/_ mL). Creating a medication entry for the standard concentrations of any medication reduces the number of programming steps on the infuser for the clinician. At least one dosing limit value must be entered for each Full rule set.

Leaving the medication or diluent amounts blank allows the clinician to enter a non-standard concentration at the time of programming. Full rule sets defined with a partial concentration will require the clinician to enter the concentration values when the dosing units are not mL/hr. When the dosing units are mL/hr, you do not have to enter concentration information.
**Limited Rule Set**

A Limited rule set does not require a concentration to be defined. At least one dosing limit value must be entered for each Limited rule set. The Container Volume field is optional. When programming the infuser for a medication with a Limited rule set, the clinician enters only the rate, volume to be infused (VTBI) and duration.

**Label Only Rule Set**

A Label Only rule set allows the clinician to see the medication name displayed on the infuser. There are no dosing limits associated with a Label Only rule set. The clinician selects the dosing units during programming. If the dosing units are not mL/hr, the clinician also enters the concentration values.
Each type of rule set will create a different display for the medication in the Drug List on the infuser.

You can create medication entries by adding them to the Master Drug Formulary or by adding them directly to a CCA. Medication entries added to a CCA are automatically added to the Master Drug Formulary.

Within a CCA, no two medication entries may have exactly the same External ID and Concentration. Also, no two medication entries may have exactly the same Displayed Name and Concentration.

In the Master Drug Formulary, two medication entries may have the same display name, medication amount, medication unit, diluent amount, and dosing units, as long as one or more of the following limits are different:

- Lower soft limit (LSL)
- Lower hard limit (LHL)
- Upper soft limit (USL)
- Upper hard limit (UHL)

**Setting Dose Rate Limits**

ICU Medical MedNet Meds allows you to define dose rate limits for both primary and secondary infusions. It is important that you understand how the dose rate limits function so please read this section carefully.

You can define upper and lower soft and hard limits as part of the rule set for each medication entry that you create in the library. As you configure the limits, the software enforces the following rule:

\[ \text{Lower Hard Limit (LHL)} < \text{Lower Soft Limit (LSL)} \leq \text{Upper Soft Limit (USL)} < \text{Upper Hard Limit (UHL)} \]

**Soft Limits**

*Soft Limits* are dose rate limits that can be overridden when programming the infuser. When a value entered on the infuser is lower than the lower soft limit or higher than the upper soft limit, the infuser displays a soft limit override confirmation message. The infuser records soft limit alerts and the user’s response to the alert in its history logs.

For example, if the upper soft limit is set to 15 mL/hr and the clinician enters 16 mL/hr, the infuser will display a soft limit override alert. This alert notifies the clinician that the entry is outside the range of the soft limits set for that medication entry. The clinician can choose to continue programming using the override, or cancel the override and edit the value. Both the override and edit events are recorded separately in the infuser’s history log.

**Hard Limits**

*Hard limits* are dose rate limits that cannot be overridden; the infuser cannot be programmed with a rate that is lower than the lower hard limit or higher than the upper hard limit. (These events are not recorded in the infuser’s history log file for Plum infusers with software versions prior to version 13.4.)
**Note:** The actual patient weight is not entered until the clinician programs the infuser. Therefore, ICU Medical MedNet Meds software cannot verify the validity of a lower limit when entering a weight-based medication entry. The infuser performs the final check when the clinician programs the infuser.

### Medication Entry Rules and Conventions

The ICU Medical MedNet Meds software uses the following conventions for Plum A+ medication entries:

- Full or Limited rule sets require at least one hard or soft limit.
- You can create medication entries by adding them to the Master Drug Formulary or by adding them directly to a CCA. Medication entries added to a CCA Target List are automatically added to the Master Drug Formulary List.
- “Validity” messages appear in red at the bottom of the Rule Set window. When you enter a value that is not allowed, the message specifies the defined range for the field, or the reason the value is not permitted.
- You cannot use the following characters in the medication name: comma (,), less than (<), greater than (>), single quotes (‘), double quotes (“), and ampersand (&).
- Once you select a medication unit, the dosing unit field will display only the enabled unit type.
- The software prohibits invalid numeric entries and signals such with an audible “beep.”
- You may use the vertical and horizontal scroll bars to navigate to an entry.
- If you do not select or populate a required field, an error message appears.
- When you highlight an entry on the Drug Library Management list view, buttons or features that are not allowed appear as “grayed” or disabled.
- When you add a new medication in the Generic Name field of the rule set window, you may search for a medication by typing the first few characters of its generic name. The drop-down list will navigate to show any matching medications.
The Plum A+ Medication Rule Set

The Rule Set window shown here is used to configure a medication entry for the Plum A+ drug library.
Rule Set Fields

The following table lists the fields, a brief description and allowed value range for the infuser.

Each medication entry must have a generic name and a displayed name; you cannot save a medication entry without a name in these fields. The number of characters in the displayed name is determined by how it is displayed on the infuser’s screen. Depending on character width, the maximum number of characters allowed in a displayed name can vary from 17 to 29.

To avoid potential confusion when creating medication entries, use only the medication name in the Displayed Name field and ensure that the external ID is identical to the external ID used in your institution’s formulary. Do not include the diluent as part of the medication name.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>This is the medication name from your Medication List. It is selected from</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td></td>
<td>the drop-down list and displays the External ID (the hospital's identifier</td>
<td></td>
</tr>
<tr>
<td></td>
<td>for a medication). Strength/Volume and Dosage Form display only if part of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>your Medication List.</td>
<td></td>
</tr>
<tr>
<td>Displayed Name</td>
<td>This is the name that will be displayed on the infuser.</td>
<td>• Varies depending on the character width</td>
</tr>
<tr>
<td></td>
<td>• Cannot be blank</td>
<td><strong>Important:</strong> You cannot use the following characters in the displayed name:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>comma (,), less than (&lt;), greater than (&gt;), single quotation marks ('), inverted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>commas (&quot;), and ampersand (&amp;.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> The display font changes on the Plum A+ infuser for lengthy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>displayed names.</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>The therapeutic class assigned to the medication entries.</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID number for the therapeutic class assigned to the medication entry.</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td>Medication Amount</td>
<td>Allows you to enter the medication amount in the units selected. The</td>
<td>For medication amounts in mcg, mg, grams, mEq, million units, or mmol:</td>
</tr>
<tr>
<td></td>
<td>combination of medication amount, medication unit, and diluent amount</td>
<td>• 0.1–99999 and “Blank”</td>
</tr>
<tr>
<td></td>
<td>creates the medication’s concentration.</td>
<td>For medication amounts in units:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 0.1–99999999 and “Blank”</td>
</tr>
<tr>
<td>Medication Unit</td>
<td>Allows you to select the unit of measure for your medication amount.</td>
<td>mcg, mg, grams, mEq, million units, mmol and units</td>
</tr>
</tbody>
</table>
Step-by-step Procedures

The following section provides step-by-step procedures that will enable you to create and manage medication entries. In this section you will learn how to do the following:

- Add a medication entry with a Full rule set in a CCA
- Add a medication entry with a Limited rule set in a CCA
- Add a medication entry with a Label Only rule set in a CCA
- Edit a medication entry in a CCA
- View a medication entry in a CCA
- Remove a medication entry from a CCA
- Add a medication entry with a Full rule set the Master Drug Formulary
- Add a medication entry with a Limited rule set to the Master Drug Formulary
- Add a Label Only medication entry to the Master Drug Formulary
- Edit a medication entry in the Master Drug Formulary
- View a medication entry in the Master Drug Formulary
- Delete a medication entry from the Master Drug Formulary
- Copy a medication entry from the Master Drug Formulary to a Target CCA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diluent Amount</td>
<td>Allows you to set the diluent amount associated with the medication entry. The diluent amount will vary depending on the container size, overfill, and volume of added solution.</td>
<td>• 0.1–9999 and “Blank”</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>Allows you to set the standard dosing unit for the medication. This will be the default value displayed on the infuser. Once dosing unit and concentration are set in ICU Medical MedNet Meds, they cannot be changed on the infuser by the clinician programming the device.</td>
<td>mL/hr, mcg/kg/min, mcg/kg/hr, mcg/min, mcg/hr, mg/kg/hr, mg/min, mg/hr, grams/hr, ng/kg/min, mmol/min, mmol/hr, mEq/hr, Million units/hr, units/kg/min, units/kg/hr, units/min, units/hr, or mUn/min</td>
</tr>
<tr>
<td>LHL, LSL, USL, UHL</td>
<td>Lower hard limit, lower soft limit, upper soft limit, upper hard limit. Allows you to set the upper and/or lower dose rate limits for the selected medication.</td>
<td>The units for the soft and hard limits are the same as the dosing units selected in the medication rule set. For ng/kg/min, mcg/kg/min, mcg/kg/hr, mcg/min, mcg/hr, mg/min, mg/kg/hr, grams/hr, Million Units/hr, mEq/hr, mmol/min, mmol/hr: • 0.001–999* For mL/hr, mUn/min, units/min, units/hr, units/kg/hr, units/kg/min: • 0.1–999</td>
</tr>
</tbody>
</table>

* Some infusers support a range of 100-9999. Refer to your infuser's System Operating Manual for complete details and allowable range.
Working with CCA Medication Entries (Plum A+)

Note: When adding medication entries to the Target List, both the selected CCA and the Master Drug Formulary are updated. When adding to the Source List, only the Master Drug Formulary is updated.

The maximum number of medication entries allowed in a CCA is 150.

To add a medication entry with a Full rule set in a CCA:

1. Select the desired CCA as the Target List from the drop-down list.

2. From the Target List, click Add.
3. Select the **Generic Name** for the medication entry.

**Note:** Selecting a generic name from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

**Note:** The **Displayed Name** can be altered as desired, for example, to accommodate “Tall Man lettering.” The maximum number of characters in a **Displayed Name** is determined by how it is displayed on the infuser screen. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

**Note:** If the desired generic name is not in the **Generic Name** drop-down list (or if no generic names appear in the list), you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new Medication List via the **Medication Import** function of the ICU Medical MedNet Meds software.

4. The **Displayed Name** can now be changed as desired; for example, to accommodate Tall Man lettering or another unique name.

5. Select **Full** (if not selected) from the **Rule Sets** drop-down list.

6. Select the medication unit and enter a Medication Amount and Diluent Amount (if desired).

7. Select the dosing unit and enter the values for soft and hard limits. (You must specify at least one limit.)

8. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA.
To add a medication entry with a Limited rule set in a CCA:

1. Select the desired CCA as the Target List.

2. From the Target List, click **Add**.

3. Select the Generic Name for the medication entry.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

**Note:** The **Displayed Name** can be altered as desired, for example, to accommodate Tall Man lettering. The maximum number of characters in a **Displayed Name** is determined by how it is displayed on the infuser screen. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

**Note:** If the desired generic name is not in the **Generic Name** drop-down list (or if no generic names appear in the list), you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.
4. The **Displayed Name** can now be changed as desired; for example, to accommodate Tall Man lettering or another unique name.

5. Select **Limited** from the **Rule Sets** drop-down list.

6. Enter the container volume amount (optional).

7. Select mL/hr and enter the values for soft and hard limits. (You must specify at least one limit.)

8. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA.
To add a Label Only rule set medication entry in a CCA:

1. Select the desired CCA as the Target List.

2. From the Target List, click Add.

3. Select the generic name for the medication entry from the drop-down list.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

**Note:** The **Displayed Name** can be altered as desired, for example, to accommodate Tall Man lettering. The maximum number of characters in a **Displayed Name** is determined by how it is displayed on the infuser screen. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

**Note:** If the desired generic name is not in the **Generic Name** drop-down list (or if no generic names appear in the list), you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.
4. The **Displayed Name** can now be changed as desired, for example, to accommodate Tall Man lettering or another unique name.

5. Select **Label Only** from the **Rule Sets** drop-down list.

6. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA.
To edit a medication entry in a CCA:

1. Select the CCA containing the medication entry you want to edit from the drop-down list.

2. From the Target List, select the medication entry you want to edit.
3. Click Edit.

**Helpful Hint:** You can also double-click a medication entry to display the Rule Set dialog box.

4. Make changes as desired.

**Note:** You cannot change the Therapeutic Class or Class ID when editing a medication entry in a CCA.

5. Click Save & Close to save changes.

**Note:** If the medication that is edited is assigned to only one CCA, the medication will also be edited in the Master Drug Formulary. If the medication that is edited is assigned to more than one CCA, a new medication will be created in the Master Drug Formulary.
To view a medication entry in a CCA:

1. Select the CCA containing the medication entry you want to view from the Target List drop-down.

2. From the Target List, select the medication entry you want to view.
3. Click View.

To remove a medication entry from a CCA:

1. Select the CCA containing the medication entry you want to remove from the Target List drop-down.

2. Select the medication entry you want to remove.
3. Click Remove.
4. At the confirmation to remove from the CCA, click **Remove**.
Working with the Master Drug Formulary (Plum A+)

The Master Drug Formulary can contain medication entries not assigned to a CCA, to facilitate later use. The total number of medication entries in the Master Drug Formulary for the Plum A+ infuser cannot exceed 3,510.

To add a medication entry with a Full rule set to the Master Drug Formulary:

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry from the drop-down list.

   **Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

   **Note:** The **Displayed Name** field cannot be left blank. The maximum number of characters in a medication name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

   **Note:** If the desired generic name is not in the **Generic Name** drop-down list, you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.
4. Select **Full** (if not already selected) from the **Rule Sets** drop-down list.

5. Select the **Medication Unit** and enter a **Medication Amount** (optional) and **Diluent Amount** (optional).

6. Select the dosing unit and type the values for soft and hard limits. (You must specify at least one limit.)

7. Click **Save & Add Another** or **Save & Close** to add the medication entry to the Master Drug Formulary.

**Note:** When a medication entry is added to the Master Drug Formulary, it is not assigned to a CCA.
To add a Limited rule set medication entry to the Master Drug Formulary:

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry from the drop-down list.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.

**Note:** The **Displayed Name** field cannot be left blank. The maximum number of characters in a displayed name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

**Note:** If the desired generic name is not in the **Generic Name** drop-down list (or if no generic names appear in the list), you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.
4. Select **Limited** from the **Rule Sets** drop-down list.

5. Type the **Container Volume** amount (optional).

6. Select mL/hr and enter the values for soft and hard limits. (You must specify at least one limit.)

7. Click **Save & Add Another** or **Save & Close** to add the medication entry to the Master Drug Formulary.

**Note:** When a medication entry is added to the Master Drug Formulary, it is not assigned to a CCA.

**To add a Label Only medication entry to the Master Drug Formulary:**

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, click **Add**.

3. Select the Generic Name for the medication entry from the drop-down list.

**Note:** Selecting a **Generic Name** from the drop-down list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and **Class ID** fields.
Note: The **Displayed Name** field cannot be left blank. The maximum number of characters in a displayed name is determined by how it is displayed on the infuser screen after it is downloaded. Depending on character width, the maximum number of characters allowed in a medication name can vary from 17 to 29.

Note: If the desired generic name is not in the **Generic Name** drop-down list (or if no generic names appear in the list), you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new Medication List via the Medication Import function of the ICU Medical MedNet Meds software.

4. Select **Label Only** from the **Rule Sets** drop-down list.
5. Click **Save & Add Another** or **Save & Close** to add the medication entry to the Master Drug Formulary.

Note: When a medication entry is added to the Master Drug Formulary, it is not assigned to any CCA.
To edit a medication entry in the Master Drug Formulary:

1. Select **Master Drug Formulary** as the Source List.

2. From the Source List, select the medication entry you want to edit.

3. Click **Edit**.

   **Helpful Hint:** You can also double-click a medication entry to display the **Rule Set** dialog box.

4. Make changes as desired.

5. Click **Save & Close** to save changes.

**Important:** Changing the dosing unit or medication unit will erase all previously entered limits.

**Note:** When a medication entry is edited, the changes are reflected in the Master Drug Formulary and in all CCAs in which the medication is listed.
To view a medication entry in the Master Drug Formulary:

1. Select **Master Drug Formulary** from the Source List.

2. From the Source List, select the medication entry you want to view.
3. Click **View**.
4. Click **Close** to exit the screen.
To delete a medication in the Master Drug Formulary:

1. Select **Master Drug Formulary** from the Source List.

2. From the Source List, select the medication entry you want to delete.

3. Click **Delete**.
The following pop-up will display only if the medication entry is assigned to one or more CCA.

4. Click **OK**.
To copy to Target CCA:

1. Select a medication entry from the Master Drug Formulary.

**Note:** A Target List CCA must be selected before you can copy a medication entry to a Target CCA from the Master Drug Formulary.

2. Click **Copy to Target CCA**.

3. Click **Copy** on the **Confirm Copy to CCA** pop-up.
Notes:
Chapter 10: LifeCare PCA Medication Entries

Overview

In this chapter you will learn to define clinical decision rules for medications in the LifeCare PCA drug library.

ICU Medical MedNet Meds software enables you to customize dose rate limits for medications used in drug libraries. You can customize clinical decision rules for up to 18 different clinical care areas (CCAs) in the hospital and up to 25 medication entries in each CCA.

Defining Rule Sets

Medication entries in the LifeCare PCA drug library can be created with specific dose rate limits. Selected fields are required and all other fields are optional.

The required fields for a LifeCare PCA medication entry are:

- Generic name
- Displayed name
- Medication amount and unit
- Diluent amount
- One bar code identifier

You can create medication entries by adding them to the Master Drug Formulary or by adding them directly to a CCA. Medication entries added to a CCA are automatically added to the Master Drug Formulary.

Within a CCA, no two medication entries may have exactly the same External ID and Concentration. Also, no two medication entries may have exactly the same Displayed Name and Concentration.

In the Master Drug Formulary, two medication entries may have the same displayed name, medication amount, medication unit, diluent amount, and dosing units as long as one or more of the limits for loading dose, PCA dose, continuous rate, and dose limit are different:

- Lower soft limit (LSL)
- Lower hard limit (LHL)
- Upper soft limit (USL)
- Upper hard limit (UHL)
Setting Dose Limits

ICU Medical MedNet Meds allows you to define dose rate limits for the loading dose, PCA dose, continuous rate, and dose limit. It is important that you understand how the limits function so please read this section carefully.

You can define upper and lower soft and hard limits as part of the rule set for each medication entry you create in the library. As you configure the limits, the software enforces the following rules:

Lower Hard Limit (LHL) < Lower Soft Limit (LSL) ≤ Upper Soft Limit (USL) < Upper Hard Limit (UHL)

Soft limits are dose rate limits that can be overridden when programming the infuser. When a value entered on the infuser is lower than the lower soft limit or higher than the upper soft limit, the infuser displays a soft limit override confirmation message. The infuser records soft limit alerts and the users’ responses to the alerts to its history logs.

For example, if the upper soft limit is set to 1.8 mg and the clinician enters 2 mg, the infuser will display a soft limit override alert. This alert notifies the clinician that the entry is outside the range of the soft limits set for that medication in the drug library. The clinician can choose to continue programming using the override, or cancel the override and edit the value. The alert and the clinician’s response are recorded in the infuser’s history log.

Hard limits are dose rate limits that cannot be overridden; the infuser cannot be programmed with a rate that is lower than a lower hard limit or higher than an upper hard limit. Hard limit alerts are recorded in the infuser’s history log.

If a Lower Hard Limit (LHL) or an Upper Hard Limit (UHL) are not specified in the rule set, the prescription drug limits will function as the LHL or UHL.
Medication Entry Rules and Conventions

The ICU Medical MedNet Meds software uses the following conventions for the LifeCare PCA medication entries:

- Entry of upper hard and soft limits and lower hard and soft limits is optional, not required.
- You can create medication entries by adding them to the Master Drug Formulary or by adding them directly to a CCA. Medication entries added to a CCA Target List are automatically added to the Master Drug Formulary List.
- “Validity” messages appear in red at the bottom of the Rule Set window. When you enter a value that is not allowed, the message specifies the defined range for the field, or the reason the value is not permitted.
- Displayed Name cannot contain comma (,) or double-quote (”) characters. Most other special characters, as well as all alphabetic and numeric characters, are acceptable.
- Once you select a medication unit, the dosing unit field will display only the enabled unit type.
- The software prohibits invalid numeric entries and signals such with an audible “beep.”
- You may use the vertical and horizontal scroll bars to navigate to an entry.
- If you do not select or populate a required field, an error message appears.
- When you highlight an entry on the Drug Library Management list view, buttons or features that are not allowed appear as “grayed” or disabled.
- When you add a new medication in the Generic Name field of the rule set window, you may search for a medication by typing the first few characters of its generic name. The drop-down list will navigate to show any matching medications.
The LifeCare PCA Medication Rule Set

The Rule Set window, seen below, enables you to configure a medication entry for the LifeCare PCA drug library.
# Rule Set Fields

The following table lists the fields, a brief description, and allowed value range for the infuser.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>The medication name from your Medication List. It is selected from the drop-down list and displays the External ID (the hospital's identifier for a medication). Strength/Volume and Dosage Form display if defined in the Medication List.</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td>Displayed Name</td>
<td>The name that will be displayed on the infuser.</td>
<td>• Varies depending on the character width&lt;br&gt;• Cannot be blank&lt;br&gt;Displayed Name cannot contain comma (,) or double-quote (“”) characters. All alphabetic and numeric characters are acceptable.</td>
</tr>
<tr>
<td>Therapeutic Class</td>
<td>The therapeutic class assigned to the medication entry.</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td>Class ID</td>
<td>The ID of the therapeutic class assigned to the medication entry.</td>
<td>Not editable in the Rule Set</td>
</tr>
<tr>
<td>Medication Amount</td>
<td>Allows you to enter the medication amount in the units selected.</td>
<td>• For mg: 0.1–999.9&lt;br&gt;• For mcg: 1–15,000</td>
</tr>
<tr>
<td>Medication Unit</td>
<td>Allows you to select the unit of measure for your medication amount.</td>
<td>mcg or mg</td>
</tr>
<tr>
<td>Diluent Amount</td>
<td>Allows you to set the total volume of the PCA vial.</td>
<td>1–30 mL</td>
</tr>
<tr>
<td>Displayed Concentration</td>
<td>The concentration of medication per mL.</td>
<td>Calculated by the software as Medication Amount divided by Diluent Amount</td>
</tr>
<tr>
<td>Bar Codes</td>
<td>Allows you to enter up to five (5) different bar codes for each medication entry.</td>
<td>• Numeric or alphanumeric&lt;br&gt;• Each bar code must be unique.&lt;br&gt;• At least one bar code is required.&lt;br&gt;• The printed bar code length must be less than 4.2 cm (about 16-17 characters in a typical font).&lt;br&gt;• Enter the bar code value without any space or punctuation characters such as parentheses.</td>
</tr>
<tr>
<td>Dosing Unit</td>
<td>The dosing unit for the medication.</td>
<td>The dosing unit field automatically populates once the medication unit is selected</td>
</tr>
<tr>
<td>Dose Limit</td>
<td>Allows you to specify the amount of medication that can be administered via PCA dose and continuous delivery in a rolling time period.</td>
<td>• Choices include one (1), four (4), six (6), or twelve (12) hours.&lt;br&gt;• Default time interval = four (4) hours (required).</td>
</tr>
</tbody>
</table>
Chapter 10: LifeCare PCA Medication Entries

The LifeCare PCA Infuser enforces Prescription Delivery limits for Loading Dose, PCA Dose, Continuous Rate, and Dose Limit. The exact limits enforced depend on the concentration of the medication. See the LifeCare PCA System Operating Manual for additional information.

**Note:** Drug and concentration selections are rounded up to the nearest tenth of a digit for mg/mL values or to the nearest digit for mcg/mL values. Minimum delivery rate is 0.1 mL/hr for concentrations between 0.1 and 1.0 mg/mL.

<table>
<thead>
<tr>
<th>Concentration (C)</th>
<th>Loading Dose</th>
<th>PCA Dose</th>
<th>Continuous Rate (per hr)</th>
<th>1 Hour Limit</th>
<th>4 Hour Limit</th>
<th>6 Hour Limit</th>
<th>12 Hour Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1–50 mg/mL</td>
<td>[0.1-10] x C</td>
<td>[0.1-5] x C</td>
<td>[0.1-20] x C</td>
<td>[0.1-20] x C</td>
<td>[0.1-80] x C</td>
<td>[0.1-120] x C</td>
<td>[0.1-240] x C</td>
</tr>
<tr>
<td>1-500 mcg/mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Rule Set window displays the Prescription Delivery Limits next to each rule set type (Loading Dose, PCA Dose, Continuous Rate, and Dose Limit) once a medication has been selected and its concentration has been defined.

These limits are enforced by the infuser as hard limits, regardless of whether hard limits have been explicitly defined in ICU Medical MedNet Meds. ICU Medical MedNet Meds prevents the user from entering a hard limit value which will violate these limits.

**Note:** ICU Medical MedNet Reports will contain data for hard limits alerts encountered by the user regardless of whether the limit is one that is explicitly defined in ICU Medical MedNet Meds or one that is enforced by the infuser.
Navigate to the LifeCare PCA Rule Set Window

The procedures in this chapter begin at the Rule Set window. To navigate to the Rule Set window, follow the path listed below:

Library Directory -> Drug Library Worksheet - LifeCare Infuser Type -> Drug Library Management view

Step-by-step Procedures

The following section provides step-by-step procedures that will enable you to create and manage medication entries. In this section you will learn to do the following:

- Add a medication entry in a CCA
- Edit a medication entry in a CCA
- View a medication entry in a CCA
- Remove a medication entry from a CCA
- Add a medication entry in the Master Drug Formulary
- Edit a medication entry in the Master Drug Formulary
- View a medication entry in the Master Drug Formulary
- Delete a medication entry from the Master Drug Formulary
- Copy a medication entry from the Master Drug Formulary to a Target CCA

To display the Rule Set window, open a Worksheet and click Add or Edit. (For instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35.)

To add a medication entry in a CCA:

1. Select the desired CCA as the Target List.
2. From the Target List, click Add.
3. Highlight a medication from the **Select a Medication** screen.

![Select a Medication](image)

**Note:** Selecting a **Generic Name** from the medication list automatically populates the **Displayed Name**, **External ID**, the **Therapeutic Class**, and the **Class ID** fields.

4. Click **Select Medication** to access the Rule Set.

![Rule Set](image)

**Note:** The **Displayed Name** can be edited once populated. The maximum number of characters in the **Displayed Name** is determined by how it is displayed on the infuser screen. Depending on character width, the maximum number of characters allowed in the displayed name can vary from 10 to 16.
5. You can edit the Medication Amount, the Medication Unit, and the Diluent Amount. The Displayed Concentration is calculated based on the data entered into these fields.

**Note:** The dosing units for Loading Dose, PCA Dose, Continuous Rate, and Dose Limit automatically populate after the medication unit is selected.

6. Enter the bar codes for the medication. At least one bar code is required to save the medication entry.

**Note:** You can use a PC-based bar code scanner (one that attaches to the PC via a “keyboard wedge”) in order to populate the bar code value. To do this, select a bar code field and scan the bar code on the medication vial. The scanner will read the medication bar code and populate the bar code field with the scanned value.

7. Enter soft and hard limits for Loading Dose (optional).
8. Enter soft and hard limits for PCA Dose (optional).

**Note:** The minimum and maximum values for the lockout intervals automatically populate based on the range defined for the CCA.

9. Enter soft and hard limits for Continuous Rate (optional).
10. Enter the time interval and upper soft or hard limits for Dose Limit (optional).

**Note:** When a soft or hard Dose Limit is entered, the clinician MUST always enter a Dose Limit on the infuser during programming.

11. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA.

**To edit a medication entry in a CCA:**

1. Select the CCA containing the medication entry you want to edit from the **Target List** drop-down.
2. From the Target List, select the medication entry you want to edit.

3. Click **Edit**.

**Helpful Hint:** You can also double-click a medication entry to display the **Rule Set** dialog box.
Note: A Medication Rule Set can be edited once a medication is assigned to a protocol without having to delete the protocol. However, if the rule set is being used by one or more protocols; medication, concentration, and time interval information cannot be edited.

4. Make changes as needed.

Note: You cannot change the Therapeutic class or the Class ID when editing a medication entry in a CCA.

5. Click **Save & Close** to save your changes.

Note: If the medication is assigned to another CCA, a new medication is created in the Master Drug Formulary. If the medication is not assigned to another CCA, the changes are applied to both the medication in the CCA and the medication in the Master Drug Formulary.
To view a medication entry in a CCA:

1. Select the CCA containing the medication entry you want to view from the **Target List** drop-down.
2. Select a medication.
3. Click **View**.
4. Click **Close** to exit the screen.
To remove a medication entry from a CCA:

1. Select the CCA containing the medication entry you want to remove from the Target List drop-down.

2. Select a medication.
3. Click Remove.

4. Click Remove on the Confirm Remove from CCA pop-up.

Note: The medication entry is not removed from the Master Drug Formulary.
Working with the Master Drug Formulary

The Master Drug Formulary can contain medication entries not assigned to a CCA, to facilitate later use. The maximum number of medication entries in the Master Drug Formulary is 585, of which 100 unique medication entries can be assigned to CCAs. For example, Morphine 1 mg/mL would be considered as one unique medication entry whether it is assigned to one or more CCAs.

Note: Refer to Rule Set Fields on page 205 for information on allowable ranges.

To add a medication entry in the Master Drug Formulary:

1. Select Master Drug Formulary as the Source List.
2. From the Source List, click Add.
3. Highlight a medication from the Select a Medication screen.

Note: Selecting a Generic Name from the medication list automatically populates the Displayed Name, External ID, the Therapeutic Class, and the Class ID fields.

4. Click Select Medication to access the Rule Set.

Note: Selecting a Generic Name from the medication list automatically populates the Displayed Name, External ID, the Therapeutic Class, and the Class ID fields.
5. Enter the Medication Amount, select the Medication Unit, and enter the Diluent Amount. The displayed concentration is calculated based on the data entered into these fields.

Note: The dosing units for Loading Dose, PCA Dose, Continuous Rate, and Dose Limit automatically populate after the medication unit is selected.

6. Enter the bar codes for the medication. At least one bar code is required to save the medication entry.

7. Enter soft and hard limits for Loading Dose (optional).

8. Enter soft and hard limits for PCA Dose (optional).

Note: The minimum and maximum values for the lockout intervals automatically populate based on the range defined for the CCA.

9. Enter soft and hard limits for Continuous Rate (optional).

10. Enter the time interval and soft and hard limits for Dose Limit.
Working with the Master Drug Formulary

Chapter 10: LifeCare PCA Medication Entries

**Note:** The clinician is prompted on the infuser to enter a **Dose Limit** for the time interval selected.

11. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA.

**Note:** When a medication entry is added to the Master Drug Formulary, it is not assigned to a CCA.

**To edit a medication entry in the Master Drug Formulary:**

1. Select **Master Drug Formulary** from the Source List.
2. From the Source List, select the medication entry you want to edit.
3. Click **Edit**.

**Helpful Hint:** You can also double-click a medication entry to display the **Rule Set** dialog box.
4. Make any desired changes.

**Note:** You cannot change the Therapeutic class or the Class ID when editing a medication entry in the Master Drug Formulary.

5. Click **Save & Close** to save your changes.

**Note:** When a medication entry is edited, the changes are reflected in the Master Drug Formulary and in all CCAs in which the medication is listed.

**To view a medication entry in the Master Drug Formulary:**

1. Select **Master Drug Formulary** from the Source List.
2. From the Source List, select the medication entry you want to view.
3. Click **View**.
4. Click **Close** to exit the screen.

To delete a medication entry from the Master Drug Formulary:

1. Select **Master Drug Formulary** from the Source List.

2. From the Source List, select the medication entry you want to delete.
3. Click **Delete**.

4. Click **OK** on the **Delete Medication** pop-up.

**Note:** If the selected medication is not attached to a CCA, the medication entry will be removed from the Master Drug Formulary and no pop-up will display.
To copy to Target CCA:

1. Select a medication entry from the Master Drug Formulary.

   **Note:** A Target List CCA must be selected before you can copy a medication entry to a Target CCA from the Master Drug Formulary.

2. Click **Copy to Target CCA**.

3. Click **Copy** on the **Confirm Copy to CCA** pop-up.
Notes:
Chapter 11: Setting Up LifeCare PCA Protocols

Overview

Note: Only users with the appropriate login privileges are able to setup LifeCare PCA Protocols.

Protocols are frequently used therapy settings stored in the infuser’s memory. Protocols can be recalled easily, making it unnecessary for the clinician to program the same therapy setting each time it is needed. You can define up to five protocols for each Clinical Care Area (CCA). The same protocol may be used across CCAs.

Note: First, create a medication entry in the CCA before you define a protocol for that medication.

To add a protocol for a medication entry:

1. Display the Protocols view by opening a Worksheet for editing and clicking the Protocols tab (for instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).

2. Under Target List, select a CCA from the drop-down list.

3. Click Add.
4. Select a medication entry.

5. Click **OK**.

6. Enter a **Protocol Number** or accept the default number.

   ![Image of the protocol creation interface]

   **Note:** The protocol number must be unique and cannot be re-used within a drug library. The protocol name, however, can be a duplicate within a drug library.

7. Enter a **Protocol Name**.

   **Note:** The Protocol Name is not displayed on the LifeCare PCA infuser.
8. Select a **Delivery Mode** from the following choices:
   a. PCA
   b. PCA + Continuous
   c. Continuous

9. Based on the delivery mode you have chosen, enter variables for the enabled fields. All enabled fields are required.

10. Click **Save**.

**Note:** All protocol dosing must be equal to or within the soft limits of the rule set for that medication and concentration (as shown in the **Medication Entry Limits** table). Values must be in the range allowed by the infuser, or an error message appears.

**To edit a protocol:**

1. From a Target List CCA, select the protocol to edit.

2. Click **Edit**.
3. Enter the desired changes.
4. Click **Save**.

**Note:** All protocol dosing must be equal to or within the soft limits of the rule set for that medication and concentration (as shown in the **Medication Entry Limits** table). Values must be in the range allowed by the infuser, or an error message appears.
To view a protocol:

1. From a Target List CCA, select the protocol to view.
2. Click View.

The selected protocol displays.
3. Click Close to exit the screen.

To remove a protocol from a CCA:

1. From a Target List CCA, select the protocol to be removed.
2. Click Remove from CCA.
3. Click **Remove** on the **Confirm Remove Protocols from CCA** pop-up.

To add a protocol to the Master Protocol List:

1. Display the Protocols view by opening a Worksheet for editing and clicking the **Protocols** tab (for instructions on opening a Worksheet, see **Chapter 5: The Library Directory** on page 35).

2. Under **Source List**, select the **Master Protocol List** from the drop-down list.
3. Click **Add**.
4. Select a medication entry.

5. Click **OK**.

6. Enter a **Protocol Number** or accept the default number.

Note: The protocol number must be unique and cannot be re-used within a drug library. The protocol name, however, can be a duplicate within a drug library.

7. Enter a **Protocol Name**.

Note: The Protocol Name is not displayed on the LifeCare PCA infuser.
8. Select a **Delivery Mode** from the following choices:
   a. PCA
   b. PCA + Continuous
   c. Continuous

9. Based on the delivery mode you have chosen, enter variables for the enabled fields. All enabled fields are required.

10. Click **Save**.

**Note:** All protocol dosing must be equal to or within the soft limits of the rule set for that medication and concentration (as shown in the **Medication Entry Limits** table). Values must be in the range allowed by the infuser, or an error message appears.

**To edit a protocol in the Master Protocol List:**

2. Click **Edit**.
3. Enter the desired changes.

4. Click **Save**.

**To view a protocol in the Master Protocol List:**

1. Select the protocol to view.
2. Click **View**.
The selected protocol displays.

3. Click Close to exit the screen.

To delete a protocol from the Master Protocol List:

1. Select the protocol to delete.
2. Click Delete from Master Protocol List.
3. Click **Remove** on the **Confirm Remove Protocols from CCA** pop-up.

![Delete Protocol dialog box with text: Deleting this protocol will remove it from the master protocol list as well as from the following CCAs: 4 South.]

4. Click **OK**.

**Note:** If the selected protocol is not associated with a CCA there will be no confirmation message. The protocol is removed from the Master Protocol list.

**To copy a protocol to a CCA:**

- **Note:** Once a protocol has been entered and saved, the protocol is available for duplication to other CCAs using the **Copy from Master Protocol List** button.

1. Select a CCA from the **Target List** drop-down list.
2. Select a protocol to be copied from the **Source List** to the selected CCA.

**Note:** A protocol can only be copied to a CCA if a medication entry with the same Generic Name, External ID, Container Concentration, and Time Interval exists in the CCA you are copying to.

3. Click **Copy to Target CCA**.
4. Click **Copy** in the **Confirm Copy Protocol to CCA** pop-up.
Chapter 12: SapphirePlus Medication Entries

Overview

This chapter explains how to create and define clinical decision rules for medications in the SapphirePlus drug library.

The ICU Medical MedNet Meds software enables you to customize dose-rate limits for medications used in drug libraries. You can customize clinical decision rules for up to 40 different clinical care areas (CCAs) in the hospital and up to 400 medication entries in each CCA. The Master Drug Formulary can contain a maximum of 14,495 medication entries but can only assign up to 11,150 medication entries to the combined CCAs.

Defining Rule Sets

To create a rule set for a medication, specify the name of the medication, the concentration, dose rate limits, and bolus limits consistent with your IV infusion therapy best practices. Each medication entry must have a generic name and a displayed name. Beyond that, you can create medication entries specific to your institution.

Important: The medication entry parameters are linked together and the programming sequence displayed on the infuser is dependent on how the rule set is defined. Please read this section carefully.

The possible combinations for medication concentration include:

- Complete concentration defined (for example, 400 mg/250 mL)
- Partial concentration defined (for example, 400 mg/__ mL, __mg/__ mL, __mg/250 mL)
- No Concentration
- Diluent Only

Once the medication unit has been selected, the units displayed in the drop-down list for dose rate limits, bolus amount limits, and bolus dose rate limits will include only the selections that are appropriate for that medication unit. For example, when the medication unit is grams, mg, or mcg, all the dosing units will be in the gram “family.”

Another characteristic of IV medication administration relates to administering a bolus dose. The ICU Medical MedNet Meds software accommodates defining limits for bolus administration by allowing three types of bolus rules to be configured independently:

- Bolus amount limits
- Bolus time limits
- Bolus dose rate limits

Bolus limits must be defined in the same unit “family” as the medication unit.

Within a CCA, no two medication entries may have exactly the same External ID and Concentration. Also, no two medication entries may have exactly the same Displayed Name and Concentration. These represent the two unique combinations.
In the Master Drug Formulary, two medication entries may have the same displayed name, medication amount, medication unit, diluent amount, and dosing units, as long as one or more attributes of the dose rate limits or bolus dose rate limits are different.

**Complete Concentration**

To create a medication entry with a specific concentration defined, enter the medication amount, medication unit, and diluent amount.

The clinician will not be able to change the concentration on the infuser for this medication.

![Source List: Edit Rule Set](image)

**Note:** Please consult the Q Core SapphirePlus User Manual for the infuser’s detailed information and functionality.
Partial Concentration

To create a medication entry with a partial concentration defined, you must select the desired medication unit. The other concentration fields are optional. Leaving the medication amount or the diluent amount blank allows the clinician to enter a non-standard concentration at the time of programming.

**Note:** Please consult the Q Core SapphirePlus User Manual for the infuser’s detailed information and functionality.
No concentration

To create a medication entry with no concentration defined, check “No Concentration.” The corresponding concentration fields will be grayed out. This type of rule set is useful when you simply want the name of the medication to display on the infuser and concentration or diluent volume is not appropriate for that medication.

Note: Please consult the Q Core SapphirePlus User Manual for the infuser’s detailed information and functionality.
Diluent Only

To create a Diluent Only medication entry, check “Diluent Only.” You may enter a specific diluent volume or leave the field blank. The clinician will be prompted to enter the diluent volume when programming the infuser if you leave the field blank. This type of rule set is useful for solutions like Dextrose 5% in Water, TPN, and others where the medication amount is not pertinent.

**Note:** Please consult the Q Core SapphirePlus User Manual for the infuser’s detailed information and functionality.
Setting Limits

ICU Medical MedNet Meds allows you to define dose rate limits, and bolus limits for medications infused through the SapphirePlus infuser.

You can define upper and lower soft and hard limits as part of the rule set for each medication entry created in the library. As you configure the limits, the software enforces the following rules:

\[
\text{Lower Hard Limit (LHL)} \leq \text{Lower Soft Limit (LSL)} \leq \text{Upper Soft Limit (USL)} \leq \text{Upper Hard Limit (UHL)}
\]

**Soft Limits** are dose rate limits that can be overridden when programming the infuser. When a value entered on the infuser is lower than the lower soft limit or higher than the upper soft limit, the infuser displays a soft limit override confirmation message. The infuser records soft limit overrides.

For example, if the upper soft limit is set to 10 mcg/kg/min and the clinician enters 15 mcg/kg/min, the infuser will display a soft limit override alert. This alert notifies the clinician that the entry is outside the range of the soft limits set for that medication in the drug library. The clinician can choose to continue programming using the override or cancel the override and edit the value.

**Hard Limits** are dose rate limits that cannot be overridden.

**Bolus Limits** can be defined in three ways:

- **Bolus Amount Limits** allow you to define the total amount of medication that can be administered in a bolus.
- **Bolus Time Limits** allow you to define the time period over which a bolus can be administered. A minimum administration time for the bolus is defined as a lower limit, while a maximum administration time is defined as an upper limit.
- **Bolus Dose Rate Limits** allow you to define the rate at which a bolus can be administered.

**Note:** If defining Bolus Rules by weight:
The Bolus Dose Rate limits can be defined based on weight only if the Bolus Amount units are also based on weight.
SapphirePlus Therapy Modes

Programming workflow on the SapphirePlus infuser requires the user to select a CCA. The user can then proceed to select the medication, enter the infusion settings (rate, volume, time, patient weight, as appropriate), confirm and start the infusion.

The SapphirePlus drug library contains settings that control which therapy modes are available on the infuser for each medication entry. In the medication rule set view, checkboxes are used to enable each of the following therapy modes:

- **Basic (Continuous):** Allows the user to program the medication as a primary infusion.
- **Bolus:** Allows the user to program a bolus delivery from either a primary or secondary infusion.
- **Piggyback (Secondary):** Allows the user to program an infusion from a secondary container once a primary infusion has been programmed.

 **Note:** The maximum rate for a piggyback infusion from a secondary container is 500 mL/hr.

- **Multistep:** Allows the user to program an infusion with up to 25 sequential steps.
Medication Entry Rules and Conventions

The ICU Medical MedNet Meds software uses the following conventions for SapphirePlus medication entries:

- Entry of upper hard and soft limits, and lower hard and soft limits, is optional, not required.
- Medication entries can be created by adding them to either the Master Drug Formulary or directly to a CCA. Medication entries added to a CCA Target List are automatically copied into the Master Drug Formulary List.
- “Validity” messages appear in red at the bottom of the Rule Set window. When you enter a value that is not allowed, the message specifies the defined range for the field, or the reason the value is not permitted.
- Displayed Name cannot contain comma (,), double-quote (“”) lesser than (<) or greater than (>) characters. All alphabetic and numeric characters are acceptable as are the following: . % / # * - _ & ( ) + SPACE

For SapphirePlus 14.x, the Displayed Name may appear on the infuser in two consecutive lines. Therefore, ICU Medical MedNet Meds reflects the infuser by showing two Displayed Name fields allowing for 40 characters that can be entered two ways, as shown below for Amino Acid 2% Dextrose 10%:

In the first Displayed Name you could have **Amino Acid 2%** -
and then you would type
**Dextrose 10%** in the Displayed Name (Optional) field

or split it as follows:
**Amino** in the first Displayed Name field
**2%** - **Dextrose 10%** in the Displayed Name (Optional) field

The **Displayed Name** field must contain an entry of at least one character. The **Displayed Name (optional)** field can remain empty.

- Once you select a medication unit, the dosing unit field will display only the enabled unit type.
- The software prohibits invalid numeric entries and signals them with an audible “beep.”
- You may use the vertical and horizontal scroll bars to navigate to an entry.
- If you do not select or populate a required field, an error message appears.
- When you highlight an entry on the Drug Library Management list view, buttons or features that are not allowed appear as “grayed” or disabled.
- When you add a new medication in the Generic Name field of the Rule Set window, you may search for a medication by typing the first few characters of its generic name. The drop-down list will navigate to show any matching medications.
The SapphirePlus Medication Rule Set

When you configure a medication for use in the SapphirePlus drug library, the Rule Set window enables you to define dosage limits as seen in the screen below.

SapphirePlus 14.0
Chapter 12: SapphirePlus Medication Entries

SapphirePlus 14.5

Target List: Add Rule Set

Medication and Concentration

Generic Name: (External ID) (Strength / Volume) (Dosage Form):

Amiodarone Max Con (10)

Displayed Name 1:

Therapeutic Class:

Class ID:

Summary: Amiodarone ___ / ml Dosed in ___

Diluent Only

Medication Amount: Medication Unit: Diluent Amount: ml

Select

Dose Rate Limits

Dosing Unit: U/mL: L/mL: USL: U/mL:

Maximum Dose Rate Unit: Maximum Dose Rate:

Time Limits (Nominal):

U/mL: L/mL: USL: U/mL:

Bolus: Disabled Simple Advanced

Bolus Amount Limits

Unit: U/mL: L/mL: USL: U/mL:

Maximum Bolus Amount:

Bolus Time Limits (Nominal)

U/mL: L/mL: USL: U/mL:

Bolus Dose Rate Limits

Dosing Unit: U/mL: L/mL: USL: U/mL:

Please specify Medication Unit.

Therapies

Basic (Continuous)

Ropivacaine (Secondary)

MultiStep

Delivery at End of Infusion

None / Stop

Continue Rate

KVO

Default KVO Rate: 1 [0.1 - 20 mL/h]

Patient Weight

Minimum: 0.1 [0.1 - 100 kg]

Maximum: 500 [1 - 500 kg]

Other Settings

Enable Automatic Patient Lockout

Save & Add Another  Save & Close  Cancel  Help
## Rule Set Fields

The following table lists the fields, a brief description, and allowed value range for the infuser.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Name</td>
<td>The medication name from the Medication List. It is selected from the drop-down list and displays the External ID (the hospital’s identifier for a medication). Strength/Volume and Dosage Form display only if part of your Medication List.</td>
<td>Not editable in ICU Medical MedNet Meds.</td>
</tr>
</tbody>
</table>
| Displayed Name         | The name that will be displayed on the infuser.                               | • Cannot be blank  
                          |                                                                              | • Each medication entry must have a generic name and a displayed name; you cannot save a medication entry without a name in these fields. The number of characters in the displayed name is determined by how it is displayed on the infuser’s screen.  
                          |                                                                              | • The maximum number of characters allowed in a displayed name is 40 (SapphirePlus 14.0 and 14.5) when using both Displayed Name fields.  
                          |                                                                              | • Displayed Name cannot contain comma (,), lesser than (<), greater than (>), or double-quote (“”) characters. All alphabetic and numeric characters are acceptable as are . % / # * - _ & ( ) + SPACE  
                          |                                                                              | SapphirePlus 14.5 only allows: lesser than (<), greater than (>), and equal (=). |
| Therapeutic Class      | The therapeutic class assigned to the medication.                             | Not editable in ICU Medical MedNet Meds.                                         |
| Class ID               | The ID of the therapeutic class assigned to the medication.                  | Not editable in ICU Medical MedNet Meds.                                         |
| No Concentration       | Allows you to create an entry for medications when concentration is not needed. | Checked or Unchecked                                                             |
| Diluent Only           | Allows you to create a medication entry for plain IV solutions or those IV fluids where concentration is not important in defining the rule set, i.e., when dosing units are mL/kg/hr or mL/hr. | Checked or Unchecked                                                             |
| Medication Amount      | Allows you to enter the medication amount in the units selected.             | mcg, mg, grams, mmol, Million Units, milliUnits, units, mEq  
                          |                                                                              | For SapphirePlus 14.0:  
                          |                                                                              | • 0.01-99.99 in increments of 0.01  
                          |                                                                              | • 100-9999999 in increments of 1  
                          |                                                                              | For SapphirePlus 14.5:  
                          |                                                                              | • 0.001-9.999 in increments of 0.001  
                          |                                                                              | • 10.00-99.99 in increments of 0.01  
                          |                                                                              | • 100-9999999 in increments of 1 |
### Chapter 12: SapphirePlus Medication Entries

The SapphirePlus Medication Rule Set

#### Field Description Allowable Range

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication Unit</td>
<td>Allows you to select the unit of measure for the medication amount.</td>
<td>mcg, mg, grams, mmol, Million Units, milliUnits, units, mEq. For SapphirePlus 14.0 and 14.5 only: nanog</td>
</tr>
</tbody>
</table>
| Diluent Amount                 | Allows you to set the total volume of the medication container or syringe. | For mL:  
  - 0.1-99.9 mL in increments of 0.1  
  - 100-9999 mL in increments of 1 |
| Dosing Unit                   | The dosing unit for the medication. | For complete dosing units, please consult your infuser’s System Operating Manual |
| Dose Rate Limits              | Lower hard limit, lower soft limit, upper soft limit, upper hard limit. | For complete dose rate limits, please consult your infuser’s System Operating Manual |
|                               | Allows you to set the upper and/or lower limits for dose rate, VTBI, bolus amount, bolus time, and bolus dose rate. |  
| Maximum Dose Rate Unit (SapphirePlus 14.5 only) | This field is only enabled when the Dosing Unit selected is weight-based. | For complete maximum dose rate limits, please consult your infuser’s System Operating Manual |
| Maximum Dose Rate (SapphirePlus 14.5 only) | Allows you to set a maximum dose for the Dose Rate Unit selected. | For maximum dose rates, please consult your infuser’s System Operating Manual |
| Time Limits (hh:mm) (SapphirePlus 14.5 only) | Lower hard limit, lower soft limit, upper soft limit, upper hard limit. | Using hh:mm formatting, the range is:  
  - 00:01-99.59 in increments of 00:01 |
| Therapies                     | Therapies allowed for the drug entry. Choosing one of these determines where the drug is listed on the infuser. | • Basic (Continuous)  
  • Piggyback (Secondary)  
  • Multistep |
| Enable Bolus                  | Indicates this medication will be available for a bolus therapy on the infuser and may be administered as a bolus that is independent of the limits governing a basic infusion. | For SapphirePlus 14.0 and 14.5 Disabled, Simple, or Advanced |
| Bolus Amount Limits\(^1\)     | Allows you to define the total amount of medication that can be administered in a bolus. | For mL:  
  - 0.1-99.9 in increments of 0.1  
  - 100-9999 in increments of 1  
For nanog, mcg, mg, gram, milliUnits- and units-based, Million Units, mEq, mmol:  
  - 0.001-99.999 in increments of 0.001  
  - 100-9999999 in increments of 0.1 |

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Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Bolus Amount and Units</strong></td>
<td>Enabled when the selected Bolus Amount Limits Unit is weight-based.</td>
<td>See Bolus Amount Limits.</td>
</tr>
<tr>
<td></td>
<td>If the Bolus Amount Limits Unit is not mL/kg, the allowable values are the same as those in the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>selected Bolus Amount Limits Unit family (mmol, mEq, Units, or grams), and exclude weight-based.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If the Bolus Amount Limits Unit is mL/kg, the Maximum Bolus Amount Units are mL.</td>
<td></td>
</tr>
<tr>
<td><strong>Bolus Time</strong></td>
<td>Allows you to define the time period over which a bolus can be administered, in hh:mm format.</td>
<td>Entered Time:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 00:01-99:59 in increments of 00:01</td>
</tr>
<tr>
<td><strong>Bolus Dose Rate</strong></td>
<td>Allows you to define the rate at which a bolus can be administered.</td>
<td>For mL family (Basic, Multistep and Bolus):</td>
</tr>
<tr>
<td><strong>Limits</strong></td>
<td></td>
<td>0.1-9.9 in increments of 0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-999 in increments of 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For mL (Piggyback only):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1 - 99.9 in increments of 0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 - 500 in increments of 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For the following families: grams, units, Million Units, mEQ-based, and mmol:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.001-99.999 in increments of 0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-9999999 in increments of 1</td>
</tr>
<tr>
<td><strong>Delivery at End of Infusion</strong></td>
<td>None/stop, Continue Rate or KVO (Default KVO Rate: 0.1-20 mL/hr)</td>
<td></td>
</tr>
<tr>
<td><strong>Patient Weight</strong></td>
<td>Allows you to set minimum and maximum patient weight for the selected medication</td>
<td>Minimum</td>
</tr>
<tr>
<td><strong>(SapphirePlus 14.5 only)</strong></td>
<td></td>
<td>0.1 - 500 kg (Default: blank)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maximum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1 - 500 kg (Default: blank)</td>
</tr>
<tr>
<td><strong>Other Settings</strong></td>
<td>Prevents patient from affecting the rule set.</td>
<td>Check or uncheck.</td>
</tr>
<tr>
<td><strong>Enable Automatic Patient Lockout</strong></td>
<td></td>
<td><strong>Note:</strong> The field is disabled if “Enable Automatic Patient Lockout” has been selected in CCA settings.</td>
</tr>
<tr>
<td><strong>(SapphirePlus 14.5 only)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Visible only when Bolus is enabled.

Refer to your infuser's System Operating Manual for complete details and allowable range.

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Note: For a list of ICU Medical MedNet compatible devices approved by country, refer to the ICU Medical MedNet Device Compatibility Matrix available through your ICU Medical Technical Support Center.
Step-by-step Procedures

The following section provides step-by-step procedures that enable you to create and manage medication entries. In this section you will learn how to do the following:

- Add a medication entry in a CCA
- Edit a medication entry in a CCA
- Create a medication entry in the Master Drug Formulary
- Edit a medication entry in the Master Drug Formulary
- View a medication entry in the Master Drug Formulary
- Delete a medication entry from the Master Drug Formulary
- Copy a medication entry from the Master Drug Formulary to a Target CCA

**To add a medication entry in a CCA:**

1. Select the desired CCA from the drop-down Target List.
2. Click **Add**, from the Target List.
3. Select the **Generic Name** for the medication entry from the medication list.

4. Click **Select Medication**.

   **Note:** Selecting a **Generic Name** from the medication list automatically populates the **Displayed Name**, **External ID**, **Therapeutic Class**, and the **Class ID** fields.
5. The **Displayed Name** can be edited once populated. You can either accept or edit the Displayed Name before continuing. For **SapphirePlus 14.0 and SapphirePlus 14.5**, the maximum number of characters in the **Displayed Name** is 40 when using the two available fields.

6. Configure the desired concentration values by either:
   a. Checking **No Concentration**, or
   b. Checking **Diluent Only**, or
   c. Entering/selecting values for **Medication Amount**, **Medication Unit**, and **Diluent Amount**.

7. Set the **Dose Rate Limits** by selecting the Dosing Unit from the drop-down list; then enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit.

   **Note:** Dose Rate Limits are optional but Dosing Unit must be selected.

   **For SapphirePlus 14.5 only:**

   The **Maximum Dose Rate Unit** field is optional and is only enabled if you select a weight-based Dosing Unit. Once you enter a **Maximum Dose Rate Unit**, the **Maximum Dose Rate** field is enabled.

   **Time Limits** are optional. Enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit, using the hh:mm format.

   **Note:** The **Time Limits** fields are disabled when **Multistep** is checked in Therapies.

8. Select the **Bolus** option(s) if you want to set bolus dose limits for this medication (Optional). If you do not choose to set Enable Bolus, proceed to the next step.
To set a SapphirePlus bolus:

Select from Disabled, Simple, or Advanced for the SapphirePlus 14.0 and 14.5.

- **Disabled**
- **Simple.** When this option is selected, the **Bolus Amount Limits Unit** field is available. Select a unit from the drop-down list and enter desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit.

- **Advanced.** When the Advanced option is selected, the following fields are available:
  a. **Bolus Amount Limits Unit.** Select from the drop-down list and enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit. This is a required field.
  c. Select the **Bolus Dose Rate Limits** from the Dosing Unit drop-down list. Enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit (optional)

9. For Therapies, check or uncheck Basic (Continuous), Piggyback (Secondary), and Multistep, as needed. At least one of the therapies must be checked to enable the medication to be selected from the Program screen on the infuser.
10. **Delivery at End of Infusion** (for SapphirePlus 14.0 and 14.5) allows you to select from None/Stop, Continue Rate or KVO (Default KVO rate is 0.1-20 mL/hr).

11. **Patient Weight** (For SapphirePlus 14.5 only) allows you to select the minimum and maximum weight for a patient. The defaults are blank for minimum and blank for maximum. If no values are entered, the range will be determined by the values set in the CCA settings.

12. **Other Settings** (For SapphirePlus 14.5 only) When checked, Enable Automatic Patient Lockout prevents a patient from altering this rule set. However, if you have checked Enable Automatic Patient Lockout in CCA Settings the rule set option is overridden as the specific CCA will incorporate this feature.

13. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA.
To edit a medication entry in a CCA:

1. Select the CCA containing the medication entry you want to edit from the Target List drop-down.
2. From the Target List, select the medication entry you want to edit.
3. Click Edit.

*Helpful Hint:* You can also double-click a medication entry to display the Rule Set dialog box.

4. Make changes as desired.
5. Click Save & Close to save your changes.

*Note:* Medication entries in the Master Drug Formulary will be updated with the same change.

If you edit a medication entry in one CCA and then edit another CCA with different rule sets, there will be two medication entries in the Master Drug Formulary that will show the same medication but each will have its own rule set.
To view a medication entry in a CCA:

1. Select the CCA containing the medication entry you want to view from the **Target List** drop-down list.

2. Select a medication.
3. Click **View**.
4. Click **Close** to exit the screen.
To remove a medication entry from a CCA:

1. Select the CCA containing the medication entry you want to remove from the **Target List** drop-down.

2. Select a medication.

3. Click **Remove** from CCA.

4. From the **Confirm Remove from CCA** pop-up, click **Remove**.

**Note:** The medication entry is not removed from the Master Drug Formulary.
Working with the Master Drug Formulary

**Note:** Refer to the [Rule Set Fields](#) section on page 243 in this chapter for information on allowable ranges.

To add a medication entry in the Master Drug Formulary:

1. Select **Master Drug Formulary** as the Source List.
2. From the Source List, click **Add**.
3. Select the **Generic Name** for the medication list.
4. Click **Select Medication**.

**Note:** Selecting a **Generic Name** from the medication list automatically populates the **Displayed Name**, **External ID**, the **Therapeutic Class**, and the **Class ID** fields.

If the desired generic name is not in the **Generic Name** list, you may add a medication to the Medication List. Alternatively, you can add the generic name by importing a new **Medication List** via the **Medication Import** function of the ICU Medical MedNet Meds software.
Note: The **Displayed Name** can be edited once populated. The maximum number of characters in the **Displayed Name** is 40 for SapphirePlus 14.0 and 14.5 when using the two available fields.

You can either accept or edit the Displayed Name before continuing.

5. Configure the desired concentration values by either:
   a. Checking **No Concentration**, or
   b. Checking **Diluent Only**, or
   c. Entering/selecting values for **Medication Amount**, **Medication Unit**, and **Diluent Amount**.

![Image](image_url)

6. Set the **Dose Rate Limits** by selecting the Dosing Unit from the drop-down list; then enter the desired values for **Lower Hard Limit**, **Lower Soft Limit**, **Upper Hard Limit**, and **Upper Soft Limit**.

Note: Dose Rate Limits are optional but Dosing Unit must be selected.
For SapphirePlus 14.5 only:

The **Maximum Dose Rate Unit** field is optional and is only enabled if you select a weight-based **Dosing Unit**. Once you enter a **Maximum Dose Rate Unit**, the **Maximum Dose Rate** field is enabled.

**Time Limits** are optional. Enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit, using the hh:mm format.

**Note:** The **Time Limits** fields are disabled when **Multistep** is checked in **Therapies**.

7. Select the **Bolus** option(s) if you want to set bolus dose limits for this medication (Optional). If you do not choose to set Enable Bolus, proceed to the next step.
To set a SapphirePlus bolus:

Select from **Disabled**, **Simple**, or **Advanced** for the SapphirePlus 14.0 and 14.5.

- **Disabled**
- **Simple**. When this option is selected, the **Bolus Amount Limits** Unit field is available. Select a unit from the drop-down list and enter desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit.

- **Advanced**. When the Advanced option is selected, the following fields are available:
  a. **Bolus Amount Limits Unit**. Select from the drop-down list and enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit. This is a required field.
  c. Select the **Bolus Dose Rate Limits** from the Dosing Unit drop-down list. Enter the desired values for Lower Hard Limit, Lower Soft Limit, Upper Hard Limit, and Upper Soft Limit (optional).
8. For Therapies, check or uncheck Basic (Continuous), Piggyback (Secondary), and Multistep, as desired.

9. **Delivery at End of Infusion** (SapphirePlus 14.0 and 14.5). Select from None/Stop, Continue Rate or KVO (Default KVO rate is 0.1-20 mL/hr)

For SapphirePlus 14.5 only:

10. **Patient Weight** (For SapphirePlus 14.5 only) allows you to select the minimum and maximum weight for a patient. The defaults are blank for minimum and blank for maximum. If no values are entered, the range will be determined by the values set in the CCA settings.

11. **Other Settings** (For SapphirePlus 14.5 only) When checked, **Enable Automatic Patient Lockout** prevents a patient from altering this rule set. However, if you have checked Enable Automatic Patient Lockout in CCA Settings the rule set option is overridden as the specific CCA will incorporate this feature.

12. Click **Save & Add Another** or **Save & Close** to add the medication entry to the CCA.

**Note:** When a medication entry is added to the Master Drug Formulary, it is not assigned to a CCA.
To edit a medication entry in the Master Drug Formulary:

1. Select **Master Drug Formulary** from the Source List.
2. From the Source List, select the medication entry you want to edit.
3. Click **Edit**.

**Helpful Hint:** You can also double-click a medication entry to display the **Rule Set** dialog box.

4. Make any desired changes.

5. Click **Save & Close** to save your changes.

**Note:** When a medication entry is edited, the changes are reflected in the Master Drug Formulary and a pop-up displays the CCAs that are affected.

If the medication entry that is edited is assigned to only one CCA, the medication entry will also be updated in the Master Drug Formulary. If the medication entry that is edited is assigned to more than one CCA, a new medication entry will be created in the Master Drug Formulary.
To view a medication entry in the Master Drug Formulary:

1. Select **Master Drug Formulary** from the Source List.
2. From the Source List, select the medication entry you want to view.
3. Click **View**.
4. Click **Close**.
To delete a medication entry from the Master Drug Formulary:

1. Select **Master Drug Formulary** from the Source List.
2. From the Source List, select the medication entry you want to delete.
3. Click **Delete** from Master Formulary.

4. Click **Delete**.

---

**Table: Master Drug Formulary**

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>External ID</th>
<th>Displayed Name</th>
<th>Concentration (or Container)</th>
<th>Dose Rate Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEXTROSE (POLY...)</td>
<td>2966</td>
<td>DEXTROSE (POLY)</td>
<td>250 mg / __ ml</td>
<td></td>
</tr>
<tr>
<td>DOPAMINE 800 MG...</td>
<td>2186</td>
<td>DOPAMINE 800 MG</td>
<td>400 mg / 250 ml</td>
<td></td>
</tr>
<tr>
<td>HEPARIN 25 000 ...</td>
<td>1642</td>
<td>HEPARIN 25 000</td>
<td>750 units / __</td>
<td></td>
</tr>
<tr>
<td>MORPHINE PCA</td>
<td>594</td>
<td>MORPHINE PCA</td>
<td>30 mg / 30 ml</td>
<td></td>
</tr>
<tr>
<td>OXYTOCIN</td>
<td>587</td>
<td>OXYTOCIN</td>
<td>10 units / 1 ml</td>
<td></td>
</tr>
<tr>
<td>VANCYMYCIN</td>
<td>577</td>
<td>VANCYMYCIN</td>
<td>500 mg / 10 ml</td>
<td></td>
</tr>
<tr>
<td>VASOPRESSIN</td>
<td>2500</td>
<td>VASOPRESSIN</td>
<td>20 units / 1 mL</td>
<td></td>
</tr>
</tbody>
</table>

---

**Diagram: Source List: Delete Rule Set**

[Diagram showing medication rules set with options for Concentration, Dose Rate Limit, and Bolus settings.]
A **Delete Medication** pop-up displays only if a CCA is affected. If not, the entry is deleted and there is no confirmation.

5. Click **OK**.
To copy to a Target CCA:

1. Select a medication entry from the Master Drug Formulary.

   **Note:** A Target List CCA must be selected before you can copy a medication entry to a Target CCA from the Master Drug Formulary.

2. Click **Copy to Target CCA**.

3. Click **Copy** on the **Confirm Copy to CCA** pop-up.
Notes:
Chapter 13: Master Infuser Setup

Plum 360 Master Infuser Settings

The Plum 360 Master Infuser Settings view allows you to select the following infuser settings:

- Continue Rate (Plum 360 15.0x and 15.1x only)
- Callback Notification
- Deliver Together (Plum 360 15.0x and 15.1x only)
- Line B Default Mode for No Drug Selected (Plum 360 15.2x only)
- Force Pump to Accept Drug Library During Power Down
- Auto-program Rejection Reason Timeout (seconds)
- Maximum Standby Time (hours)
- Default Clinical Use
- Keypad Lock/Unlock code (Plum 360 15.2x only)

To display the Master Infuser Settings view, open a Worksheet and click the Master Infuser Setup tab. (For instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).
Continue Rate (Plum 360 15.0x and 15.1x only)

The Continue Rate setting allows you to select the default rate the infuser switches to after a therapy has completed. The Continue Rate options are KVO and Rate. KVO (Keep Vein Open) is a very low rate (1 mL/hr) that reduces the potential for clotting at the infusion site. Rate is the same delivery rate as the completed therapy. The Continue Rate setting can be changed when programming the infuser:

- Select KVO to make the default continue rate KVO.
- Select Rate to make the default continue rate the same as the completed therapy’s rate.

Callback Notification

The Callback Notification setting, when enabled, causes the infuser to emit an audible nurse callback alarm and display a notification between steps of a multi-step infusion, a piggyback infusion, or after a loading dose. The default Callback Notification setting is No (disabled). This setting can be changed when manually programming the infuser. For more information on nurse callback alarms, refer to the infuser’s system operating manual.

Deliver Together (Plum 360 15.0x and 15.1x only)

The Deliver Together setting allows you to choose the default two-line delivery method. This functionality defines the default relationship between Line A and Line B on the infuser. The Deliver Together options are Piggyback and Concurrent. When Piggyback is selected, Line A delivery stops while Line B infuses. Line A delivery resumes when Line B delivery is complete.
When Concurrent is selected, both lines infuse at the same time. The Deliver Together setting can be changed when programming the infuser.

- Select Piggyback to make the default deliver together setting piggyback
- Select Concurrent to make the default deliver together setting concurrent

**Line B Default Mode for No Drug Selected (Plum 360 15.2x only)**

The Line B Default Mode for No Drug Selected setting allows you to select either Piggyback or Concurrent as the default delivery mode for Line B when the selected medication is No Drug Selected. This can be changed when programming the infuser.

**Force Pump to Accept Drug Library During Power Down**

This setting determines if the infuser will automatically install a new Medication Library upon infuser turn off. If setting is Yes, the infuser will install library without prompting user during power down. The default setting is No.

**Auto-program Rejection Reason Timeout (seconds)**

When an auto-program is rejected by ICU Medical MedNet, a rejection reason appears on the infuser to notify the nurse that the auto-program has been rejected prior to sending to the infuser. The timeout setting allows you to set the length of time the message will remain on the infuser's screen. The range is 10-30 seconds and the default is 15 seconds.

**Maximum Standby Time (hours)**

The Maximum Standby setting allows you to select the period of time the infuser can wait before beginning a therapy. The Standby setting cannot be overridden when programming the infuser.

**Note:** This setting affects both delayed start and standby. If enabled, both will be available at the infuser. If disabled, neither will be available at the infuser.

The range is 24 to 72 hours in one-hour increments. The default is 72 hours.

**Default Clinical Use**

The Default Clinical Use setting allows you to change the “NOT SPECIFIED” value entered in a CCA to the Default Clinical Use you enter.

**Note:** The value entered as Default will be attributed to ALL entries marked “NOT SPECIFIED” in all CCAs and in the Master Drug Formulary.

**Keypad Lock/Unlock Code (Plum 360 15.2x only)**

The Keypad Lock/Unlock code setting allows you to set a unique code to lock and unlock the keypad in clinical mode. This setting cannot be changed on the infuser.

The code can be any 4-digit number from 0000 to 9999.
To configure the master infuser settings:

1. Click the **Master Infuser Setup** tab.
2. Select the desired option for each setting.
3. When finished making selections, click **Save**.

**Note:** To save changes to the master infuser settings, you must click **Save** before navigating away from the **Master Infuser Settings** view.

The selections made in the Master Infuser Settings view apply to all CCAs in the library.
Plum A+ Master Infuser Settings

The Plum A+ Master Infuser Settings view allows you to select the following infuser settings:

- Continue Rate
- Callback Notification
- Deliver Together
- Enable Delay/Standby

To display the Master Infuser Settings view, open a Worksheet and click the Master Infuser Setup tab. (For instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).

Continue Rate

The Continue Rate setting allows you to select the default rate the infuser switches to after a therapy has completed. The Continue Rate options are KVO and Rate. KVO (Keep Vein Open) is a very low rate (1 mL/hr) that reduces the potential for clotting at the infusion site. Rate is the same delivery rate as the completed therapy. The Continue Rate setting can be changed when programming the infuser:

- Select KVO to make the default continue rate KVO.
- Select Rate to make the default continue rate the same as the completed therapy’s rate.
Callback Notification

The *Callback Notification* setting, when enabled, causes the infuser to emit an audible nurse callback alarm and display a notification between steps of a multi-step infusion, a piggyback infusion, or after a loading dose. The default Callback Notification setting is **No** (disabled). This setting can be changed when manually programming the infuser. For more information on nurse callback alarms, refer to the ICU Medical Plum A+/A+ 3 System Operating Manual.

Deliver Together

The *Deliver Together* setting allows you to choose the default two-line delivery method. This functionality defines the default relationship between Line A and Line B on the infuser. The Deliver Together options are **Piggyback** and **Concurrent**. When Piggyback is selected, Line A delivery stops while Line B infuses. Line A delivery resumes when Line B delivery is complete. When Concurrent is selected, both lines infuse at the same time. The Deliver Together setting can be changed when programming the infuser.

- Select **Piggyback** to make the default deliver together setting piggyback
- Select **Concurrent** to make the default deliver together setting concurrent

Enable Delay/Standby

The *Enable Delay/Standby* setting allows you to select the standby setting, **Yes** (enabled) or **No** (disabled). When enabled, the infuser can be programmed to wait for a period of time before beginning a therapy. When disabled, the option to program a waiting period before a therapy begins is not available. The Standby setting *cannot* be overridden when programming the infuser.

**Note:** This setting affects both delayed start and standby. If enabled, both will be available at the infuser. If disabled, neither will be available at the infuser.

- Select **Yes** to enable Delay/Standby
- Select **No** to disable Delay/Standby
To configure the master infuser settings:

1. Click the **Master Infuser Setup** tab.
2. Select the desired option for each setting.
3. When finished making selections, click **Save**.

Note: To save changes to the master infuser settings, you must click **Save** before navigating away from the **Master Infuser Settings** view.

The selections made in the Master Infuser Settings view apply to all CCAs in the library.
LifeCare PCA Master Infuser Settings

The LifeCare PCA Master Infuser Settings view allows you to select the following infuser settings:

- Nurse Call Relay Contacts
- Purge Capability
- PCA Tone
- History Format
- Clock Format
- Alarm Sounds

To display the Master Infuser Settings view, open a Worksheet and click the Master Infuser Setup tab. (For instructions on opening a Worksheet, see Chapter 5: The Library Directory on page 35).

Nurse Call Relay Contacts

The Nurse Call Relay setting allows you to set up the nurse call relay system. The pump needs to be connected to the nurse call relay system in the hospital using the jack on the rear of the pump.

The proper configuration (Normally Open or Normally Closed) will depend on how the health care facility has set up their particular nurse call relay system. The default setting is Normally Open.
History Format
The History Format setting allows you to select the format of the history (infusions, PCA doses, and event log) when viewed on the pump screen.

- 1 & 24 hours – shows infusion summary for the last one and 24 hours
- Hour by hour – shows infusion summary by hour

The default is 1 & 24 hours.

Purge Capability (applies to the LifeCare PCA 5.x only)
The Purge Capability setting allows you to enable the screen prompts on the pump to ask if the clinician would like to purge the set before programming the pump. The default is Enabled.

PCA Tone
The PCA Tone setting allows you to determine what tones are emitted from the pump when the pendant is pressed by the patient. A successful request means a PCA dose was delivered to the patient, while a Reject means a PCA dose was not delivered (because it was during the lockout period). The default is Different Accept/Reject tones.

- Key tone on successful request only – An audible beep is heard when a PCA dose is successfully administered.
- Different Accept/Reject tones – A different audible beep is heard when a PCA dose is accepted or rejected. This is the default setting.
- Same key tone on all PCA requests – The same audible beep is heard regardless of whether a PCA dose was successful or rejected.

Clock Format
The Clock Format setting allows you to set the display of the clock to either a 12-hour or a 24-hour format. The default is a 24-hour Clock format.

Alarm Sounds
For the LifeCare PCA 5.x only: The Alarm Sounds setting allows you to select different rhythms or cadences for the alarms on the pump. This allows you to differentiate the pump alarm sound from other devices. There are five sounds available. The default is Alarm 1. There is only one alarm sound enabled for the LifeCare PCA 7.x.

Note: To save changes to the master infuser settings, you must click Save before navigating away from the Master Infuser Settings view.

The selections made in the Master Infuser Settings view apply to all CCAs in the library.
**SapphirePlus 14.0 Master Infuser Settings**

The SapphirePlus Master Infuser Setup allows the setting of passwords authorizing different levels of programming options. Each level allows actions on that level and lower level.

The device authorization levels are:

**High Level** and **Preprogram** Levels: allow full access for all tasks and configuration settings. High level authorized personnel can reset the lock level of the infuser.

**Medium Level**: allows basic programming options, such as starting infusions, repeating the last infusion and priming the infuser. No new infusion can be started with this level password.

**Low Level**: has no programming options and no ability to change any setting. However, at this level, the infuser can be stopped and infusion allowed to continue.

**Note**: All levels can administer a patient bolus.

Please refer to the SapphirePlus 14 literature for additional details of allowable functions per level.

**Infuser Settings**

**Enable New Patient** is the default setting.

**Enable US Format** sets the format to a 12-hour clock (AM/PM time setting) and US date format of month/day/year. If unchecked, the format is a 24-hour clock and a date format of day/month/year.
SapphirePlus 14.5 Master Infuser Settings

SapphirePlus 14.5 Master Infuser Setup also allows the setting of passwords authorizing different levels of programming options. Each level allows actions on that level and lower level.

The device authorization levels are:

**High Level** and **Preprogram** Levels: allow full access for all tasks and configuration settings. High level authorized personnel can reset the lock level of the infuser.

**Medium Level**: allows basic programming options, such as starting infusions, repeating the last infusion and priming the infuser. No new infusion can be started with this level password.

**Low Level**: has no programming options and no ability to change any setting. However, at this level, the infuser can be stopped and infusion allowed to continue.

**Note**: All levels can administer a patient bolus. Please refer to the SapphirePlus 14.5 literature for additional details of allowable functions per level.
Infuser Settings

Enable New Patient is the default setting.

Date/Time

Clock Format: You can use the default 12-hour Clock (AM/PM time setting) or select the 24-hour Clock.

Date Format: Select the default US date format of month, day, year (mm/dd/yy) or select day, month, year (dd/mm/yy).
Appendix A: ICU Medical MedNet Integrator

Overview

ICU Medical MedNet Integrator provides interfaces to a hospital’s enterprise level applications and serves as the conduit for the exchange of data between infusers, the ICU Medical MedNet server, and a variety of hospital information systems.

When interfaced to a BCMA system, ICU Medical MedNet Integrator supports electronic documentation of IV administration events into the patient record. This integration also allows the BCMA system to incorporate the IV infusion rate into the five Rights verification process.

The workflow for the clinician is as follows:

• Scan the patient identification, the medication container, and the pump using the BCMA application and its bar code scanner
• Program the infuser based on the physician’s order
• Confirm the programming and start the infusion

Note: Depending on the BCMA system, scanning of the patient, medication, and pump may also occur after the infusion has been started.

Once the infusion has started, ICU Medical MedNet sends the program values (medication/concentration, dose, rate, volume to be infused, and duration) back to the BCMA system for review by the clinician, verification, and electronic charting.

Note: The specific functionality available to you will depend on your institution’s ICU Medical MedNet software license.

Setting up ICU Medical MedNet Integrator for BCMA integration

Define a bar code strategy for identifying each channel of the infusers that will be used; affix the bar code label to each channel.

WARNING: To ensure that information is sent to the Bar Code Medication Administration (BCMA) system from the correct infuser, ICU Medical strongly recommends that before go-live with ICU Medical MedNet™ Integrator™ you verify the bar code label affixed to each infuser corresponds to the correct channel.

Important: Please compare the infuser data on the infuser with the data received from the BCMA. In the event of a discrepancy, please chart the infuser data manually.
<table>
<thead>
<tr>
<th>Glossary</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active Drug Library</strong></td>
<td>Worksheet that has been finalized and is available to send to infusers</td>
</tr>
<tr>
<td><strong>Alert Forwarding</strong></td>
<td>Alert Forwarding may also be referred to as Alarm Forwarding:</td>
</tr>
<tr>
<td></td>
<td>Alert Forwarding is the ability to send IV device alarm data to EHR or</td>
</tr>
<tr>
<td></td>
<td>Alarm Management Systems. Clinicians can now receive secondary alerts</td>
</tr>
<tr>
<td></td>
<td>remotely and retain the ability to identify the specific device, patient</td>
</tr>
<tr>
<td></td>
<td>and alert type involved.</td>
</tr>
<tr>
<td><strong>Archived Drug Library</strong></td>
<td>Previously active library</td>
</tr>
<tr>
<td><strong>BCMA</strong></td>
<td>Bar Code Medication Administration</td>
</tr>
<tr>
<td><strong>Callback Notification</strong></td>
<td>Setting that configures the infuser to emit an audible tone</td>
</tr>
<tr>
<td><strong>CCA (Clinical Care Area)</strong></td>
<td>A CCA may be the same as a physical nursing unit or may encompass a</td>
</tr>
<tr>
<td></td>
<td>patient population. For example, the following may be defined as CCAs:</td>
</tr>
<tr>
<td></td>
<td>ICU, Blood Products, Med/Surg, Orthopedics, Endoscopy, etc.</td>
</tr>
<tr>
<td><strong>CE</strong></td>
<td>Acronym for Connectivity Engine that allows the infuser to communicate</td>
</tr>
<tr>
<td></td>
<td>with a wired or wireless network</td>
</tr>
<tr>
<td><strong>Concurrent Delivery</strong></td>
<td>Setting for Line B mode</td>
</tr>
<tr>
<td><strong>Container Volume</strong></td>
<td>Volume of the bag, bottle, syringe or vial used to define a medication</td>
</tr>
<tr>
<td></td>
<td>entry</td>
</tr>
<tr>
<td><strong>Continue Rate</strong></td>
<td>Delivery rate after the VTBI amount has been infused</td>
</tr>
<tr>
<td><strong>CSV file</strong></td>
<td>Comma separated value file format used by the software for importing and</td>
</tr>
<tr>
<td></td>
<td>exporting certain files</td>
</tr>
<tr>
<td><strong>Custom Syringe or Vial</strong></td>
<td>See LifeCare PCA Vial</td>
</tr>
<tr>
<td><strong>Default Occlusion Pressure</strong></td>
<td>Pressure at which the infuser will sound the distal occlusion alarm</td>
</tr>
<tr>
<td><strong>Delayed Start</strong></td>
<td>Programming option that allows the infusion to be started at a later time</td>
</tr>
<tr>
<td><strong>Deliver Together</strong></td>
<td>Setting that defines the type of delivery mode, piggyback or concurrent</td>
</tr>
<tr>
<td><strong>Diluent Amount</strong></td>
<td>Volume of fluid in which a medication is diluted</td>
</tr>
<tr>
<td><strong>Distal Occlusion</strong></td>
<td>Blockage between the infuser and the patient</td>
</tr>
<tr>
<td><strong>Dose Limit (LifeCare PCA)</strong></td>
<td>User-programmable parameter specifying the maximum amount of drug that</td>
</tr>
<tr>
<td></td>
<td>can be administered via LifeCare PCA dose and continuous delivery in a</td>
</tr>
<tr>
<td></td>
<td>programmable rolling time period consisting of discrete accumulation</td>
</tr>
<tr>
<td></td>
<td>periods of six minutes</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>When the default drug library is used, a 1-hour or 4-hour Dose Limit</td>
</tr>
<tr>
<td></td>
<td>period may be selected in Biomed mode. When a user-defined drug library</td>
</tr>
<tr>
<td></td>
<td>is used, a 1-hour, 4-hour, 6-hour, or 12-hour Dose Limit period may be</td>
</tr>
<tr>
<td></td>
<td>specified for each medication.</td>
</tr>
<tr>
<td>Glossary Item</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Drug Library</td>
<td>Collection of medication entries and infuser settings that, when used with compatible infusers, may reduce the frequency of human errors by restricting the ways in which medications can be administered</td>
</tr>
<tr>
<td>Drug Library Worksheet</td>
<td>Drug library that can be edited but cannot be sent to infusers until it is finalized</td>
</tr>
<tr>
<td>Edit</td>
<td>The user responded to an alert by changing the value entered</td>
</tr>
<tr>
<td>EHR System</td>
<td>Electronic Health Records System</td>
</tr>
<tr>
<td>Enable Delay/Standby</td>
<td>Infuser setting for Plum A+ that allows the infuser to be programmed for a waiting period before a therapy begins</td>
</tr>
<tr>
<td>External ID</td>
<td>An identifier for a Medication. Each Medication in the Medication List must have a unique External ID</td>
</tr>
<tr>
<td>Finalized Drug Library</td>
<td>Drug library that has been approved for use on infusers and cannot be changed</td>
</tr>
<tr>
<td>Finalization</td>
<td>The act of approving a Worksheet and making it the Active library</td>
</tr>
<tr>
<td>Full Rule Set</td>
<td>Type of rule set that allows medication entries to be configured with a medication name, complete or partial concentration, specific dosing unit, and corresponding dose rate limits</td>
</tr>
<tr>
<td>Hard Limit</td>
<td>Upper and/or lower limits for the selected medication and selected CCA that cannot be overridden (Plum A+ and LifeCare PCA)</td>
</tr>
<tr>
<td></td>
<td>It is recommended that hard limits be defined to prevent medication errors.</td>
</tr>
<tr>
<td></td>
<td>Hard limits may vary for different CCAs</td>
</tr>
<tr>
<td>Hard Limit Alert</td>
<td>An alert presented to the user when a hard limit is exceeded. The user’s response depends on the infuser.</td>
</tr>
<tr>
<td>HIS</td>
<td>Hospital Information System</td>
</tr>
<tr>
<td>Infusion</td>
<td>Medication with a defined concentration that is administered via IV infusion to a patient.</td>
</tr>
<tr>
<td>Infusion Documentation</td>
<td>Infusion Documentation is an alternative name for Auto-Documentation</td>
</tr>
<tr>
<td></td>
<td>Is the feature that allows populating medication administration records, I&amp;O flow sheet and dashboards with infusion events in an EHR system.</td>
</tr>
<tr>
<td>KVO (keep vein open)</td>
<td>Very low delivery rate that may reduce the potential for clot formation at the catheter tip</td>
</tr>
<tr>
<td>Label Only Rule Set</td>
<td>A Label Only rule set allows the clinician to see the medication name displayed on the infuser. There are no dosing limits associated with this rule set.</td>
</tr>
<tr>
<td></td>
<td>Label Only rule sets are not found in LifeCare PCA or SapphirePlus drug libraries.</td>
</tr>
<tr>
<td>LDAP</td>
<td>Lightweight Directory Access Protocol, a network protocol that enables applications to use a company’s existing network directory listing for user names and passwords, thus allowing the company’s network administrators to manage login access to multiple applications from one central source. For example, users can use their company’s network login information with the same credentials (user name and password) to access ICU Medical MedNet Software</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>LifeCare PCA Lockout Interval</strong></td>
<td>Programmed time interval specifying the minimum time that must pass after a loading dose or PCA dose (bolus) is administered; this time interval specifies when the next PCA dose can begin. Requests made during the lockout interval are denied.</td>
</tr>
<tr>
<td><strong>LifeCare PCA Vial</strong></td>
<td>Vial or syringe that is compatible with the LifeCare PCA infuser, which is either pre-filled and barcoded (standard) or filled and barcoded by the hospital pharmacy (custom)</td>
</tr>
<tr>
<td><strong>Limited Rule Set</strong></td>
<td>Type of rule set that allows medication entries to be configured with a medication name, diluent volume, and rate limits</td>
</tr>
<tr>
<td><strong>Loading Dose</strong></td>
<td>Dose which can be administered at any time by the clinician during the programmed therapy (LifeCare PCA only)</td>
</tr>
<tr>
<td><strong>Master Drug Formulary</strong></td>
<td>Comprehensive list of medications and rule sets defined for use in a drug library</td>
</tr>
<tr>
<td><strong>Maximum Dose Rate</strong></td>
<td>Highest rate at which the infuser can be programmed to run. This rate is defined as the upper hard limit</td>
</tr>
<tr>
<td><strong>Medication Entry</strong></td>
<td>Rule set defined for a unique combination of a medication and concentration</td>
</tr>
<tr>
<td><strong>Medication List</strong></td>
<td>List of medications used by the hospital. The Medication List is used to define drug libraries</td>
</tr>
<tr>
<td><strong>Multistep</strong></td>
<td>Programming option that allows delivery in steps or phases with different dosing parameters for each step</td>
</tr>
<tr>
<td><strong>Occlusion</strong></td>
<td>Blockage in the tubing set that prevents the infuser from infusing fluid into the patient. Possible causes of occlusions are kinked or plugged tubing</td>
</tr>
<tr>
<td><strong>Override</strong></td>
<td>The User acknowledged the alert and retains the values that triggered the soft alert. Hard alerts are not able to be overridden</td>
</tr>
<tr>
<td><strong>Piggyback Mode</strong></td>
<td>Programming option that allows the delivery of a secondary infusion while delivery from the primary infusion is suspended. When the secondary infusion has completed delivery of the volume to be infused, the primary infusion resumes delivery</td>
</tr>
<tr>
<td><strong>Prime</strong></td>
<td>Clear out or purge air from the tubing. Same as Purge</td>
</tr>
<tr>
<td><strong>Program</strong></td>
<td>A Program is any change in the infuser settings that triggers a user confirmation on the pump.</td>
</tr>
<tr>
<td><strong>Protocols (LifeCare PCA)</strong></td>
<td>Frequently used therapy settings which can be saved making it unnecessary for the clinician to program the same settings each time. Protocols are determined by the health care facility</td>
</tr>
<tr>
<td><strong>Proximal Occlusion</strong></td>
<td>Blockage between the infuser and the fluid IV infusion</td>
</tr>
<tr>
<td><strong>Purge</strong></td>
<td>Clear out or “purge” air from the tubing. Same as Prime</td>
</tr>
<tr>
<td><strong>Report Options</strong></td>
<td>Configurations entered by the user to define the desired report output. Examples include Time period, CCA, Medication, etc.</td>
</tr>
<tr>
<td><strong>Rule Set</strong></td>
<td>Constraints that are assigned to medication entries. The type of rule for the medication in the drug library. Rule sets can include both soft and hard limits.</td>
</tr>
<tr>
<td><strong>Service Line</strong></td>
<td>A designation used in reports to aggregate data across multiple CCAs or facilities. Each CCA is mapped to a Service Line. For example, a service line called Med/Surg may be used to examine data from the CCAs Four West, Five North, and Five East in a single hospital</td>
</tr>
</tbody>
</table>
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Pump Programming</td>
<td>Smart Pump Programming functionality is integrated with a BCMA system using ICU Medical MedNet Programmer. Smart Pump Programming is an alternative name for Auto-Programming</td>
</tr>
<tr>
<td>Soft Limit</td>
<td>Upper and/or lower dose limits for the selected medication and selected CCA that can be overridden. Soft limits for a particular medication may vary across CCAs</td>
</tr>
<tr>
<td>Soft Limit Alert</td>
<td>An alert presented to the user when a soft limit is exceeded. The user may choose to edit or override the value entered in response to the alert</td>
</tr>
<tr>
<td>Standby</td>
<td>Programming option that allows the infusion to be started at a later time. Similar to delayed start</td>
</tr>
<tr>
<td>Standard Syringe</td>
<td>See LifeCare PCA Vial</td>
</tr>
<tr>
<td>Value</td>
<td>Value can represent either dose or time, depending on the type of rule set that is reported.</td>
</tr>
<tr>
<td>Variance</td>
<td>Variance is a calculated value intended to represent how far away the user's initial programmed value was compared to the defined limit. Variance is defined as [(Initial Value - Limit Violated) / Limit Violated]. The result is expressed as a percentage and shown as a negative number for Lower Limit violations, and as a positive number for Upper Limit violations. 10,000% is the maximum displayable variance.</td>
</tr>
<tr>
<td>VTBI</td>
<td>Volume To Be Infused</td>
</tr>
<tr>
<td>Worksheet</td>
<td>Draft drug library that has not yet been finalized</td>
</tr>
</tbody>
</table>

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**Note:** Please refer to the System Operating Manual for information on each infuser.
Notes: