

# 5

## Printing Labels

### Overview

SLS PCS allows you to scan a drug's barcode and easily print a label containing information about the drug, the preparer, the time of preparation, and other information (for example, concentration, dilution notice, user defined warnings, expiration times), to be affixed to a syringe. It also allows you to print custom labels that have been configured for your site.

### Formulary Database

Information about scanned drugs is contained in the formulary database that was installed on SLS PCS. The formulary database is managed by an administrator using the SLS Administration Tool. For more information about the SLS Administration Tool, refer to the *SLS Administration Tool User's Manual*.

Each drug record in the formulary database contains use and labeling information, audio announcements that are played when the drug record is found, whether the dilution should be forced, allowed, or not allowed for the drug, and a choice of concentrations and diluents.

To ensure safety, no changes are ever written to the formulary database in SLS PCS and all formulary updates are handled by a full overwrite of the database.

## **Container IDs (Outside the USA)**

Outside the USA, Container IDs are used to identify drugs. A drug's Container ID is included in its container barcode.

When you scan a drug container to initiate the printing of a syringe label, SLS PCS uses the Container ID to find the correct drug information in the formulary database.

## **Container IDs and Master IDs (USA Only)**

In the USA, 11-digit Master IDs and 10-digit Container IDs are used to identify drugs. A drug's Container ID is included in its container barcode.

Master IDs always uniquely identify a drug. However, in rare cases, the same Container ID could be used for up to three different drugs.

When you scan a drug container barcode to initiate the printing of a syringe label, SLS PCS uses the Container ID to find the correct drug information in the formulary database. SLS PCS looks for drugs with the same Container ID and for Master IDs that map to the Container ID. The Master ID can be used to help locate the correct drug record when the Container ID is not in the formulary database.

## **Matching Container IDs**

*Matching* is the process that occurs when a drug container barcode is scanned on an SLS PCS and SLS PCS determines that the Container ID in the barcode equals (that is, *matches*) the Container ID for one or more drug records in the formulary database.

## **Mapping Container IDs to Master IDs (USA Only)**

*Mapping* is the process that occurs when a drug container barcode is scanned and there are 11-digit Master IDs that could potentially map to the scanned 10-digit Container ID.

*Learning* is the process of associating the 10-digit Container ID with one of the mapped 11-digit Master IDs.

For more information about mapping and learning, refer to “Learning a Drug (USA Only)” on page 5-10.

## **Verification**

*Verification* is the process of scanning a drug container’s barcode and verifying that the drug name and concentration that is in the formulary database matches the drug name and concentration of the scanned drug container. For more information, refer to “Verifying a Drug” on page 5-12.

## **Communication of Verification and Drug Not Found (DNF) Events to the SLS Administration Tool**

When a Verification or Drug Not Found event occurs, SLS PCS will send the event information via the network to the SLS Administration Tool. An SLS system administrator can then use the SLS Administration Tool to update the existing formulary and distribute a new formulary package to all SLS PCSs. SLS PCS users will then not have to verify the same drug or receive a Drug Not Found message for the drug.

## **SLS Drug Preparation Methods**

There are two preparation methods for managing how drugs are labeled: Normal Dilution and Total Dose/Total Volume (TD/TV).

- **Normal Dilution.** This method is commonly used in OR environments where the amount and frequency of drug administration can vary. Since the total dose being administered might not be known ahead of time, the primary information required on the syringe label is the drug name and prepared concentration.
- **Total Dose/Total Volume (TD/TV).** This method is commonly used when an order or prescription for a drug is issued and the drug is prepared according to the instructions in the order. TD/TV is also used in applications involving infusion pumps. Drugs prepared in this manner include the drug name, the total dose to be administered, and the total volume of the drug and diluent in the final preparation. SLS PCS also includes the equivalent concentration of the preparation on the label for regulatory compliance.

SLS PCS allows multiple TD/TV preparations to be associated with each drug. The preparations are set up using the SLS Administration Tool and included as part of the SLS formulary. When a drug container is scanned on SLS PCS, you can select from TD/TV preparations associated with that drug.

### **Notes About TD/TV Preparation Method**

Note the following about TD/TV preparation method:

- TD/TV information will be printed on labels that support it [for example, 30 x 80-mm Japan labels (JP-L1\_vxx)] and shown on any applicable previews.

If the selected drug classification template does not support TD/TV information, the TD/TV dialog boxes described in this manual will still appear on SLS PCS. However, the label will not have any TD/TV information printed on it.

- TD/TV information is not encoded by default in the syringe barcode. A custom barcode that includes this information could be created. Contact Codonics.
- The TD/TV function is only supported for single drugs in the formulary. It is not supported for combination drugs.
- Administer Mode will only announce the drug name and equivalent concentration, but not TD/TV values.

## Printing a Syringe Label

The general workflow for printing a syringe label is:

1. If you want to specify the drug's dilution, set the Dilution switch to on.
2. Scan the drug container barcode.
3. Specify the dilution and diluent, if necessary.
4. Confirm the label displayed on the touch screen before printing it, if this confirmation step has been configured.
5. Retrieve the printed syringe label from the output bin.
6. Confirm whether the syringe label printed correctly, if this confirmation step has been configured.

Details for these steps are covered in the following topics.



**CAUTION** The formulary used on SLS PCS should be one that was created by an SLS system administrator and approved for use.



**CAUTION** When preparing syringes, always keep control of the drug container and syringe until the label is properly printed, confirmed, and adhered to the proper syringe.



**NOTE:** It is recommended that syringes smaller than 5 cc (ml) have the printed label wrapped around the barrel of the syringe with the ends adhered together in a flag fashion.

## Scanning the Drug Container Barcode



**NOTE:** You can scan a barcode from any SLS PCS state and it will print a label. You do not have to press the **Syringe** label button.



To scan the drug container barcode

1. To include dilution information on the label for drugs that can be diluted, press the **Dilute** switch to on. This must be done prior to scanning the drug container barcode.



Dilute switch



**NOTE:** The dilution setting for each drug in the formulary has precedence over the **Dilute** switch setting. Therefore, the **Dilute** switch will be ignored if the drug is not allowed to be diluted or if it is required to be diluted. For more information about determining a drug's dilution setting in the formulary, refer to the SLS Administration Tool User's Manual.



**NOTE:** The **Dilute** switch is set to off at the completion of the label printing.

2. Scan the drug container barcode by aligning the barcode with the barcode scanner located below the touch screen.



### **Scanning a barcode on a drug container**



**NOTE:** Place the container below the scanner so that the red cross-hair lines up on the barcode. Placing the container closer to the cover, almost resting it on the cover, instead of placing it closer to the scanner, will also provide better results.



## Selecting from Matching Container IDs

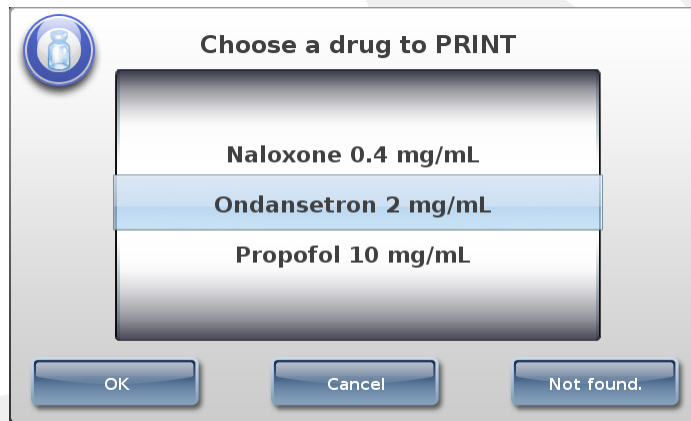
*Matching* is the process that occurs when a drug container barcode is scanned on an SLS PCS and SLS PCS determines that the Container ID in the barcode equals (that is, *matches*) the Container ID for one or more drug records in the formulary database.

For single matches, the matching drug record is automatically selected by the system.

In very rare instances, if more than one match is found, the matching drugs are listed in the **Choose a drug to PRINT** dialog box, as shown below.



**NOTE:** If there are multiple matches for a Container ID, this dialog box will be displayed every time a drug container barcode with that Container ID is scanned.



You have three options:

- If none of the choices are correct, press the **Not Found** button. The system indicates that no drugs were selected and a syringe label is not printed.

Or, in the USA, if mappings are then found after pressing the **Not Found** button, then the **Choose a drug to LEARN** dialog box displays. Refer to “Learning a Drug (USA Only)” on page 5-10.

- To cancel the print operation, press the **Cancel** button. The main screen displays.
- If one of the choices is correct, select it and press the **OK** button. A confirmation dialog box displays.

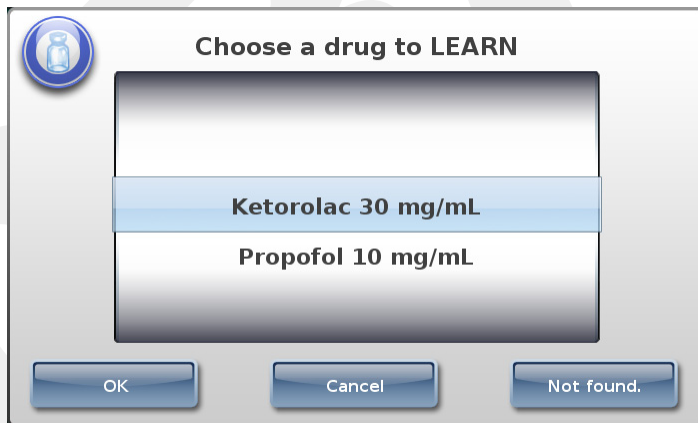
### **Learning a Drug (USA Only)**

*Mapping* is the process that occurs when a drug container barcode is scanned and there are 11-digit Master IDs that could potentially map to the scanned 10-digit Container ID.

For example, a pharmacist enters only a drug's 11-digit Master ID when adding the drug to the formulary. When a user scans that drug's container barcode for the first time and there are no 10-digit Container ID matches, SLS PCS will look for all 11-digit Master IDs that could potentially map to the drug's Container ID.

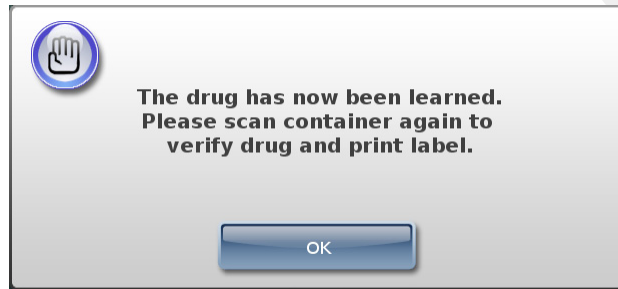
Learning is the process of associating the 10-digit Container ID from a scanned drug container barcode with a mapped 11-digit Master ID.

If the Container ID that was scanned can be mapped to more than one Master ID in the formulary database, then any Master ID mappings that are found for the Container ID are displayed in the Choose a drug to LEARN dialog box.



You have three options:

- If none of the choices are correct, press the **Not Found** button. The system indicates that no drugs were selected and a syringe label is not printed. A custom label can then be selected for printing.
- To cancel the print operation, press the **Cancel** button. The main screen displays.
- If one of the choices is correct, select it and press the **OK** button. A confirmation dialog box displays.



The drug has been learned by the system. The next time this drug container barcode is scanned, the system will remember the correct drug information to use.



**CAUTION** SLS PCS users can have an SLS PCS learn drug containers. Please contact your SLS system administrator for proper training and usage.

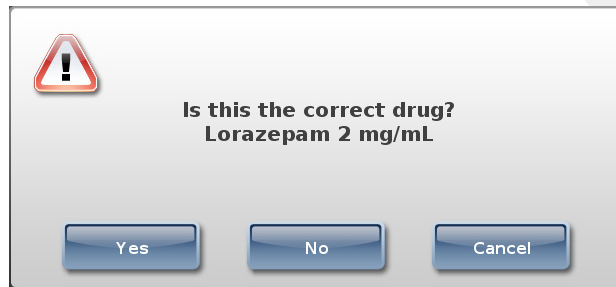


**NOTE:** Learned drugs are added only to the individual SLS PCS. Global updates should be made in the Master Drug Database (MDD) and formulary using the SLS Administration Tool. For more information, refer to the SLS Administration Tool User's Manual.

## Verifying a Drug

*Verification* is the process of scanning a drug container's barcode and verifying that the drug name and concentration that is in the formulary database match the drug name and concentration of the drug container. By default, each SLS PCS requires that all scanned drug containers be verified the first time that each SLS PCS sees them. Refer to the *SLS Administration Tool User's Manual* for more information about verification configuration.

If a drug's verification status is Not Verified, then the verification prompt displays.



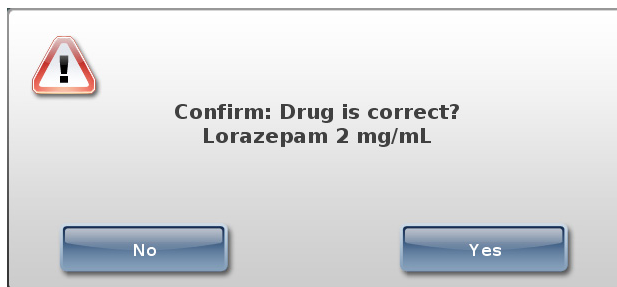
You have three options:

- If the displayed information does not match the drug container, press the No button. The system prompts you to confirm your decision. If you confirm it, then the system indicates that the drug failed verification and you are given the option of printing a custom label. You could then enter the syringe drug information on the custom label by hand. If this drug container barcode is scanned again at this SLS PCS, the system will indicate that the drug has a Verification Failed status and will only allow the option of printing a custom blank label. For more information about custom labels, refer to “Custom Labels” on page 5-40.



**CAUTION** A failed verification is a serious issue. It means that the formulary is wrong. An SLS system administrator should be consulted immediately to review the logs and correct the formulary.

- To cancel the print operation, press the **Cancel** button. The main screen displays.
- If the displayed information matches the drug container, press the **Yes** button. The system prompts you to confirm your decision.



To confirm your decision, press the **Yes** button.



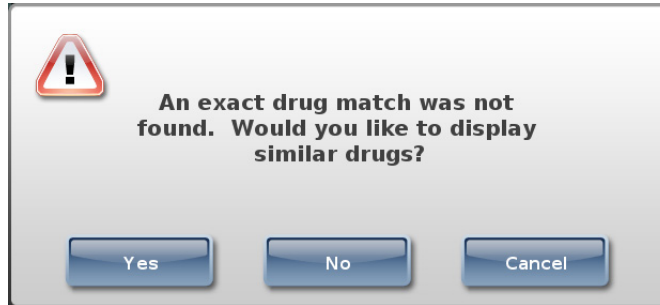
**CAUTION** SLS PCS users can verify drug containers. Please contact your SLS system administrator for proper training and usage.



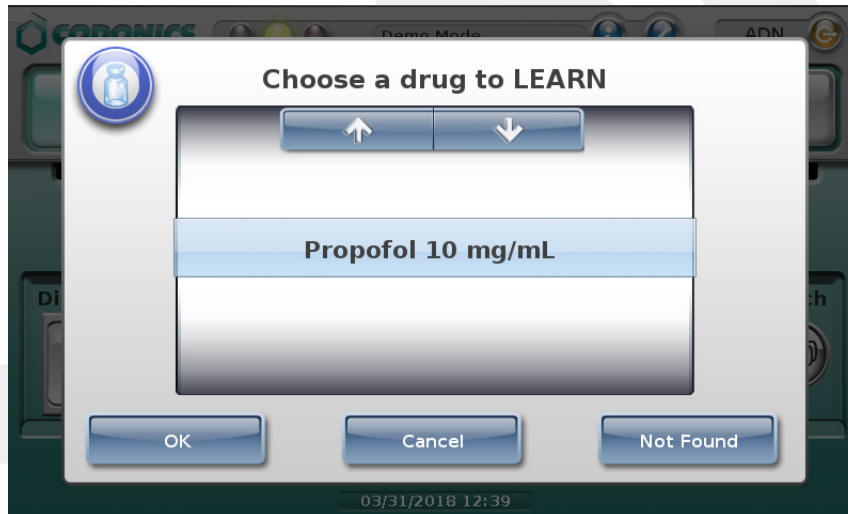
**NOTE:** If a drug record in a formulary is Not Verified, that drug will have to be verified on each of SLS PCSs on which the formulary is installed. Verifying a drug record in one SLS PCS does not change its verification state in the other SLS PCSs.

## **Drug Not Found (DNF) and Other Item Events**

Drug Not Found events occur when a container barcode is scanned and there are no mappings or matches of the NDC in the formulary drug database. To reduce the number of Drug Not Found events, a search algorithm that uses 9-digit matching is executed to identify possible matching drug entries in the formulary.



When an SLS PCS user selects a drug entry that was identified by this algorithm, as on the screen shown below, the information is communicated back to the AT Device Manager so that the formulary can be updated and deployed to all SLS PCSs.



**NOTE:** Before selecting a possible match, ensure that it is the one you want. The search will display the drug name and concentration and any message associated with that entry. For example, a drug with a message that it is preservative free will have a separate entry shown on the user interface from a drug that is not preservative free and does not have a message.



**NOTE:** 9-digit matching is enabled using the SLS Administration Tool. Refer to the Version 1.9.0 SLS Administration Tool Release Notes, part number 901-245-014.01.

Other Item events occur when a container barcode is scanned and there is no barcode parsing rule in the formulary drug database.

Drug Not Found and Other Item dialog messages are automatically dismissed after about 7 seconds or when scanning another vial.



## Specifying the Dilution and Diluent (Normal Dilution Method)

If you turned the **Dilute** switch on and the drug can be diluted, or if the drug must be diluted, you are prompted to specify the dilution and diluent. When a dilution is required for a drug (e.g., a drug such as Cefazolin that requires reconstitution), SLS PCS announces **Dilution Required** before the drug name and concentration are announced.

The screenshot shows a dialog box titled "fentaNYL" with the instruction "Choose a dilution." It contains two scrollable lists. The "Concentration" list has three visible options: "5 mcg/mL", "10 mcg/mL", and "Other". The "Diluent" list has four visible options: "Sterilized Water", "Normal Saline", "D5W", and "Ringers Lactate". The "5 mcg/mL" option in the concentration list and the "Normal Saline" option in the diluent list are highlighted with blue bars. Above each list are up and down arrow buttons. At the bottom of the dialog are "OK" and "Cancel" buttons.



**NOTE:** As of version 2.5.0, the scroll arrows are not available when you can no longer scroll in a specific direction. As shown above, there can be additional options above and below on the visible portion of the wheel list, so make sure to scroll to see all options.



**NOTE:** As of version 2.5.0, the displayed sort order is numeric (e.g., 1, 2, 3, 10, 20, 30) instead of alphabetic (e.g., 1, 10, 2, 20, 3, 30).

Press and/or drag the lists, or press the up and down arrow buttons, until the appropriate concentration (dilution) and diluent are selected (that is, they are displayed under the blue highlighted bars).



You can also select **Other** for the concentration to print a label with a blank line so that you can enter the dilution on the label by hand. You can also select **Other** for the diluent.



**WARNING** SLS PCS users are responsible for calculating and selecting the correct concentration and diluent.



**NOTE:** Additional dilutions can be added using the SLS Administration Tool. For more information, refer to the SLS Administration Tool User's Manual.

After selecting the concentration and diluent, press the **OK** button. One of the following occurs:

- You are prompted to confirm the label before it is printed, if this option has been configured. Go to “Specifying a Total Dose/Total Volume and Diluent (TD/TV Method)” on page 5-19.
- The label is printed. Retrieve the label and go to “Confirming the Printed Syringe Label” on page 5-36.

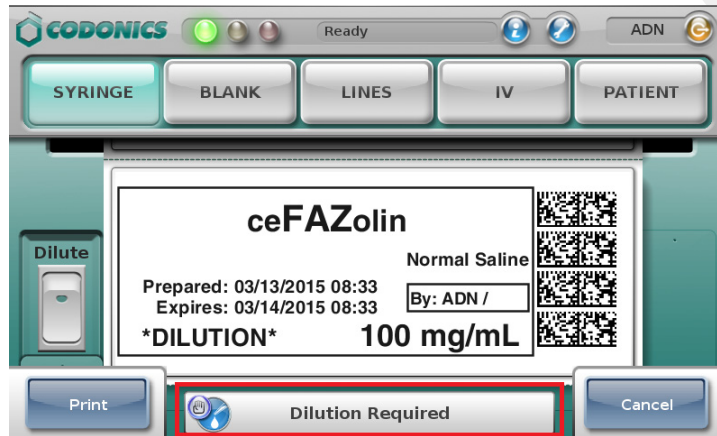


**WARNING** To avoid mislabeling syringes, make sure that you immediately remove each label from the output bin after it is printed, confirm the label, and then affix it to the appropriate syringe before attempting to print another syringe label.



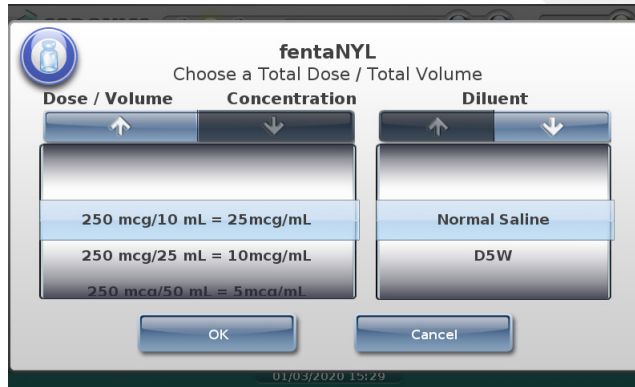
**WARNING** Unwanted labels should be destroyed or disposed of to ensure that incorrect labels are not used.

A Dilution Required message displays on the SLS PCS user interface and is announced when a drug entry is set to Dilution Required in the formulary.



## Specifying a Total Dose/Total Volume and Diluent (TD/TV Method)

For drugs in the formulary whose preparation method was specified as TD/TV: If you turned the **Dilute** switch on and the drug can be diluted, or if the drug must be diluted, you are prompted to specify TD/TV and diluent. When dilution is required for a drug (e.g., a drug such as Cefazolin that requires reconstitution), SLS PCS announces **Dilution Required** before the drug name and concentration are announced.



The sort order for TD/TV entries is: TD values are descending (e.g., 10 to 2) and TV values for a given TD value are ascending (e.g., 2 to 10).



**WARNING** SLS PCS users are responsible for calculating and selecting the correct TD/TV entry and diluent.



**NOTE:** As of version 2.5.0, the scroll arrows are not available when you can no longer scroll in a specific direction. As shown above, there can be additional options above and below on the visible portion of the wheel list, so make sure to scroll to see all options.



**NOTE:** As of version 2.5.0, the displayed sort order is numeric (e.g., 1, 2, 3, 10, 20, 30, for ascending) instead of alphabetic (e.g., 1, 10, 2, 20, 3, 30).



**NOTE:** Additional dilutions can be added using the SLS Administration Tool. For more information, refer to the SLS Administration Tool User's Manual Addendum.



To select TD/TV  
and diluent  
entries

1. Select the appropriate entries in the lists: press and/or drag the list, or press the up and down arrow buttons, until the appropriate entry is selected (that is, it is displayed under the blue highlighted bars)

In the **Diluent** list:

- If the dilution status for the drug is Not Allowed, the only option in the **Diluent** list will be **None**.
- If the dilution status for the drug is Allowed, a **None** option is included at the bottom of the **Diluent** list.
- If the dilution status for the drug is Required, a **None** option is not included in the **Diluent** list.

2. To save your selections, press the **OK** button.

If you did not select an **Other** TD/TV option, go to step 5.

If you selected an Other TD/TV option, you are prompted to enter the dose and volume values.

**Morphine**  
Enter Other Total Dose/Total Volume

**Total Dose**  
20 mg

**Total Volume**  
2 mL

**Equivalent Concentration:**  
**10 mg/mL**

OK Cancel

09/17/2012 11:26

3. Enter TD/TV values in the **Total Dose** and **Total Volume** fields.

As you enter the values, the system computes the equivalent concentration and displays it in the **Equivalent Concentration** field.

4. To save the value entries, press the **OK** button.

5. Continue in the label printing workflow:

- If you are prompted to confirm the label before it is printed, go to “Specifying a Total Dose/Total Volume and Diluent (TD/TV Method)” on page 5-19.
- If you are not prompted to confirm the label, the label is printed. Retrieve the label and go to “Confirming the Printed Syringe Label” on page 5-36.



**WARNING** To avoid mislabeling syringes, make sure that you immediately remove each label from the output bin after it is printed, confirm the label, and then affix it to the appropriate syringe before attempting to print another syringe label.



**WARNING** Unwanted labels should be destroyed or disposed of to ensure that incorrect labels are not used.

The following examples show TD/TV prompt behavior on SLS PCS during the label printing procedure. The examples are based on the drug's Dilution setting and TD/TV entries, as specified in the SLS Administration Tool.

These are examples only; they do not represent an actual drug situation. The examples are intended to represent how TD/TV works and its behavior on SLS PCS.



**NOTE:** If TD/TV equivalent concentration is within 1% of the original container concentration, the system considers TD/TV to be equivalent to the original concentration. Otherwise, the system considers TD/TV to be a dilution. For example, if the original container concentration is 0.3 g but the TD/TV entry is 0.3333, then they are considered different and 0.3333 is considered a dilution.

#### **TD/TV Prompt Behavior: Example 1**

For this example:

- The drug is Morphine.
- The Always Show TD/TV configuration option is on.
- The original drug container concentration is 10 mg/mL.
- The dilution status is set to Allowed.
- The available diluents are Normal Saline, Sterilized Water, and Other.

The configured TD/TV entries include multiples of the original container concentration and dilutions of the original concentration:

- 10 mg/1 mL
- 10 mg/10 mL

- 10 mg/20 mL
- 10 mg/100 mL
- 20 mg/2 mL
- Other mg/mL

The TD/TV prompt will be as follows:

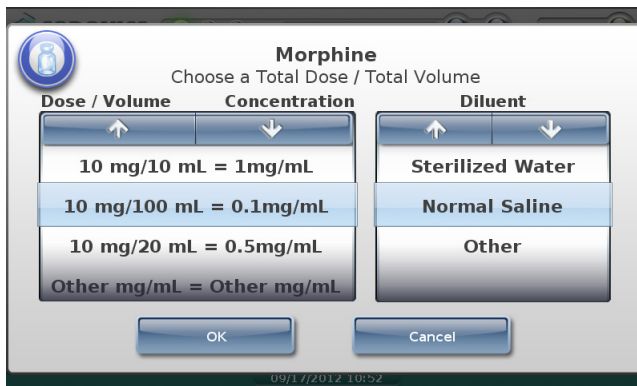
- If the **Dilute** switch is set to **Off**, the TD/TV prompt will display as follows:

Dose / Volume	Concentration	Diluent
10 mg/1 mL = 10mg/mL		
20 mg/2 mL = 10mg/mL		None
Other mg/mL = Other mg/mL		

09/17/2012 10:47

No diluted TD/TV entries or diluents will be shown because the **Dilute** switch is set to off. Only TD/TV entries with concentrations that are equivalent to the original concentration (for example, 10 mg/mL) are displayed and no diluents are displayed.

- If the **Dilute** switch is set to **On**, the TD/TV prompt will display as follows:



Only TD/TV entries that are dilutions of 10 mg/mL are displayed and the diluents are displayed.

### ***TD/TV Prompt Behavior: Example 2***

For this example:

- The drug is Heparin.
- The Always Show TD/TV configuration option is on.
- The original drug container concentration is 10,000 Units/mL.
- The dilution status is set to Not Allowed.
- There are no available diluents.

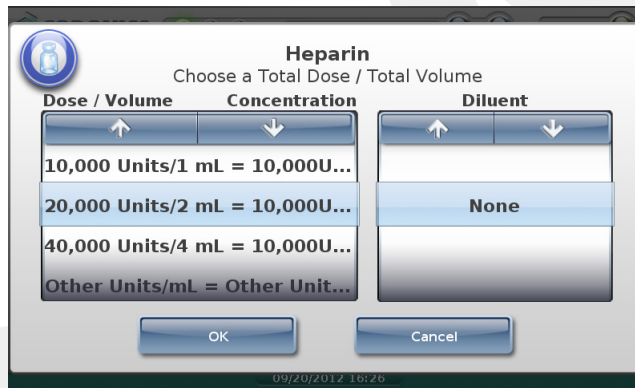
The configured TD/TV entries include multiples of the original concentration, dilutions of the original concentration, and an Other entry:



- 10,000 Units/1 mL
- 10,000 Units/2 mL
- 20,000 Units/2 mL
- 20,000 Units/4 mL
- 40,000 Units/4 mL
- Other Units/mL

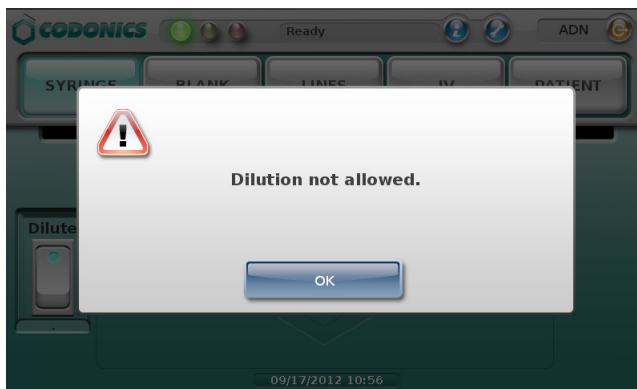
The TD/TV prompt will be as follows:

- If the **Dilute** switch is set to **off**, the TD/TV prompt will display as follows:



No dilution values of 10,000 Units/mL will be shown. Only TD/TV entries that are equivalent to the original container concentration of 10,000 Units/mL are displayed (for example, 20,000 Units/2 mL), and no diluents are displayed.

- If the **Dilute** switch is set to **on**, the following prompt that indicates that dilutions are not allowed is displayed:



### ***TD/TV Prompt Behavior: Example 3***

If the Warning shown in example 2 is ignored and a TD/TV entry is a dilution but the **Dilution** setting is **Not Allowed**, then you will be able to choose a dilution but no diluents will be displayed. You should be aware that this configuration overrides the intention of not allowing dilutions.

### ***TD/TV Prompt Behavior: Example 4***

For this example:

- The drug is Atropine.
- The Always Show TD/TV configuration option is on.
- The original drug container concentration is 0.5 mg/mL.
- The dilution status is set to Required.
- The available diluents are Normal Saline and Sterilized Water.

The configured TD/TV entries include multiples of the original container concentration, dilutions of the original concentration, and an Other entry:

- 0.25 mg/10 mL
- 0.5 mg/1 mL
- 0.5 mg/5 mL
- 0.5 mg/10 mL
- 0.5 mg/50 mL
- 1 mg/2 mL
- Other mg/mL

Based on the settings shown above, the following TD/TV prompt displays regardless of whether the **Dilute** switch is set to off or on:

The screenshot shows a software interface for selecting a Total Dose / Total Volume (TD/TV) for Atropine. The title is "Atropine" and the subtitle is "Choose a Total Dose / Total Volume". The interface is divided into two main sections: "Dose / Volume" and "Diluent".

Dose / Volume	Concentration	Diluent
0.25 mg/10 mL = 0.025mg/mL		
0.5 mg/10 mL = 0.05mg/mL		Sterilized Water
0.5 mg/5 mL = 0.1mg/mL		Normal Saline
0.5 mg/50 mL = 0.01mg/mL		

At the bottom of the interface are two buttons: "OK" and "Cancel". A timestamp "09/17/2012 11:10" is visible at the very bottom.

Only TD/TV entries that are dilutions are displayed, and the diluents are displayed.

### ***TD/TV Prompt Behavior: Example 5***

For this example:

- The drug is Morphine.
- The Always Show TD/TV configuration option is on.
- The original drug container concentration is 10 mg/mL.
- The dilution status is set to Allowed.
- The available diluents are Normal Saline and Sterilized Water.

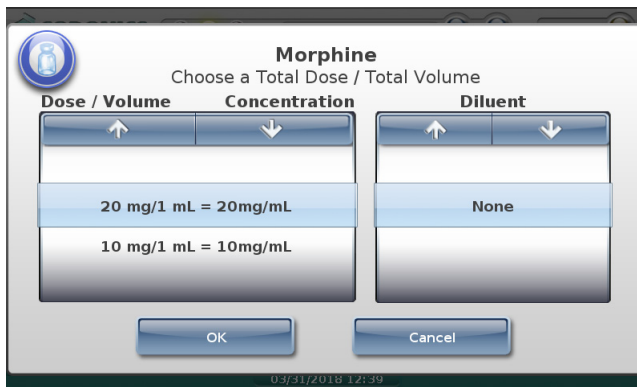
The configured TD/TV entries include multiples of the original container concentration, a concentration that is higher than the original concentration, dilutions of the original concentration, and an Other entry:

- 10 mg/1 mL
- 10 mg/10 mL
- 10 mg/20 mL
- 10 mg/100 mL
- 20 mg/1 mL
- Other mg/mL

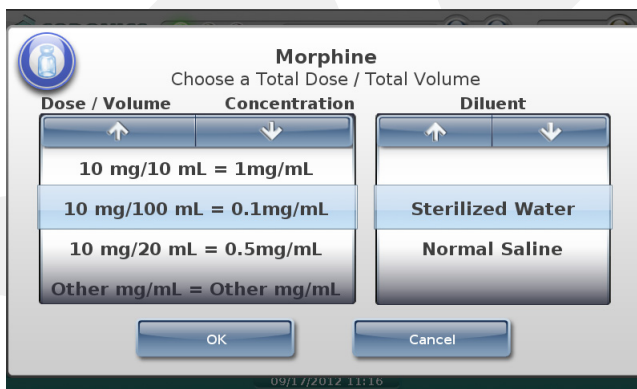
The TD/TV prompt will be as follows:

- If the **Dilute** switch is set to **off**, and because there is an Other option in the formulary, the drug label will display automatically with the original concentration, ready for printing.

If there were no Other option in the formulary, the TD/TV prompt would display with only TD/TV entries whose concentration are equivalent to the original container concentration.



- If the **Dilute** switch is set to **on**, the following prompt that indicates that dilutions are allowed is displayed:





**NOTE:** If any of the listed concentrations are higher than the original drug concentration, a warning message similar to the following will display in the SLS Administration Tool when creating the formulary to indicate this condition.

*Warning: Verify concentration values. The following entries have a concentration that is higher than the original drug concentration*

*20 mg / 1 ml = 20 mg/ml*

*Original Drug Concentration = 10 mg/ml*

*To prevent users from selecting higher concentrations on the SLS PCS, they need to be removed from the formulary using the SLS Administration Tool. For more information about the SLS Administration Tool, refer to the SLS Administration Tool User's Manual.*

### **TD/TV Prompt Behavior: Example 6**

For this example:

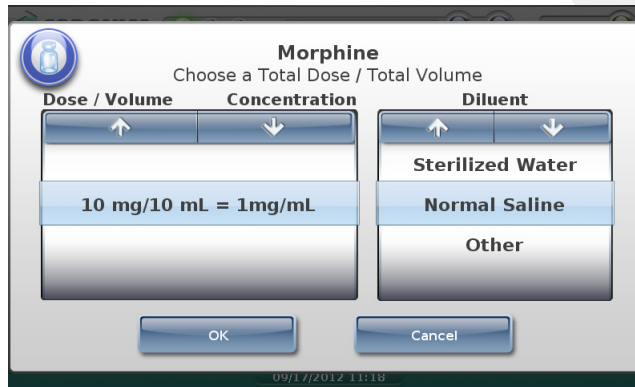
- The drug is Morphine.
- The Always Show TD/TV configuration option is **not** on.
- The original drug container concentration is 10 mg/mL.
- The dilution status is set to Allowed.
- The available diluents are Normal Saline, Sterilized Water, and Other.

The configured TD/TV entries include a concentration that is equivalent to the original container concentration and a dilution:

- 10 mg/1 mL
- 10 mg/10 mL

The TD/TV prompt will be as follows:

- If the **Dilute** switch is set to **off**, the TD/TV entry whose concentration is equivalent to the original container concentration will be automatically selected because it is the only non-diluted concentration defined for the drug. A TD/TV prompt is not displayed.
- If the **Dilute** switch is set to **on**, the TD/TV prompt will display as follows:



The prompt is displayed because, even though there is only one dilution value, multiple diluents have been selected for the drug. If only one diluent had been selected, then the dilution and diluent would have been automatically selected by the system and no prompt would have been displayed.

### **TD/TV Prompt Behavior: Example 7**

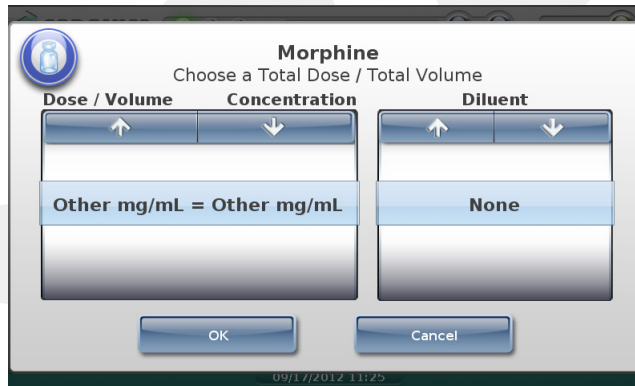
For this example:

- The drug is Morphine.
- The Always Show TD/TV configuration option is on.
- The original drug container concentration is 10 mg/mL.
- The dilution status is set to Allowed.
- The available diluents are Normal Saline and Sterilized Water.

The only configured TD/TV entry is Other mg/mL.

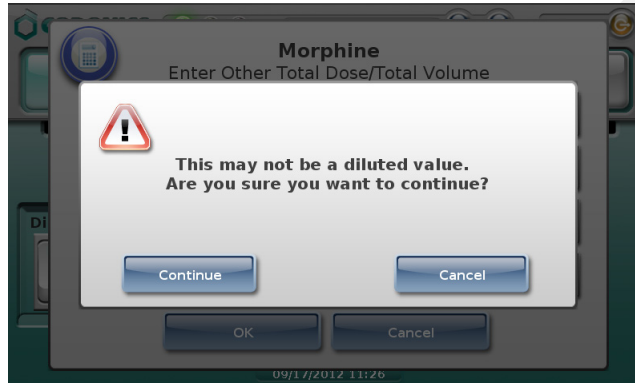
The TD/TV prompt will be as follows:

- If the **Dilute** switch is set to **off**, only the Other entry will be displayed in the TD/TV prompt:





- If the **Dilute** switch is set to **on** and you select a TD/TV entry whose concentration is equivalent to the original container concentration (for example, 20 mg/2 mL), the system will display the following message to indicate that the entered TD/TV might not be a dilution:

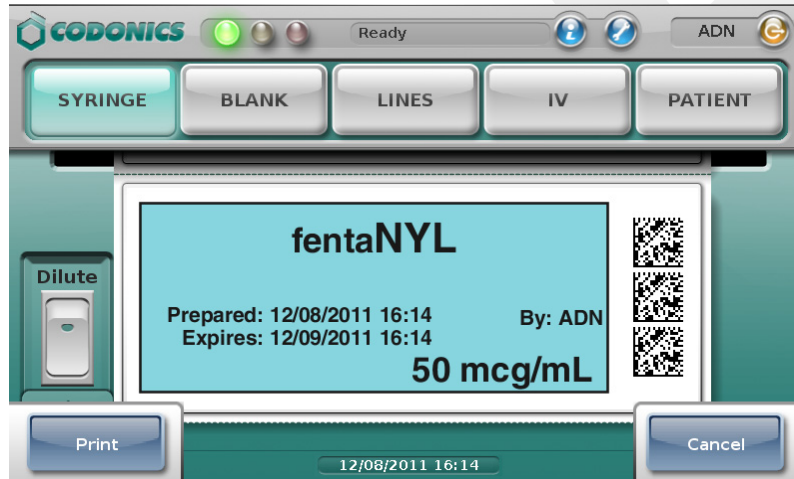


## Confirming the Syringe Label Before Printing It

If the system is configured to require visual confirmation of the label before printing it, you are prompted to confirm the displayed label.



**NOTE:** If a sound file has been configured for the scanned drug, the system also announces the drug name and, if specified, the concentration when the label to be printed is displayed on the main screen.



**NOTE:** Labels as presented on the touch screen and in print form might not be an absolute match to how your SLS system administrator viewed them in the SLS Administration Tool.

If the label is not correct or you do not want to print the label at this time, press the **Cancel** button.



**CAUTION** A failed visual label confirmation is a serious issue. It might mean that the formulary is wrong. An SLS system administrator should be consulted immediately to review the logs and correct the formulary.

If the label is correct, press the **Print** button to confirm it and print the label. After the label has been printed, retrieve it from the output bin.



**WARNING** To avoid mislabeling syringes, make sure that you immediately remove each label from the output bin after it is printed, confirm the label, and then affix it to the appropriate syringe before attempting to print another syringe label.



**WARNING** Unwanted labels should be destroyed or disposed of to ensure that incorrect labels are not used.

Next you need to confirm that the label printed correctly. Go to “Confirming the Printed Syringe Label” below.

## Confirming the Printed Syringe Label

If the system is configured to require confirmation after printing the syringe label, you are prompted to scan the label's barcode to confirm that it printed correctly.



**NOTE:** Labels as presented on the touch screen and in print form might not be an absolute match to how your SLS system administrator viewed them in the SLS Administration Tool.

After reviewing the printed label and the label displayed on the touch screen, you have the following options:

- Scan the label's barcode.
  - If the barcode is correct, the system plays an audible beep, briefly displays a confirmation message, and then displays the main screen.

- If the scanned barcode is incorrect, the system displays a message explaining the actions that can be taken.

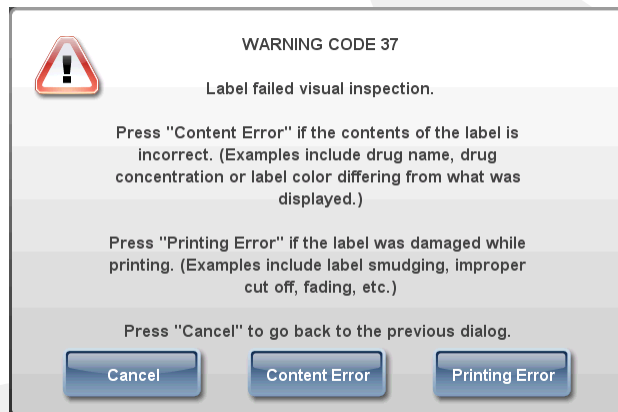


**WARNING** Incorrect syringe labels should be destroyed or disposed of to ensure that they are not used.



**CAUTION** A failed label content confirmation is a serious issue. It might mean that the formulary is wrong. An SLS system administrator should be consulted immediately to review the logs and correct the formulary.

- If by visual inspection you can see that the label did not print correctly, press the **No** button. You are prompted to indicate whether there was a label content error or a problem printing the label.



After pressing either of the **Error** buttons, the system displays a message explaining the appropriate action to take.



**WARNING** Incorrect syringe labels should be destroyed or disposed of to ensure that they are not used.



**WARNING** If the barcode scan or you indicate that the label content was not correct or that the label was not printed correctly, contact the SLS system administrator or Codonics Technical Support (+1 440.243.1198) to resolve the problem before attempting to print a syringe label again.



**CAUTION** A failed label content confirmation is a serious issue. It might mean that the formulary is wrong. An SLS system administrator should be consulted immediately to review the logs and correct the formulary.

- If you are unable to scan the barcode, press the **Unable to Scan** button. You are prompted to discard the label and to try scanning the drug container barcode and printing the label again. Correct the scanning problem before attempting to print any more labels.



**WARNING** Unconfirmed syringe labels should be destroyed or disposed of to ensure that they are not used.

### **Auxiliary Barcodes for Container IDs**

SLS PCS supports auxiliary barcodes on standard-size labels so that a 1D barcode of the Container ID of the original drug container can be included on printed labels.

Auxiliary barcodes can contain:

- A 10-digit Container ID when the SLS Master Drug Database (MDD) mode is set to US NDC.
- A 10- or 13-digit Container ID when the SLS MDD mode is set to Other.

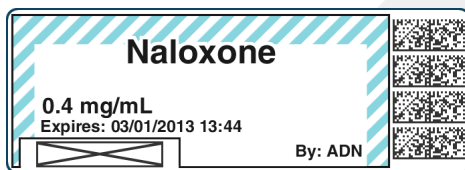
Only the original Container ID of the drug container will be encoded in the auxiliary barcode.



**WARNING** Scanning the auxiliary barcode in Administer Mode or when the SLS PCS main screen is displayed will create another label. If creating this label was unintended, either cancel the label's printing at the pre-print confirmation screen or discard the label.

### **Printing a Placeholder Graphic for a Non-Compliant Container ID**

If SLS PCS detects that a drug's Container ID is not compliant with the 10-digit or 13-digit limit, it will print a label with a special **X** graphic, as shown in the example below.



For example, the last digit of a 13-digit Container ID must be a check digit for the rest of the Container ID. If it is not, then the Container ID will be non-compliant.

SLS PCS will not display any error or warning messages when non-compliant Container IDs are encountered. The placeholder graphic will act as the only indicator that the drug Container ID is not compatible with the auxiliary barcode.

## **Manually Entering the Expiration Date/Time on a Syringe Label**

If the drug's expiration time has been set to 0 in the formulary, the syringe label will include a blank space for you to manually enter the expiration date/time.



## **Custom Labels**

In addition to printing syringe labels, SLS PCS can print custom labels that are configured for your site.

The next topic describes the custom label categories. For instructions about how to print custom labels, refer to “Printing Custom Labels” on page 5-45.

### **Custom Label Categories**

By default, the system includes pre-defined categories for Blank, Lines, I.V., and Patient labels. These categories are described in the following topics.

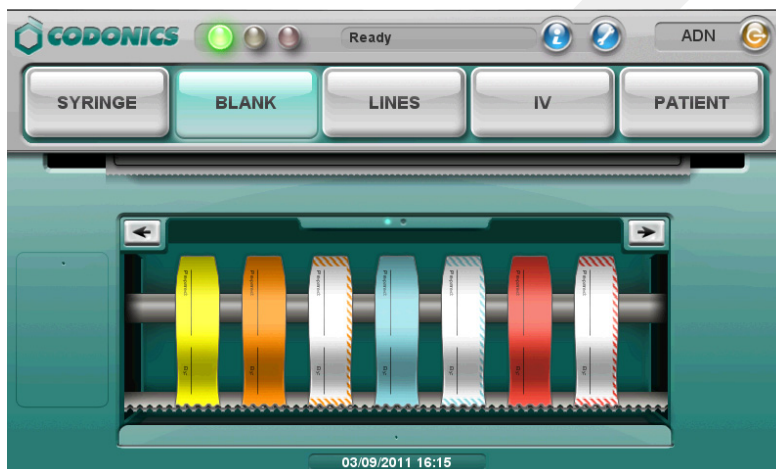


**NOTE:** Custom labels can be added using the SLS Administration Tool. For more information, refer to the SLS Administration Tool User's Manual.



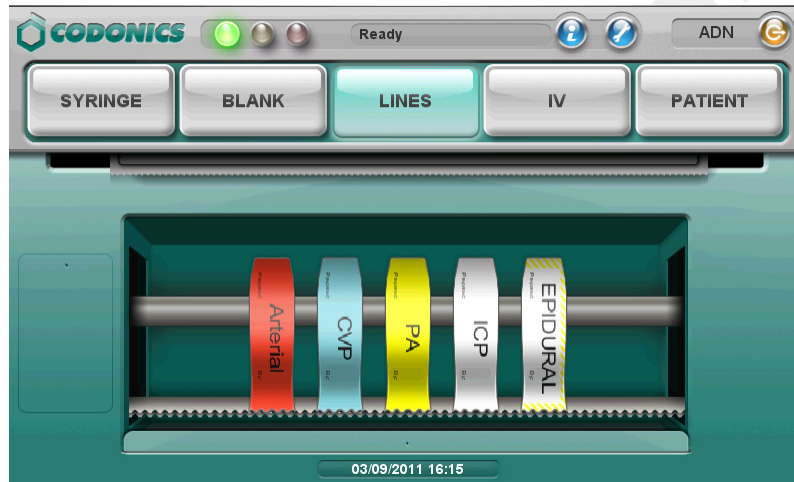
## **Blank**

These blank syringe labels (no drug name or concentration) are provided for the labeling of drugs that do not have an NDC barcode on them, are not in the formulary, or cannot be read by the barcode scanner. By default, one copy of the Blank label will be printed when it is selected.



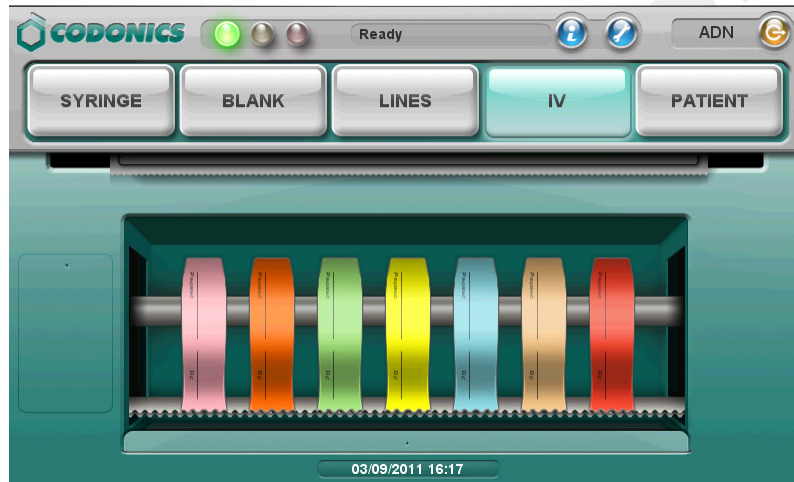
## Lines

These labels are provided for the labeling of invasive monitoring lines used commonly in anesthesia. By default, one copy of the Lines label will be printed when it is selected.



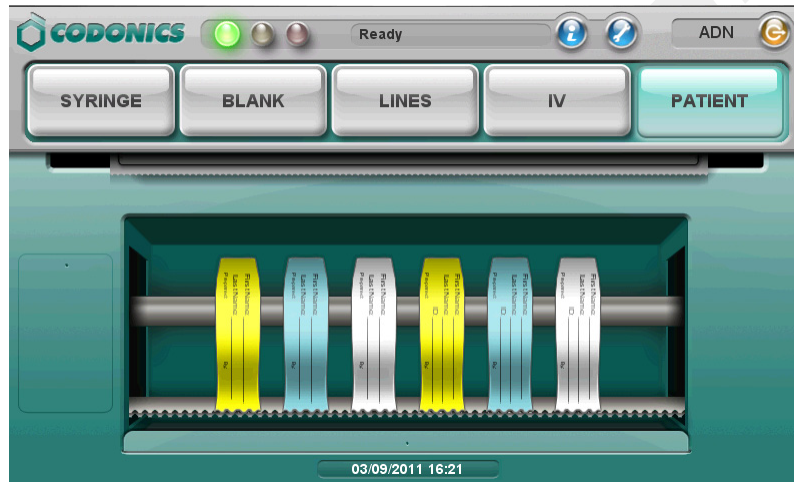
#### IV

These labels are provided for the labeling of the general IV line and catheter. By default, two copies of the IV label will be printed when it is selected.



## Patient

These labels are provided for the labeling of the reports and specimens. By default, two copies of the Patient label will be printed when it is selected.

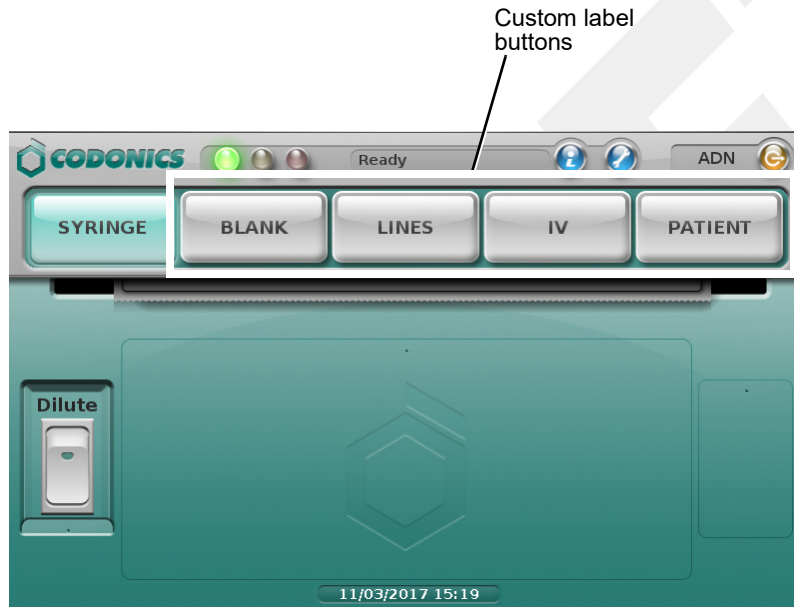


## Printing Custom Labels

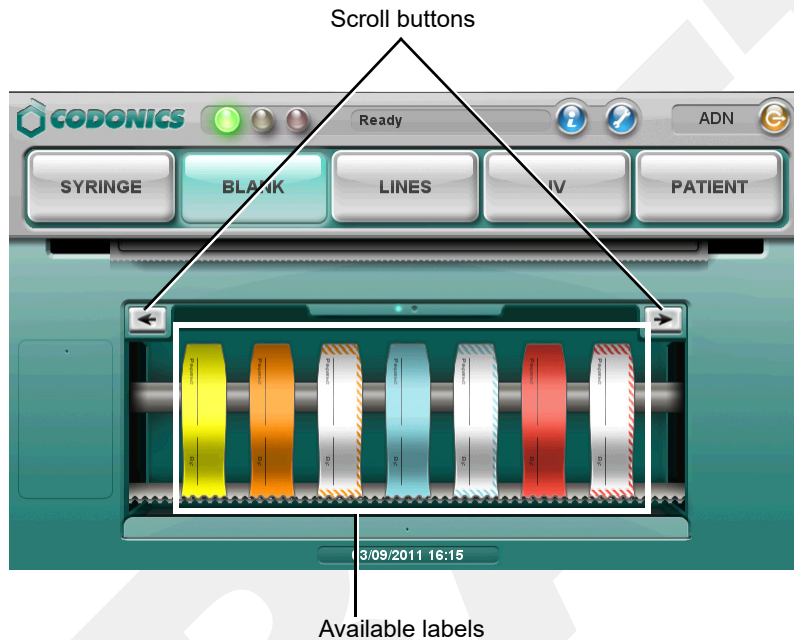


To print a custom label

1. Press one of the custom label buttons.



The system displays a selection of the custom labels that are available for that category.



2. If there are more custom labels than can be displayed at one time, press the left or right arrow buttons to scroll to the other labels.
3. Press the desired custom label to print it.

The system prints the label. There is no pre-print or post-print confirmation of custom labels.

## Printing Labels in Batch Mode



**WARNING** The safest way to label a syringe (or any container of medication) using SLS PCS is to scan a drug container, draw up the drug as the label is being printed, and then immediately label the syringe before setting it down. Batch Mode introduces the risk of a mislabeled syringe since more than one label from a single container scan is being created. This changes the one-to-one relationship (e.g., one vial and one syringe with a single label). For example, if there is more than one filled syringe without a label, there is a potential for a syringe to be mislabeled. Or if there are more labels than there are filled syringes, there is a potential for an extra label being placed on the wrong syringe. Be sure to visually confirm that the label you are applying is the correct one for the syringe being labeled.



**NOTE:** Batch Mode requires a feature key on SLS PCS. Contact your Codonics Sales Representative to obtain the proper key.



**NOTE:** Batch Mode is configured using the SLS Administration Tool. Refer to the Codonics SLS Batch and Copy Modes Technical Brief (901-268-003).

In a typical Pharmacy application, Batch Mode allows you to automatically print multiple copies of the original label. The label can include a user-defined lot number and a larger initial area for use cases in which two sets of initials are required on the label. This might occur because a different person prepared the label than prepared the syringe, or if an additional safety check is required.



## **Positioning SLS PCS to Support Printing Labels in Batch Mode**

To avoid issues when printing labels in Batch Mode:

- Make sure that SLS PCS is placed on a flat surface. If SLS PCS is rotated toward its right side, the hanging strip of labels can cause strain during printing. This in turn can cause labels to be vertically misaligned and ink to be printed on the liner instead of the label.
- Place the rear edge of SLS PCS flush with the edge of the desk or table on which it is positioned. This will allow the printed strip of labels to hang over the edge freely while printing.

## **Printing Multiple Labels in Batch Mode**



To print multiple  
labels in Batch  
Mode

1. Make sure that the media is fed properly into the media path.

If the media is not fed in straight, the printed information on the label could be printed onto the liner.



2. Make sure that the label contents are properly centered on printed labels.

Print 10 to 20 labels to make sure that the print location has stabilized. Then, if needed, use the Adjust Label utility to adjust the media path to center the label contents properly on the labels. Refer to “Adjusting the Media Path” on page 3-18.

**Make sure printed area is centered inside of label**



3. Press the **Batch** button.



The **Batch Mode Configuration** screen displays.

4. Enter the number of copies of the label to print and, if applicable, a second preparer's initials and a lot number.

**Batch Mode Configuration**

Copies:       Second Preparer's Initials:

Lot Number:

Single    Strip

-   1   2   3

#   4   5   6

/   7   8   9

:   ABC   0   ←

Cancel   OK

- Up to 999 copies can be printed in one batch job.
  - A lot number can be up to 18 alphanumeric characters.
  - If a lot number is entered, the bottom barcode will be replaced with the human-readable lot number. If a lot number is not entered, then the bottom barcode on the label will print normally with a barcode. See an example of a label with the lot number in step 7.
  - If a lot number is entered that was previously used, an alert message will display letting you know that it was already used.
  - The number of copies and the lot number entries will not persist from batch job to batch job.
5. Select whether to cut the labels:
    - **Single:** Cut in between each copy of the label
    - **Strip:** Leave all copies of the labels on a single liner.

The selection of **Single** or **Strip** will persist from batch job to batch job.



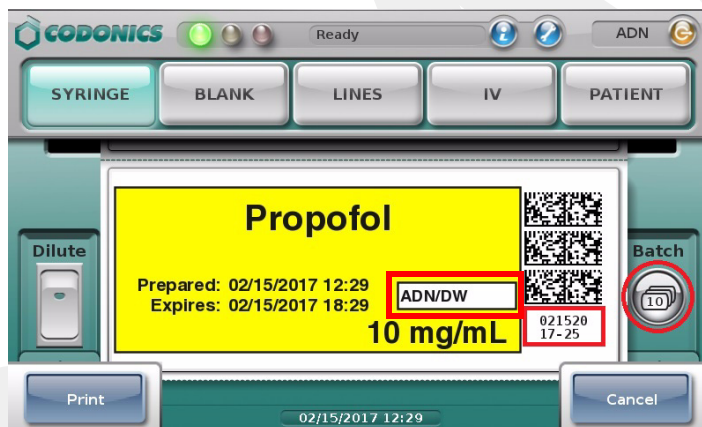
**NOTE:** If *Strip* is chosen, you will be asked at the end of the batch whether to cut the liner.

6. To save your entries, press **OK**.
7. Scan the container barcode.

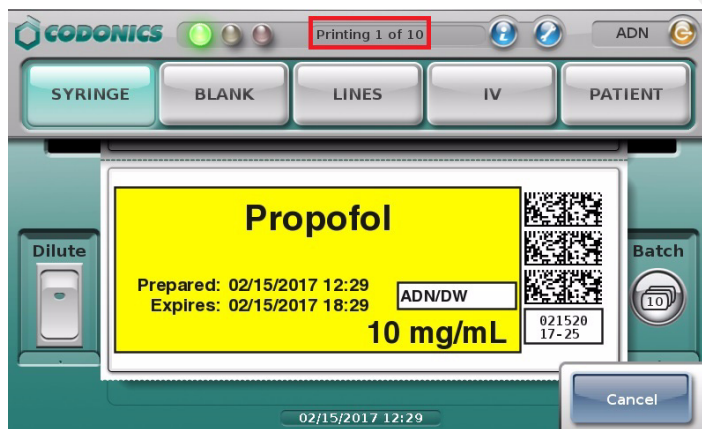
The label displays. If entered, it includes:

- The second preparer's initials in the box with your initials.
- The lot number in the bottom barcode area.

Also, the number of copies to be printed displays on the **Batch** icon.



Once printing has started, the number of labels that have been printed is displayed in the system status box.



**NOTE:** To cancel the printing of the batch job, press the Cancel button on the main screen. The job will be stopped once the current label is finished printing.

When the batch is completed, if **Strip** was selected on the **Batch Mode Configuration** screen, a screen displays that shows the job status and prompts you to confirm cutting the liner.



8. Press OK.

The dialog box closes and the liner is cut.



**WARNING** Handling of long strips of labels increases the chance of a paper cut.



**CAUTION** Do not pull the strip of labels or try to tear the strip of labels. This can cause jamming and/or damage to SLS PCS.



**NOTE:** If SLS PCS is configured for Post Print Confirmation, the Post Print Confirmation screen displays after the batch is complete. You will need to scan only the last label to confirm the printed labels.



**NOTE:** If printing a one-color label in Batch Mode (e.g., yellow for Propofol), an ink cartridge is considered unusable if the single color is empty, even if a predominant amount of the two other colors (e.g., cyan or magenta) remain in the cartridge. This is to make sure that all potential colors (e.g., green) can be produced with the cartridge.

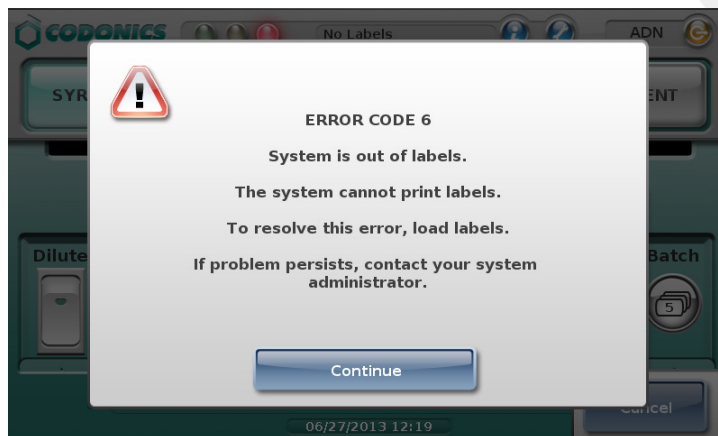
## **Reaching the End of Media Before a Batch or Copy Job Completes**

### **Strip Cut Printing**

When using strip cut printing, if the end of the media is reached before printing in Batch or Copy Mode is completed, a message displays that indicates how many labels of the total number have printed and that the system is out of labels.



After pressing **OK**, the printed labels are cut and the media is automatically rewound. The following message displays.



Replace the media (refer to “Loading or Replacing the Label Media” on page 2-26 and press **Continue** to dismiss the message. The batch or copy job will be completed.

### **Single Cut Printing**

If you print in Batch Mode using single cuts, when the last available label prints, SLS PCS will cut the last label and then automatically rewind the media. A message will appear indicating the system is out of labels and to load a new roll of labels. If the batch job was not completed, once a new roll of media is loaded, the job will complete.

## Printing Labels in Copy Mode

Copy Mode allows you to print multiple copies of the same label from a single scan of a drug container. For example, three copies of a label might be required from a single scan of a Phenylephrine vial if the same label is being used on a 100-mL IV bag, a syringe drawn from the IV bag, and the line coming from the IV bag.



**WARNING** The safest way to label a syringe (or any container of medication) using SLS PCS is to scan a drug container, draw up the drug as the label is being printed, and then immediately label the syringe before setting it down. Copy Mode introduces the risk of a mislabeled syringe since more than one label from a single container scan is being created. This changes the one-to-one relationship (e.g. one vial and one syringe with a single label). For example, if there is more than one filled syringe without a label, there is a potential for a syringe to be mislabeled. Or if there are more labels than there are filled syringes, there is a potential for an extra label being placed on the wrong syringe. Be sure to visually confirm that the label you are applying is the correct one for the syringe being labeled.



**NOTE:** Copy Mode requires a feature key on SLS PCS. Contact your Codonics Sales Representative to obtain the proper key.



**NOTE:** Copy Mode is configured using the SLS Administration Tool. Refer to the Codonics SLS Batch and Copy Modes Technical Brief (901-268-003).



To print multiple copies of a label from a single scan

1. Make sure that the media is fed properly into the media path.

If the media is not fed in straight, the printed information on the label could be printed onto the liner.

2. Make sure that the label contents are properly centered on printed labels.

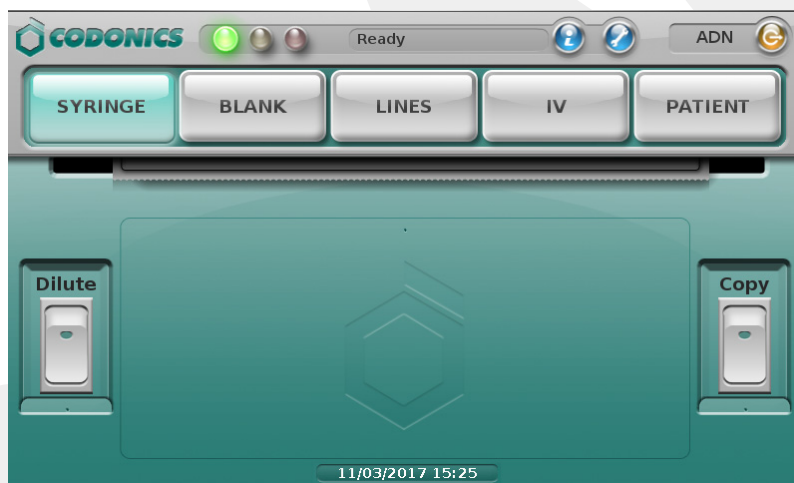


Print 10 to 20 labels to make sure that the print location has stabilized. Then, if needed, use the Adjust Label utility to adjust the media path to center the label contents properly on the labels. Refer to “Adjusting the Media Path” on page 3-18.

**Make sure printed area is centered inside of label**



3. To turn on Copy Mode, press the Copy switch.



**NOTE:** If the drug entry in the formulary is set to Required for Copy Mode, you do not need to press the Copy switch. When you scan the drug container, the Copy dialog box shown in step 4 will automatically appear.

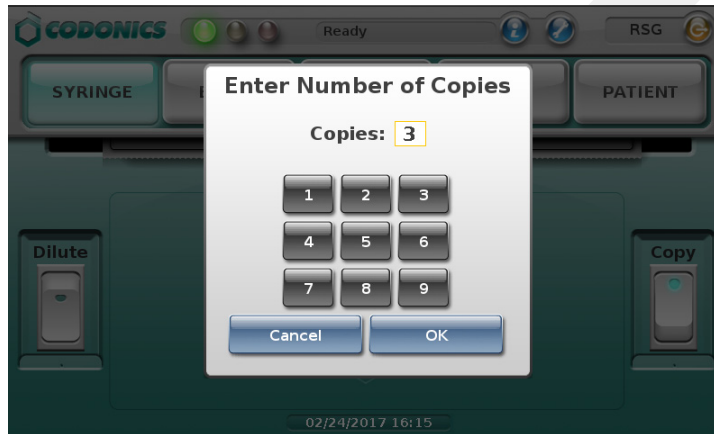


**NOTE:** If you need to dilute the drug and make copies, you should press both the Dilute switch and the Copy switch. You will first be prompted to select the dilution information and then enter the copy information.

4. Scan the container's barcode.

If the drug is set in the formulary to Allowed or Required for Copy Mode, the **Copies** screen displays.

5. Enter the required number of copies, from 1 to 9.



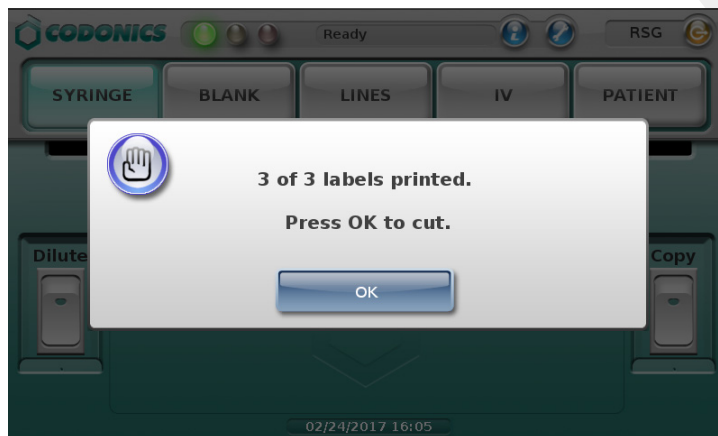
6. Press **OK**.

Once printing has started, the number of labels that have been printed is displayed in the system status box.



**NOTE:** To cancel the printing of the copy job, press the Cancel button on the main screen. The job will be stopped once the current label is finished printing.

When the printing is completed, a screen displays that shows the job status and prompts you to confirm cutting the liner.



7. Press OK.

The dialog box closes and the liner is cut.



**WARNING** Handling of long strips of labels increases the chance of a paper cut.



**CAUTION** Do not pull the strip of labels or try to tear the strip of labels. This can cause jamming and/or damage to SLS PCS.



**NOTE:** If SLS PCS is configured for Post Print Confirmation, the Post Print Confirmation screen displays after the printing is complete. You will need to scan only the last label to confirm the printed labels.

If the end of the media is reached before printing in Copy Mode is completed, a message displays indicating that the system is out of labels. For more information, refer to “Reaching the End of Media Before a Batch or Copy Job Completes” on page 5-54.

## SLS Advanced Smart Scanning

SLS Advanced Smart Scanning (SASS) is an optional feature that allows you to scan a container and print a label, not print a label, or allow printing of an SLS label. For example, you can scan a prefilled syringe and only hear SLS PCS announce the drug name and concentration without printing a label. This better ensures that you have selected the correct drug when there is no need for a printed label.

When integrated with a drug cart that supports SASS, this feature also decrements inventory of those items scanned on SLS PCS. For example, it allows you to scan non-drug containers (e.g., gauze, syringes) that have barcodes on their packaging and not print an SLS label but still automatically decrement the cart inventory.



**NOTE:** SASS requires a feature key on SLS PCS. Contact your Codonics Sales Representative to obtain the proper key.

### **SASS Use Cases**

Following are use cases when scanning drug containers with SASS enabled.



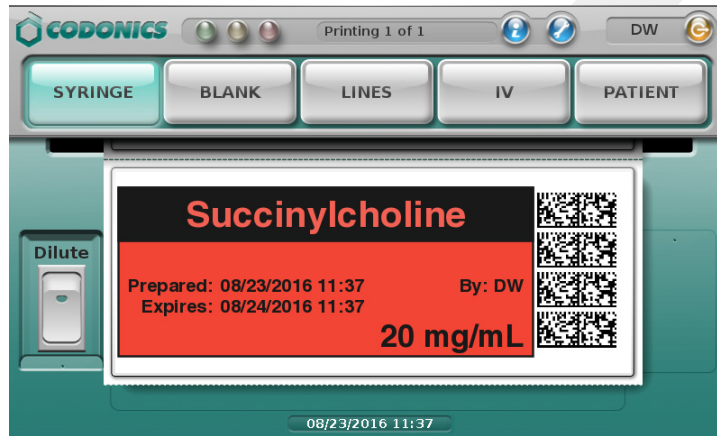
**NOTE:** When a drug cart supports SASS and is integrated with SLS PCS, the cart will also support Common Login/Common Scan.



**NOTE:** When a drug cart is not integrated with SLS PCS, the following use cases will not perform any inventory accounting. SLS PCS behavior will still be as defined in the use case.

### **SLS Formulary Drug Print Setting Set to Always**

SLS PCS will display the drug label with all predefined elements shown (e.g., label template, drug name, concentration, preparation/expiration time, etc.), announce the drug name and concentration, and print the label. The cart will automatically decrement the inventory as long as the drug is in the cart's formulary.

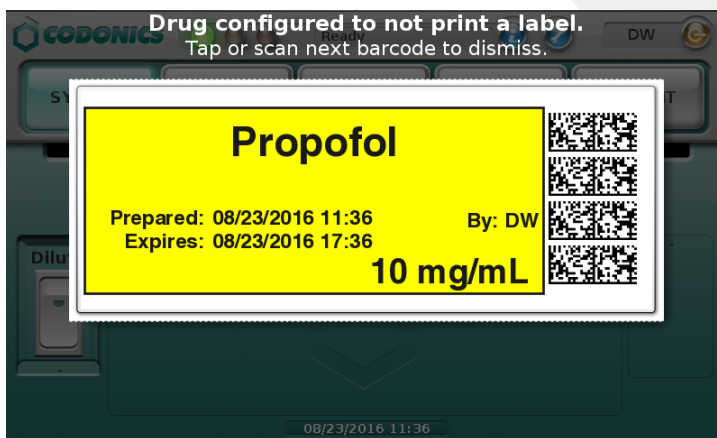


### **SLS Formulary Drug Print Setting Set to Never (e.g., Pre-Filled Syringe)**

SLS PCS will display the drug label with all predefined elements shown, announce the drug name and concentration, but **not** print the label. After a few seconds, the label will automatically close. The cart will automatically decrement the inventory as long as the container is in the cart's formulary.



**NOTE:** Scanning another container while the message is displayed will also dismiss the message.

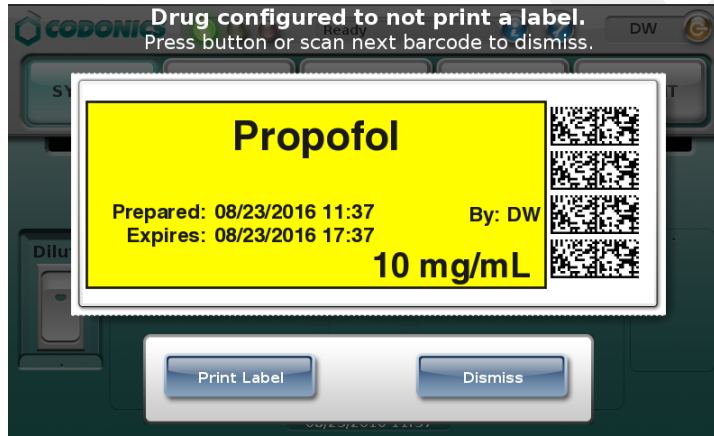


### **SLS Formulary Drug Print Setting Set to Allow (e.g., Pre-Filled Syringe)**

SLS PCS will display a label with all predefined elements shown, announce the drug name and concentration, and allow you to print the label or dismiss it. The cart will automatically decrement the inventory as long as the container is in the cart's formulary.



**NOTE:** Scanning another container while the message is displayed will also dismiss the message.





### **Drug Container Not Found in the SLS Formulary**

SLS PCS displays a Drug Not Found message and announces **Drug Not Found**. After a few seconds the message will automatically close. The cart will automatically decrement the inventory as long as the container is in the cart's formulary.



**Drug Container Not Found in the SLS Formulary but Stocked in the Cart (e.g., Gauze, Syringes)**

SLS PCS displays an Other Item message. After a few seconds the message will automatically close. The cart will automatically decrement the inventory as long as the container is in the cart's formulary.



**NOTE:** Scanning another container while the dialog is displayed will also dismiss the dialog.

