

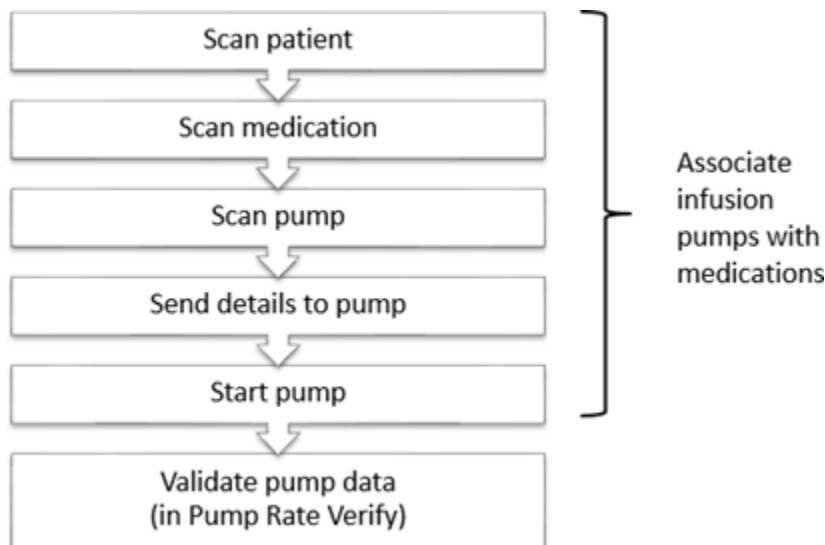
Integrated Infusion Pumps

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Getting Started

With integrated infusion pumps, your pumps can communicate with Epic. To use integrated pumps, you first associate the pump with a medication and start the pump. Then you periodically review and validate the data from the pump in Epic using Pump Rate Verify.


Here are the high-level steps:



Associate infusion pumps with medications


Associate the infusion pump with a medication so that you can program the pump and validate the infusion details in Hyperspace. This functionality is available in Rover iOS and Android as well. Rover-specific steps will be called out separately.

1. Scan the patient's wristband and then scan the medication.
 - In Rover:
 - Open the patient chart from Patient Lists and go to the MAR. Select or scan the medication to administer.
 - Select **Create a New Admin**. Tap the medication administration cart and select the infusion order. Verify details are correct and click **✓ Accept**.
2. Scan the pump.
 - If required, select the line you're infusing the medication through or add a new line and link it.
 - In Rover: If the volume to be infused (VTBI) has not been defined, enter it at this time.

3. In the MAR, verify that the administration details are correct and click  **Send Details**.
 - If there's a ranged dose or rate, enter the starting dose or rate.
 - If your pump has multiple channels, choose the channel you're infusing the medication through and verify that the pump association time is correct.
4. On the pump screen, verify that the medication details are correct and then start the pump.
 - When the pump has started successfully, the window disappears, the pump is associated, and the administration appears on the MAR.

Associate infusion pumps after the fact

When your patient needs a medication STAT or when a patient is transferred, you can start a medication infusion on the pump before you associate it in Epic. Later, you need to back-associate the pump so the data from the pump appears in Epic.




1. Scan the patient's wristband and then scan the medication.
2. Select the correct MAR action:
 - Use New Bag if the infusion hasn't been documented in Epic yet.
 - Use Associate Infusion Device if you have already documented the new bag and want to start receiving infusion data in Epic.
3. Scan the pump.
 - If required, select the line you're infusing the medication through or add a new line and link it.
4. In the MAR, verify that the administration and pump details are correct and click  **Accept**.
5. Validate the data as described in the following topic.

Validate pump data

After you associate a pump, it sends data to Epic with each action taken on the pump and in intervals. Follow your unit's policies for how often you need to validate rates and volumes.

To review and validate pump infusions, use the Pump Rate Verify tool. In this tool, you can verify rates for all of a patient's pump infusions at the same time.



1. Open the Intake/Output flowsheet and add a column for the current time.
 - The Pump Rate Verify tool pulls in data from the pump up to the time of the most recent column in Flowsheets. Adding a column for the current time ensures that you're seeing all the available data.

2. Click  **Pump Rate Verify** in the toolbar.
 - Each medication appears in its own section.
 - The **Source** column shows additional information, such as whether the pump went offline during an administration.
3. Verify that the rate, dose, and volume data is accurate for each medication.
4. Clear check boxes for administrations you don't want to file, such as clinically insignificant pauses or keep vein open/to keep open (KVO/TKO).
5. Confirm that the correct action (**Stopped** or **Paused**) is selected for infusion rates of 0 mL/hr.
6. Select **Disassociate** if appropriate.
7. If a **Show MAR Warnings** link appears, click the link to reconcile those warnings.
 - If you don't click the link, the warnings will appear when you click  **Accept**.
8. Click  **Accept** when you've reviewed all the infusions.




Change the rate of an infusion

Follow these steps to change the rate of an infusion, including when you need to titrate an infusion and manage a patient's reaction to an infusion. Depending on your pump vendor, you can either change the rate from the pump or the MAR.

Change rates from the pump

1. Change the rate on the pump.
2. Scan the patient's wristband and then scan the medication.
3. Open the Intake/Output tab in Flowsheets and add a column.
4. Right-click the name of the infusion group and click  **Pump Rate Verify**.
5. The check box next to the rate change appears. Click  **Accept**.
 - The new rate appears in Flowsheets and on the MAR.

Change rates from the MAR

1. Scan the patient's wristband and then scan the medication.
2. Select the **Rate Change** MAR action.
3. Scan the pump.
4. In the MAR, verify that the administration details are correct and click  **Send Details**.
5. On the pump, verify that the medication details are correct and then start the infusion program.
6. Back in Epic, open the Intake/Output tab in Flowsheets and add a column. Right-click the name of the infusion group and click  **Pump Rate Verify**.
7. The check box next to the rate change appears. Click  **Accept**.
 - The new rate appears in Flowsheets and on the MAR.

Document giving a subsequent bag or syringe

Some infusions are given in multiple bags or syringes over time. Follow the steps below when you have already associated and administered the first bag or syringe and now need to replace it with the second bag or syringe.

Document a subsequent bag or syringe after the previous is empty


If the previous bag is empty and the pump has stopped, document the next bag the same way you did for the first bag. This functionality is available in Rover iOS and Android as well.



Refer to the [Associate infusion pumps with medications](#) topic for more information.

Document a subsequent bag or syringe and line change with no pause



If the previous bag is still infusing, you can switch to the next bag with no pause. Follow these steps when you want to switch out the tubing while hanging a new bag.

1. While the previous bag is still infusing, scan the patient's wristband to open the MAR.
2. Click the **Show Pumps** link.
3. Click **Disassociate** for the pump module with the expiring bag and tubing.
4. Scan the new medication.
5. Scan the pump with the new bag and tubing.
6. If required, select the line you're infusing the medication through or add a new line and link it.
7. In the MAR, update the administration details:
 - Change the administration time to one minute after the disassociation above.
 - Verify that the other administration details are correct and click  **Send Details**.
8. Accept the warning on the pump about the medication already infusing.
9. On the pump screen, verify that the medication details are correct.
10. Start the pump and then immediately pause it because the new tubing is not yet connected to the patient.
11. Connect the new tubing and restart the new pump channel or module.
12. Stop the old pump channel or module. Disconnect the tubing.
13. Validate the data as usual.

Stop or pause an infusion

Validate that a pump is paused when you're using the pump for another infusion, such as a piggyback. Validate that a pump is stopped when that infusion is finished. Whether you stop the pump manually or it stops automatically, you need to validate that action using Pump Rate Verify.

1. Scan the patient's wristband or open the patient's chart.

2. Open the Intake/Output flowsheet and add a column for the current time.
3. Right-click the row for the stopped medication and click  **Pump Rate Verify**.
4. In Pump Rate Verify, select an action of Paused or Stopped.
5. If the patient no longer needs the pump or if you plan to infuse a different medication through this pump, select **Disassociate** to disassociate the pump.
6. Click  **Accept**.

Document flush fluids

Flush fluids are ordered to clear the remaining infusion medication from the line to ensure the tubes are clean and the patient gets the full dose of the medication infused. You can prime the line with a medication or you can prime the line with a fluid.

Prime the line with a medication

When a nurse primes the line initially with a medication, a flush can be administered after the medication infusion is complete to ensure the full dose of the infusion gets administered to the patient.

1. Prime the line for the medication infusion and administer the medication with pump integration as usual.



Refer to the [Associate infusion pumps with medications](#) topic for detailed steps.

2. When your medication infusion is complete, **do not disassociate the pump**.
3. Administer your flush fluid on the pump so that the initial medication volume that was primed is infused.
4. When finished with the flush, validate the pump data as usual.



Refer to the [Validate pump data](#) topic for detailed steps.

5. The full infusion volume of the medication in the bag, plus in the line should be accounted for in Pump Rate Verify.

Prime the line with a fluid

When a nurse primes the line initially with a non-medication fluid, a flush can be administered after the medication infusion is complete to ensure the full dose of the infusion gets administered to the patient. This flush done after the infusion will not be captured in Pump Rate Verify.

1. Prime the line for the medication infusion with a non-medication fluid and administer the medication with pump integration as usual.



Refer to the [Associate infusion pumps with medications](#) topic for detailed steps.

2. When your medication infusion is complete, validate the pump data and disassociate the pump as usual.




Refer to the [Validate pump data](#) topic for detailed steps.

3. Administer your flush fluid on the pump so that the full medication volume is infused.
4. The full infusion volume of the medication in the bag should be accounted for in Pump Rate Verify. The flush volume of the non-medication fluid will not be.

IV Piggybacks (IVPB)

Depending on your pump vendor, when you give an IV piggyback (IVPB), you can set your pump to either automatically restart the primary infusion when the IVPB is finished or keep the vein open/to keep open (KVO/TKO) and call you back when it's finished.



Start a piggyback

1. Scan the patient's wristband and scan the IVPB medication.
2. Scan the pump and choose the Piggyback or Secondary channel.
3. In the MAR, verify that the administration details are correct and click  **Send Details**.
4. On the pump screen, verify that the medication details are correct and then start the pump.
5. Validate the data as usual, including the rates and stopped action for the primary infusion.

Stop a piggyback

Stop a piggyback with automatic primary restart or secondary disassociation

If the pump was set to automatically restart the primary and select the dissociate button in Pump Rate Verify, follow these steps when the piggyback stops.

1. Scan the patient's wristband or open the patient's chart.
2. In Flowsheets, click  **Pump Rate Verify** on the toolbar.
3. Verify that the rate for the piggyback is 0. Choose the **Stopped** action.
4. Verify that **Disassociate** is selected.
5. Verify that the volume for the piggyback is correct. Adjust it if necessary.
6. Verify that the primary infusion rate is correct and the action is **Restarted**.
7. Click  **Accept**.



Refer to the Medication Administration guide for more details about documenting IVPBs.

Boluses

Bolus from a new bag

To give a bolus of a maintenance fluid from a new bag:

1. Document it as you would a normal infusion.



Refer to the [Associate infusion pumps with medications](#) topic for detailed steps.

2. When the bolus stops infusing, validate the zero rate in Pump Rate Verify and verify that the action is **Stopped**.
3. Disassociate the pump when prompted.

Bolus from an existing bag


To bolus a medication from an existing bag:

1. On the MAR, click the due time for the bolus order.
2. Select a MAR action of **Bolus from Bag**.
 - This action populates a dose in the bolus row in your medication's infusion group, but doesn't drop a charge.
3. Program the bolus on the pump.
4. Validate the infusion rates according to your organization's policy.
5. Validate the volume. Note that the volume and rates from the bolus will be filed to the existing infusion associated in step 1.

Loading Doses

Administer a loading dose as part of the infusion order

Follow these steps when you are sending a single infusion to the pump and letting the pump functionality handle the loading dose.

1. Scan the patient's wristband and scan the medication.
2. Scan the pump.
3. In the MAR, verify that the administration details are correct and click  **Send Details**.
4. On the pump screen:
 - Verify that the medication details are correct.
 - Program a loading dose.
 - Start the pump.
5. In the warning that appears, click **Use Pump Values**.

Administer a loading dose as a separate order

Follow these steps when you have two orders for an infusion: a loading dose medication order and the medication order.

1. Administer the loading dose as usual.




Refer to the [Associate infusion pumps with medications](#) topic for detailed steps

2. When the loading dose has finished infusing, administer the infusion medication order following the same process.

Administer a nurse-mixed multi-component bag

Follow these steps when you (the nurse) are mixing a multi-component infusion. A common example of this is a vial of medication with a bag of an infusion base like normal saline that interlock with each other to combine as a mixture.

1. Prepare and mix your infusion. Retain all vials and bags for scanning.
2. Scan the patient's wristband, scan the vial, and scan the pump.
3. In the MAR, scan the bag and verify that the administration details are correct and click  **Send Details**.
4. On the pump screen, verify that the medication details are correct and then start the pump.




- When the pump has started successfully, the window disappears, the pump is associated, and the administration appears on the MAR.

PCA and Syringe Pumps

Patient controlled analgesic (PCA) pumps are syringe infusion pumps with extra security that allow a patient to administer pain medications to themselves within advised limits.


Associate a PCA pump with a medication and validate data

This workflow is very similar to the normal pump association, but has added steps for securing the infusion in the pump. To review and validate PCA infusions, use the PCA Verify tool to review information about a PCA medication, including X hour limit, total volume, total doses, attempted doses, loading dose, and more. Then you can accept or update the values and file them to a PCA assessment group in Flowsheets.

1. Scan the patient's wristband and then scan the medication.
2. On the pump, prepare for the administration. This might include unlocking it and powering it on.
3. Insert the infusion syringe into the pump.
4. Scan the pump.
5. If required, select the line you're infusing the medication through or add a new line and link it.
6. In the MAR, verify that the administration details are correct and click  **Send Details**.
 - Depending on your organization's policy, dual signoff might be required.
7. On the pump, verify that the medication details are correct and then start the pump. Close and lock the access door.
 - When the pump has started successfully, the window disappears, the pump is associated, and the administration appears on the MAR.
8. When it is time to stop the infusion, unlock the door on the pump and stop the pump.
9. Open the Intake/Output flowsheet and add a column for the current time.
10. The PCA Verify tool pulls in data from the pump up to the time of the most recent column in Flowsheets. Adding a column for the current time ensures that you're seeing all the available data.
11. Right-click the PCA infusion group and select **PCA Verify**.
12. Verify that the administration data is accurate.
13. Confirm that the correct action (**Stopped** or **Paused**) is selected for infusion rates of 0 mL/hr.
14. Select **Disassociate** if appropriate.
15. If a **Show MAR Warnings** link appears, click the link to reconcile those warnings.
16. If you don't click the link, the warnings will appear when you click  **Accept**.
17. Click  **Accept** when you've reviewed all the infusions.

Administer un-pooled vials


Certain infusions, such as albumin or IVIG, are typically made up of multiple vials that need to be administered sequentially.

1. Scan the patient.
2. Scan the first vial and then scan the pump.
3. In the MAR, scan the rest of the vials in order. Verify that the administration details are correct and click  **Send Details**.
 - The volume to be infused will represent the total of all vials.
4. On the pump, manually update the volume to be that of the first vial and start the pump.
5. When the pump has started successfully, the window disappears, the pump is associated, and the administration appears on the MAR.
6. Continue to manually program volumes into the pump for the vials sequential order and infuse them, until all vials have been infused.
 - As long as the pauses between vial administrations on the pump are less than 2 minutes, they are considered insignificant pauses by default.

Transfer a Patient with a Pump

Disassociate an infusion order from the pump channel

When a patient is transferred from a pump-integrated department to a non-integrated department, you must disassociate any infusion orders from the pump.

1. Validate all rate changes up to this point.
2. File volumes up to this point for all meds that are being run through the pump.
3. Open the MAR and click **Show Pumps**.
4. Click **Disassociate** to disconnect each infusion order in Epic from the pump.
5. Click  **Accept**.

Associate an infusion order that's already running with the pump channel


When a patient is transferred from a non-integrated department to a pump-integrated department, you must associate any infusion orders with the pump. Associate the infusion orders with the pump as soon as possible when you assume care of the patient.

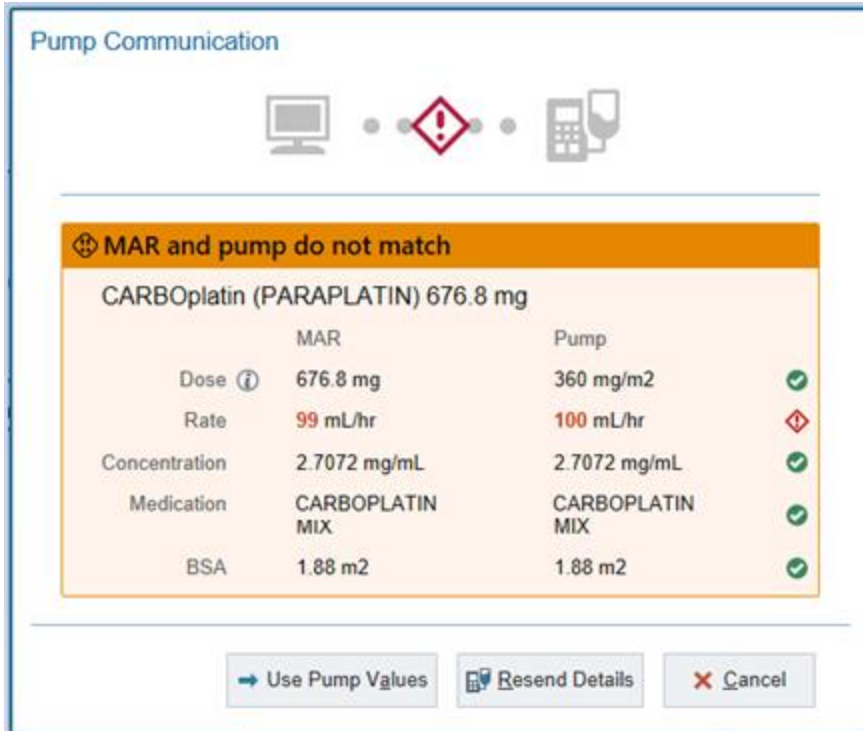


Refer to the [Associate infusion pumps after the fact](#) topic for detailed steps.

Troubleshooting

Pump Communication warning

If you start an infusion pump with medication details that don't match the medication values on the MAR, the Pump Communication window appears. For example, if you change the dose or rate information on the pump after you click  **Send Details**, the warning message appears.



In the Pump Communication window, conflicting values appear in red and have a warning icon. After you determine which values are correct, follow the steps below to continue administering the medication.


If the values on the pump are correct

Click → **Use Pump Values**. This option is available only for conflicting dose and rate values. The administration appears on the MAR with the pump values, and the pump is associated.

If the values on the MAR are correct

1. Stop the pump, clear the pump program, and click **Resend Details**.
2. On the pump screen, verify that the medication details are correct and then start the pump.
3. When the Pump Communication window indicates that the pump started successfully, click **Close** or wait for it to close automatically. The administration appears on the MAR and the pump is associated.

Pump Communication




Pump successfully started

Administration Details ⌵


CARBOplatin (PARAPLATIN) 676.8 mg

	MAR	Pump	
Dose ⓘ	360 mg/m ²	360 mg/m ²	✓
Rate	100 mL/hr	100 mL/hr	✓
Concentration	2.7072 mg/mL	2.7072 mg/mL	✓
Medication	CARBOPLATIN MIX	CARBOPLATIN MIX	✓
BSA	1.88 m ²	1.88 m ²	✓

Pump not yet started warning

If the pump has started but the data isn't coming through, click  **Try Again**.


Pump Communication



⚠ Unable to Confirm Pump Start

If the pump has not started, start the pump and click Try Again.

If the pump has already started, click Try Again.

If the warning appears again, wait approximately 10-15 seconds and click  **Try Again** a second time.

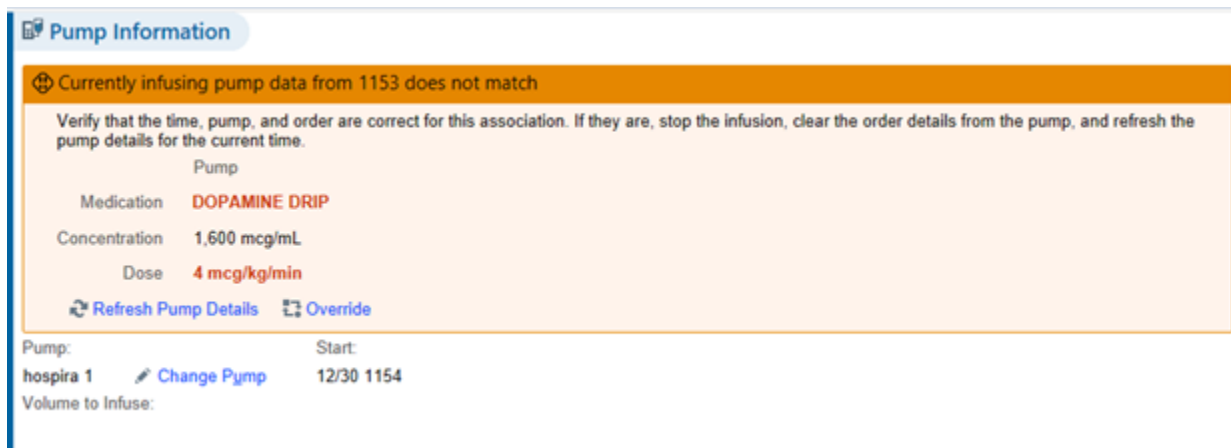


If the warning appears a third time, click → **Manually Program Pump** to save the administration and continue with your documentation.

Administration warning

When you scan an infusion pump that's already associated with a different patient, a warning appears in the MAR administration details within the Pump Information section.

- Click **Override** to associate the pump with your patient. This disassociates the pump from the previous patient 1 second before the new association time with your patient. This is appropriate if you know the pump is not being used on a patient at this time.
- Click **Refresh Pump Details** to have it look at the pump details again. This is appropriate if the pump was in the process of being disassociated from another patient that had a running infusion on it and now it should be free again. This allows you to select an appropriate start time and use the same pump.
- Click **Change Pump** and scan a different pump to leave the pump associated with the previous patient.



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