

# Medication Administration – Insulin Infusion

Insulin titratable Infusion administration involves:

- Begin a new insulin infusion or begin a new bag
- Administer an insulin IV bolus
- Change the rate of insulin infusion
- Document infusion volume

Insulin titratable infusion is usually ordered through one of the Insulin Infusion PowerPlans. The following demonstration uses an example of **ICU Insulin Infusion – Critical Care** PowerPlan.

Component	Status	D..	Details
<b>ICU Insulin Infusion - Critical Care (Module) (Initiated)</b>			
Last updated on: 23-Mar-2018 10:26 PDT by: TestUser, Nurse			
Patient Care			
Continuous Infusions			
<input checked="" type="checkbox"/> insulin regular (human) additive 100 unit + sodium chloride 0.9% (NS) titratable infusi...	Ordered		titrate, IV, 0 unit/h minimum rate, 20 unit/h maxim Protocol for Patient NOT currently receiving insulin
Medications			
<input checked="" type="checkbox"/> insulin regular (insulin regular - bolus dose from protocol)	Ordered		dose range: 1 to 10 unit, IV, as directed, PRN hyper Refer to insulin regular titratable infusion order for
<input checked="" type="checkbox"/> dextrose 50% (dextrose 50% inj)			oglycemia, drug form: L or LESS: administer 12

Insulin infusion order

PRN insulin bolus

## Begin a New Infusion or Begin a New Bag

1. Review the insulin infusion order on the **MAR**. The insulin protocol can be viewed by hovering over the order or from the order comments (right-click select order info). The following screenshot is an example of viewing the insulin protocol from the order comments.

MEDPROCESS, TESTTHREE - Order Information for: insulin regular (human) additive 100 unit + sodium...

Task View Options Help

Original order entered and electronically signed by TestUser, Nurse on 22/Mar/2018 at 16:49 PDT.  
No Cosignature Required order by Dhingra, Vinay  
Pharmacy Department

**insulin regular (human) additive 100 unit + sodium chloride 0.9% (NS) titratable infusion 100 mL**

Details Additional Info History **Comments** Validation Results Ingredients Pharmacy

Order Comment

MAR Note

**Order Comment**  
22/Mar/2018 16:50 PDT TestUser, Nurse  
Protocol for Patient NOT currently receiving insulin infusion

Blood glucose:

4 mmol/L or LESS: administer 25 mL of dextrose 50% IV push and notify provider. Check blood glucose in 15 mins.

4 to 4.9 mmol/L: no insulin required. Recheck blood glucose in 1 hour then q4h.

5 to 10 mmol/L: no insulin required. Recheck blood glucose in 4 hours then q4h.

10.1 to 12 mmol/L: start insulin infusion at 1 unit/h. Recheck blood glucose in 2 hours.

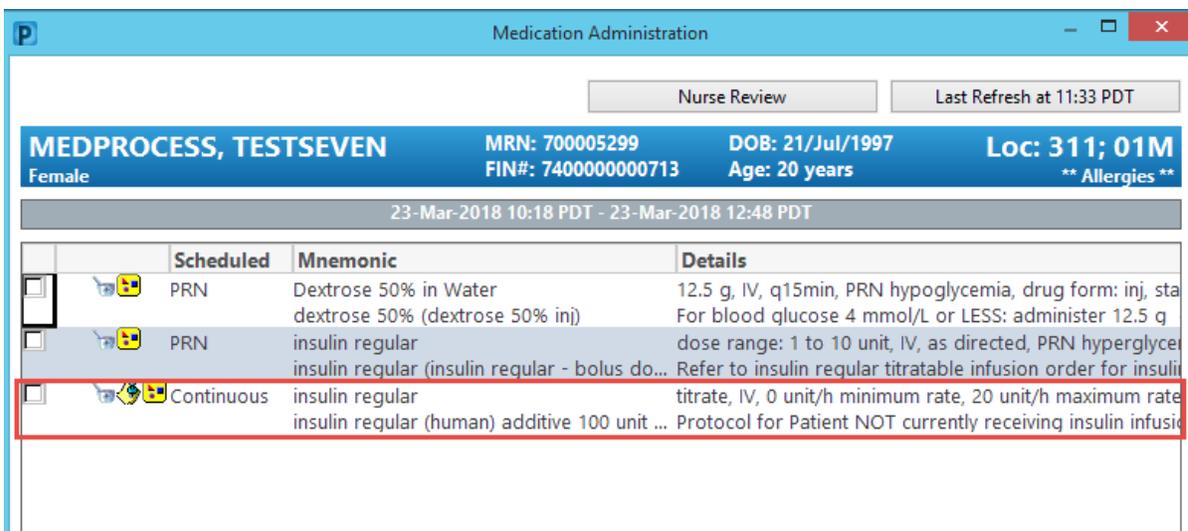
Move the scrollbar down to see the whole protocol



**NOTE:**

- When beginning a new insulin infusion in Critical Care/High Acuity settings, it is the nurse who decides the **start rate** and if an insulin IV bolus is required based on the current glucose result and the protocol for **patient NOT currently receiving insulin infusion**. In other settings, the infusion start rate will be ordered by the provider and there will be **no** insulin IV bolus to be given.
- If an insulin IV bolus is required, please refer to the section Administer an Insulin IV Bolus to administer the bolus.

2. Click the **Medication Administration Wizard (MAW)**  in the toolbar. Scan the patient’s wristband as prompted.



The screenshot shows the Medication Administration window for patient MEDPROCESS, TESTSEVEN. The patient is female, born 21/Jul/1997, located in room 311; 01M. The interface includes a Nurse Review button and a Last Refresh timestamp of 11:33 PDT. A table below lists scheduled medications:

	Scheduled	Mnemonic	Details
<input type="checkbox"/>	PRN	Dextrose 50% in Water dextrose 50% (dextrose 50% inj)	12.5 g, IV, q15min, PRN hypoglycemia, drug form: inj, sta For blood glucose 4 mmol/L or LESS: administer 12.5 g
<input type="checkbox"/>	PRN	insulin regular insulin regular (insulin regular - bolus do...	dose range: 1 to 10 unit, IV, as directed, PRN hyperglyce Refer to insulin regular titratable infusion order for insuli
<input type="checkbox"/>	Continuous	insulin regular insulin regular (human) additive 100 unit ...	titrate, IV, 0 unit/h minimum rate, 20 unit/h maximum rate Protocol for Patient NOT currently receiving insulin infusio

- If the medication is coming from pharmacy, scan the patient specific barcode.

If nurse is mixing own bag, then scan the barcode for **insulin regular 300 unit/3 ml inj**. Select the insulin infusion task from the list, and then click **OK** to continue.



Filtered Tasks

**MEDPROCESS, TESTSEVEN** MRN: 700005299 DOB: 21/Jul/1997 Loc: 311; 01M  
 Female FIN#: 7400000000713 Age: 20 years \*\* Allergies \*\*

Scanned:

Medication	Strength	Volume
insulin regular	300 unit	3 mL

Qualified Tasks:

Scheduled	Mnemonic	Details	Qualifications
Continuous	insulin regular	titrate, IV, 0 unit/h minimum rate, 20 unit/h maximum...	Not all ingredients scanned
	insulin regular (human) additive 100 unit +...	Protocol for Patient NOT currently receiving insulin ...	

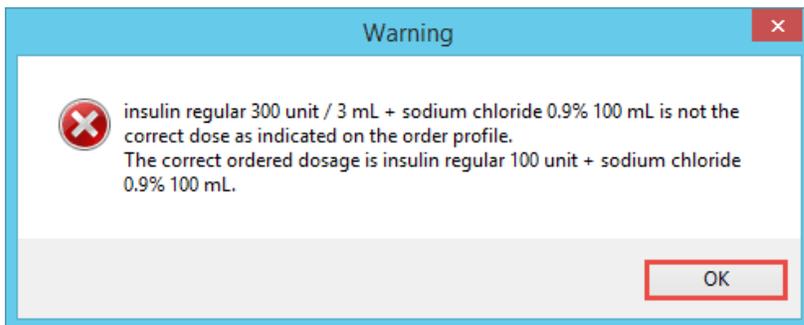
Scan additional ingredients or choose a task to continue.

- Click **Yes** to acknowledge the warning message popup. The warning message displays because IV fluids are not scanned into the system.

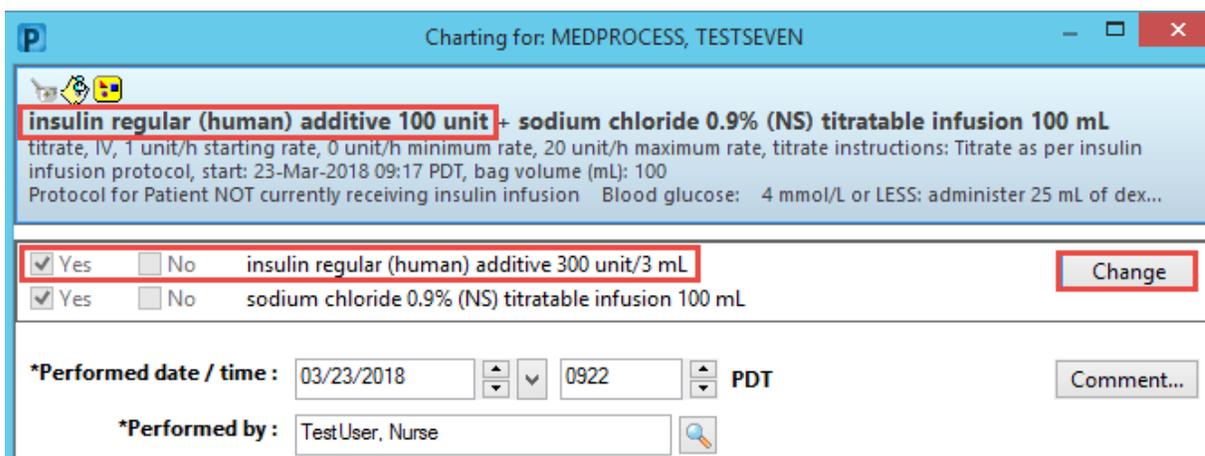
Warning

All ingredients in this task have not been scanned.  
Do you want to continue documentation?

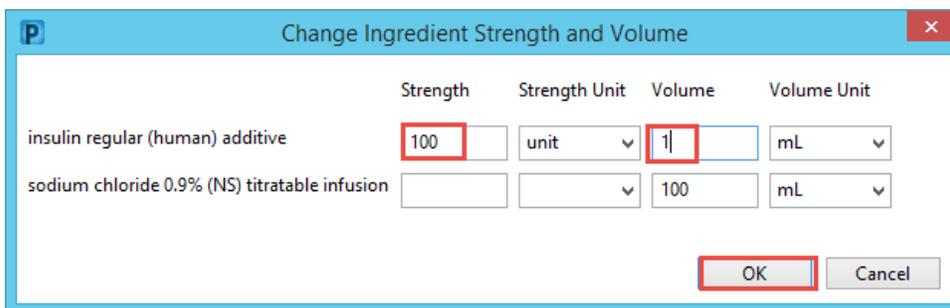
- Click **OK** to acknowledge the overdose warning. The overdose warning displays because the scanned medication dose is greater than what is ordered on the order profile.



- Review the information in the medication charting window. Click the **Change** button to correct the insulin dose.



- Change the insulin **strength** and **volume** to 100 unit and 1 ml, respectively. Then click **OK**.



- Fill in the correct data in the medication charting window and then click **OK**. Ensure to document in the **insulin regular Dose** field. The **Rate** will be automatically calculated once the dose has been entered.

Charting for: MEDPROCESS, TESTSEVEN

**insulin regular (human) additive 100 unit + sodium chloride 0.9% (NS) titratable infusion 100 mL**  
 titrate, IV, 1 unit/h starting rate, 0 unit/h minimum rate, 20 unit/h maximum rate, titrate instructions: Titrate as per insulin infusion protocol, start: 23-Mar-2018 09:17 PDT, bag volume (mL): 100  
 Protocol for Patient NOT currently receiving insulin infusion Blood glucose: 4 mmol/L or LESS: administer 25 mL of dex...

Yes  No insulin regular (human) additive 100 unit/1 mL Change

Yes  No sodium chloride 0.9% (NS) titratable infusion 100 mL

\*Performed date / time : 03/23/2018 0922 PDT Comment...

\*Performed by : TestUser, Nurse

Witnessed by :

\*Bag # : 1

\*Site : Hand - Left

\*Volume (mL) : 100

\*Rate (mL/h) : 1

\*insulin regular Dose : 1 unit/h

**Begin Bag**

OK Cancel



**NOTE:** If a new infusion is being started, the **Bag #** field is automatically numbered as 1. Also it says **Begin Bag** in the bottom right hand corner – this cannot be changed if it is the first time the medication is being administered. The system will automatically increase the value of the **Bag #** field by one for the subsequent bag.

9. Review and click **Sign**.

Medication Administration window showing patient information and a list of medications. The 'Continuous' medication row is highlighted with a red box.

Scheduled	Mnemonic	Details	Result
PRN	Dextrose 50% in Water	12.5 g, IV, q15min, PRN hypoglycemia, dr...	
PRN	dextrose 50% (dextrose...	For blood glucose 4 mmol/L or LESS: ad...	
PRN	insulin regular	dose range: 1 to 10 unit, IV, as directed, ...	
PRN	insulin regular (insulin r...	Refer to insulin regular titratable infusion...	
<input checked="" type="checkbox"/> Continuous	insulin regular	titrate, IV, 0 unit/h minimum rate, 20 ...	100 mL, IV, 1 mL/h, Hand -
	insulin regular (huma...	Protocol for Patient NOT currently rec...	

Buttons: Nurse Review, Last Refresh at 11:33 PDT, Sign

10. The insulin infusion has been successfully started. The charted **Begin Bag** information displays on the MAR.

MAR interface showing medication administration details. The 'Begin Bag' information is highlighted with a red box.

Medications	23/Mar/2018 09:33 PDT
<b>Continuous Infusions</b>	<b>Pending</b>
insulin regular (human) additive 100 unit	last bag started:
sodium chloride 0.9% (NS) titratable infusion 100 mL	23-Mar-2018 09:33 PDT
titrate, IV, 1 unit/h starting rate, 0 unit/h minimum rate, 20 unit/h maximum rate, titrate instructions: Titrate as per insulin infusion protocol, start: 23-Mar-2018 09:17 PDT, bag volume (mL): 100 Protocol for Patient NOT currently receiving insulin i...	
<b>Administration Information</b>	<b>Begin Bag 100 mL 1 mL/h</b>
insulin regular	<b>1 unit/h Auth (Verified)</b>
sodium chloride 0.9%	

11. Navigate to the **Interactive View**. The insulin infusion displays in the **IV Drips** section of the Adult Quick View.

Result	Comments	Flag	Date
07-Mar-2018			
11:03 PST			
11:00 PST			
IV Drips			
insulin regular (human) additive 100 unit + sodium c...	Rate mL/h	1	
insulin regular	unit/h	1	

12. Click on the **Insulin Infusion** section to chart additional documentation as required by policy/protocol.

Result	Comments	Flag	Date
07-Mar-2018			
11:08 PST			
11:00 PST			
IV Drips			
insulin regular (human) additive 100 unit + sodium c...	Rate mL/h	1	
insulin regular	unit/h	1	
Insulin Infusion			
Insulin Infusion Protocol		Critical Car...	
GLU Whole Blood POC Source		Finger	
GLU Whole Blood POC Result	mmol/L	10.8	
GLU Whole Blood POC Non-numeric Result			
Blood Glucose Next Due		2 Hour	
Insulin Infusion Rate Change			
Insulin Infusion Comment			



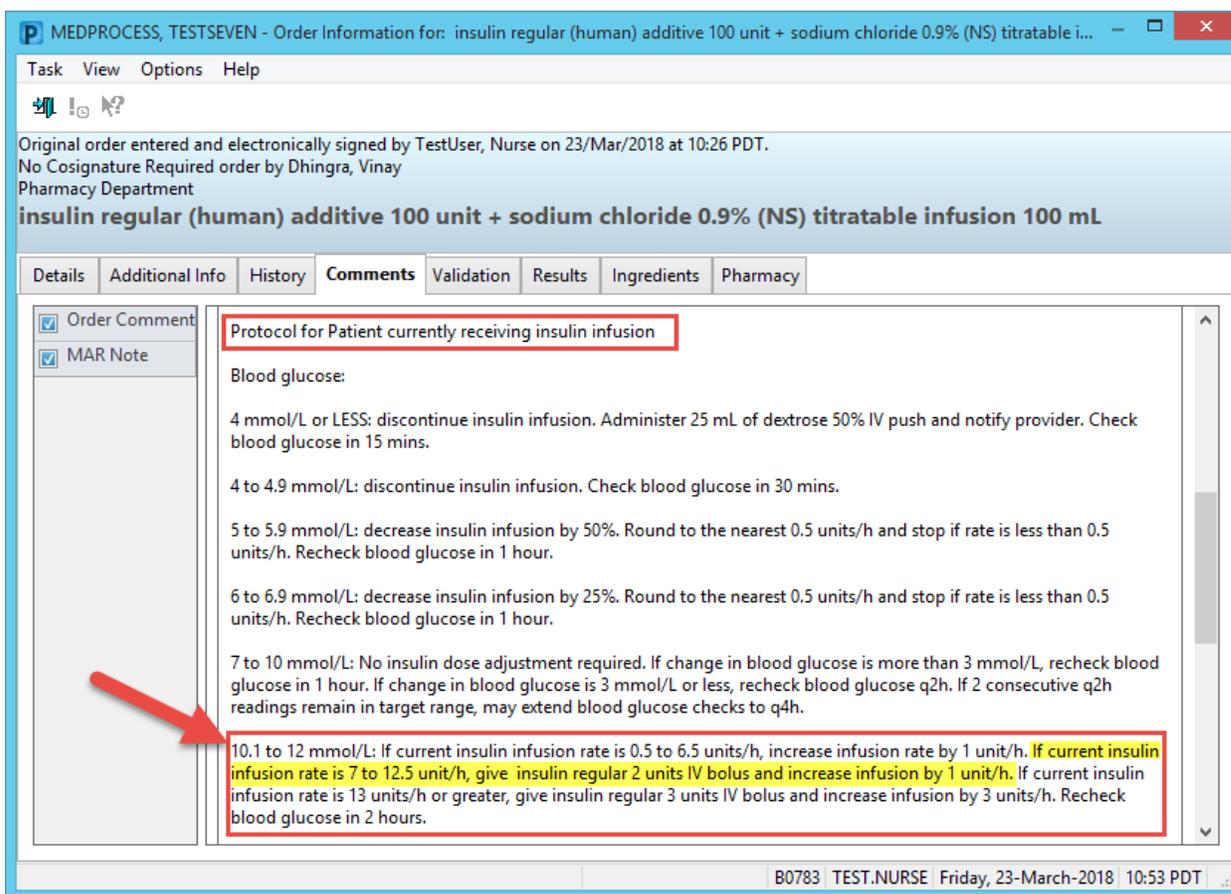
**NOTE:** The blood glucose results documented in this iView section will flow to the Glucose Blood Point of Care section, or vice versa.

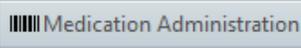
## Administer an Insulin IV Bolus

An Insulin IV bolus will be only required in **critical care/high acuity** areas. Based on the **Critical Care Insulin Protocol**, It can be administered at the start of the infusion or during the infusion. The insulin IV bolus order is a PRN order with a dose range, and the IV bolus will be given from the infusion bag.

The following steps use an example that the nurse has obtained a new glucose of “12 mmol/L” and the current insulin infusion rate is running at 10 unit/h:

1. Navigate to the **MAR** and review the insulin infusion order to view the insulin protocol. According to the **Critical Care Insulin Protocol** for patient currently receiving insulin infusion, for a new glucose of 12, an insulin IV bolus of 2 units and an increase of infusion rate by 1 unit/h are required. Please refer to the section *Change the Rate of Insulin Infusion* for the rate change.



2. Click the **Medication Administration Wizard (MAW)**  in the toolbar. Scan the patient’s wristband as prompted.
3. Manually select the PRN insulin bolus task from the list.



**NOTE:** No barcode scanning is needed because the bolus is given from the infusion bag.

Medication Administration

Nurse Review    Las

**MEDPROCESS, TESTSEVEN**    MRN: 700005299    DOB: 21/Jul/1997  
Female    FIN#: 740000000713    Age: 20 years

23-Mar-2018 10:32 PDT - 23-Mar-2018 13:02 PDT

	Scheduled	Mnemonic	Details
<input type="checkbox"/>	PRN	Dextrose 50% in Water dextrose 50% (dextrose 50% in)	12.5 g, IV, q15min, PRN hypoglycemia, drug form: inj For blood glucose 4 mmol/L or LESS: administer 12.5
<input type="checkbox"/>	PRN	insulin regular insulin regular (insulin regular - bolus dose from protocol)	dose range: 1 to 10 unit, IV, as directed, PRN hyperg Refer to insulin regular titratable infusion order for ir
<input type="checkbox"/>	Continuous	insulin regular insulin regular (human) additive 100 unit + sodium chloride ...	titrate, IV, 0 unit/h minimum rate, 20 unit/h maximum Protocol for Patient NOT currently receiving insulin in

Click the check box to manually select the PRN Insulin bolus task

4. Click into the **Result** cell (highlighted as yellow) to open the charting window.

Medication Administration

Nurse Review    Last Refresh at 11:47 PDT

**MEDPROCESS, TESTSEVEN**    MRN: 700005299    DOB: 21/Jul/1997    Loc: 311; 01M  
Female    FIN#: 740000000713    Age: 20 years    \*\* Allergies \*\*

23-Mar-2018 10:32 PDT - 23-Mar-2018 13:02 PDT

	Scheduled	Mnemonic	Details	Result
<input type="checkbox"/>	PRN	Dextrose 50% in Water dextrose 50% (dextrose...	12.5 g, IV, q15min, PRN hypoglycemia, dr... For blood glucose 4 mmol/L or LESS: ad...	
<input checked="" type="checkbox"/>	PRN	insulin regular insulin regular (insuli...	dose range: 1 to 10 unit, IV, as directe... Refer to insulin regular titratable infu...	insulin regular 10 unit, IV, hyperglycemia
<input type="checkbox"/>	Continuous	insulin regular insulin regular (human) ...	titrate, IV, 0 unit/h minimum rate, 20 unit/ Protocol for Patient NOT currently receivi...	

Click into the Result box

5. Enter appropriate chart details including blood glucose and diluent volume. Click **OK** to continue.

Charting for: MEDPROCESS, TESTSEVEN

**insulin regular (insulin regular - bolus dose from protocol)**  
 dose range: 1 to 10 unit, IV, as directed, PRN hyperglycemia, drug form: inj, start: 23-Mar-2018 10:26 PDT  
 Refer to insulin regular titratable infusion order for insulin protocol

**\*Performed date / time :** 03/23/2018 1151 PDT

**\*Performed by :** TestUser, Nurse

Witnessed by :

Medication not given within the last 5 days.

**GLU Whole Blood POC Result** 12 mmol/L

Acknowledge GLU Whole Blood POC Result No Result found in previous 30 minutes. [Trend](#)

**\*insulin regular:** 2 unit Volume: ml

Diluent: sodium chloride 0.9% 2 ml

**\*Route:** IV Site:

Reason: hyperglycemia

Total Volume: 2 Infused Over: 0 minute

23-Mar-2018 1000 PDT	23-Mar-2018 1100 PDT	23-Mar-2018 1200 PDT	23-Mar-2018 1300 PDT	23-Mar-2018 1400 PDT	23-Mar-2018 1500 PDT
	2				

Not Given

Reason:

Comment...

**OK** Cancel

6. Review and click **Sign**.

Nurse Review    Last Refresh at 11:47 PDT

**MEDPROCESS, TESTSEVEN**  
Female
MRN: 700005299  
FIN#: 7400000000713
DOB: 21/Jul/1997  
Age: 20 years
Loc: 311; 01M  
\*\* Allergies \*\*

23-Mar-2018 10:32 PDT - 23-Mar-2018 13:02 PDT

	Scheduled	Mnemonic	Details	Result
<input type="checkbox"/>	PRN	Dextrose 50% in Water	12.5 g, IV, q15min, PRN hypoglycemia, dr... dextrose 50% (dextrose... For blood glucose 4 mmol/L or LESS: ad...	
<input checked="" type="checkbox"/>	PRN	insulin regular insulin regular (insuli...	dose range: 1 to 10 unit, IV, as directe... Refer to insulin regular titratable infu...	insulin regular 2 unit + so GLU Whole Blood POC Res
<input type="checkbox"/>	Continuous	insulin regular insulin regular (human) ...	titrate, IV, 0 unit/h minimum rate, 20 unit/... Protocol for Patient NOT currently receivi...	

Ready to Scan
2 of 2

Back    Sign

## Change Rate of Insulin Infusion

Insulin infusion rate change is documented in the **IV Drips** and **Insulin Infusion** sections. When a new blood glucose is obtained, the nurse checks the insulin infusion protocol in the infusion order and decides if adjustments are required.

As mentioned in the above section *Administer an Insulin IV Bolus*, an increase of infusion rate by 1 unit/h (1 ml/h) is needed for the patient. To document the rate change:

1. Navigate to the **IV Drips** section in the Interactive View.
2. Double-click on the box next to the dose of the insulin infusion. Enter a new value.



**NOTE:** Enter an infusion rate of “0” for holding insulin infusion.

Result	Comments	Flag	Date
23/Mar/2018			
11:00 PDT 09:00 PD			
<b>IV Drips</b>			
insulin regular (human) additive 100 unit + sodium chloride 0.9%...	Rate mL/h	10	10
insulin regular	unit/h	11	10
<b>Insulin Infusion</b>			

- Click on the **Insulin Infusion** iView section to chart additional documentation as required by policy/protocol.

**Adult Quick View**

- VITAL SIGNS
- Modified Early Warning System
- PAIN ASSESSMENT
- Pain Modalities
- IV Drips
- Insulin Infusion**
- Heparin Infusion
- Apnea/Bradycardia Episodes
- Mental Status/Cognition
- Sedation Scales
- Provider Notification
- Environmental Safety Management
- Activities of Daily Living
- Measurements
- Glucose Blood Point of Care
- Individual Observation Record
- Comfort Measures
- Transfer/Transport
- Shift Report/Handoff

**Last 24 Hours**

Find Item  Critical  High  Low  Abnormal  Unauth

Result	Comments	Flag	Date
23/Mar/2018			
11:00 PDT 09:00 PDT			
<b>IV Drips</b>			
insulin regular (human) additive			
100 unit + sodium chloride 0.9%...	Rate mL/h	11	10
insulin regular	unit/h	11	10
<b>Insulin Infusion</b>			
Insulin Infusion Protocol		Critical Care/High ..	Critical Care/Hig...
GLU Whole Blood POC Source		Finger	Finger
GLU Whole Blood POC Result	mmol/L	12	13 ↑
GLU Whole Blood POC Non-numeric Result			
Blood Glucose Next Due		2 Hour	2 Hour
Insulin Infusion Rate Change		Increase	Increase
Insulin Infusion Increased By	unit/h	1	2
Insulin Infusion Comment		Bolus 2 uints given	

- Click **Sign** (green check mark) and refresh screen.

## Document Infusion Volume

Infusion intake volume is documented in the **Intake and Output** band.

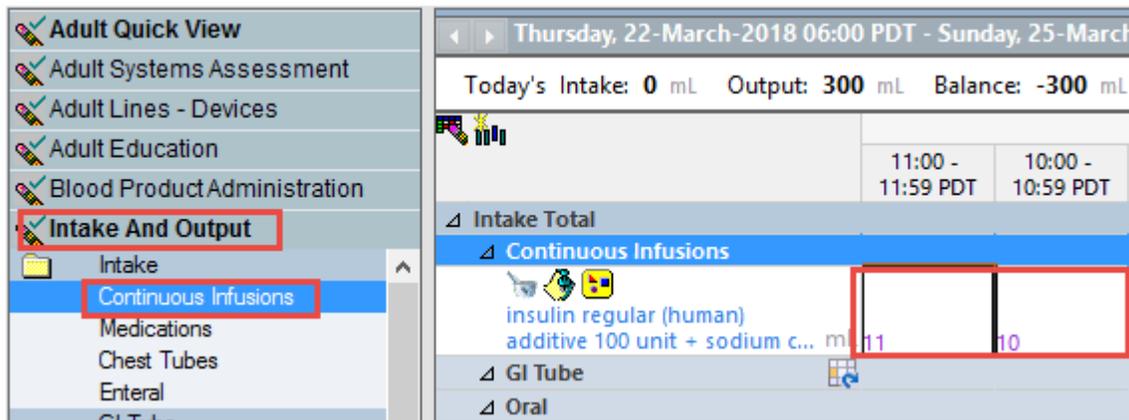
1. Navigate to **Intake And Output** band of Interactive View
2. Locate the insulin infusion in the **Continuous Infusions** section.
3. Double-click into the cell under the appropriate time column and the volume will auto populate (in purple text).



**NOTE:** The volume can be manually changed if it is incorrect.



**WARNING:** Clinicians need to return to **Intake and Output** throughout the shift to continue documenting intake volumes as long as the infusion is still running. This step is imperative for documenting accurate intake and output!



4. Click the green checkmark ✓ to sign and the text will turn to black.



**NOTES:**

- Infusion volume can still be documented even after the infusion order is discontinued. The infusion dithers out in **Intake and Output** after being discontinued.
- To document volume, click on the appropriate cells and manually enter volume values for the infusion.

## Related Topics

- Medication Administration – Heparin Infusion
- Ordering continuous and Titratable Infusions
- Medication Administration – IV fluids

## Key Words

- Insulin Infusion
- Continuous infusions
- Iview
- Rate change