

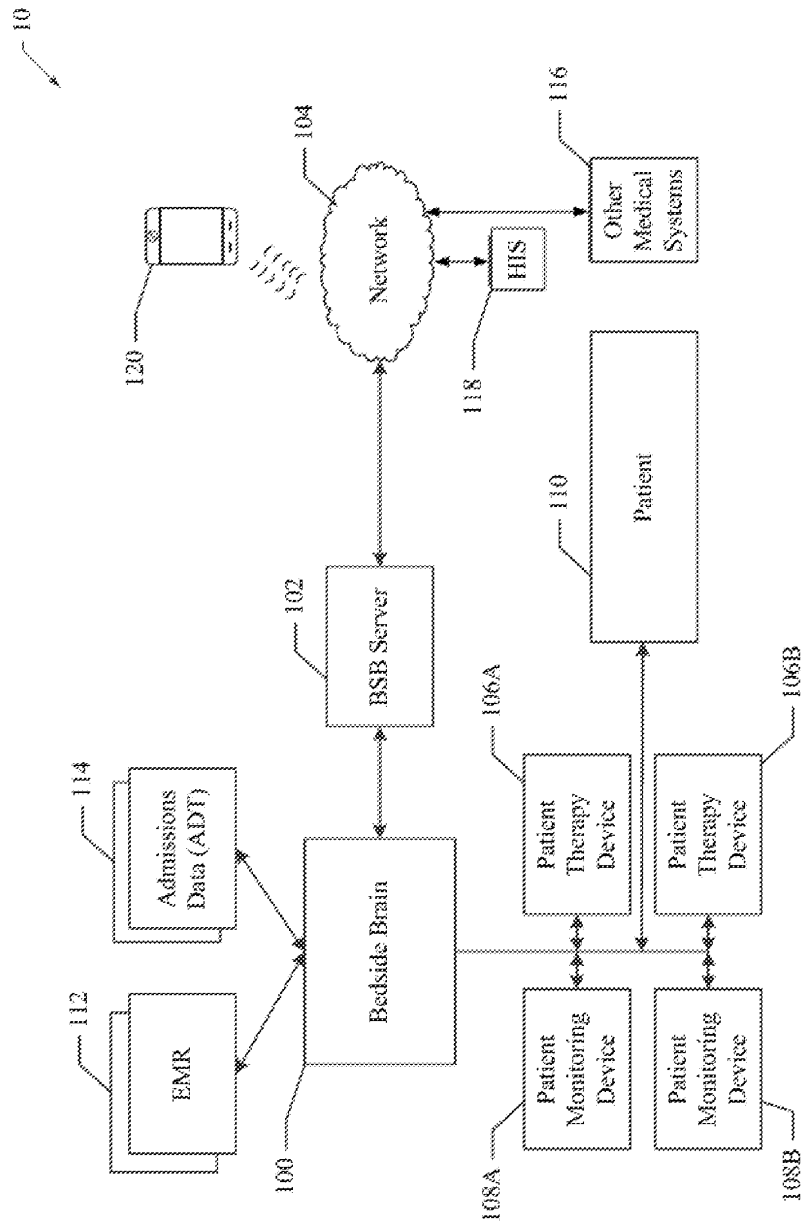


FIG. 1

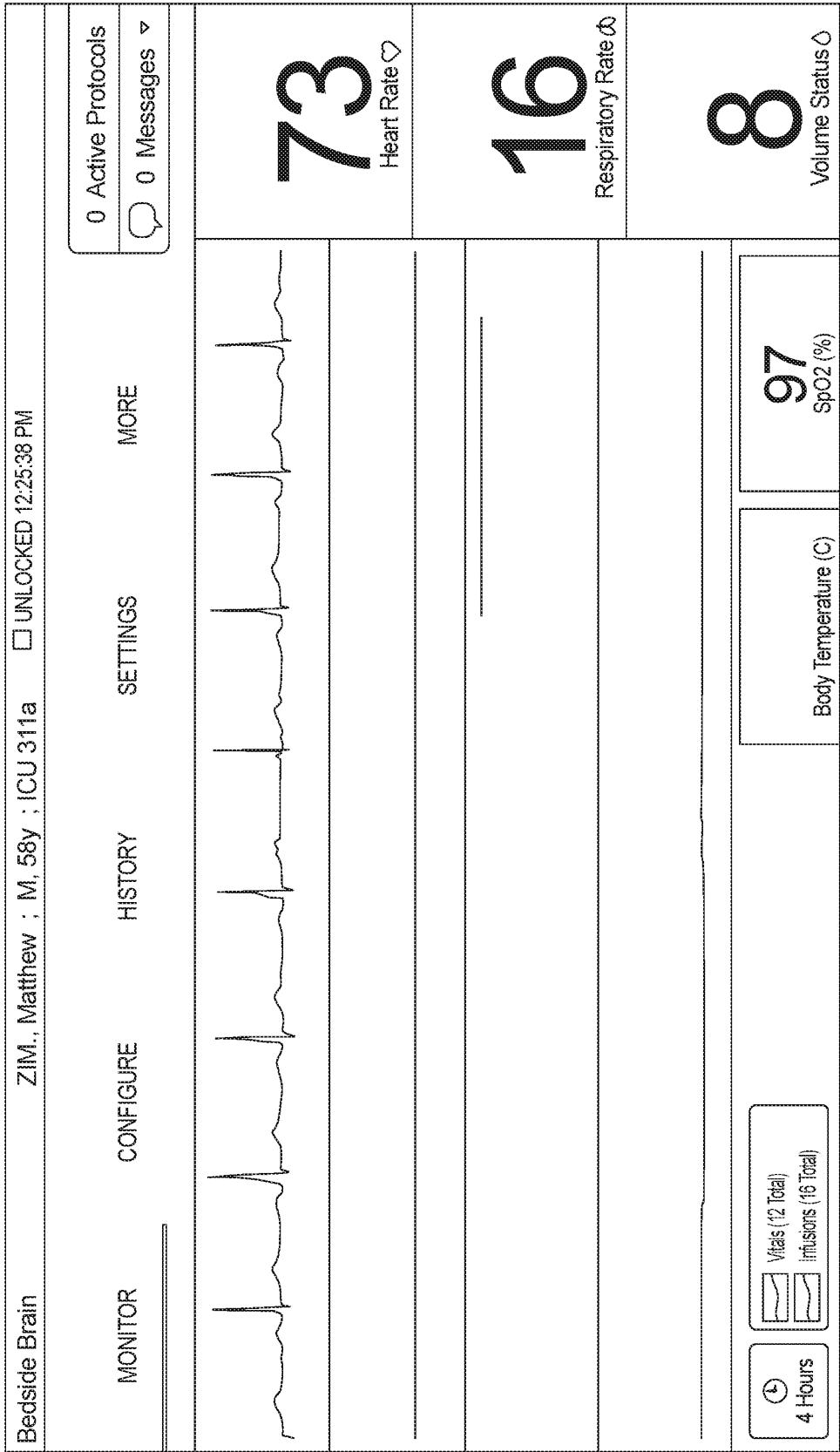


FIG. 2

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 1:01:55 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Hypovolemia

Not Running (Suspended)

Protocol

Status

Hypervolemia

Not Running (Suspended)

Hypoventilation with narcotics

Not Running (Missing Reqs)

Hypovolemia

Not Running (Suspended)

Infiltration

Not Running (Missing Reqs)

Magnesium infusion

Not Running (Missing Reqs)

SUMMARY

SETUP & ACTIVATION

Full Protocol

Summary

Description

Potential Automatic Safety Actions (1)

AUTOMATICALLY BOLUS the rehydration infusion

StartBolus - InfusionPump or SyringePump with Normal Saline or Lactated Ringers or D5 Lactated Ringers

Requirements

Required Inputs (1)

Parameter

Source

FIG. 3

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 3:19:36 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Full Protocol

Full Protocol - Hypovolemia

#1 of 3 When: Volume index is severely low
Do AUTOMATICALLY BOLUS the rehydration infusion

#2 of 3 When: NOT Volume index is severely low
+ Volume index is mildly low
Do Show warning on BSB of hypovolemia.

#3 of 3 When: NOT Volume index is severely low
+ NOT Volume index is mildly low
Do Nothing

any other reason that a hard bolus would be dangerous?

Therapy device not connected: InfusionPump or SyringePump
Config item #6 is not valid

Request Activation

Viewing: Safety Protocols

Sort by:

Protocol	Status
Hyperkalemia	Not Running (Missing Reqs)
Hypervolemia	Not Running (Missing Reqs)
Hypoventilation with narcotics	Not Running (Missing Reqs)
Hypovolemia	Not Running (Missing Reqs)
Infiltration	Not Running (Missing Reqs)

is value

7

5 mL

250 mL

160 pounds

Yes

ure, ARDS, or Yes

FIG. 4

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 3:49:18 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Hypovolemia

Not Running (Missing Reqs)

Full Protocol

Protocol

Status

Hypotension

Not Running (Missing Reqs)

Hypoventilation with narcotics

Not Running (Missing Reqs)

Hypovolemia

Not Running (Missing Reqs)

Infiltration

Not Running (Missing Reqs)

Magnesium infusion

Not Running (Missing Reqs)

Required Inputs (1)

Parameter

Volume

Sensor - PIVA

Required Therapeutic Devices (1)

Device

Assignment

InfusionPump or SyringePump with Normal Saline or Lactated Ringers or D5 Normal Saline or D5 Lactated Ringers

None detected

Setup & Activation

Patient Settings

Common Settings (3)

SUMMARY

SETUP & ACTIVATION

FIG. 5

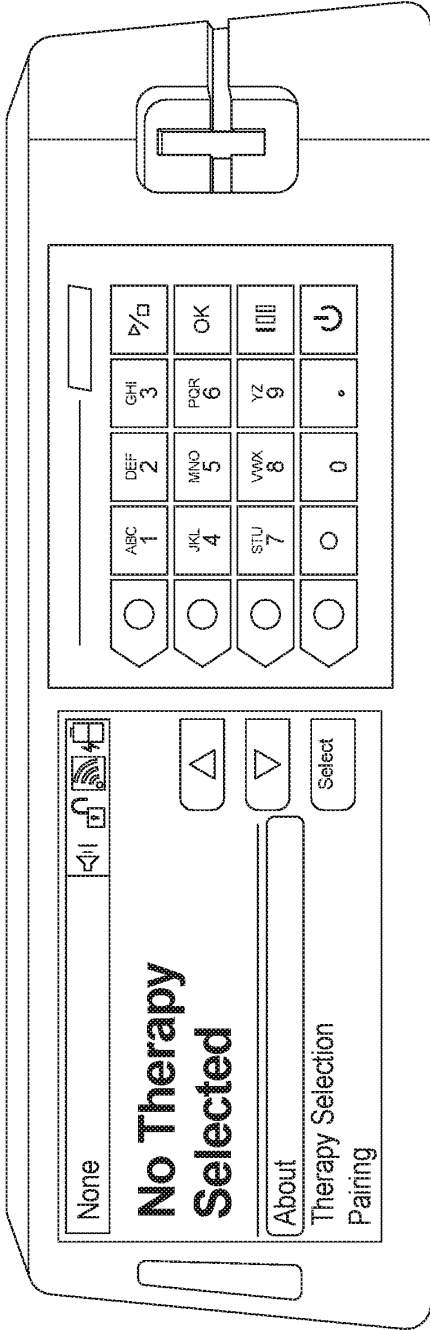


FIG. 6A

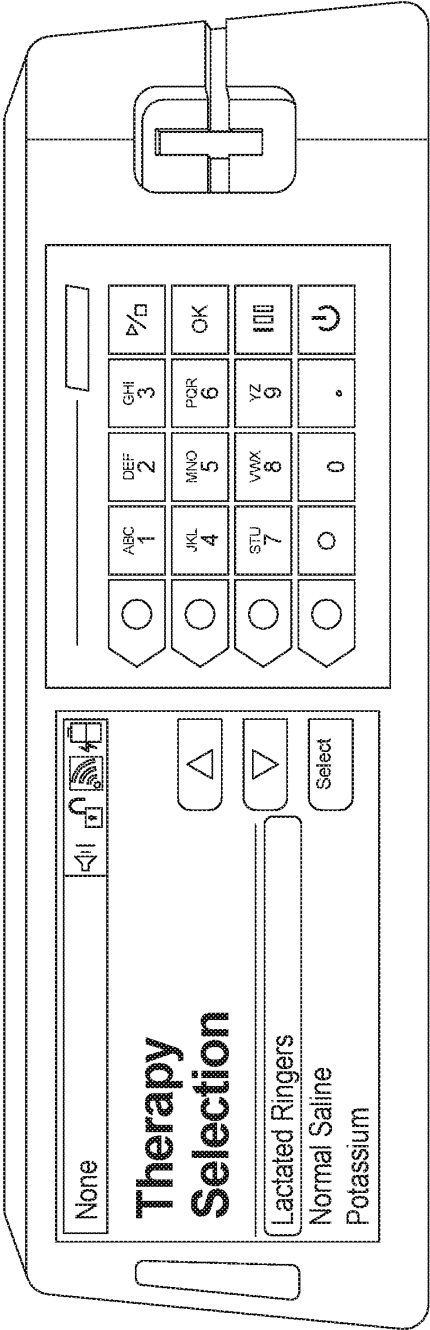


FIG. 6B

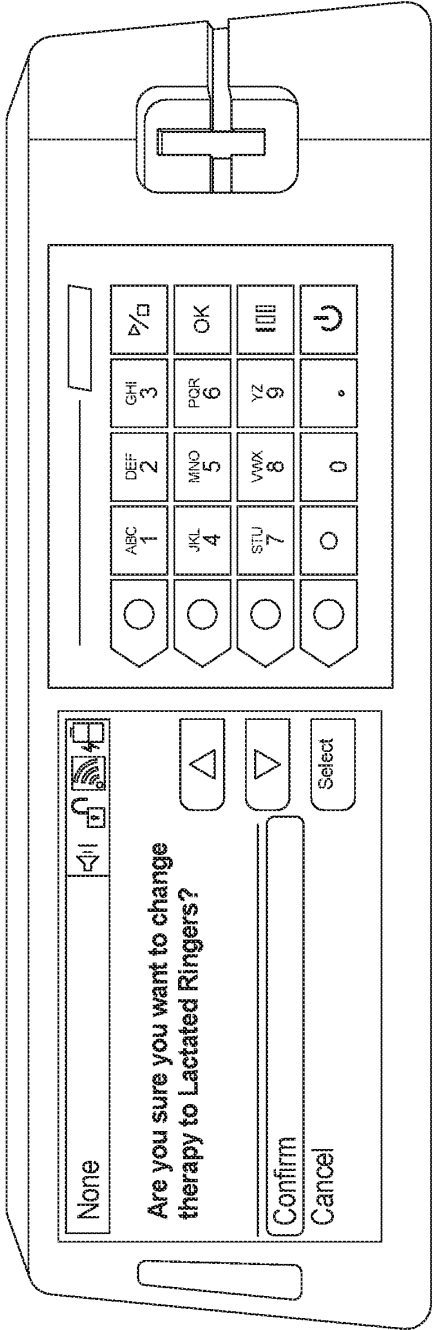


FIG. 6C

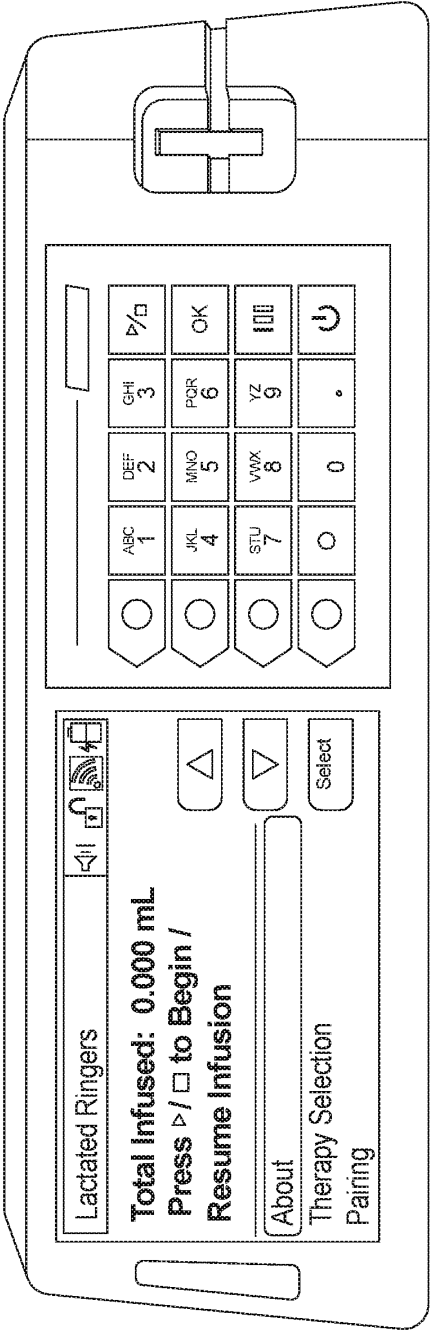


FIG. 6D

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 1:02:51 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Hypovolemia

Not Running (Suspended)

Full Protocol

SUMMARY

SETUP & ACTIVATION

Potential Automatic Safety Actions (1)

AUTOMATICALLY BOLUS the rehydration infusion

StarBolus - InfusionPump or SyringePump with Normal Saline or Lactated Ringers or D5 Normal Saline or D5 Lactated Ringers

Requirements

Required Inputs (1)

Parameter

Source

Volume

Sensor - PIVA

Required Therapeutic Devices (1)

Device

Assignment

InfusionPump or SyringePump with Normal Saline or Lactated Ringers or D5 Normal Saline or D5 Lactated Ringers

IV - Pump I - Lactated Ringers

FIG. 7

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 1:03:25 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Protocol

Status

Hypovolemia

Not Running (Suspended)

Hypoventilation with narcotics

Not Running (Missing Reqs)

Hypovolemia

Not Running (Suspended)

Infiltration

Not Running (Missing Reqs)

Magnesium infusion

Not Running (Missing Reqs)

Hypovolemia

Not Running (Suspended)

Summary

Setup & Activation

✓

Infusion pump or Syringe pump with Normal Saline or Lactated Ringers or D5 Normal Saline or D5 Lactated Ringers

IV - Pump I - Lactated Ringers

Setup & Activation Patient Settings

Common Settings (3)

Protocol expires (auto-deactivates) in:

8 hours

Delay protocol start for:

30 minutes

Auto-execute therapy safety action only if I don't respond within:

120 seconds

Protocol-Specific Settings (6)

FIG. 8

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 2:43:04 PM

MONITOR

CONFIGURE

0 Active Protocols

0 Messages

Full Protocol

None detected

1

2

3

4

5

6

7

8

9

Clear

0

120 (Default)

Cancel

Enter

Protocol-Specific Settings (6)

1. Required

Show warning message on BSB screen when PIVA volume index falls below this value

7

Viewing: Safety Protocols

Sort by:

Protocol

Status

Hypervolemia

Not Running (Suspended)

Hypoventilation with narcotics

Not Running (Missing Reqs)

Hypovolemia

Not Running (Suspended)

Infiltration

Not Running (Missing Reqs)

Magnesium infusion

Not Running (Missing Reqs)

Auto-execute therapy safety action only if I don't respond within:

Value must be between 0 and 9999

240 seconds

1

2

3

4

5

6

7

8

9

Clear

0

120 (Default)

Cancel

Enter

Protocol-Specific Settings (6)

1. Required

Show warning message on BSB screen when PIVA volume index falls below this value

7

FIG. 9

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 2:42:00 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Hypovolemia

Not Running (Suspended)

Full Protocol

SUMMARY

SETUP & ACTIVATION

Protocol	Status
Hyperkalemia	Not Running (Missing Reqs)
Hypervolemia	Not Running (Missing Reqs)
Hypoventilation with narcotics	Not Running (Missing Reqs)
Hypovolemia	Not Running (Missing Reqs)
Infiltration	Not Running (Missing Reqs)

Protocol-Specific Settings (6)

1. Required

Show warning message on BSB screen when PIVA volume index falls below this value

7

2. Required

Bolus rehydration IV fluid when PIVA volume index falls below this value

5 mL

3. Required

Volume of rehydration fluid (in mL) to Bolus if severely hypovolemic

250 mL

4. Required

Weight of the patient in pounds (must be over 90 lbs)

160 pounds

5. Required

Is the patient over 18 years old and more than 90 pounds?

Yes

6. Required

Does the patient have any of the following: heart failure, renal failure, liver failure, ARDS, or any other reason that a fluid bolus would be dangerous?

Yes

Therapy device not connected: InfusionPump or SyringePump

Config item #6 is not valid

Request Activation

FIG. 10

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 3:32:51 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Hypovolemia

Not Running (Suspended)

Full Protocol

Protocol

Status

Hyperkalemia

Not Running (Missing Reqs)

Hypervolemia

Not Running (Missing Reqs)

Hypoventilation with narcotics

Not Running (Missing Reqs)

Hypovolemia

Not Running (Missing Reqs)

Infiltration

Not Running (Missing Reqs)

SUMMARY

SETUP & ACTIVATION

Does the patient have any of the following: heart failure, renal failure, liver failure, ARDS, or any other reason that a fluid bolus would be dangerous?

Yes - Protocol Will Not Enable

Yes - Protocol Will Not Enable

No

1. Required

2. Required

3. Required

4. Required

5. Required

6. Required

Index falls below this value

Below this value

plemic

160 pounds

Is the patient over 18 years old and more than 90 pounds?

Does the patient have any of the following: heart failure, renal failure, liver failure, ARDS, or any other reason that a fluid bolus would be dangerous?

7

5 mL

250 mL

160 pounds

Yes

Yes

Therapy device not connected: InfusionPump or SyringePump

Config item #6 is not valid

Request Activation

FIG. 11

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 4:24:51 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Hypovolemia

Not Running (Suspended)

Full Protocol

SUMMARY

SETUP & ACTIVATION

Protocol	Status
Hypoventilation with narcotics	Not Running (Missing Reqs)
Hypovolemia	Not Running (Suspended)
Infiltration	Not Running (Missing Reqs)
Magnesium infusion	Not Running (Missing Reqs)
OverHydration	Not Running (Missing Reqs)

1. Required

Show warning message on BSB screen when PIVA volume index falls below this value

7

2. Required

Bolus rehydration IV fluid when PIVA volume index falls below this value

5 mL

3. Required

Volume of rehydration fluid (in mL) to Bolus if severely hypovolemic

250 mL

4. Required

Weight of the patient in pounds (must be over 90 lbs)

160 pounds

5. Required

Is the patient over 18 years old and more than 90 pounds?

Yes

6. Required

Does the patient have any of the following: heart failure, renal failure, liver failure, ARDS, or any other reason that a fluid bolus would be dangerous?

No

Request Activation

FIG. 12

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 1:06:36 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Protocol	Status
Hyperkalemia	Not Running (Missing Reqs)
Hypervolemia	Not Running (Suspended)
Hypoventilation with narcotics	Not Running (Missing Reqs)
Hypovolemia	Not Running (Suspended)
Infiltration	Not Running (Missing Reqs)

Activating Protocol: Hypervolemia

Pre-approval on therapeutic devices is required.

By activating this protocol, the clinical user pre-authorizes the potential safety actions listed below as being not harmful to the patient, even if the system were to perform them inappropriately.

Please go to the following devices to approve pairing:

Device	Therapy
IV - Pump #1	Lactated Ringers

12

16

Cancel

Complete Activation

FIG. 13

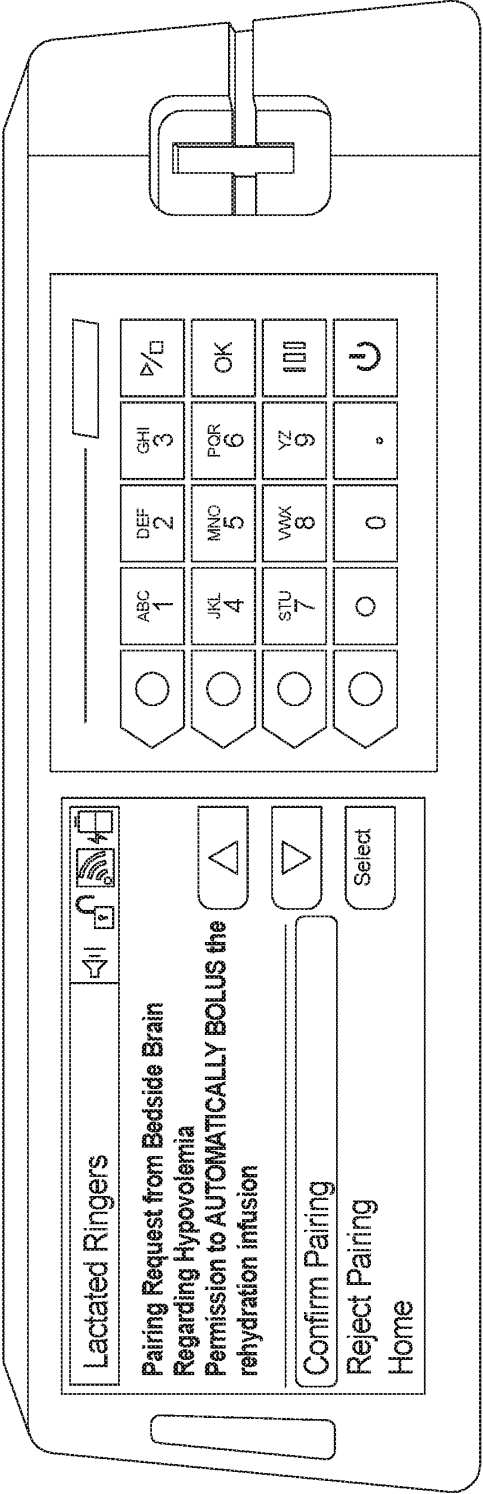


FIG. 14

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 4:56:12 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages ▾

Viewing: Safety Protocols

Sort by:

Protocol	Status
Hypoventilation with narcotics	Not Running (Missing Reqs)
Hypovolemia	Not Running (Suspended)
Infiltration	Not Running (Missing Reqs)
Magnesium infusion	Not Running (Missing Reqs)
OverHydration	Not Running (Missing Reqs)

Activating Protocol: Hypovolemia

Pre-approval on therapeutic devices is required.

By activating this protocol, the clinical user pre-authorizes the potential safety actions listed below as being not harmful to the patient, even if the system were to perform them inappropriately.

Please go to the following devices to approve pairing:

Device	Therapy
☒ IV - Pump #1	Lactated Ringers

Cancel

Complete Activation

FIG. 15

Bedside Brain

ZIM., Matthew ; M, 58y ; ICU 311a

☐ LOCKED 5:10:49 PM

MONITOR

CONFIGURE

HISTORY

SETTINGS

MORE

0 Active Protocols

0 Messages

Viewing: Safety Protocols

Sort by:

Hypovolemia

Running

Full Protocol

Protocol

Status

Hypoventilation with narcotics

Not Running (Missing Reqs)

Hypovolemia

Running

Infiltration

Not Running (Missing Reqs)

Magnesium infusion

Not Running (Missing Reqs)

OverHydration

Not Running (Missing Reqs)

SUMMARY

SETUP & ACTIVATION

1. Required

Show warning message on BSB screen when PIVA volume index falls below this value

7

2. Required

Bolus rehydration IV fluid when PIVA volume index falls below this value

5 mL

3. Required

Volume of rehydration fluid (in mL) to Bolus if severely hypovolemic

250 mL

4. Required

Weight of the patient in pounds (must be over 90 lbs)

160 pounds

5. Required

Is the patient over 18 years old and more than 90 pounds?

Yes

6. Required

Does the patient have any of the following: heart failure, renal failure, liver failure, ARDS, or any other reason that a fluid bolus would be dangerous?

No

Deactivate Protocol

FIG. 16

Bedside Brain					ZIM., Matthew ; M, 58y ; ICU 311a					☐ LOCKED 5:13:16 PM				
MONITOR		CONFIGURE		HISTORY		SETTINGS		MORE		1 Active Protocol				
										0 Messages ▾				
										73 Heart Rate ♥				
										16 Respiratory Rate ⚙				
										8 Volume Status ⚙				
										SpO2 (%)				
										Body Temperature (C)				
										Vitals (12 Total) Infusions (16 Total)				
										4 Hours				

FIG. 17

Bedside Brain		ZIM., Matthew ; M, 58y ; ICU 311a		☐ LOCKED 5:14:49 PM	
MONITOR	CONFIGURE	HISTORY	SETTINGS	MORE	1 Active Protocol ▾
					Messages ▾ 1 Clear All
				93 Heart Rate ♥	7 seconds ago Low Volume Warning! Consider giving rehydration fluid. Consistent volume for 1 minute (6.6) less_ than 7.0
				18 Respiratory Rate ⌚	
				4 Volume Status ⌚	
4 Hours Vitals (12 Total) Infusions (16 Total)		Body Temperature (C)		SpO2 (%)	

FIG. 18

Bedside Brain					ZIM., Matthew ; M, 58y ; ICU 311a		LOCKED 5:17:05 PM	
MONITOR		CONFIGURE		HISTORY	SETTINGS	MORE		
						1 Safety Action Pause All		
						Hypovolemia 111s until 1 automatic safety action 1 of 1: AUTOMATICALLY BOLUS the rehydration infusion <i>StartBolus - InfusionPump - Normal Saline</i> Cancel Perform Now ☐ What triggered this? ☒ Review Changes		
						93 Heart Rate ♥		
						18 Respiratory Rate ∅		
						4 Volume Status ∅		
 Vitals (12 Total) Infusions (16 Total)		Body Temperature (C)		SpO2 (%)				
 4 Hours								

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Bedside Brain ZIM., Matthew ; M, 58y ; ICU 311a LOCKED 5:24:24 PM

MONITOR	CONFIGURE	HISTORY	SETTINGS	MORE
1 Safety Action				
Resume All Paused ▾				
☐ Hypovolemia 106s until 1 automatic safety action 1 of 1: AUTOMATICALLY BOLUS the rehydration infusion <i>StartBolus - InfusionPump - Normal Saline</i> Cancel Perform Now ☒ What triggered this? Review Changes				

Vitals (12 Total)

Infusions (16 Total)

4 Hours

Body Temperature (C)

SpO2 (%)

Volume Status

2019

Bedside Brain					ZIM., Matthew ; M, 58y ; ICU 311a					☐ LOCKED 5:25:23 PM				
MONITOR		CONFIGURE		HISTORY		SETTINGS		MORE		1 Safety Action				
										Resume All Paused				
								93 Heart Rate		Hypovolemia 106s until 1 automatic safety action 1 of 1: AUTOMATICALLY BOLUS the rehydration infusion StartBolus - InfusionPump - Normal Saline Cancel Perform Now				
								18 Respiratory Rate		What triggered this? Review Changes				
								4 Volume Status						
4 Hours Vitals (12 Total) Infusions (16 Total)				Body Temperature (C)		SpO2 (%)								

FIG. 21

Bedside Brain					ZIM., Matthew ; M, 58y ; ICU 311a					☐ LOCKED 9:43:17 PM				
MONITOR		CONFIGURE		HISTORY		SETTINGS		MORE		1 Safety Action				
Vitals (12 Total) Infusions (16 Total) 4 Hours								92 Heart Rate		Hypovolemia 1 action auto-executed by system. 2 minutes ago (9:41pm) ☒ 1 of 1: AUTOMATICALLY BOLUS the rehydration infusion StartBolus - InfusionPump - Normal Saline Protocol suspended. Deactivate ☐ What triggered this?				
										21 Respiratory Rate		3 Volume Status		

FIG. 22

BSB Monitor Central				Showing: All Units		▽	
10 Patients with Emergent Notifications in "All Units" (8 not notified)							
Room	RN	Patient Name	Patient Info	Last Update	Rescues	Alerts/Alarms	Notified?
2S 213-2	Ratched M 692-2214	Stevens J	38y M	7s	Hypovolemia - 180s until: (1) Bolus 250 cc Normal Saline (2) Stop Magnesium infusion	Volume Status = 4 (Low) Heart Rate = 121 (High)	☐
2S 223-1	Smith P 692-2217	Peters M	84y F	3s		Heart Rate = 134 (High)	☐
2S 224-1	Smith P 692-2217	Jackson R	72y F	5s	Hypervolemia - 72s until: (1) Stop Lactated Ringers infusion	Volume Status = 16 (High)	☐
2S 225-2	Smith P 692-2217	Efram E	38y M	7s	Hypovolemia - 180s until: (1) Bolus 250 cc Normal Saline (2) Stop Magnesium infusion	Volume Status = 4 (Low) Heart Rate = 121 (High)	☐
2S 228-1	Smith P 692-2217	Tralfaz K	84y F	3s		Heart Rate = 134 (High)	☐
2S 241-1	Smith P 692-2217	Smeisinberg J	72y F	5s	Hypervolemia - 72s until: (1) Stop Lactated Ringers infusion	Volume Status = 16 (High)	☐
2S 244-2	Ratched M 692-2214	Kamelsinsk... U	38y M	7s	Hypovolemia - 180s until: (1) Bolus 250 cc Normal Saline (2) Stop Magnesium infusion	Volume Status = 4 (Low) Heart Rate = 121 (High)	☐
							▽
SCROLL FOR 3 MORE (2 NOT NOTIFIED)							

FIG. 23