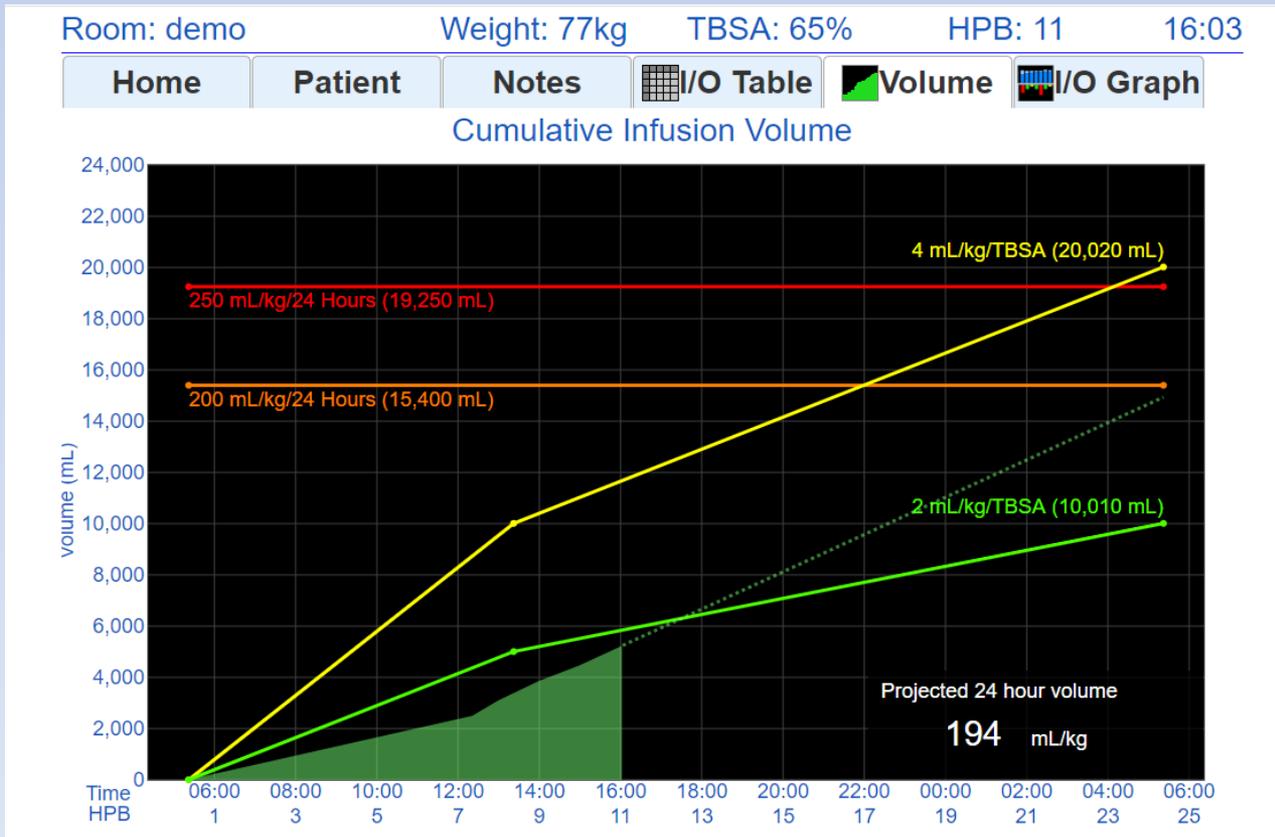


Burn Navigator® Training Guide Adult Example



What is Burn Navigator?

Burn Navigator is a Clinical Decision Support tool to help health care providers manage IV fluid therapy for adult and pediatric severe burn patients.

Resuscitation Graph

Room: demo

Weight: 66kg

TBSA: 45%

HPB: 16

11:22

Home

Patient

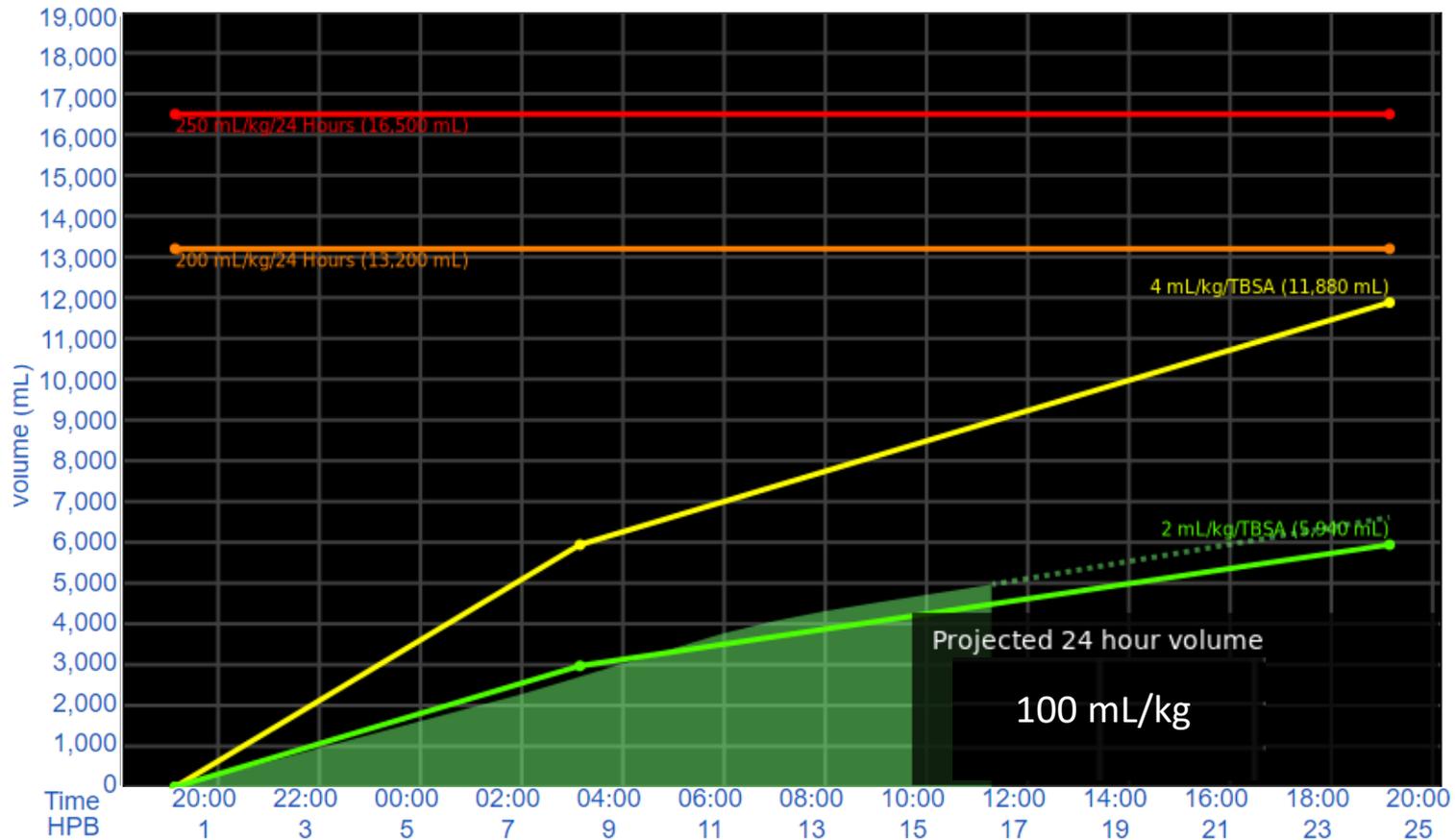
Notes

I/O Table

Volume

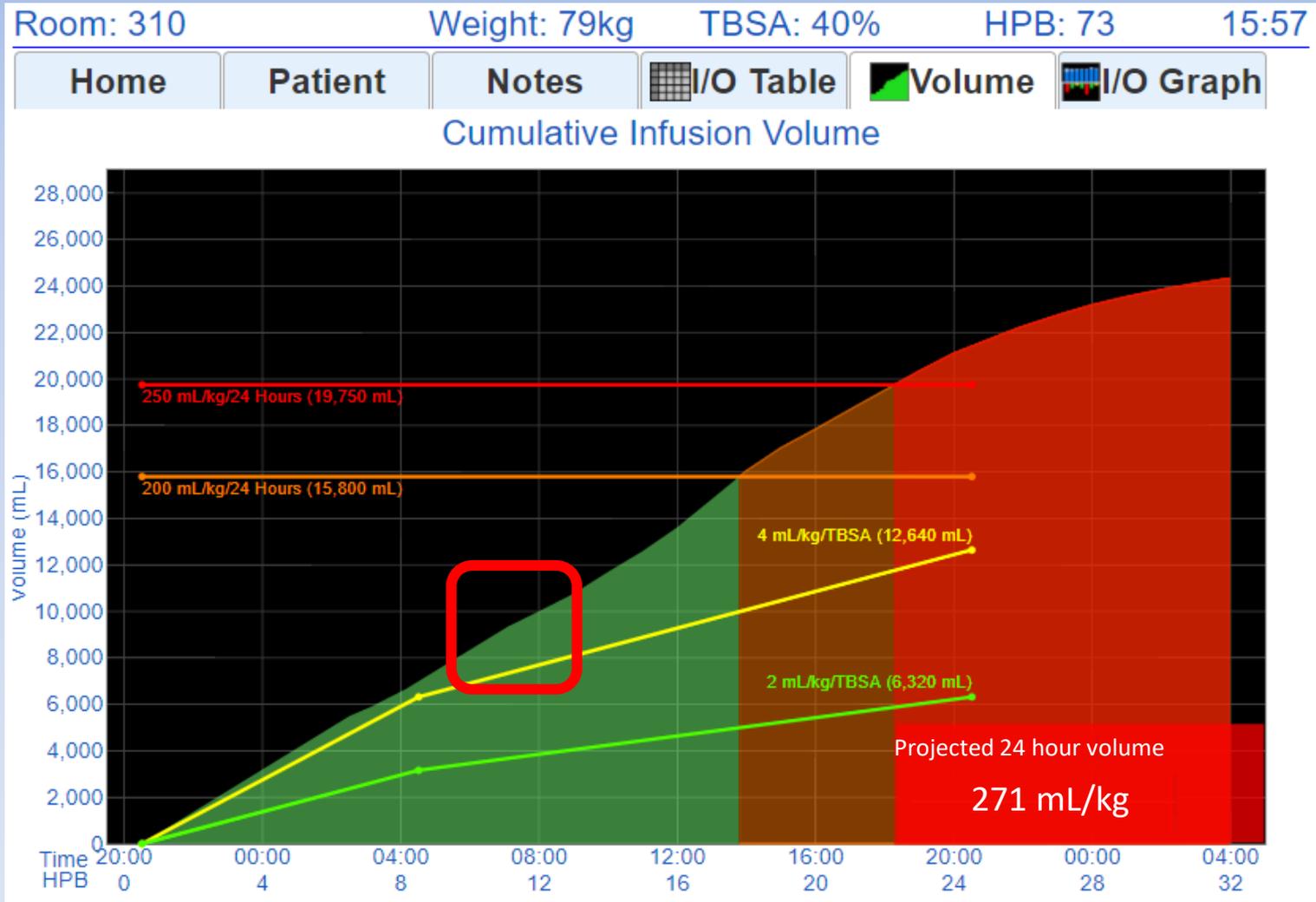
I/O Graph

Cumulative Infusion Volume



This resuscitation is going well.

Resuscitation Graph



Intervening when fluids exceed the guideline is key to avoiding too much fluid. The red box above shows the key time to intervene. (More on this graph later.)

Clinical Data

- **Army's Initial Retrospective Study** (before and after, n=70)¹
 - 35% additional time in target Urine Output range
 - 24 hour fluids given reduced from 6.5 to 4.2 mL/kg/TBSA
 - 2.5 fewer ventilator days
 - Decreased mortality between cohorts
- **Army Retrospective Review** (n=207)²
 - 24 hour fluids given were 3.5 mL/kg/TBSA
 - Mean urine output for initial 24 hours was 55 mL/hr
- **UTMB Retrospective Review** (n=154)³
 - AKI incidence reduced from 15% to 6% in first five days (p=.089)

1 Salinas, J et al, Computerized decision support system improves fluid resuscitation following severe burns: An original study, *Crit Care Med* 2011, 39(9), 2031-8.

2 J Salinas et al, *Review of Patients Resuscitated Using a Computerized Decision Support System in A Burn Intensive Care Unit*. *Crit Care Med* 2012, 225: Abstract only.

3 Sheaffer J et al, *Incidence of Acute Kidney Injury in Computerized Decision Support System Guided Fluid Resuscitations*, American Burn Association Oral Presentation, 24 March 2017.

Indications for Use

- The Burn Navigator is indicated for use in the care of adult patients with 20% or more Total Body Surface Area (TBSA) burned, or pediatric patients, 24 months old or older, weighing at least 10 kg with 15% or more TBSA burned, as a fluid resuscitation monitor and calculator for hourly fluid recommendations.
- The Burn Navigator is intended to be used for burn patients of all ages, weights and co-morbidities as a fluid resuscitation monitor.
- The Burn Navigator is intended to be initiated within 24 hours of the burn incident and to be used no longer than 72 hours post burn.

Protocols

Room: 501

Weight: 80kg

TBSA: %

HPB:

09:22

Select the patient protocol:

Adult predictive protocol

Targets 30 - 50 mL/hr

Up to 15% changes each hour.

Recommended for most adults without gross myoglobinuria.

Custom protocol

Target: to mL/kg, urine output.

Limited to 10% changes each hour.

Recommended for pediatric patients.

Monitor only

No hourly recommendations.

Provides resuscitation graphs and alerts.

Back

Next

Adult Predictive Protocol

- Uses the **Salinas algorithm** developed by U.S. Army Burn Center¹.
- The Salinas algorithm uses the trend of the last three hours of UO to recommend the next hour's IV infusion rate.
- The Salinas algorithm will go up to the hourly cap chosen by your medical director (e.g., 10%, 15% or 20% each hour).
- This protocol is recommend for most adult patients who do not have resuscitation confounders.



Adult predictive protocol

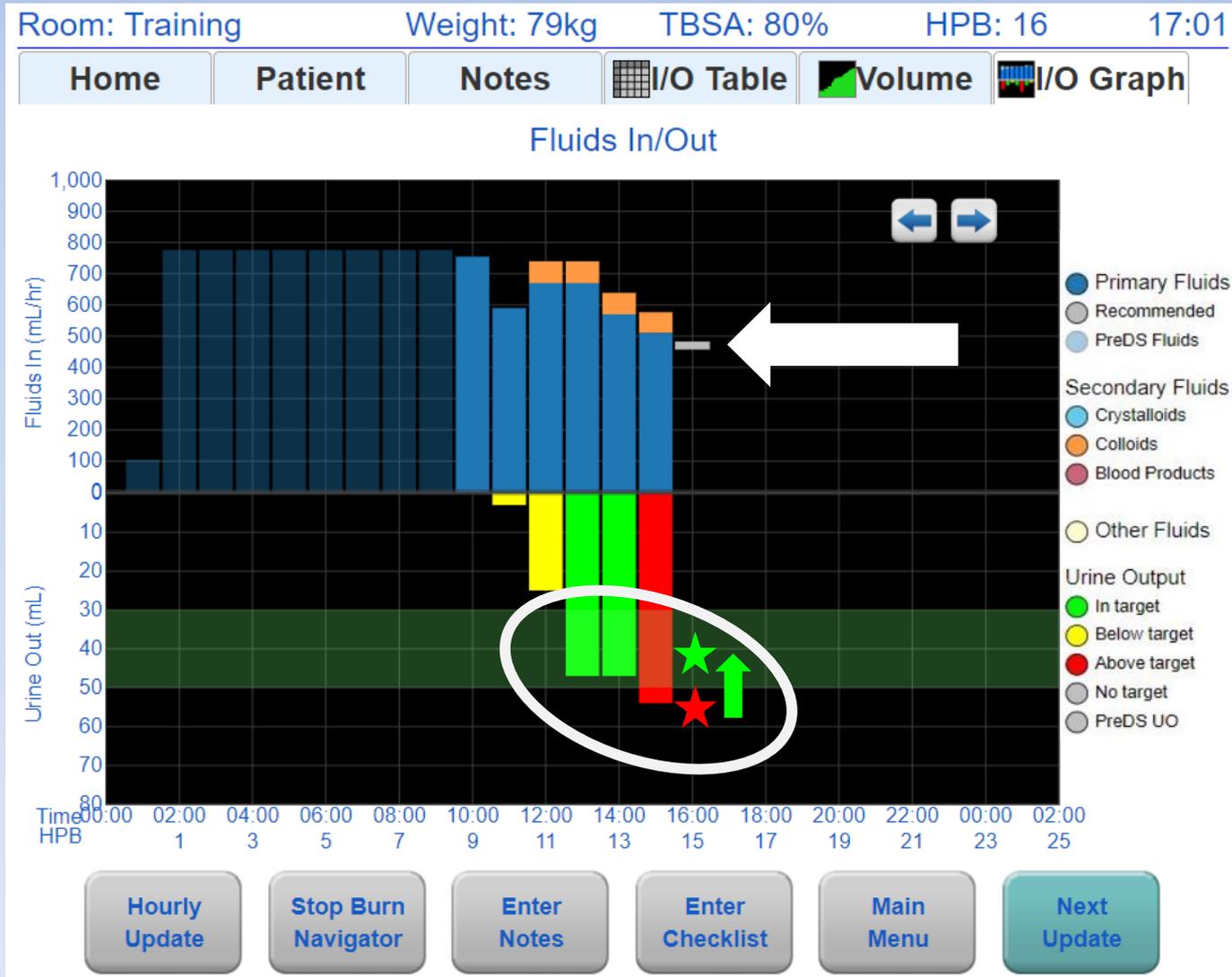
Targets 30 - 50 mL/hr

Up to 15% changes each hour.

Recommended for most adults without gross myoglobinuria.

¹ Salinas, J et al, Computerized decision support system improves fluid resuscitation following severe burns: An original study, Crit Care Med 2011, 39(9), 2031-8.

Adult Predictive Protocol uses a 3-hour trending algorithm



Custom Protocol

- Allows clinicians to set a target Urine Output range in **mL** or **mL/kg** each hour.
- If the patient's UO is not in target, then the Custom Protocol will recommend increasing or decreasing the IV fluid rate by 10%.



Custom protocol

Target: to , urine output.

Limited to 10% changes each hour.

Recommended for pediatric patients.

Monitor Only

- Monitor Only provides resuscitation graphs, projections and alerts
- Monitor Only does not provide an hourly IV fluid recommendation based on UO
- Choose this protocol when UO is not a good surrogate of general organ perfusion (such as acute renal failure or with diuretics) or if the patient does not have a Foley catheter



Monitor only

No hourly recommendations.

Provides resuscitation graphs and alerts.

Clinical Decision Support (CDS)

- As a CDS tool, Burn Navigator is not intended to replace clinical decision judgement, rather it informs clinical decision making.
- Users should always rely on their clinical judgment when making decision regarding patient care. The Burn Navigator recommendations are not a substitute for clinical judgment.

Interface

**White fields
you can edit**

**Colored fields
you cannot edit**

Room: Training Weight: 80kg TBSA: 70% HPB: 9 14:17

Select primary resuscitation fluid:

Select initial rate formula:

Recommended rate: Enter new rate:
 mL/hr

Log into Burn Nav Web

For U.S., log into <https://burnnav.net>

For Europe, log into <https://eu.burnnav.net>

For Canada, log into <https://ca.burnnav.net>

Click “Training Mode”

Arcos Hospital

Welcome Chris ▾

Active patients

Room No.	TBSA	Weight	Protocol	Hours Post Burn	Report	Session Id
training	65 %	80 kg	Adult predictive algorithm	HPB 1	PDF	training-100
Training603	50 %	67 kg	Adult predictive algorithm	HPB 6	PDF	training-96

Start New Patient

Training Mode

Type a room number
or training

Enter weight
- You can enter **kg** or **lbs**.

Room: Training Weight: 80kg TBSA: % HPB: 14:06

New Patient Information

Room number:

Enter patient weight:

kg or lbs

Then, press "Next"

Room: 501

Weight: 80kg

TBSA: %

HPB:

09:14

Confounders

Does the patient have...

Gross myoglobinuria?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Unknown
High blood alcohol/EtOH?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Unknown
Hyperglycemia?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Unknown
End stage renal disease?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Unknown
Congestive heart failure?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Unknown
Urinary catheter?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	

Back

Next

Choose Adult predictive algorithm

Room: 501

Weight: 80kg

TBSA: %

HPB:

09:22

Select the patient protocol:

Adult predictive protocol

Targets 30 - 50 mL/hr

Up to 15% changes each hour.

Recommended for most adults without gross myoglobinuria.

Custom protocol

Target: to mL/kg, urine output.

Limited to 10% changes each hour.

Recommended for pediatric patients.

Monitor only

No hourly recommendations.

Provides resuscitation graphs and alerts.

Back

Next

If an adult patient has myoglobinuria, you may need to target 75-100 mL UO

Select the patient protocol:

Adult predictive protocol

Targets 30 - 50 mL/hr

Up to 20% changes each hour.

Recommended for most adults without gross myoglobinuria.

Custom protocol

Target: to mL, urine output.

Limited to 10% changes each hour.

Recommended for pediatric patients.

Monitor only

No hourly recommendations.

Provides resuscitation graphs and alerts.

Enter TBSA

- Be as accurate as you can be
- Only count 2nd and 3rd degree

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 9

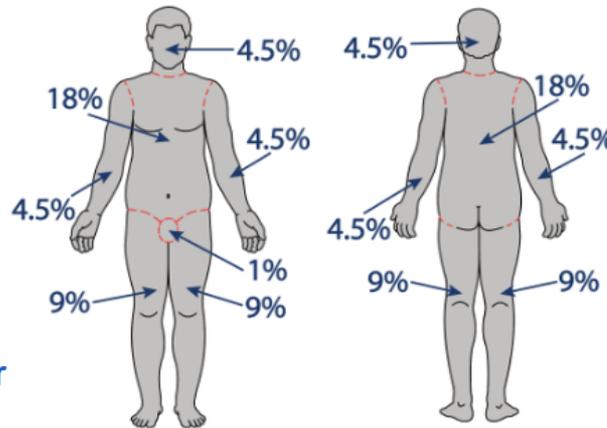
09:33

Enter total body surface area burned (TBSA):

 %

NOTE: Only include 2nd and 3rd degree burns for TBSA.

- 18+ years
- 15-17 years
- 10-14 years
- 5-9 years
- 1-4 years
- Birth to 1 year



Back

Next

Enter height

(it is optional for adult predictive algorithm)

Room: Training Weight: 80kg TBSA: 80% HPB: 9 09:32

Enter patient height:

(Optional for adult predictive protocol)

cm or inches

Body Surface Area

m²

TBSA:

Burned Surface Area:

 m²

Back

Next

Enter how long ago the patient was burned in hours and minutes

If you don't know, make your best guess

Room: Training Weight: 80kg TBSA: 70% HPB: 9 14:15

Enter elapsed time since burn occurred:

9 hours 0 minutes

Time of burn:

05:15

Back Next

The software will calculate time of burn

**Enter
total fluids given
and urine output
since the burn
until now**

Room: Training Weight: 80kg TBSA: 80% HPB: 9 09:39

Enter fluids given until now:

mL

Enter urine output until now:

mL

[Back](#) [Next](#)

If you don't know this information now,
you can leave it blank and enter it later

You can select different starting formulas

Room: Training Weight: 80kg TBSA: 80% HPB: 9 09:41

Select primary resuscitation fluid:
Lactated Ringer's

Select initial rate formula:
3 mL/kg/TBSA

Recommended rate: Enter new rate:
600 mL/hr 600 mL/hr

Back Next

Your physician may want you to start at a different rate. If so, enter the rate here.

Lactated Ringer's is the default fluid. You can change fluid types.

You've completed the new patient setup!

Now you see the Home Screen

Room: Training Weight: 80kg TBSA: 80% HPB: 9 09:43

Home Patient Notes I/O Table Volume I/O Graph

Current primary fluid: Next update due:

Lactated Ringer's 17 minutes

Current infusion rate: Projected 24 hour volume

600 mL/hr 2.5 mL/kg/TBSA

Adult predictive protocol 30 to 50 mL
 Custom protocol 30 to 50 mL
 Monitor only

Hourly Update Stop Burn Navigator Enter Notes **Enter Checklist** Main Menu Next Update



Press "Enter Checklist"

Enter checklist information

Room: Training Weight: 80kg TBSA: 80% HPB: 9 09:44

Enter Checklist

Enter Vitals			Check Extremities	
✓ Systolic BP	<input type="text" value="85"/>	mmHg	✓ Elevate burned extremities	<input checked="" type="checkbox"/>
✓ Diastolic BP	<input type="text" value="64"/>	mmHg	✓ Check for Tightness	<input checked="" type="checkbox"/>
CVP	<input type="text" value="---"/>	mmHg	Check Pulses	
✓ Heart Rate	<input type="text" value="115"/>	bpm	✓ Left Upper	<input type="text" value="normal"/>
Enter Bladder Pressure			✓ Right Upper	<input type="text" value="weak"/>
Bladder pressure	<input type="text" value="---"/>	mmHg	✓ Left Lower	<input type="text" value="normal"/>
Enter Labs			✓ Right Lower	<input type="text" value="weak"/>
ScvO2	<input type="text" value="---"/>	%		
✓ Lactate	<input type="text" value="2.1"/>	mg/dL		
Base excess	<input type="text" value="---"/>	mEq/L		
✓ Hemoglobin	<input type="text" value="10.5"/>	g/dL		

Don't forget these!

Drop-down selections

Checklists are recommended:

- When starting a new resuscitation
- Every 6 hours

Advance time to the next update

Room: Training Weight: 80kg TBSA: 80% HPB: 9 09:45

Home **Patient** **Notes** I/O Table Volume I/O Graph

Current primary fluid: Next update due:

Lactated Ringer's 15 minutes

Current infusion rate: Projected 24 hour volume

600 mL/hr 2.5 mL/kg/TBSA

Adult predictive protocol 30 to 50 mL
 Custom protocol 30 to 50 mL
 Monitor only

Hourly Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu **Next Update**



Press “Next Update”

Room: Training Weight: 80kg TBSA: 80% HPB: 10 10:00

Fluid Update: Urine Data

Urine measurement time

From: 09:42 To: 10:00 18 mins

Urine output volume

3 mL 0.1 mL/kg/hr

Urine output is not measured or unknown

Back Next

“**From**” time is the end of the last update

“**To**” time is when you collect UO data

Enter 3 mL UO, then press “Next”

Room: Training Weight: 80kg TBSA: 80% HPB: 10 10:01

Fluids Given

From:09:42 To:10:00 18 mins

Primary fluid was:

Lactated Ringer's

Infusion rate: Infusion volume:

600 mL/hr 180 mL

Back Next



Your current pump rate
(change if needed)



Volume for this
time period

The **rate** and **volume**
will be different if the
time period is not 60
minutes

If you edit the rate, the volume for the time period will be updated

Click “Select a fluid type”

Room: Training	Weight: 80kg	TBSA: 80%	HPB: 10	10:03
Additional Fluids				
Fluid	Volume	Repeat		
Select a fluid type...				
Total Additional Fluids: --- mL				

Note that “Additional Fluids” are divided into two categories: Secondary Fluids and Other Fluids.

Secondary Fluids are added to the total fluid volume and – if repeated – are included in the 24-hour fluid projection.

Other Fluids are not included in the total fluid volume or the 24-hour fluid projection.

Additional Fluids				
Fluid	Volume	Repeat		
Select a fluid type...				
Select a fluid type...				
Secondary Fluids Category:		s: --- mL		
Lactated Ringer's				
Normal Saline				
Plasma-lyte				
Albumin 5%				
Albumin 25%				
Packed Red Blood Cells		ast hour.		
Fresh Frozen Plasma				
Whole Blood				
Hextend				
Other Fluids Category:				
Tube Feeds				
Lactated Ringer's + 5% Dextrose				
IV Medications				
Other Fluid				

Back Next

Choose “Albumin 5%”

Type 70mL and click
“Repeat”

Room: Training	Weight: 80kg	TBSA: 80%	HPB: 10	10:04	
Additional Fluids					
Fluid	Volume	Repeat			
x Albumin 5%	70 mL	<input checked="" type="checkbox"/>			
Select a fluid type...					
Total Additional Fluids: 70 mL					
WARNING: Giving fluids in addition to the primary resuscitation fluid may require an adjustment to the fluid infusion rate by the user, different from the rate recommended by Burn Navigator. The attending physician should be contacted to determine if the new recommended infusion rate is appropriate.					
		<input type="button" value="Back"/>	<input type="button" value="Next"/>		

You'll see this warning message anytime additional fluids are given, because the algorithm doesn't take those fluids into account

Room: Training Weight: 80kg TBSA: 80% HPB: 10 10:05

New Rate

Previous infusion rate: 600 mL/hr

Fluid type:

Recommended rate:

690 mL/hr

↑ 15 %

New rate:

690 mL/hr

↑ 15 %

Back

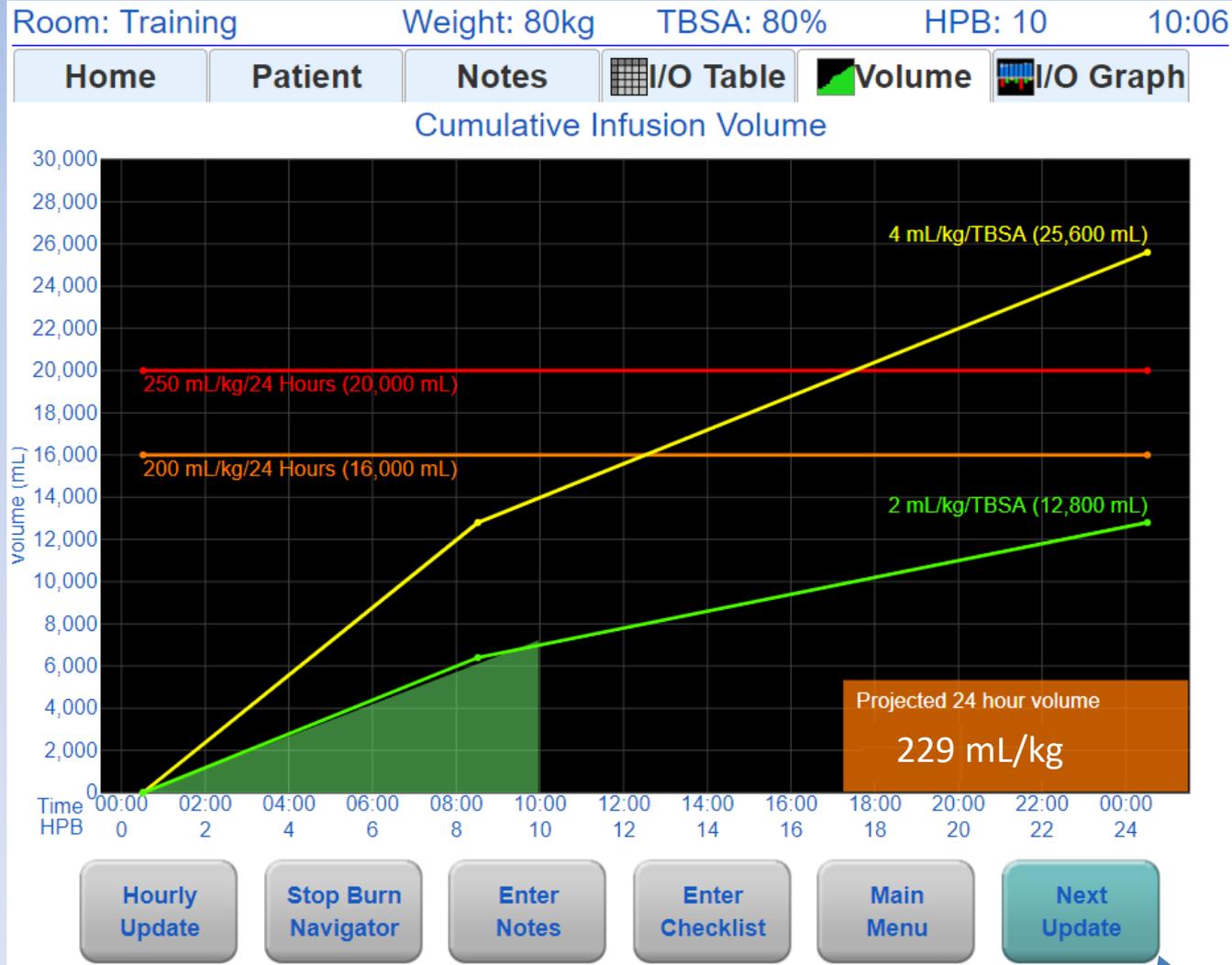
Next

New

recommendation

**Accept this recommendation
by pressing “Enter”**

Let's do another update



Press "Next Update"

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 11

11:00

Fluid Update: Urine Data

Urine measurement time

From:10:00

To: 11:00

60 mins

Urine output volume

25 mL

0.3 mL/kg/hr

Urine output is not measured or unknown

Back

Next

**Enter UO,
then press “Next”**

Room: Training Weight: 80kg TBSA: 80% HPB: 11 11:04

Fluids Given

From:10:00

To:11:00

60 mins

Primary fluid was:

Lactated Ringer's

Infusion rate:

690

mL/hr

Infusion volume:

690

mL

Back

Next

Since our pump rate wasn't changed during this hour, just press "Next"

Because you chose “Repeat” last time, albumin is listed again.

Press “Next”

Room: Training Weight: 80kg TBSA: 80% HPB: 11 11:05

Additional Fluids

Fluid	Volume	Repeat
<input type="checkbox"/> Albumin 5%	<input type="text" value="70"/> mL	<input checked="" type="checkbox"/>
<input type="text" value="Select a fluid type..."/>		

Total Additional Fluids: 70 mL

WARNING: Giving fluids in addition to the primary resuscitation fluid may require an adjustment to the fluid infusion rate by the user, different from the rate recommended by Burn Navigator. The attending physician should be contacted to determine if the new recommended infusion rate is appropriate.

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 11

11:05

New Rate

Previous infusion rate: 690 mL/hr

Fluid type:

Lactated Ringer's

Recommended rate:

790 mL/hr

 14 %

New rate:

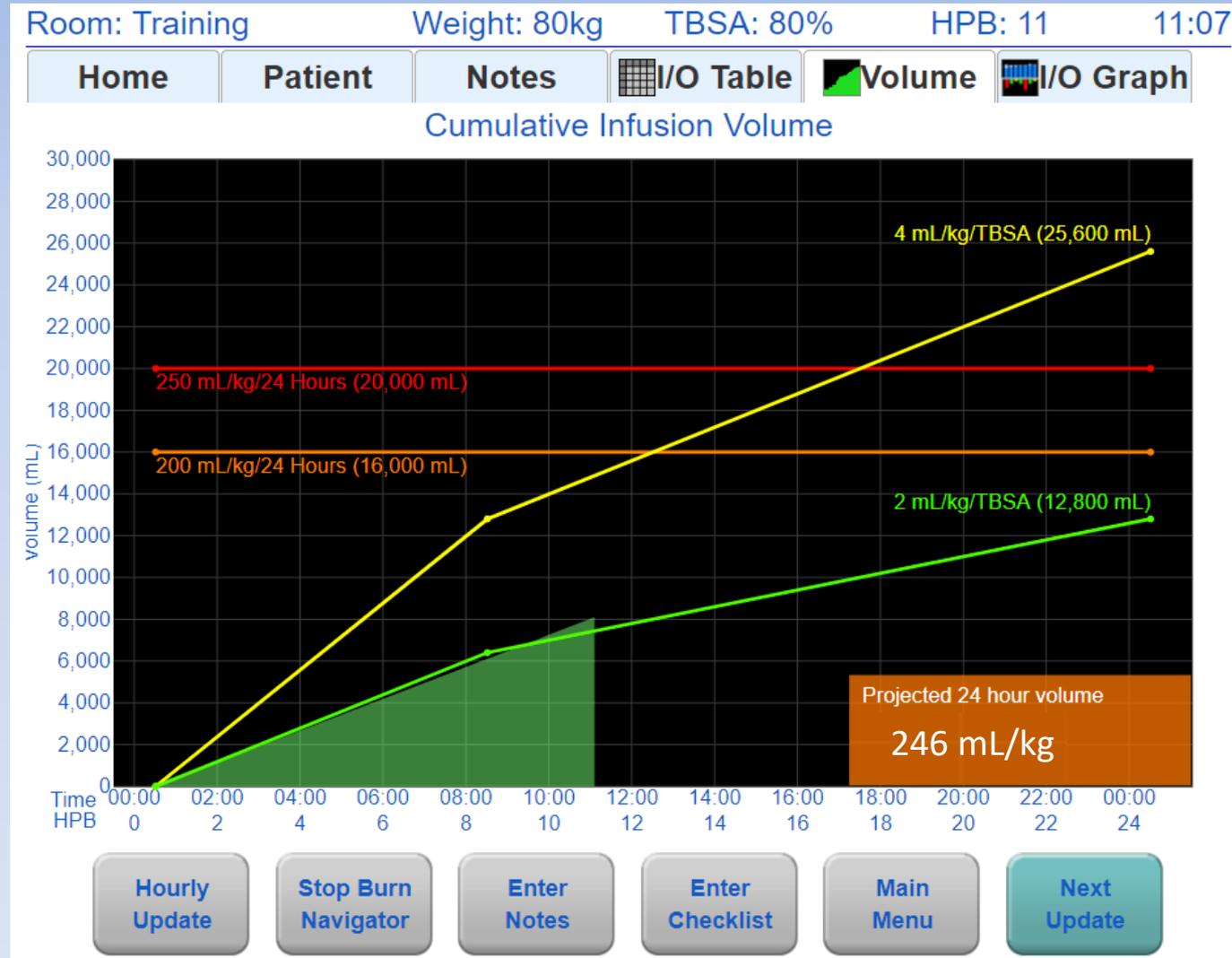
790 mL/hr

 14 %

Back

Next

Let's do one more update



Press "Next Update"

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 12

12:00

Fluid Update: Urine Data

Urine measurement time

From: 11:00

To:

12:00

60 mins

Urine output volume

47

mL

0.6 mL/kg/hr

Urine output is not measured or unknown

Back

Next

Enter UO

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 12

12:01

Fluids Given

From:11:00

To:12:00

60 mins

Primary fluid was:

Lactated Ringer's

Infusion rate:

790

mL/hr

Infusion volume:

790

mL

Back

Next

Confirm the pump wasn't changed: **press Next**

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 12

12:02

Additional Fluids

Fluid	Volume	Repeat
<input checked="" type="checkbox"/> Albumin 5%	<input type="text" value="70"/> mL	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Fresh Frozen Plasma	<input type="text" value="250"/> mL	<input type="checkbox"/>
<input type="text" value="Select a fluid type..."/>		

Total Additional Fluids: 320 mL

WARNING: Giving fluids in addition to the primary resuscitation fluid may require an adjustment to the fluid infusion rate by the user, different from the rate recommended by Burn Navigator. The attending physician should be contacted to determine if the new recommended infusion rate is appropriate.

Back

Next

**Add FFP, 250 mL
(without repeat)**

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 12

12:03

Safety Questions

Is patient hypotensive?

Yes

No

Is patient hyperglycemic?

Yes

No

Is patient on pressors?

Yes

No

Is patient on diuretics?

Yes

No

Back

Next

Accept this recommendation

New Rate

Previous infusion rate: 790 mL/hr

Fluid type:

Lactated Ringer's

Recommended rate:

680 mL/hr



-14 %

New rate:

680 mL/hr



-14 %

Alert! Consult with attending physician about an appropriate fluid rate during presence of hypotension, hyperglycemia, pressors or diuretics.

Back

Next

If you say “Yes” to a safety question, you’ll see this alert

Room: Training

Weight: 80kg

TBSA: 80%

HPB: 12

13:02

New Rate

Previous infusion rate: 790 mL/hr

Fluid type:

Lactated Ringer's

Recommended rate:

680 mL/hr

↓ -14 %

New rate:

700 mL/hr

↓ -11 %

Back

Next

Change new rate to **700 mL/hr**
Because patient was hypotensive

Main Screens

HPB - Hours Post Burn

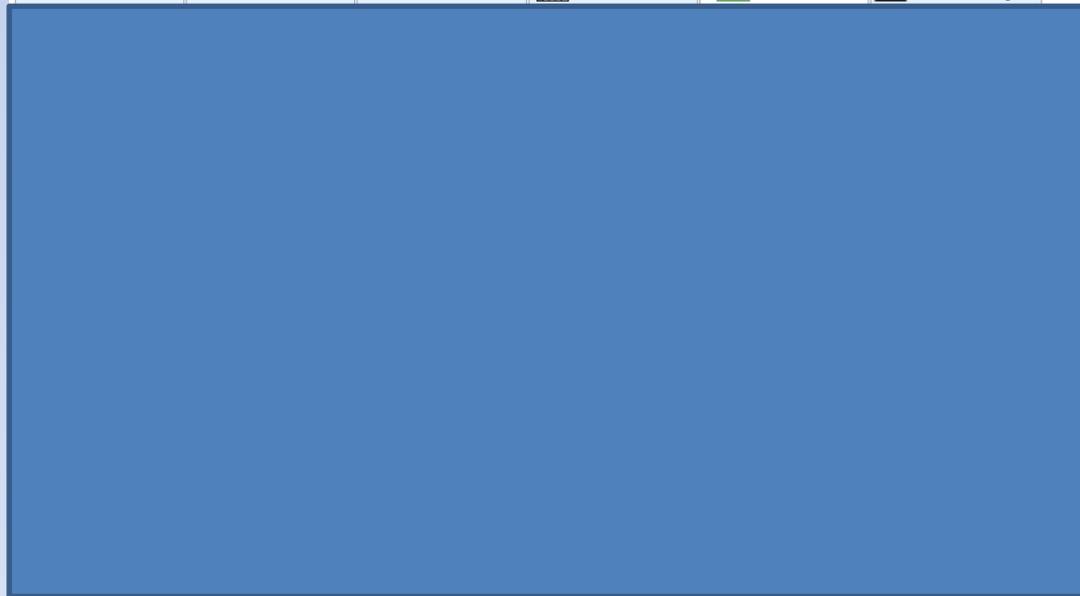


Six main tabs



Room: Training Weight: 80kg TBSA: 80% HPB: 10 10:06

Home Patient Notes I/O Table Volume I/O Graph



Functional buttons
are at the bottom



Edit Update Button

Room: Training Weight: 79kg TBSA: 80% HPB: 16 17:18

Home Patient Notes I/O Table Volume I/O Graph

Current primary fluid: Next update due:
($\frac{2}{3}$) LR + ($\frac{1}{3}$) Albumin 5% 42 minutes

Current infusion rate: Projected 24 hour volume
440 mL/hr 2.4 mL/kg/TBSA

LR	293	mL/hr
Alb 5%	147	mL/hr

Adult predictive protocol 30 to 50 mL
 Custom protocol 30 to 50 mL
 Monitor only

Edit Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu PDF Report

Enter new fluid update if it is time to do so

You can Edit the fluid update within 10 minutes of the entry, as long as the button is gray and says "Edit Update."

Fluid Update Button

Room: Training Weight: 79kg TBSA: 80% HPB: 16 17:18

Home Patient Notes I/O Table Volume I/O Graph

Current primary fluid: Next update due:
($\frac{2}{3}$) LR + ($\frac{1}{3}$) Albumin 5% 42 minutes

Current infusion rate: Projected 24 hour volume
440 mL/hr 2.4 mL/kg/TBSA

LR	293	mL/hr
Alb 5%	147	mL/hr

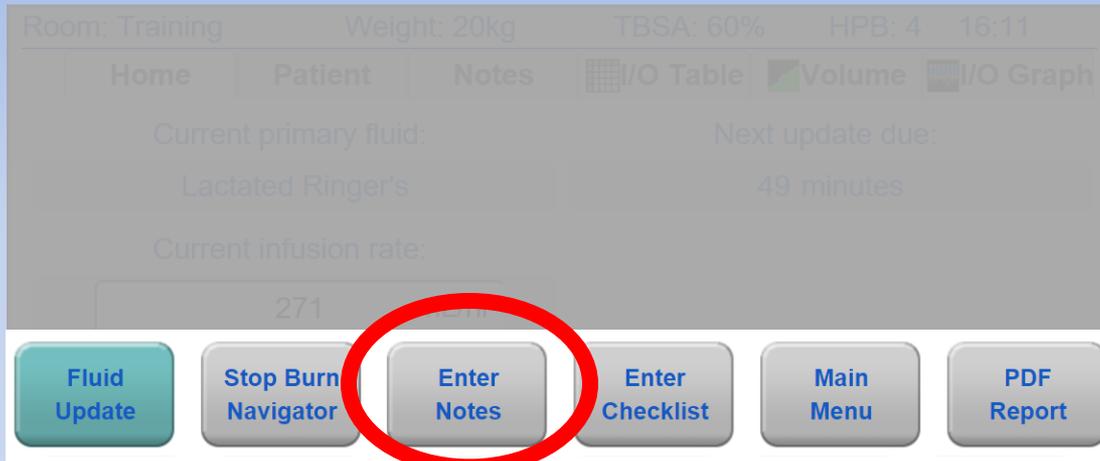
Adult predictive protocol 30 to 50 mL
 Custom protocol 30 to 50 mL
 Monitor only

Fluid Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu PDF Report

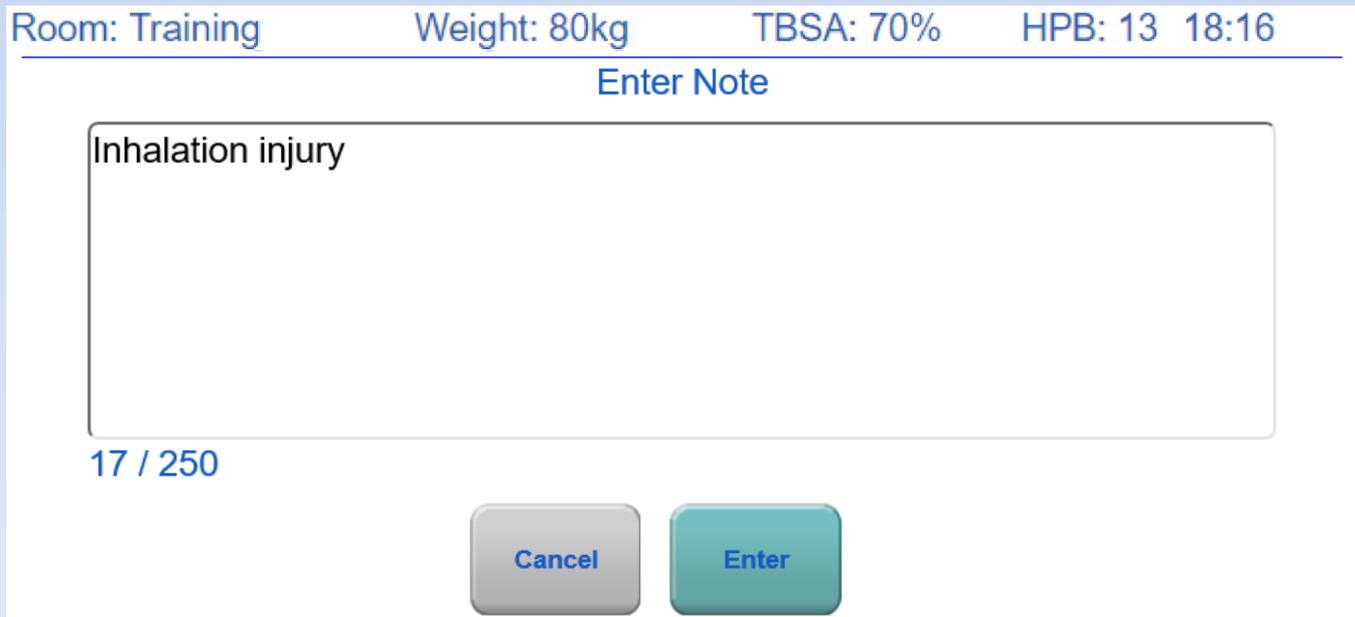
Fluid updates can be entered as often as every 15 minutes.

You may enter a new Fluid Update when the button is teal and reads "Fluid Update."

Enter Notes Button

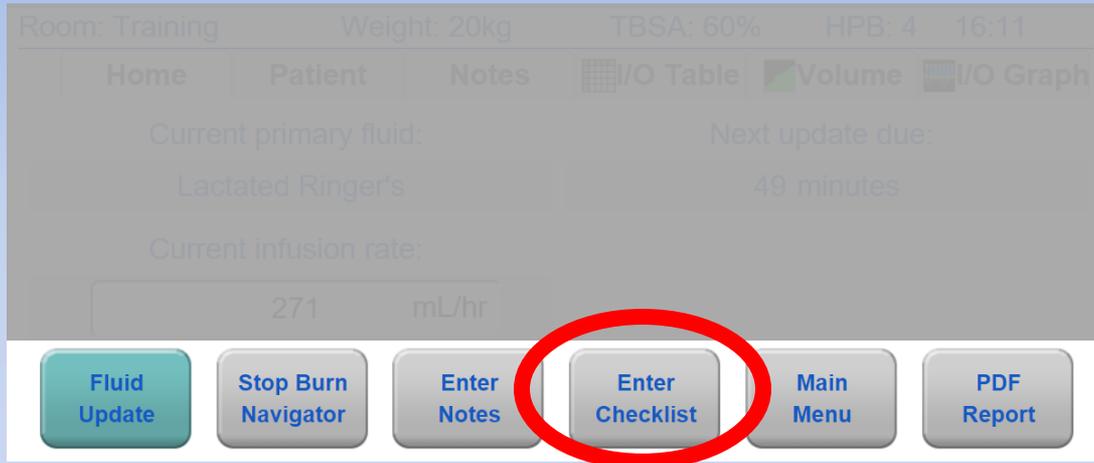


Press "Enter Notes"



**Press "Enter"
to save the
note**

Enter Checklist Button



A screenshot of the 'Enter Checklist' screen. The header shows: Room: Training, Weight: 80kg, TBSA: 70%, HPB: 9, 14:20. The screen is divided into several sections:

- Enter Vitals:**
 - ✓ Systolic BP: 85 mmHg
 - ✓ Diastolic BP: 64 mmHg
 - CVP: --- mmHg
 - ✓ Heart Rate: 115 bpm
- Enter Bladder Pressure:**
 - Bladder pressure: --- mmHg
- Enter Labs:**
 - ScvO2: --- %
 - ✓ Lactate: 2.1 mg/dL
 - Base excess: --- mEq/L
 - ✓ Hemoglobin: 10.5 g/dL
- Check Extremities:**
 - ✓ Elevate burned extremities:
 - ✓ Check for Tightness:
 - Check Pulses:**
 - ✓ Left Upper: normal
 - ✓ Right Upper: weak
 - ✓ Left Lower: normal
 - ✓ Right Lower: weak

At the bottom, there are two buttons: Cancel (grey) and Enter (teal).

“Enter Checklist” shows the checklist screen

We’ve already done one, so just continue for now!

Press the "Home" tab

This screen show
Current Infusion
rate

It shows Patient
protocol status

Room: Training Weight: 79kg TBSA: 80% HPB: 16 17:18

Home Patient Notes I/O Table Volume I/O Graph

Current primary fluid: Next update due:
($\frac{2}{3}$) LR + ($\frac{1}{3}$) Albumin 5% 42 minutes

Current infusion rate: Projected 24 hour volume
440 mL/hr 2.4 mL/kg/TBSA

LR	293	mL/hr
Alb 5%	147	mL/hr

Adult predictive protocol 30 to 50 mL
 Custom protocol 30 to 50 mL
 Monitor only

Fluid Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu PDF Report

Press the “Patient” tab

This screen lets you edit patient information

If you’ve mapped a more accurate TBSA, edit it here!

Room: Training Weight: 80kg TBSA: 80% HPB: 12 13:29

Home **Patient** Notes I/O Table Volume I/O Graph

Room number: Training

Weight: 80 kg

Size of burn (TBSA): 80 %

Height: in. cm.

Confounders? Unknown

Elapsed time since burn (HPB): 12 hrs. 15 mins.

Minimum rate after 8 HPB: 120 mL/hr

Fluids given pre-Burn Navigator: 7000 mL

Urine output pre-Burn Navigator: mL

Burn time: 01:14 HPB 0

Software started: 10:14 HPB 9

Software ended: -- : --

Fluid Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu PDF Report

Press the “Notes” tab

Your **notes** and system generated notes are **on the left**

Room: Training Weight: 80kg TBSA: 80% HPB: 12 13:30

Home Patient **Notes** I/O Table Volume I/O Graph

Notes:

13:00 HPB: 12
Hypotensive: Yes
Hyperglycemic: No
Pressors: No
Diuretics: No

13:00 HPB: 12
Recommended rate: 680 mL/hr
Entered rate: 700 mL/hr
Physician: Dr.
Caregiver: Nurse
Rationale: Physicians direction

10:14 HPB: 9
Confounders:
Myoglobinuria: Unknown
Hyperglycemic: Unknown
High blood alcohol/EtOH: Unknown

Checklists:

10:15 HPB: 9
Checklist

Systolic BP	= 85 mmHg
Diastolic BP	= 64 mmHg
CVP	= mmHg
Heart rate	= 115 BPM
Bladder pressure	= mmHg
ScvO2	= %
Lactate	= 2.1 mg/dL
Base Excess	= mEq/L
Hemoglobin	= 10.5 g/dL
Left upper pulses	= normal
Right upper pulses	= weak
Left lower pulses	= normal
Right lower pulses	= weak
Burned extremities elevated	
Tightness checked	

Fluid Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu PDF Report

Checklists are on the **right**

The most recent notes and checklists are at the top
Scroll down to see older entries!

Each note and checklist is time-stamped with hour post burn!

Resuscitation Plan: First Note

Room: Training Weight: 80kg TBSA: 80% HPB: 12 13:30

Home Patient **Notes** I/O Table Volume I/O Graph

Notes:

13:00 HPB: 12
Hypotensive: Yes
Hyperglycemic: No
Pressors: No
Diuretics: No

13:00 HPB: 12
Recommended rate: 680 mL/hr
Entered rate: 700 mL/hr
Physician: Dr.
Caregiver: Nurse
Rationale: Physicians direction

10:14 HPB: 9
Confounders:
Myoglobinuria: Unknown
Hyperglycemic: Unknown
High blood alcohol/EtOH: Unknown

Checklists:

10:15 HPB: 9
Checklist

Systolic BP	= 85 mmHg
Diastolic BP	= 64 mmHg
CVP	= mmHg
Heart rate	= 115 BPM
Bladder pressure	= mmHg
ScvO2	= %
Lactate	= 2.1 mg/dL
Base Excess	= mEq/L
Hemoglobin	= 10.5 g/dL
Left upper pulses	= normal
Right upper pulses	= weak
Left lower pulses	= normal
Right lower pulses	= weak
Burned extremities elevated	
Tightness checked	

Fluid Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu PDF Report

Helpful for reviews, training & quality improvement

Press the “I/O Table” tab

Room: demo Weight: 75kg TBSA: 35% HPB: 15 01:03

[Home](#) [Patient](#) [Notes](#) **[I/O Table](#)** [Volume](#) [I/O Graph](#)

Actual Times(edit) Hourly Averages

Hours Post Burn (HPB)	HPB0	HPB1	HPB2	HPB3	HPB4	HPB5	HPB6	HPB7	HPB8	HPB9
Clock Hour	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20
Urinary Output (mL)	12	25	25	53	45	45	49	55	54	41
Urinary Output (mL/kg/hr)	0.2	0.3	0.3	0.7	0.6	0.6	0.7	0.7	0.7	0.5
Recommended Rate (mL/hr)				245	400	330	390	340	330	271
Actual Primary Rate (mL/hr)	83	167	167	329	400	330	390	340	330	271
Actual Primary Volume (mL)	83	167	167	328	400	330	390	340	330	272
Lactated Ringer's (mL)	83	167	167	328	400	330	390	340	330	272
Total Secondary Fluids (mL)						50	50	50	197	53
Fresh Frozen Plasma (mL)									148	2
5% Albumin (mL)						50	50	50	49	51
Total Other Fluids (mL)							100	100		
IV Medications (mL)							100	100		
Total Fluids In (mL)	83	167	167	328	400	380	540	490	527	325
Total Cumulative Fluids (mL)	83	250	418	746	1,146	1,526	2,066	2,556	3,083	3,407
Hypotensive				No	No		No	No	No	No
Hyperglycemic				No	No		No	No	No	No
On Pressors				No	No		No	No	No	No
On Diuretics				No	No		No	No	No	No

The I/O Table is a record of all fluid data

“Hourly Averages”
 view shows you data
 fitted to clock hours
 e.g.:
13:00 – 14:00
14:00 – 15:00
 etc.

Hours are labeled by
 HPB:
Hour Post Burn 1
Hour Post Burn 2
 etc.

Room: demo Weight: 75kg TBSA: 35% HPB: 15 01:03

Home Patient Notes I/O Table Volume I/O Graph

Actual Times(edit) Hourly Averages

Hours Post Burn (HPB)	HPB0	HPB1	HPB2	HPB3	HPB4	HPB5	HPB6	HPB7	HPB8	HPB9
Clock Hour	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20
Urinary Output (mL)	12	25	25	53	45	45	49	55	54	41
Urinary Output (mL/kg/hr)	0.2	0.3	0.3	0.7	0.6	0.6	0.7	0.7	0.7	0.5
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Actual Primary Rate (mL/hr)	83	167	167	329	400	330	390	340	330	271
Actual Primary Volume (mL)	83	167	167	328	400	330	390	340	330	272
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Total Cumulative Fluids (mL)	83	250	418	746	1,146	1,526	2,066	2,556	3,083	3,407
Hypotensive				No	No		No	No	No	No
Hyperglycemic				No	No		No	No	No	No
On Pressors				No	No		No	No	No	No
On Diuretics				No	No		No	No	No	No

“Actual Times” view shows you the data when you entered it, e.g.:

13:00
14:05
15:03
 etc.

The columns might not be 60 minutes!! They could be:

65 min
 57 min
 60 min
 etc.

Room: Training Weight: 80kg TBSA: 70% HPB: 11 20:59

Home Patient Notes I/O Table Volume I/O Graph

Actual Times(edit) Hourly Averages

Actual Times	13:03	14:00	15:00	16:00	17:00	18:00	19:00	20:00	(21:00)
Urinary Output (mL)	150	250	50	60	65	45	40	25	
Urinary Output (mL/kg/hr)	0.5	3.3	0.6	0.8	0.8	0.6	0.5	0.3	
Recommended Rate (mL/hr)		1,050	900	770	880	750	750	850	880
Actual Primary Rate (mL/hr)	500	1,050	900	770	880	750	750	850	
Actual Primary Volume (mL)	2,000	998	900	770	880	750	750	850	
Lactated Ringer's (mL)	2,000	998	900	770	880	750	750	850	
Total Secondary Fluids (mL)			50					150	
Plasma-lyte (mL)			50						
25% Albumin (mL)								150	
Total Other Fluids (mL)				250	350	250	250	250	
IV Medications (mL)				250	250	250	250	250	
Tube Feeds (mL)					100				
Total Fluids In (mL)	2,000	998	950	1,020	1,230	1,000	1,000	1,250	
Total Cumulative Fluids (mL)	2,000	2,998	3,948	4,968	6,198	7,198	8,198	9,448	
Hypotensive		No	No		No				
Hyperglycemic		No	No		No				
On Pressors		No	No		No				
On Diuretics		No	No		No				

Fluid Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu Next Update

Numbers on the two views may differ!

Weight: 80kg

Weight	Notes	I/O
y Averages		
12:22	13:00	14:10 (15:00)
	3	20
0.0	0.1	0.2
	1,050	1,260 1,510
7,000	665	1,470
7,000	665	1,470
	70	
	70	
7,000	735	1,470
7,000	7,735	9,205

Buttons: Enter Notes, Enter Checklist

TBSA: 70%

I/O Table	Volume	
HPB3	HPB4	HPB5 (HPB6)
11-12	12-13	13-14
	3	17
0.0	0.1	0.2
0	665	1,260 1,510
1,750	1,307	1,260
1,750	1,307	1,260
	70	
	70	
1,750	1,377	1,260
6,358	7,735	8,995

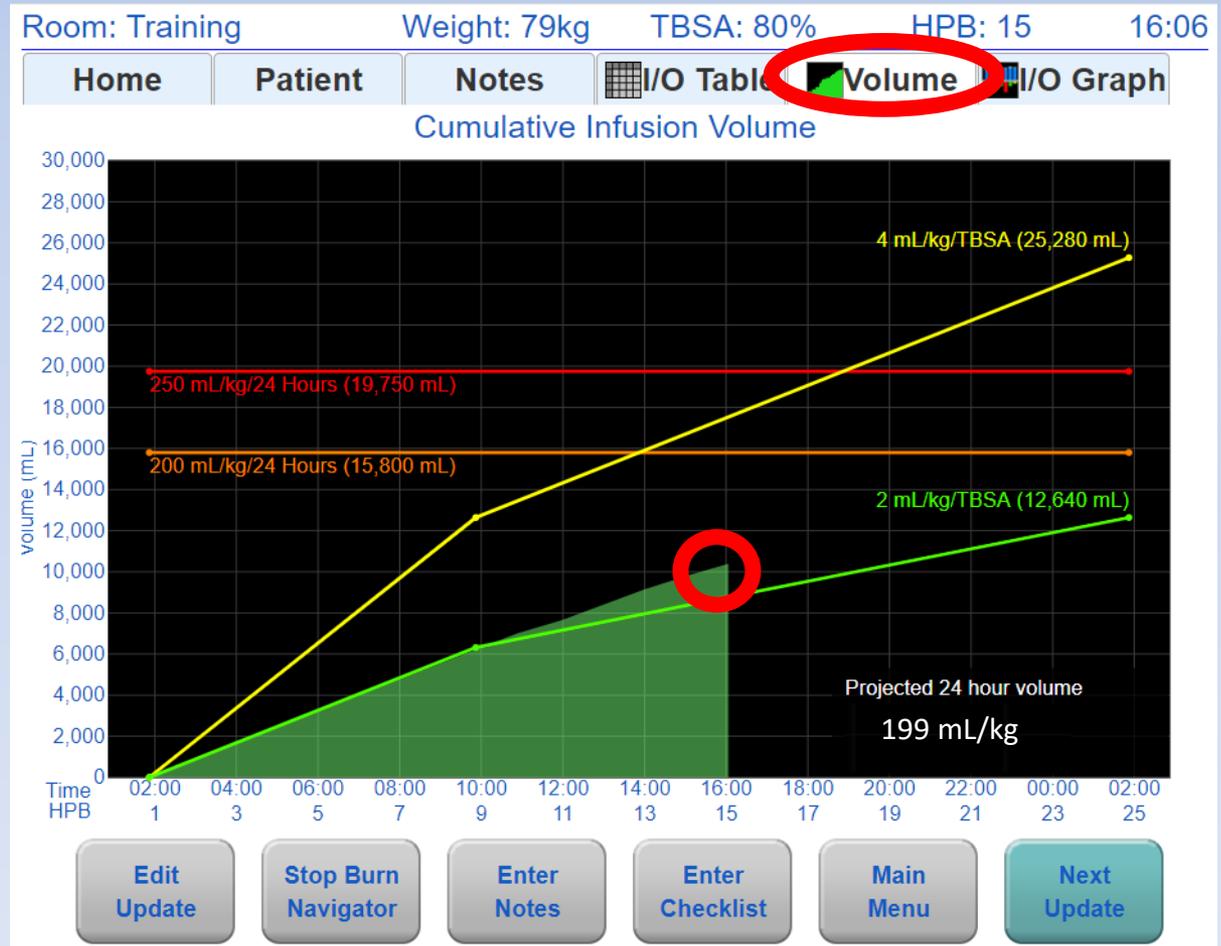
Buttons: Main Menu, Next Update

Press the “Volume” tab

Shown are all fluids given to the patient since time of burn

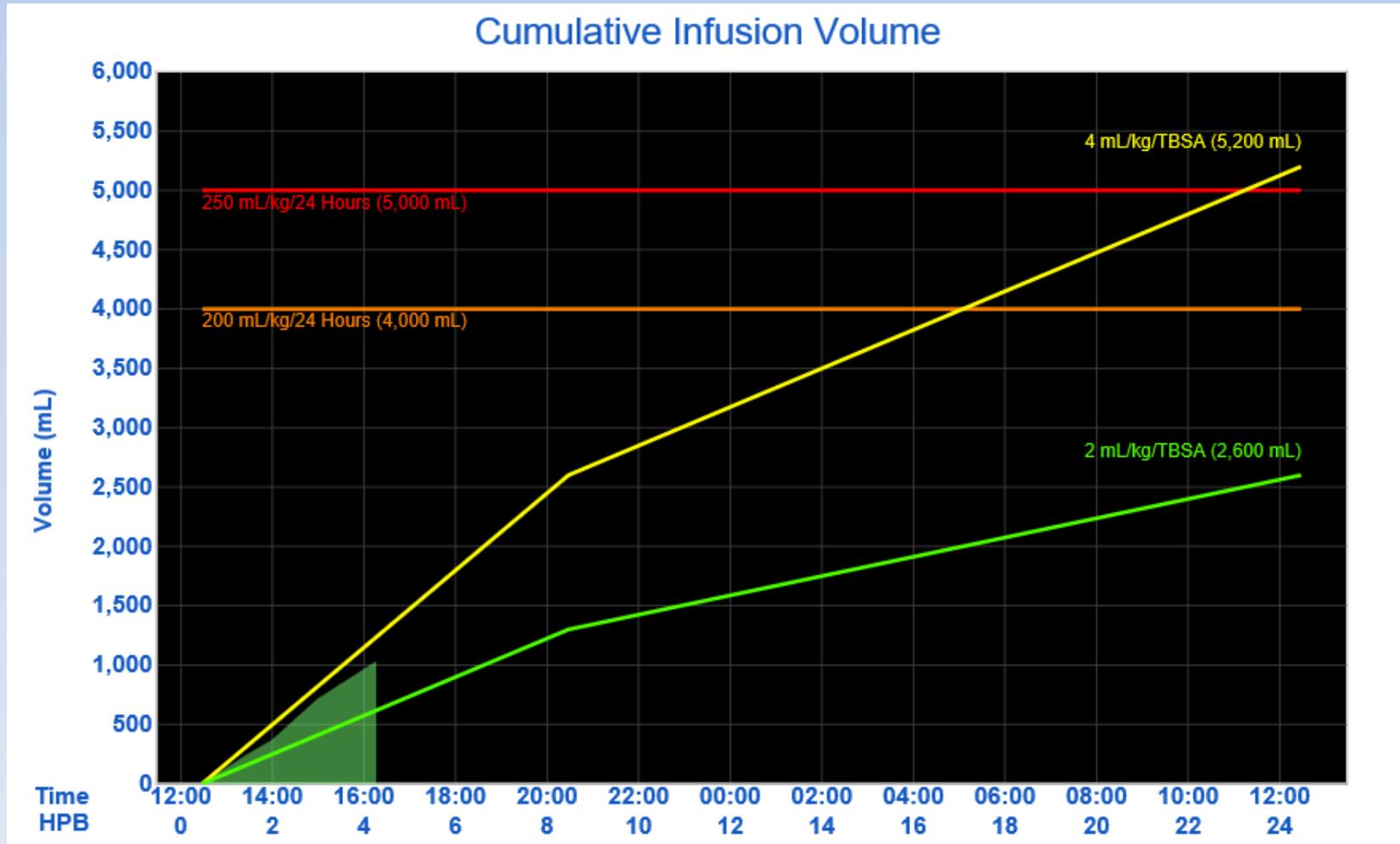
The “green mountain” of fluids grows over time

How much fluid has this patient received?



Resuscitation guidelines:

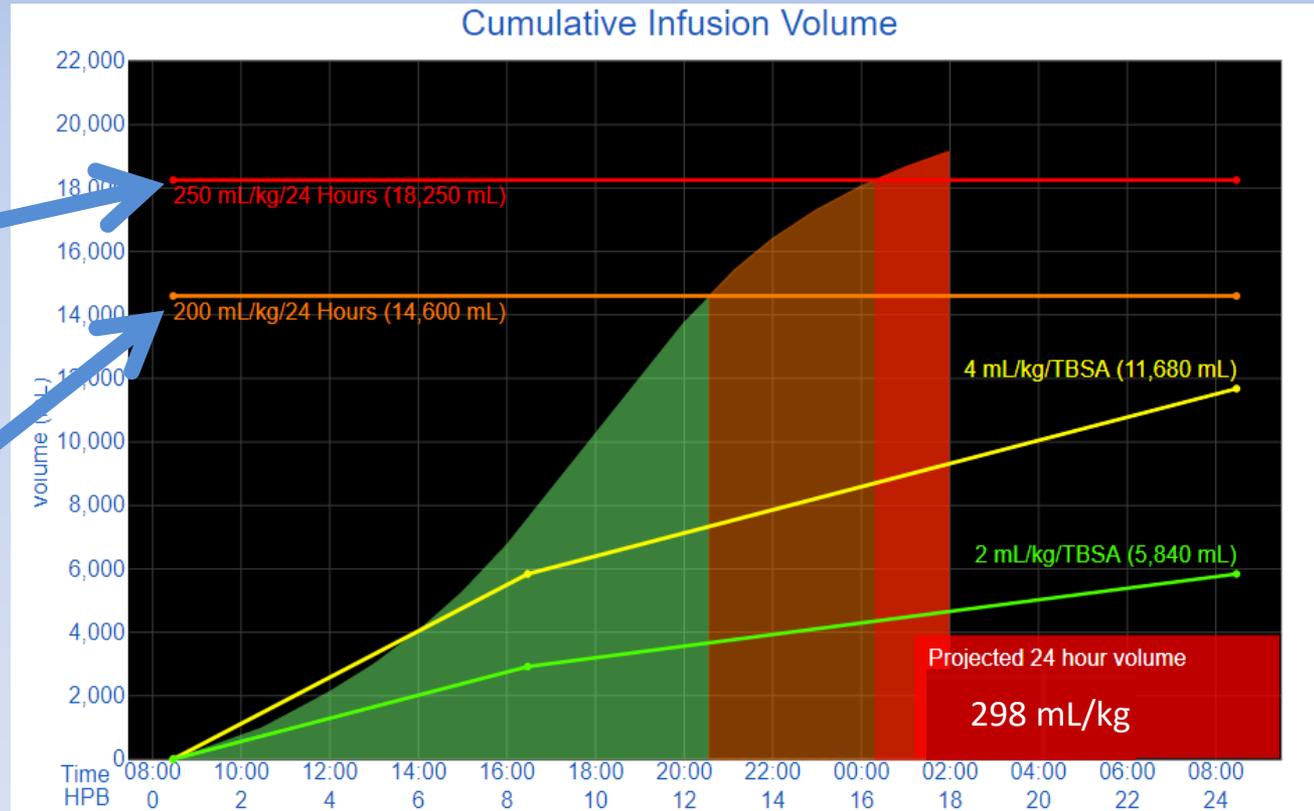
- 4mL/kg/TBSA (Parkland) in yellow
- 2mL/kg/TBSA (Modified Brooke) in green



Alert lines

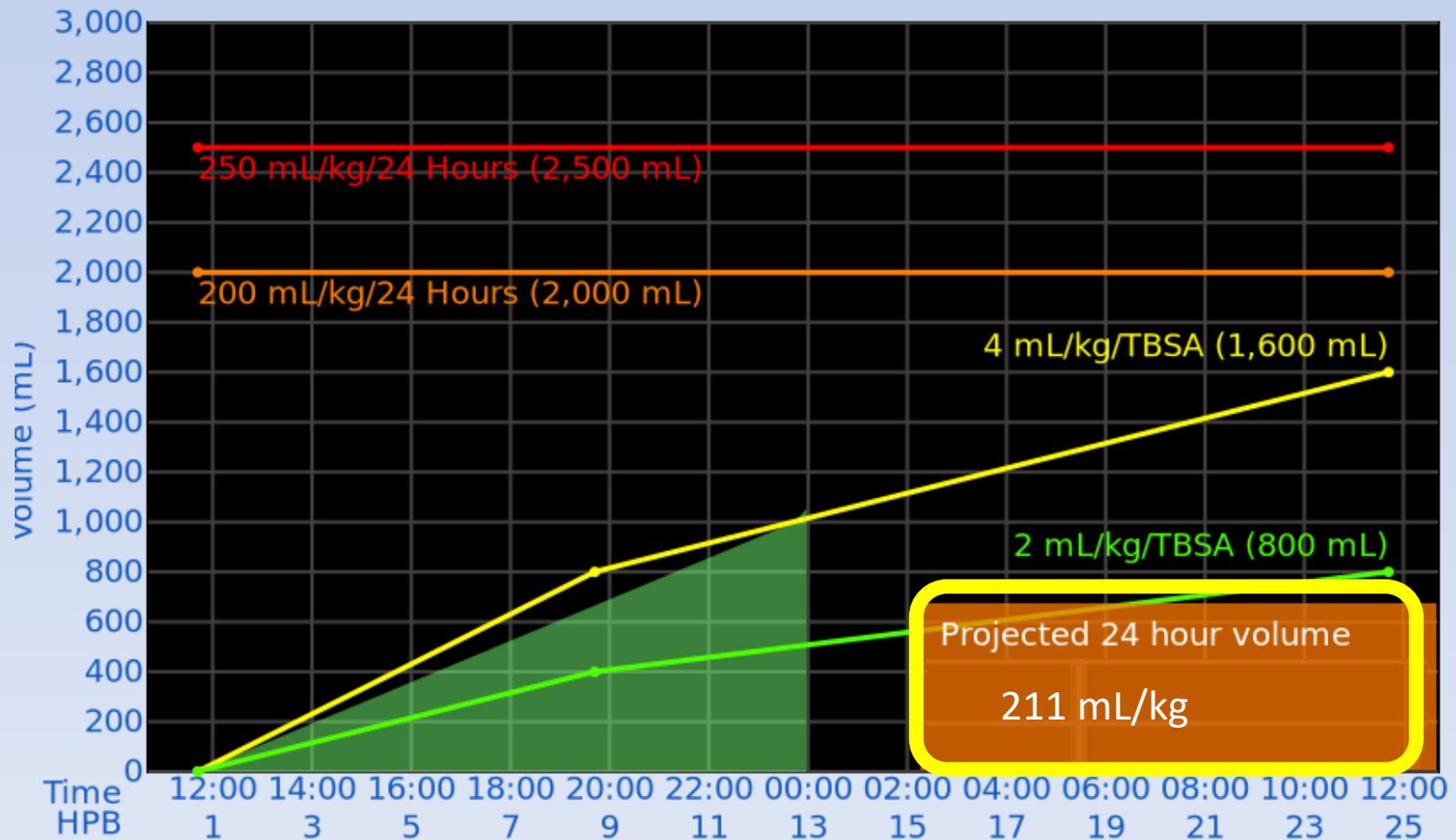
**250 mL/kg
in 24 hours
(Ivy Index) in red**

**200 mL/kg
in 24 hours
in orange**



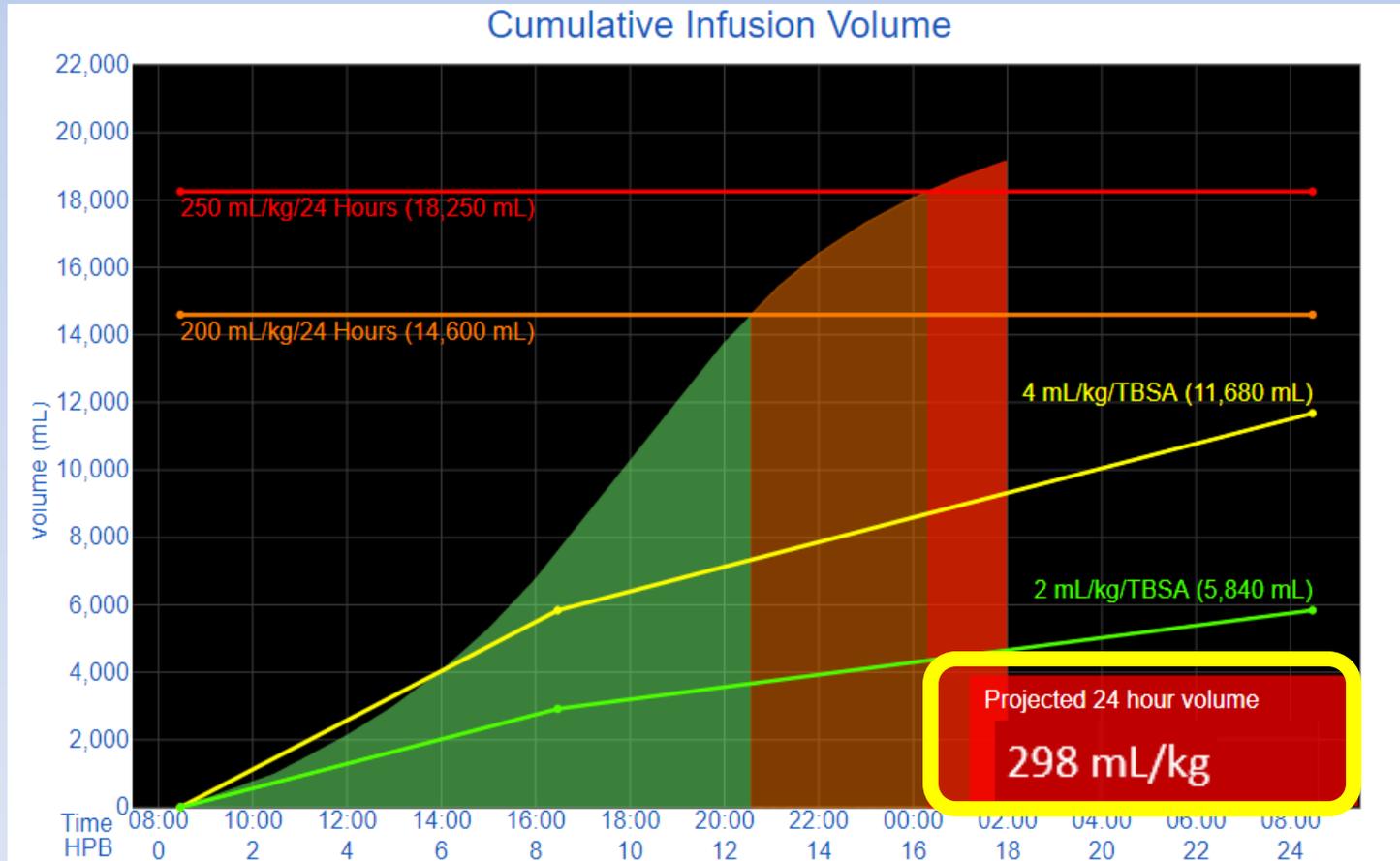
24-hour fluid projections:

- Shows by HPB 10
- Based on current rate & past fluids



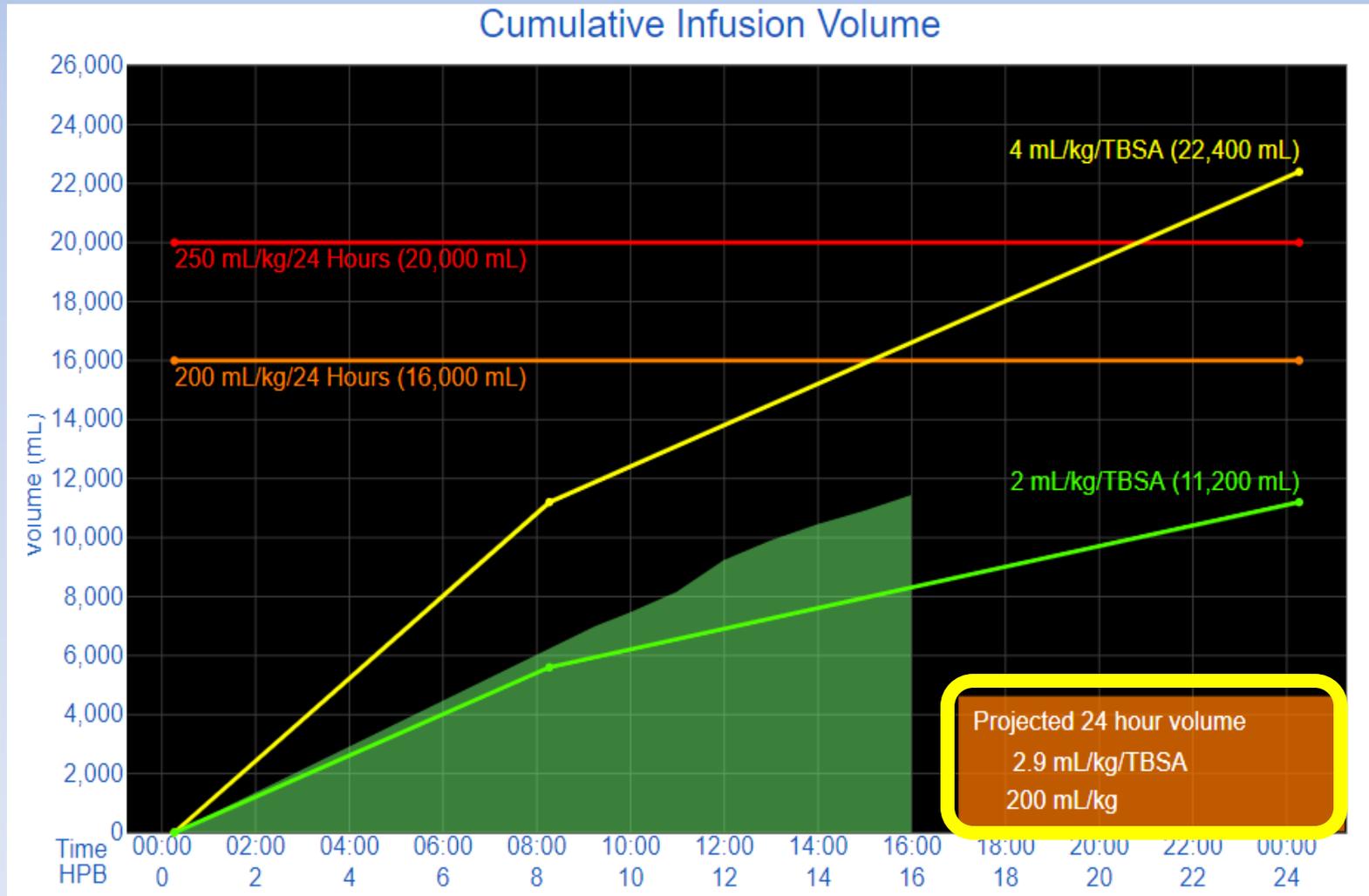
The label will turn red if either:

- ml/kg/TBSA is above 6.0, or
- ml/kg is above 250



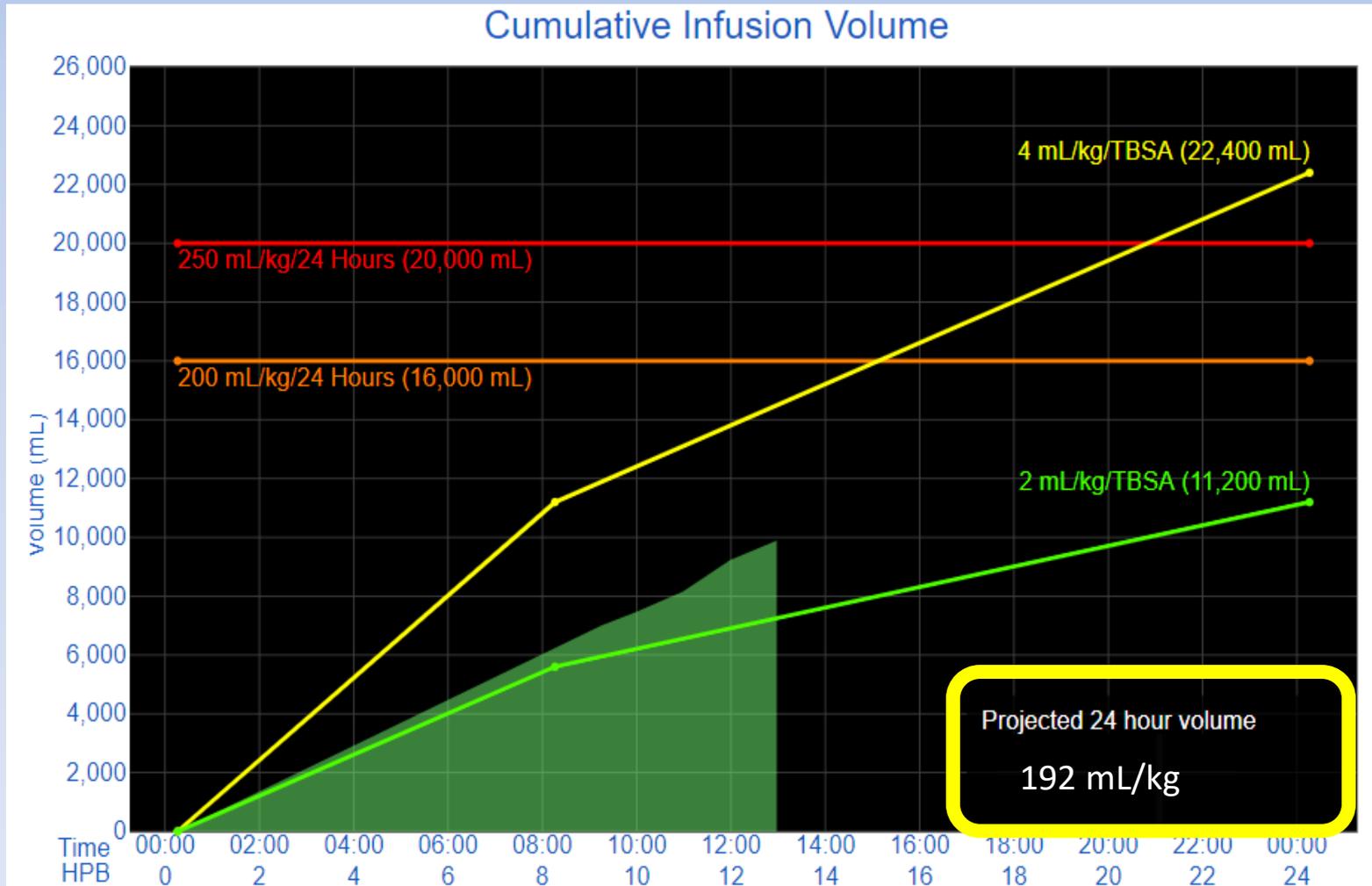
The label will turn orange if:

- ml/kg/TBSA is above 5.0 and 6.0
- ml/kg is between 200 and 250

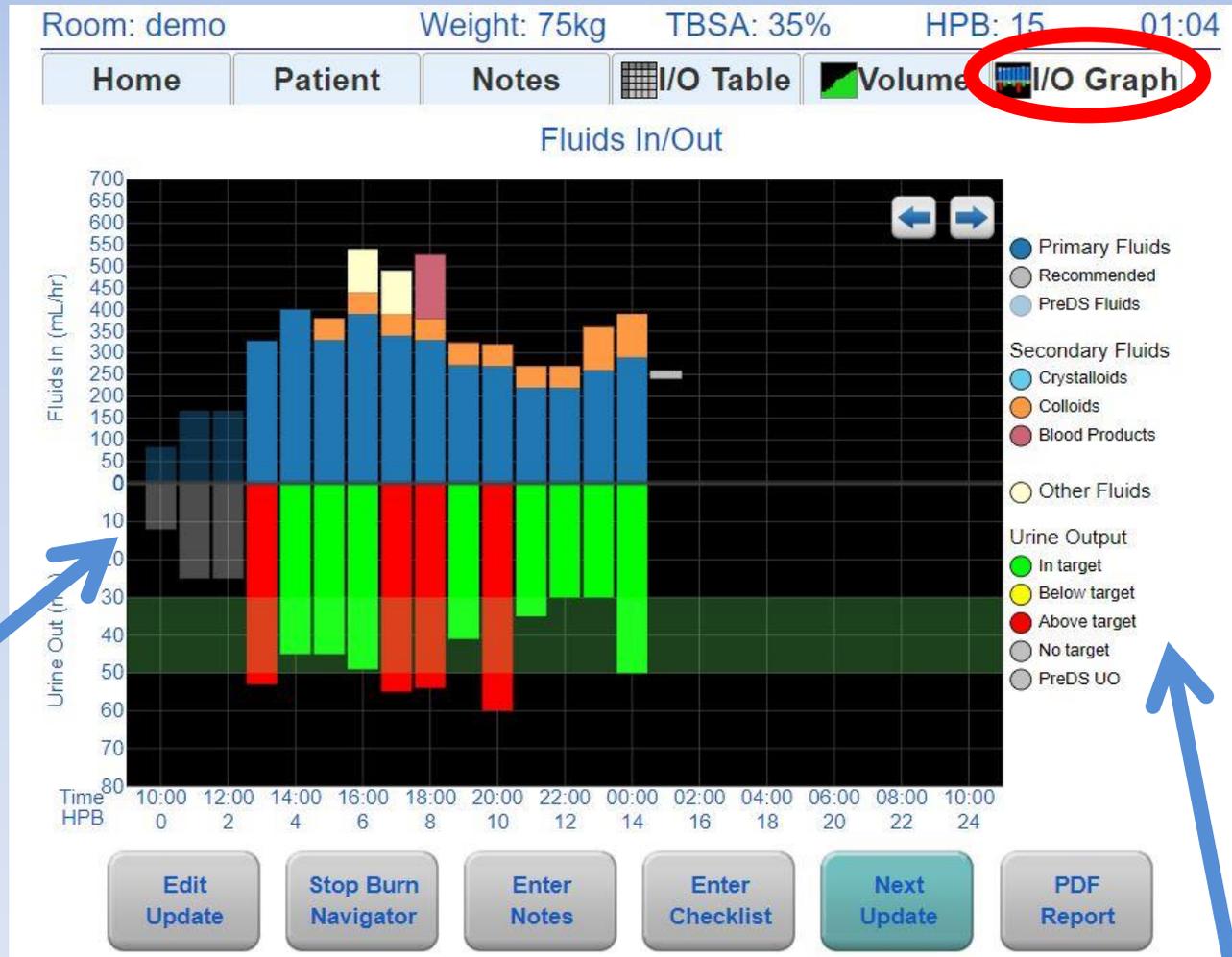


The label will turn black if both:

- ml/kg/TBSA is less than 5.0
- ml/kg is less than 200



Press the "I/O Graph" tab



Pre-Burn
Navigator
fluids have
transparent
bars

Legend

Safety Features

Recommendations:

- Won't change more than the "cap"
- Max recommended: 2,000mL/hr or less

Room: Training Weight: 20kg TBSA: 60% HPB: 2 15:06

New Rate

Previous infusion rate: 225 mL/hr

Fluid type: Lactated Ringer's

Recommended rate: 247 mL/hr

New rate: 270 mL/hr

10 % 20 %

Back Enter

Minimum rates

Room: Training Weight: 20kg TBSA: 55% HPB: 4 16:12

Minimum rate

For first 8 hours post burn (HPB):

2mL/kg/TBSA Formula 140 mL/hr

After 8 HPB:

4-2-1 Formula 60 mL/hr

(4 mL/kg/hr for the first 10 kg) + (2 mL/kg/hr for the next 10 kg) + (1 mL/kg/hr for weight above 20 kg)

Manual 40 mL/hr

Cancel Enter

Alerts are a Safety Feature

“Non-Responder” Alert

When patients aren't responding to fluid therapy

Room: Training	Weight: 20kg	TBSA: 60%	HPB: 6	18:34
----------------	--------------	-----------	--------	-------

Alert!

Urinary output is not responding to fluid therapy. Check Foley catheter for obstruction and check bladder pressure. Patient may be a fluid “non-responder”. Contact attending physician.

[Back](#) [Next](#)

Checklists are also a Safety Feature

Other indicators of **under-resuscitation** or **over-resuscitation**

Room: Training Weight: 80kg TBSA: 80% HPB: 12 13:30

Home Patient Notes I/O Table Volume I/O Graph

Notes:

13:00 HPB: 12
Hypotensive: Yes
Hyperglycemic: No
Pressors: No
Diuretics: No

13:00 HPB: 12
Recommended rate: 680 mL/hr
Entered rate: 700 mL/hr
Physician: Dr.
Caregiver: Nurse
Rationale: Physicians direction

10:14 HPB: 9
Confounders:
Myoglobinuria: Unknown
Hyperglycemic: Unknown
High blood alcohol/EtOH: Unknown

Checklists:

10:15 HPB: 9
Checklist

Systolic BP	= 85 mmHg
Diastolic BP	= 64 mmHg
CVP	= mmHg
Heart rate	= 115 BPM
Bladder pressure	= mmHg
ScvO2	= %
Lactate	= 2.1 mg/dL
Base Excess	= mEq/L
Hemoglobin	= 10.5 g/dL
Left upper pulses	= normal
Right upper pulses	= weak
Left lower pulses	= normal
Right lower pulses	= weak
Burned extremities elevated	
Tightness checked	

Edit Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu Next Update

Keep in Mind!

Recommendations are only recommendations!

Understand the whole clinical picture,
communicate with the attending physician, and
do what's best for the patient

Press “Stop Burn Navigator”

Room: Training Weight: 80kg TBSA: 80% HPB: 9 09:45

Home Patient Notes I/O Table Volume I/O Graph

Current primary fluid: Next update due:

Lactated Ringer's 15 minutes

Current infusion rate: Projected 24 hour volume

600 mL/hr 2.5 mL/kg/TBSA

Adult predictive protocol 30 to 50 mL
 Custom protocol 30 to 50 mL
 Monitor only

Edit Update **Stop Burn Navigator** Enter Notes Enter Checklist **Main Menu** Next Update

When resuscitation
is over

(For shift change)

Reviewing Patient Files

Arcos Hospital Welcome Chris ▾

Active patients

Room No.	TBSA	Weight	Protocol	Hours Post Burn	Report	Session Id
training	65 %	80 kg	Adult predictive algorithm	HPB 1	PDF	training-100
Training603	50 %	67 kg	Adult predictive algorithm	HPB 6	PDF	training-96

Start New Patient **Training Mode**

Patient Records

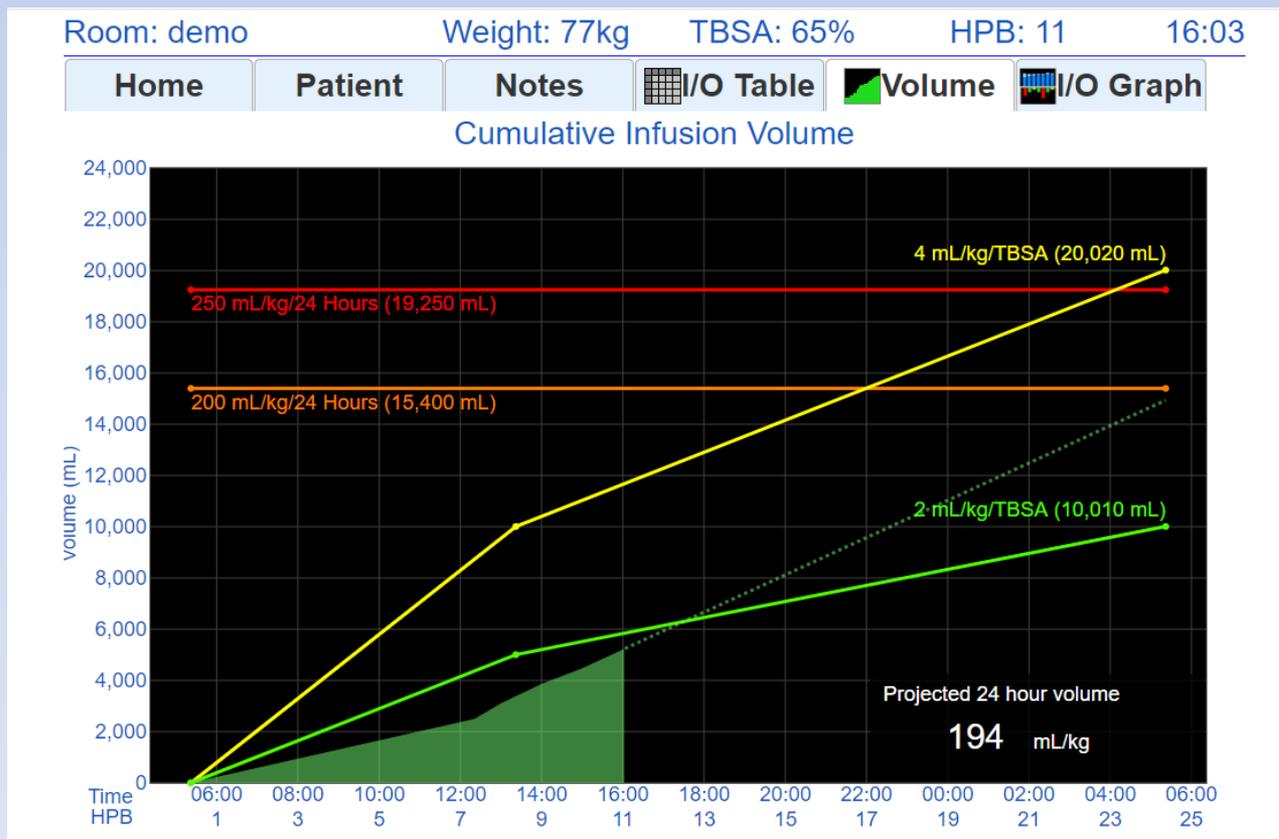
Room No.	TBSA	Weight	Protocol	End Time	Report	Session Id
Training	70 %	80 kg	Adult predictive algorithm	HPB 6	PDF	training-99
Training	70 %	80 kg	Adult predictive algorithm	HPB 17	PDF	training-95

“End Decision Support” button moves the patient from “Active” to “Records”

You can view, but cannot edit, past patient files

Frequently Asked Questions

Can more than one person see a patient's file at the same time?



YES!

And any browser
can do the fluid
update

FAQs

What if we change fluid types (e.g., LR to an albumin protocol)?

Room: Training Weight: 20kg TBSA: 60% HPB: 4 18:01

New Rate

Previous infusion rate: 225 mL/hr

Fluid type: Lactated Ringer's

Recommended 225

- Lactated Ringer's
- Lactated Ringer's + 5% Dextrose
- ($\frac{2}{3}$) LR + ($\frac{1}{3}$) Albumin 5%
- ($\frac{1}{2}$) LR + ($\frac{1}{2}$) Albumin 5%
- ($\frac{2}{3}$) LR + ($\frac{1}{3}$) FFP
- Normal Saline
- Plasma-lyte
- Albumin 5%

Back Enter

On the recommendation screen,
select the new Fluid Type from the drop-down list.

The new Primary Fluid Type will be titrated up or down next hour.

FAQs

What if I change the pump rate in the middle of the hour?

If you change the rate from the HOME screen ...



Room: Training Weight: 79kg TBSA: 80% HPB: 16 17:18

Home Patient Notes I/O Table Volume I/O Graph

Current primary fluid: (2/3) LR + (1/3) Albumin 5% Next update due: 42 minutes

Current infusion rate: 440 mL/hr Projected 24 hour volume: 2.4 mL/kg/TBSA

LR	293	mL/hr
Alb 5%	147	mL/hr

Adult predictive protocol 30 to 50 mL
 Custom protocol 30 to 50 mL
 Monitor only

Edit Update Stop Burn Navigator Enter Notes Enter Checklist Main Menu Next Update

Room: training Weight: 80kg TBSA: 70% HPB: 5 19:04

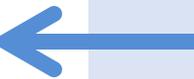
Fluids Given

From: 18:00 To: 19:00 60 mins

Primary fluid was: Lactated Ringer's

Infusion rate: 1106 mL/hr Infusion volume: 1106 mL

Back Next

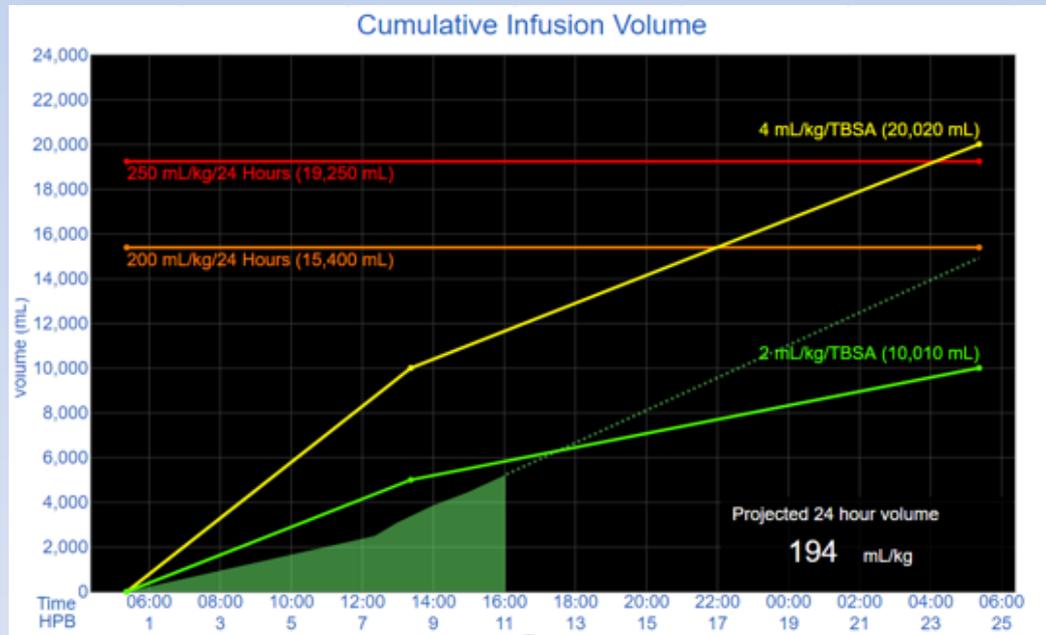


...the average rate and volume are calculated for that hour for you in the next update!

Arcos™

Burn Navigator®

Questions?



Arcos customer support:

877.542.8025

support@arcosmedical.com