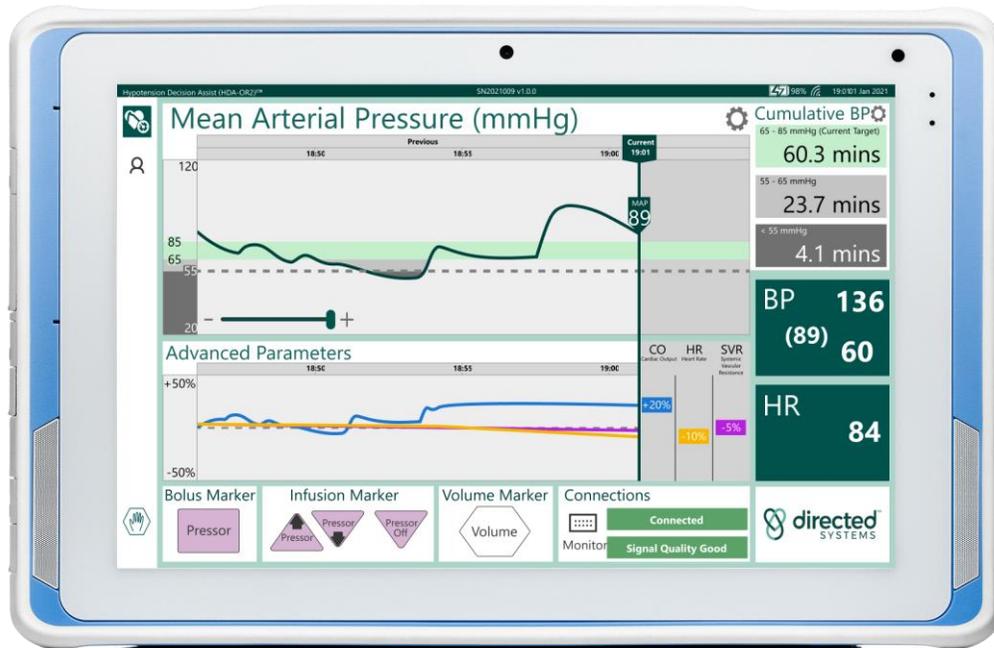


Hypotension Decision Assist (HDA-OR2) Clinical User Training Guide



Purpose



- This training session is intended to introduce clinical users to HDA-OR2
- A separate training session is available for technicians on how to set up HDA-OR2

Contents



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Intended Use



- HDA-OR2 is clinical decision support software intended to assist healthcare professionals in managing blood pressure and the cardiovascular system.
- It is used to monitor the trend of low and variable blood pressure and cardiovascular stability in patients undergoing anesthesia during surgical procedures.
- **NOTE:**
 - HDA-OR2 is not a replacement for the vital signs monitors
 - The output from HDA-OR2 should not solely be used to determine the use of vasopressors. Other treatments including fluids are an option in blood pressure management

Parameters measured



- HDA-OR2 allows you to enter patient details and displays the following physiologic measurements derived from the input arterial waveform signal
 - Mean arterial pressure (MAP) .
 - Systolic blood pressure
 - Diastolic blood pressure
 - Heart rate
 - 5-minute changes in cardiac output
 - 5-minute changes in systemic vascular resistance (SVR)

(Refer to the user manual for an explanation of how these parameters are derived and their meaning in the context of the use of HDA-OR2)

- HDA-OR2 is also programmed to detect the signal artefacts that have the potential to impact its performance.

(Refer to the user manual for details on the signal artefacts that HDA-OR2 is designed to detect and important warning on CO and SVR measurements during transducer flushing / zeroing)

Patient Parameters



Parameter	Units and Valid Ranges	
Patient Weight	20 to 300 pounds	9 to 136 kg
Patient Height	24 inches to 72 inches	61 cm to 183 cm
Patient Age	18-19, 20-24, 25-29, ... 85-89, >=90 (in bands)	

Parameter Performance Specifications



Parameter	Range	Unit	Accuracy
Mean Arterial Pressure (MAP)	50-125	mmHg	±4 mmHg
Systolic Pressure (Sys)	65-150	mmHg	±4 mmHg
Diastolic Pressure (Dia)	35-100	mmHg	±4 mmHg
Heart Rate (HR)	50-110	bpm	±1 bpm

See user manual on information on accuracy of percentage change in Nominal Cardiac Output and Nominal Systemic Vascular Resistance

CONTRAINDICATIONS & WARNINGS

Contraindications



HDA-OR2 is contraindicated in the following situations:

- Patients under 18 years of age
- Patients with aortic regurgitation
- Patients fitted with an intra-aortic balloon pump (IABP)

Warnings & Cautions



Warnings

- HDA-OR2 is intended for use exclusively in the Operating Room
- HDA-OR2 is for use only by Board Certified medical professionals who have been trained in its use
- HDA-OR2 must not be used on any patient who is less than 18 years old
- HDA-OR2 is MR Unsafe and is not intended for use in a MR environment
- If installed on the Tegar all-in-one PC option, HDA-OR2 does not have an internal battery. Disconnecting from the mains power will end the patient session.



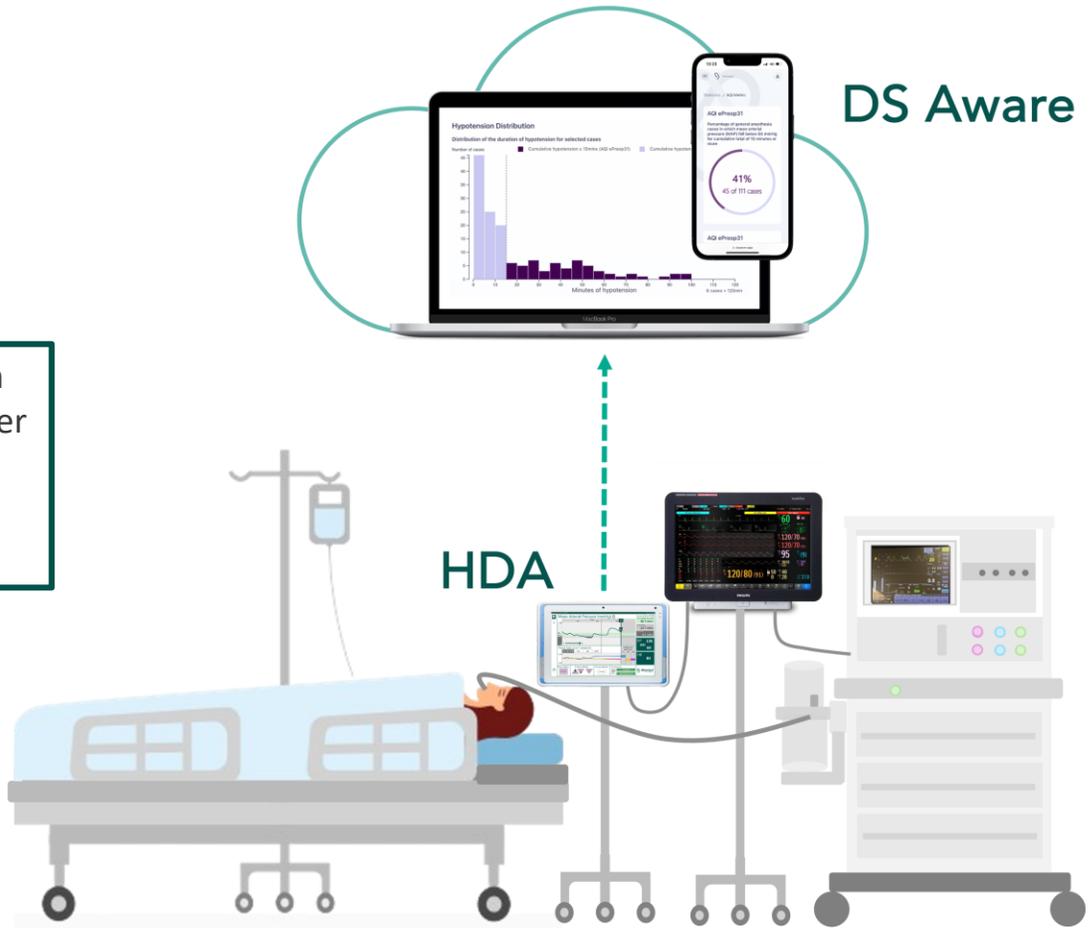
Cautions

- The output from HDA-OR2 should not solely be used to determine the use of vasopressors. Other treatments including fluids are an option in blood pressure management

Connects straight to the vital signs monitor



Data is exported from the patient monitor over serial or network connection (Ethernet/WiFi)*



HDA-OR2 connects to the vital signs monitor

Connects to digital export port on monitor via a serial or network connection

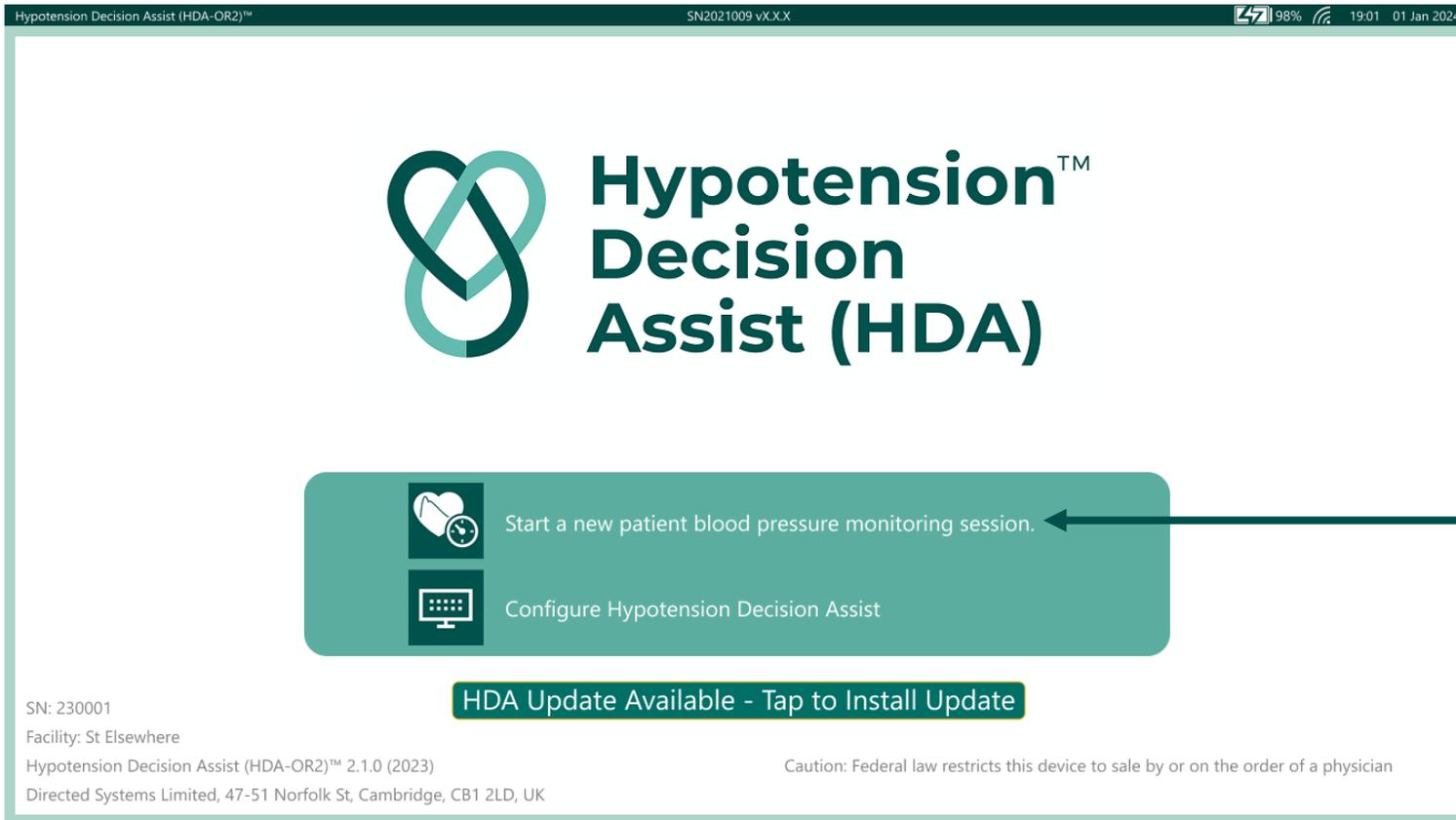
Blood pressure waveform data sent from monitor to HDA-OR2

HDA-OR2 processes the waveform

Patient with standard A-line transducer

*Network connection to monitor is supported by Philips IntelliVue monitors only

Launch Screen

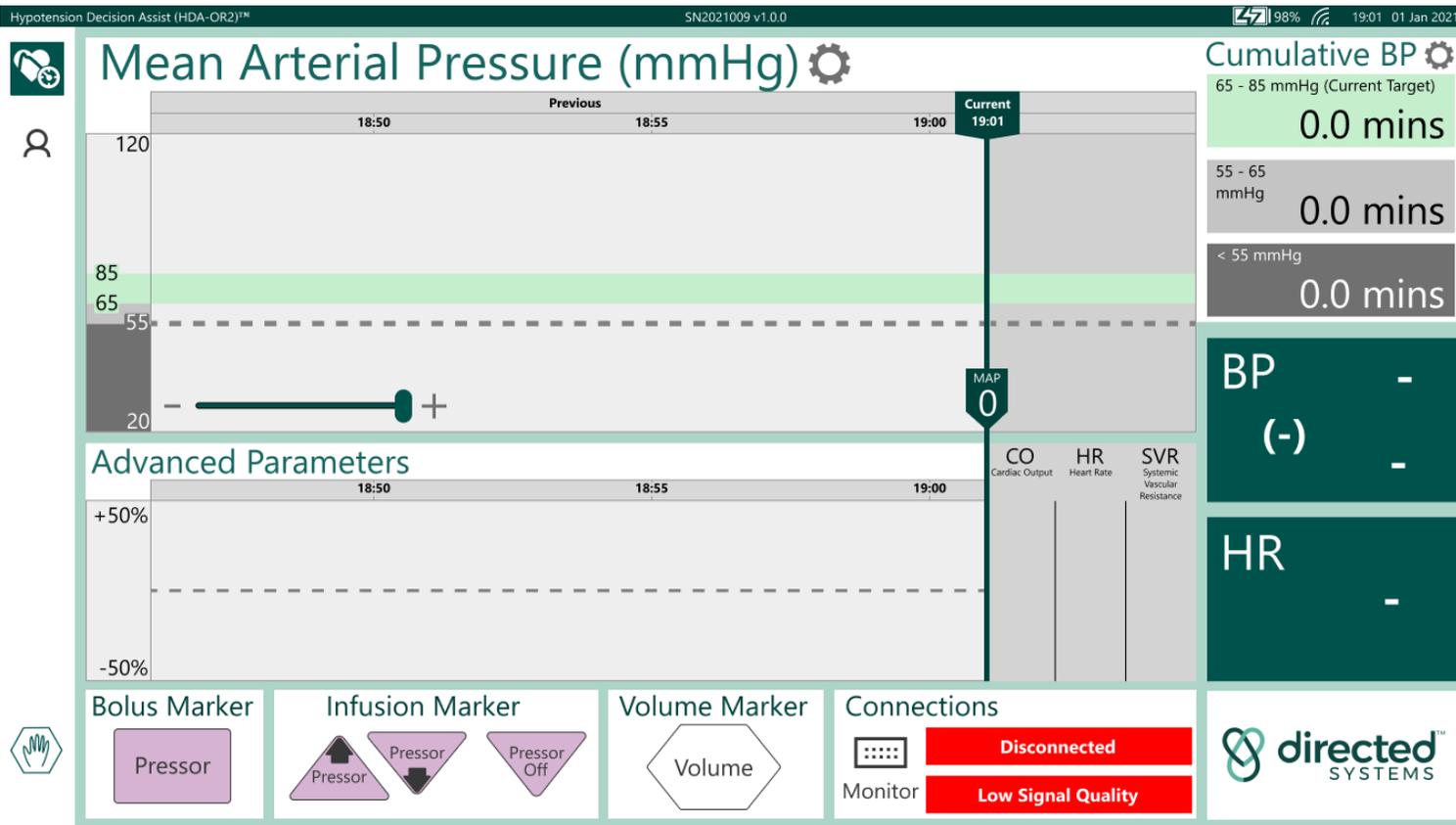


You will first be presented with the launch screen.

On the launch screen, select the 'Start a new blood pressure monitoring session' button

This will take you to the Main screen.

Main screen – what you will first see

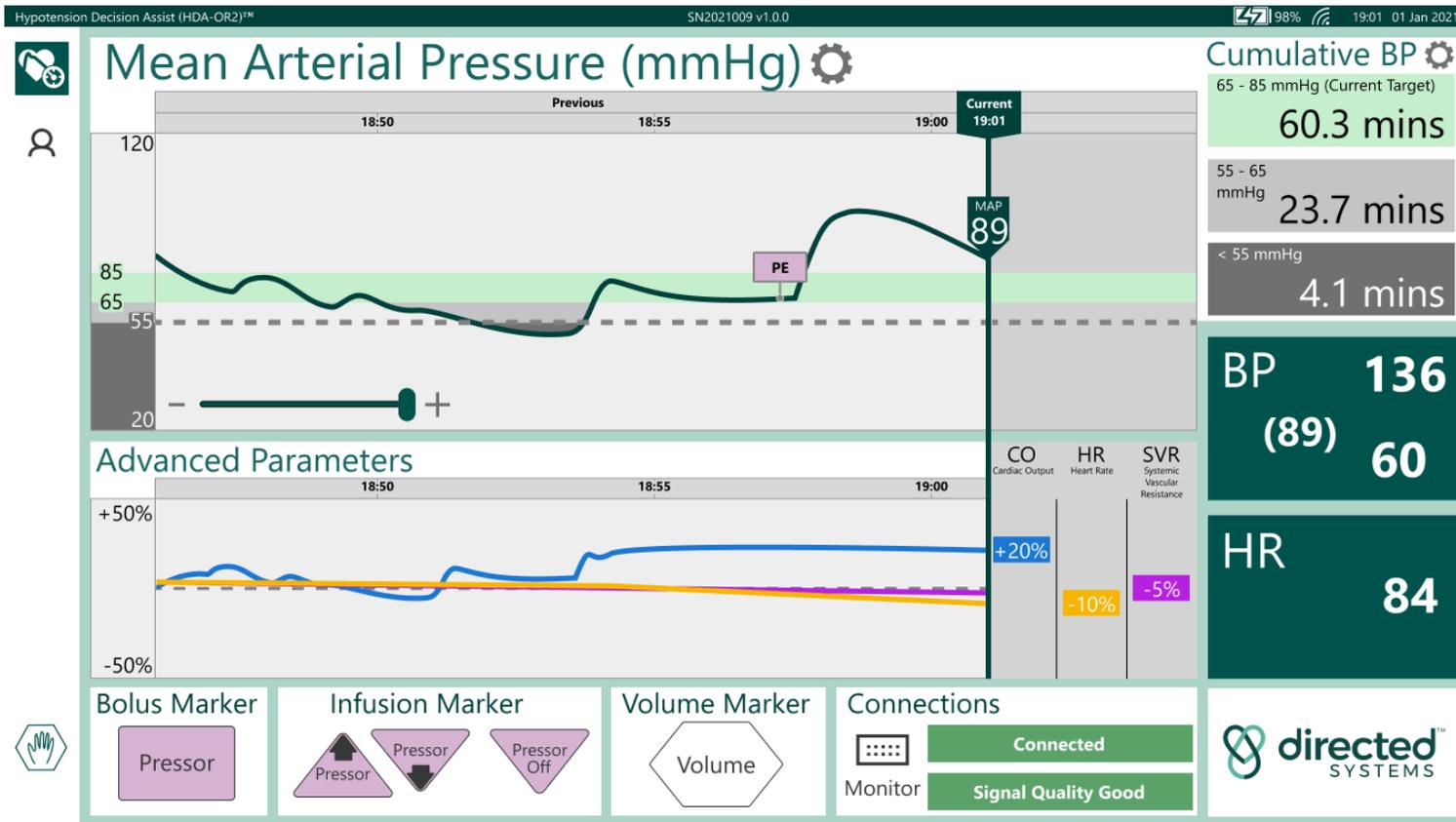


When first presented with the Main screen, there will be no, or little data information visible.

As vital signs come in from the vital signs monitor, you will start to see the main screen populated with readings

Instructions on setting the display time are included in the user manual and Set Up and Configuration presentation

Main screen – as time progresses



Over time, the screen will populate with vital sign measurements and you will see parameters displayed in numeric and graphical format.

HDA-OR2 applies a 30 seconds smoothing to the data

Patient information and settings – Demographics



Touch  HDA-OR2 switches to the Patient Information and Settings page.

Hypotension Decision Assist (HDA)™

Patient Information and Settings

HDA Session Number: ZUHE4-VFLUK-P84F1 Surgery Type: Neuro

Patient weight: 187 lbs OR 85.0 kg Patient age: 20-24

Patient height: 71 inches OR 180 cms

Target Mean Arterial Pressure MAP (mmHg): 40 — 55 — 90 — 120

Allow target MAP < 65 mmHg

Cumulative BP Thresholds: 55 - 90 mmHg, 55 - 65 mmHg, < 55 mmHg

Warning: This product is certified for use on patients aged over 18 only.

Display Brightness: [Slider]

directed SYSTEMS

You can select surgery type from drop-down menu.

You can enter or edit patient demographics throughout the patient session.

Patient information and settings – Surgery type



Hypotension Decision Assist (HDA)™ 4G LTE 98% 19:01 20 Jan 2020

Patient Information and Settings

HDA Session Number: d9f9d74n

Type of Surgery: Neuro, Cardiac, Bla, Bla, Bla, Bla

Patient weight: 187 lbs OR 85.0 kg

Patient height: 71 inches OR 180 cms

Target Mean Arterial Pressure MAP (mmHg)

Upper: 70 - 190 (85 mmHg)

Lower: 60 - 100 (65 mmHg)

Cumulative BP Thresholds: 65 - 85 mmHg, 55 - 65 mmHg, < 55 mmHg

Display Brightness

You can select surgery type from drop-down menu.

Patient information and settings - Target blood pressure range



Hypotension Decision Assist (HDA)™ 98% 19:01 01 Jan 2021

Patient Information and Settings

HDA Session Number: ZUHE4-VFLUK-P84F1 Surgery Type: Neuro

Patient weight: 187 lbs OR 85.0 kg Patient age: 20-24

Patient height: 71 inches OR 180 cms

Warning
This product is certified for use on patients aged over 18 only.

Target Mean Arterial Pressure MAP (mmHg)

40 — 55 — 65 — 90 — 120

Allow target MAP < 65 mmHg

Cumulative BP Thresholds

- 55 - 90 mmHg
- 55 - 65 mmHg
- < 55 mmHg

Display Brightness

Target blood pressure can be adjusted to cater for specific patient needs

Blood pressure ranges will adjust as sliders are moved

Tick to allow target zone to be reduced below 65 mmHg

Patient information and settings - Screen brightness



Hypotension Decision Assist (HDA)™ 98% 19:01 01 Jan 2021

Patient Information and Settings

HDA Session Number: ZUHE4-VFLUK-P84F1 Surgery Type: Neuro

Patient weight: 187 lbs OR 85.0 kg Patient age: 20-24

Patient height: 71 inches OR 180 cms

Target Mean Arterial Pressure MAP (mmHg): 40 - 120 (sliders at 55 and 90)

Allow target MAP < 65 mmHg

Cumulative BP thresholds:
55 - 80 mmHg
55 - 65 mmHg
< 55 mmHg

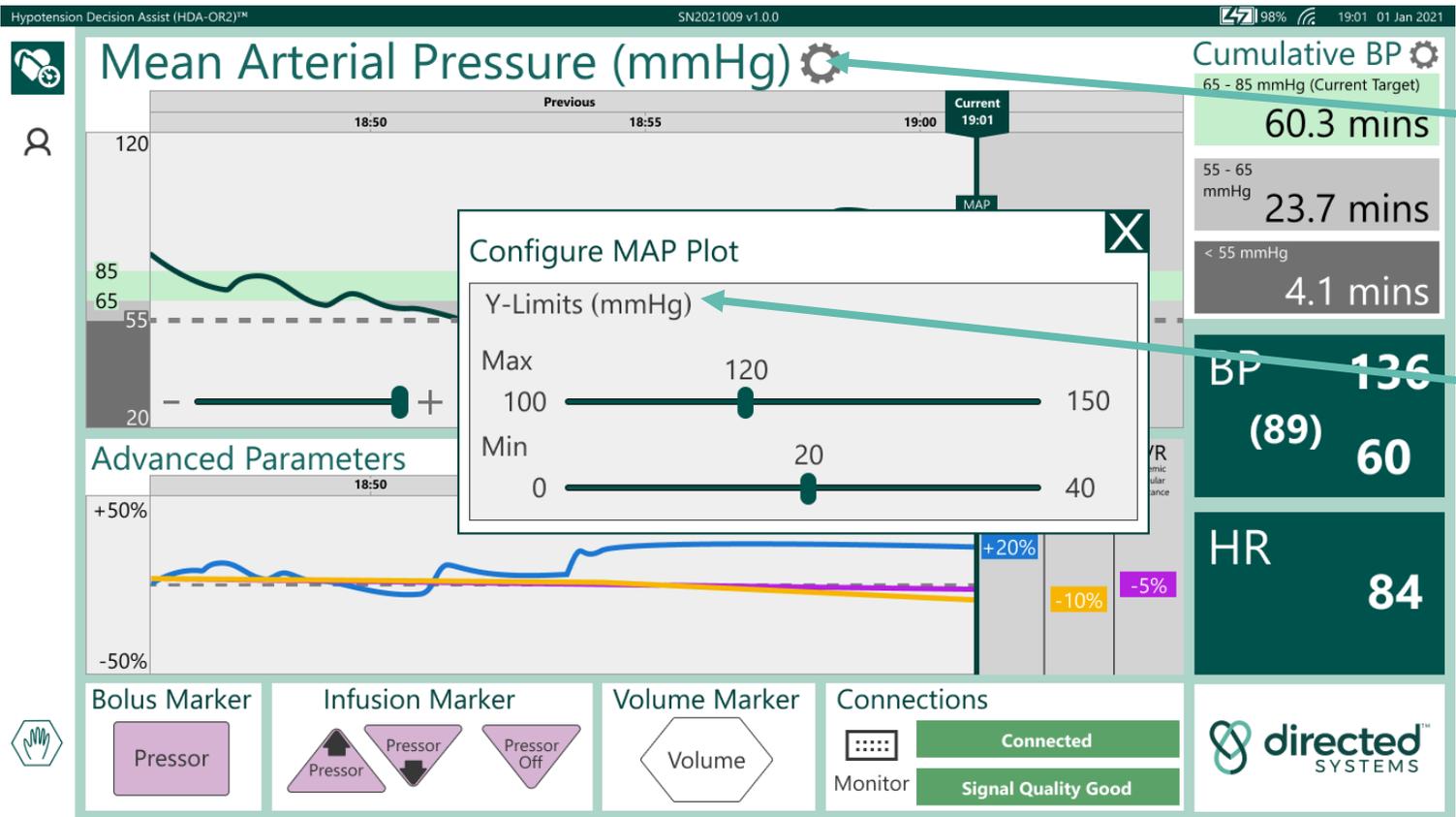
Warning: This product is certified for use on patients aged over 18 only.

Display Brightness: [Slider]

You can adjust the screen brightness using slider

To return to the main page,
Touch 

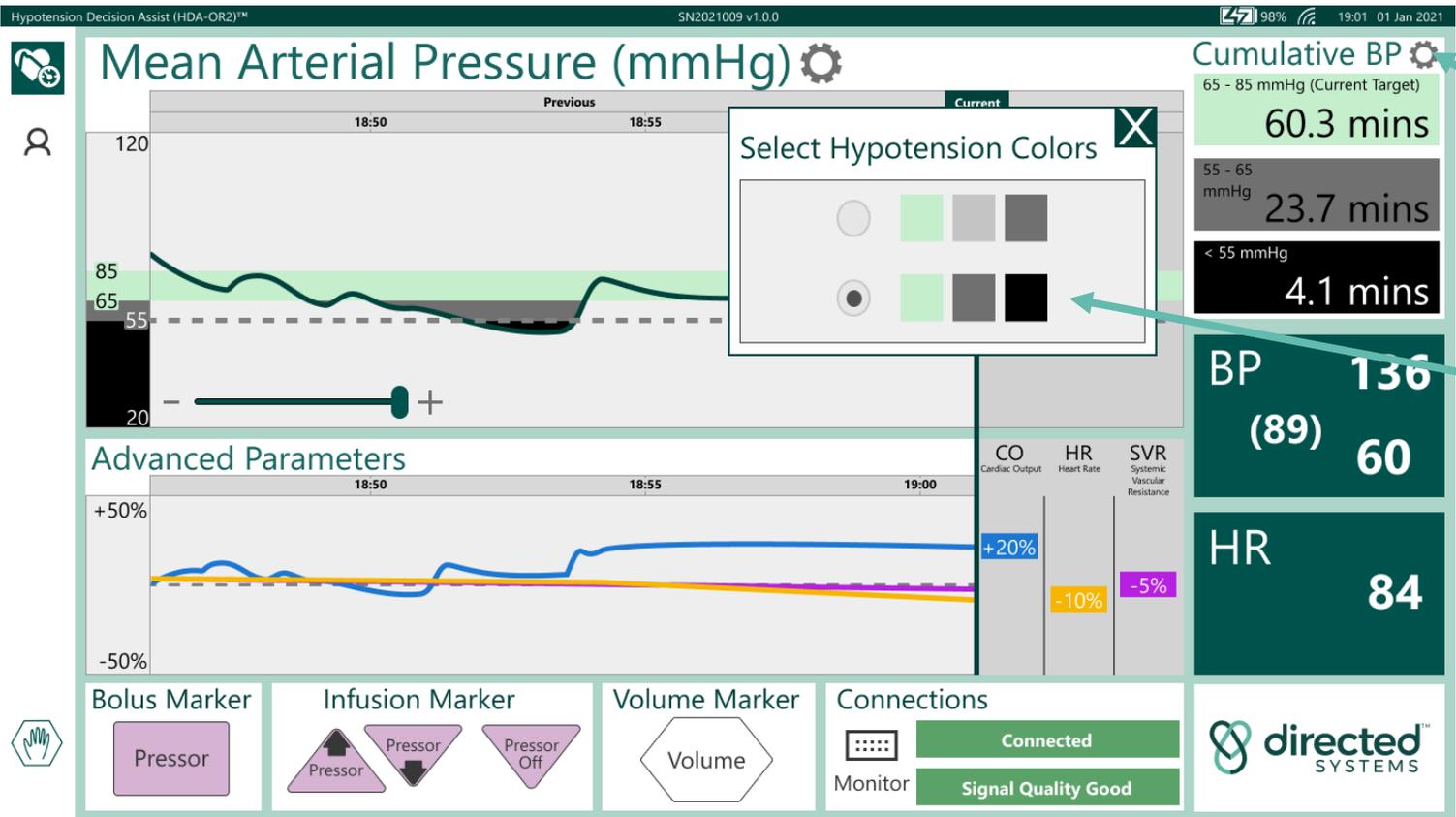
Main screen – configuring MAP plot



Touch  to configure the MAP plot

Y-Limits of the MAP plot can be adjusted by moving the sliders left and right.

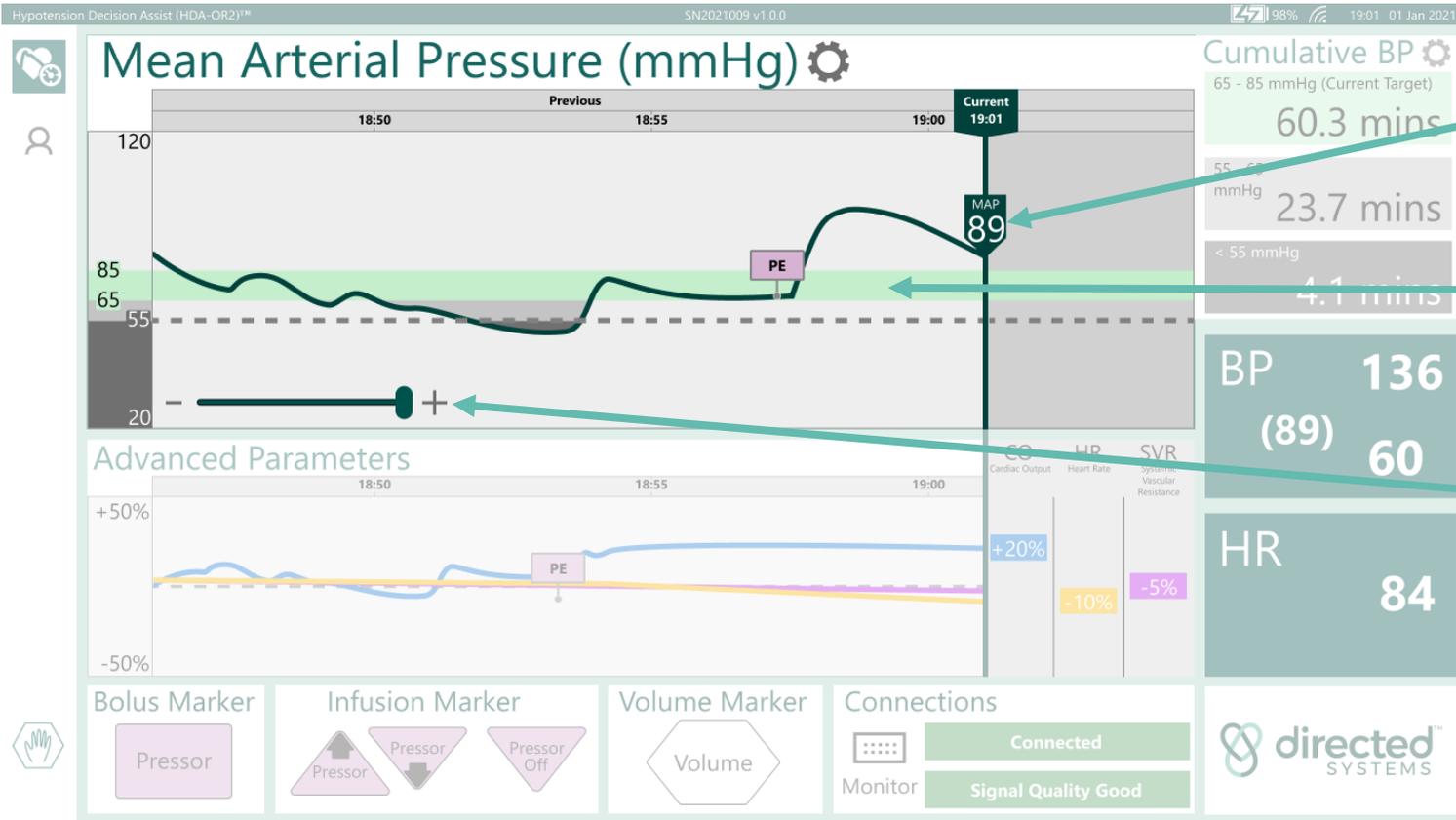
Main screen – configuring hypotension highlights



Touch  to configure the hypotension highlights

Select preferred color scheme for highlights: low contrast or high contrast.

Mean Arterial Pressure (MAP)

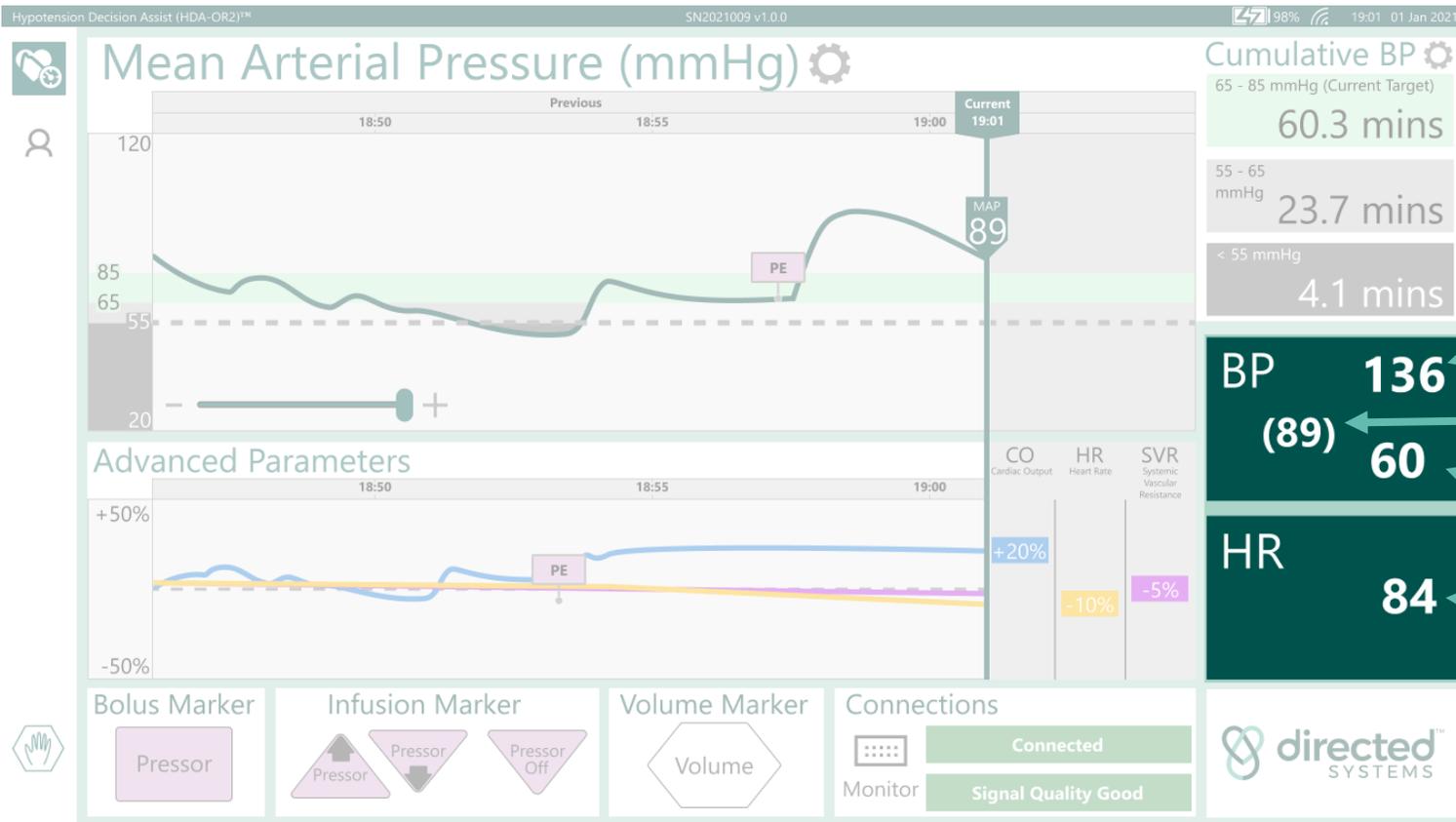


Main chart shows MAP trend and current numeric value.

Green zone shows target MAP range

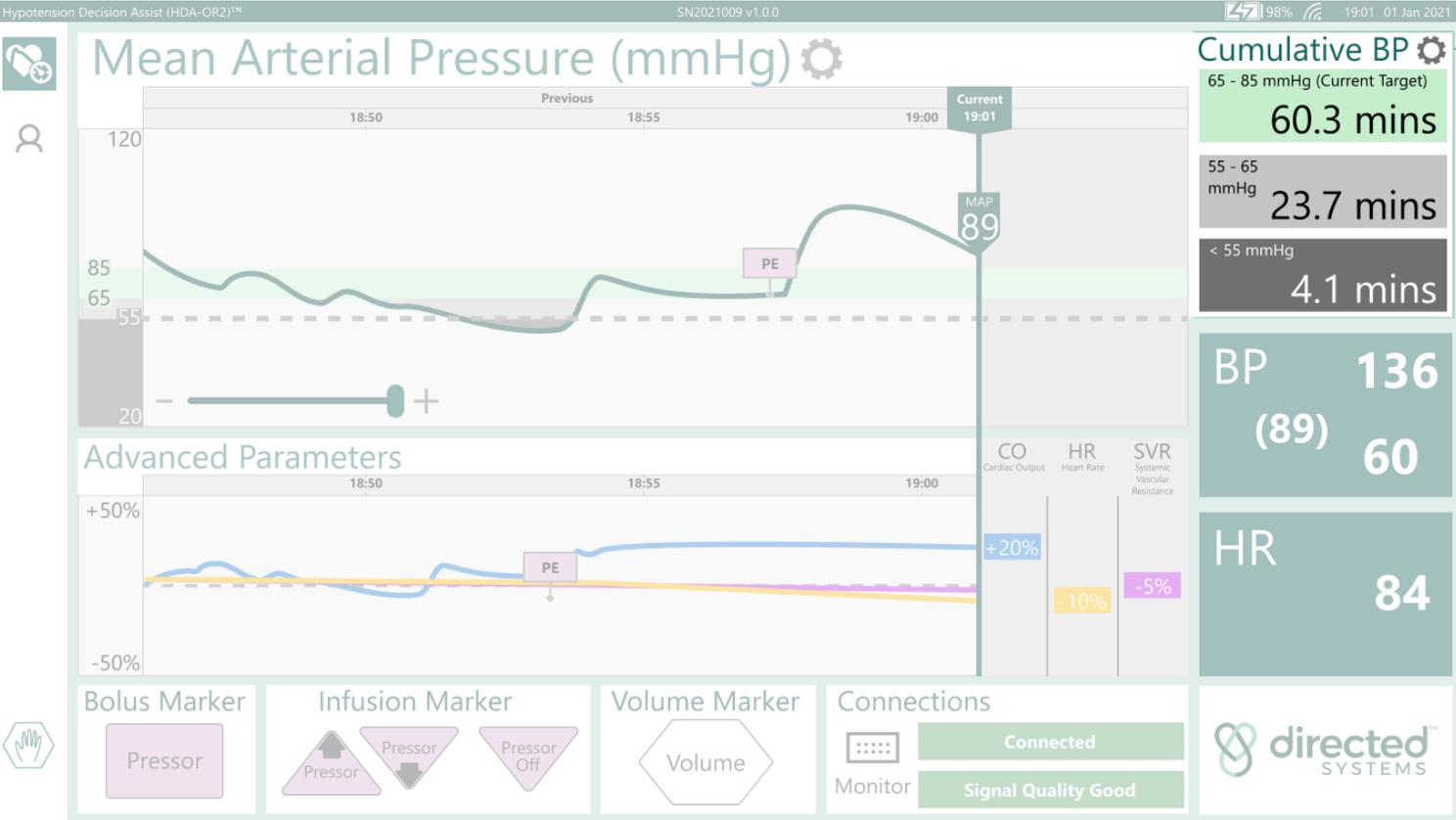
Slider allows MAP timescale to be zoomed in and out

Numeric Parameters



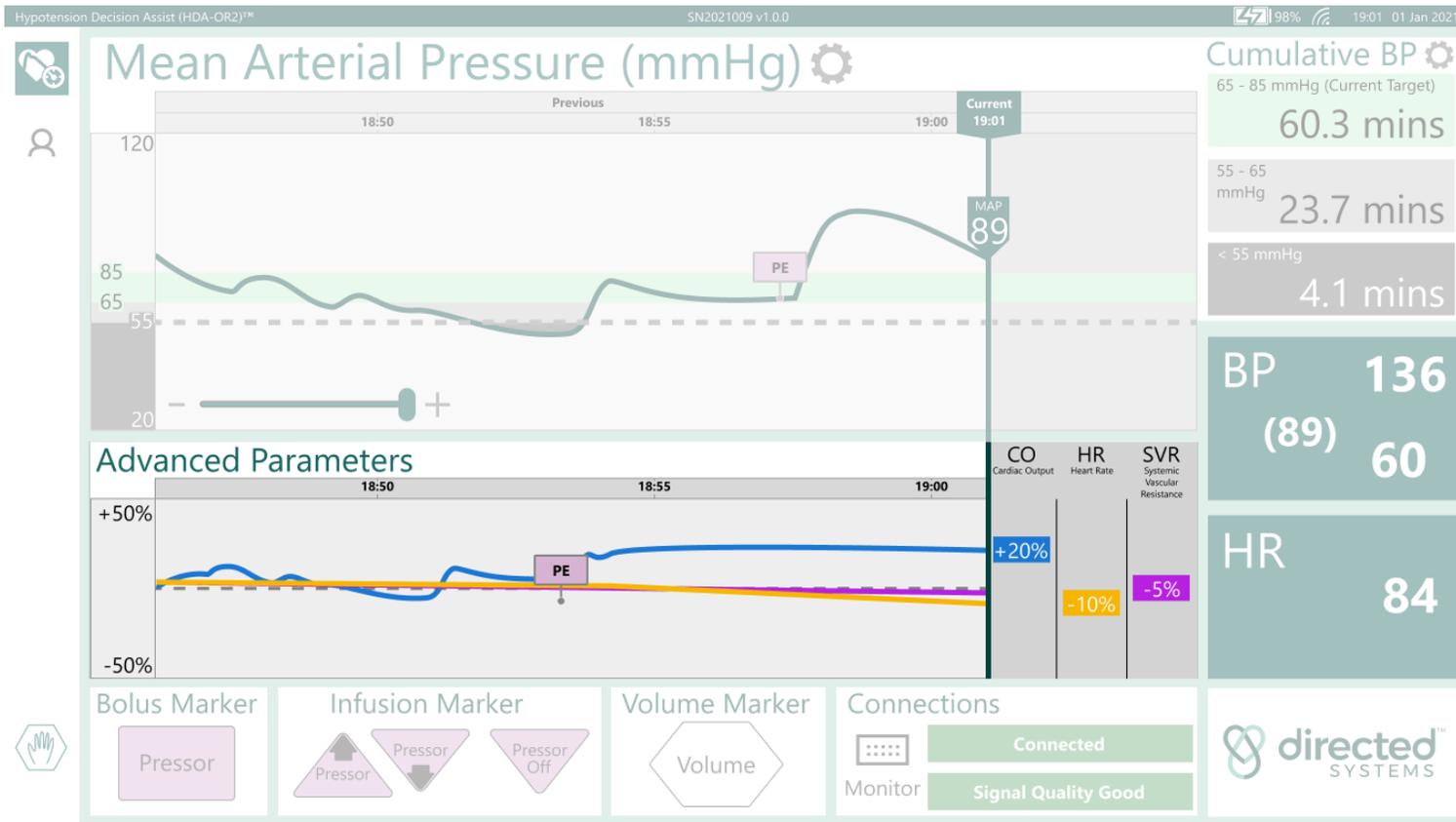
- Systolic blood pressure
- Mean arterial pressure
- Diastolic blood pressure
- Heart rate

Cumulative BP



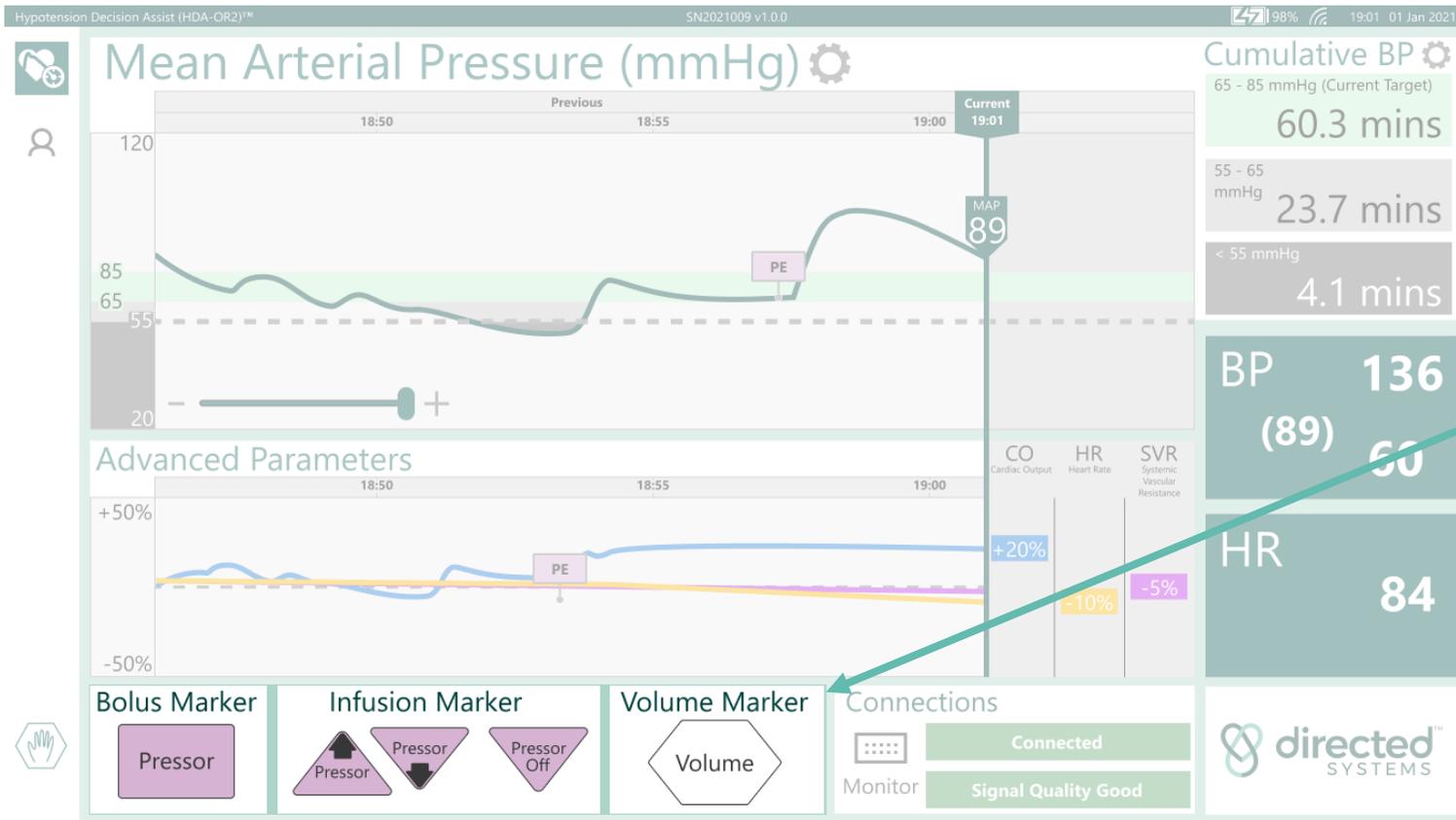
Cumulative time spent in each blood pressure range is stored and displayed

Trend Data



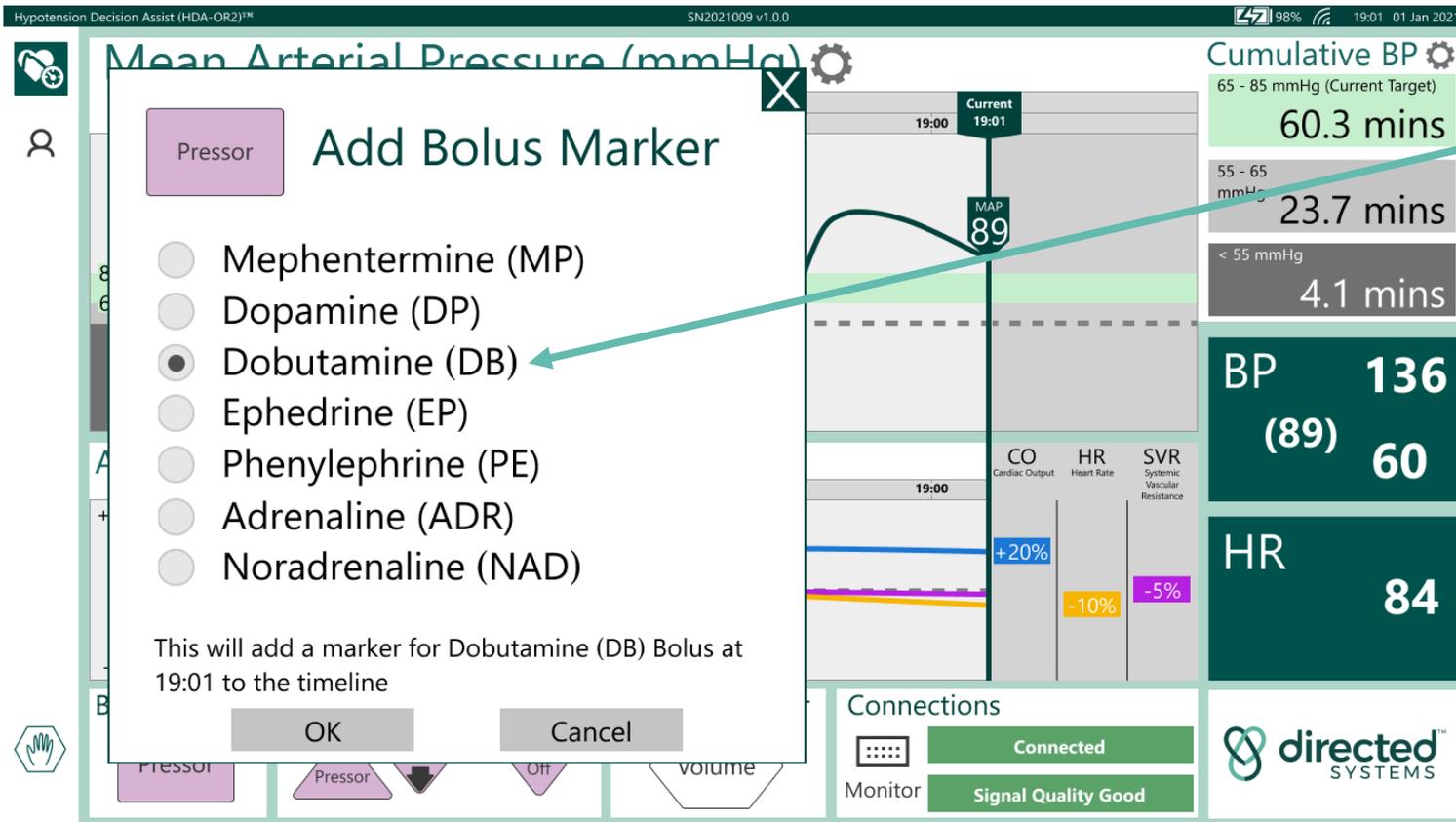
Advanced parameter trends are displayed in this highlighted region.

Treatment plotting labels



Press appropriate marker button when treatment given to pull up a medication list (see next slide)

Selecting marker labels



Hypotension Decision Assist (HDA-OR2)™ SN2021009 v1.0.0 198% 19:01 01 Jan 2021

Mean Arterial Pressure (mmHg)

Add Bolus Marker

Pressor

- Mephenetermine (MP)
- Dopamine (DP)
- Dobutamine (DB)
- Ephedrine (EP)
- Phenylephrine (PE)
- Adrenaline (ADR)
- Noradrenaline (NAD)

This will add a marker for Dobutamine (DB) Bolus at 19:01 to the timeline

OK Cancel

Current 19:01 MAP 89

Cumulative BP

- 65 - 85 mmHg (Current Target) 60.3 mins
- 55 - 65 mmHg 23.7 mins
- < 55 mmHg 4.1 mins

BP 136 (89) 60

HR 84

CO +20% HR -10% SVR -5%

Connections

- Connected
- Monitor Signal Quality Good

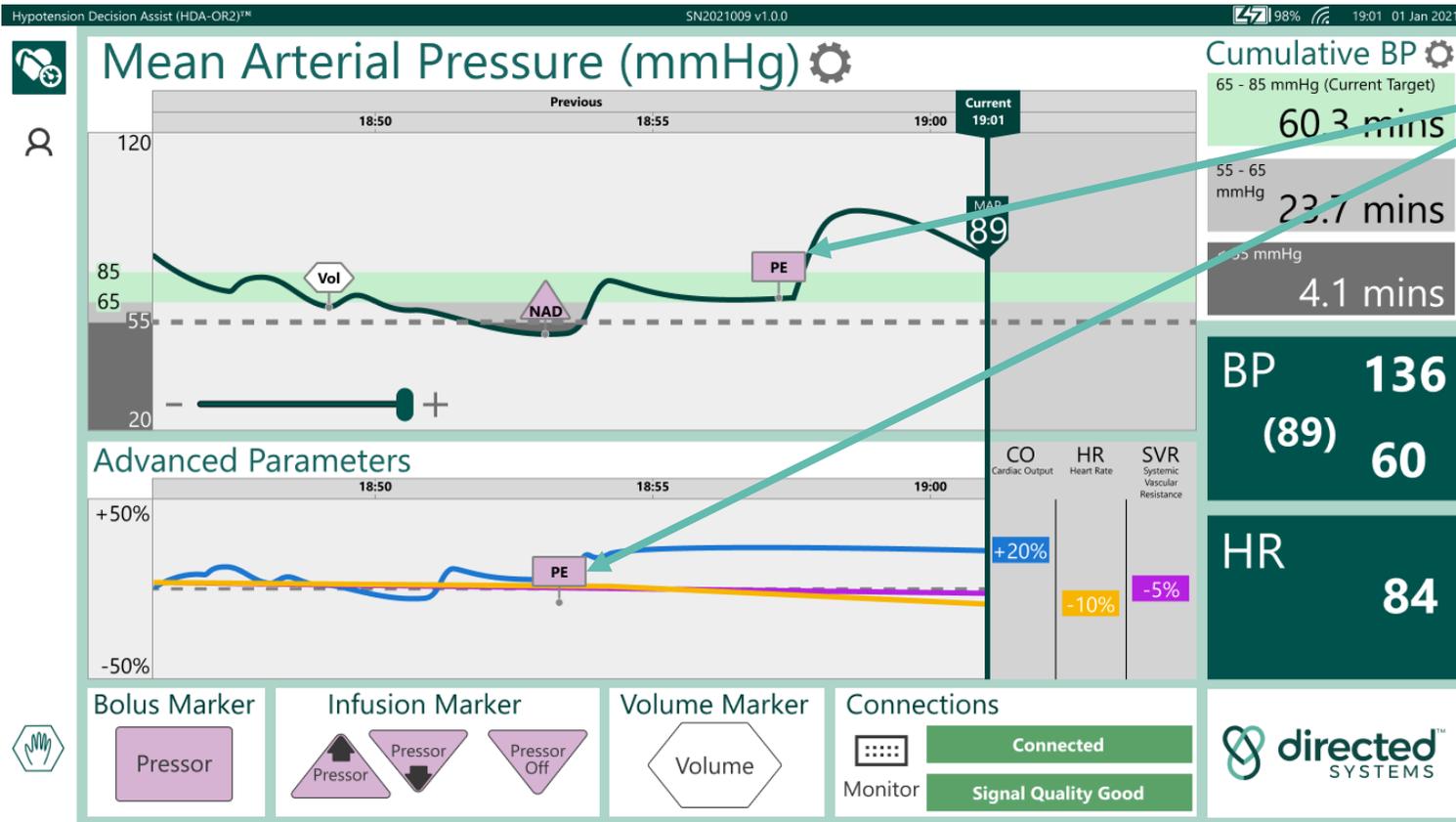
directed SYSTEMS

Select the appropriate medication given and a marker will be applied to the graphs and press OK

Only one vasopressor can be selected at a time

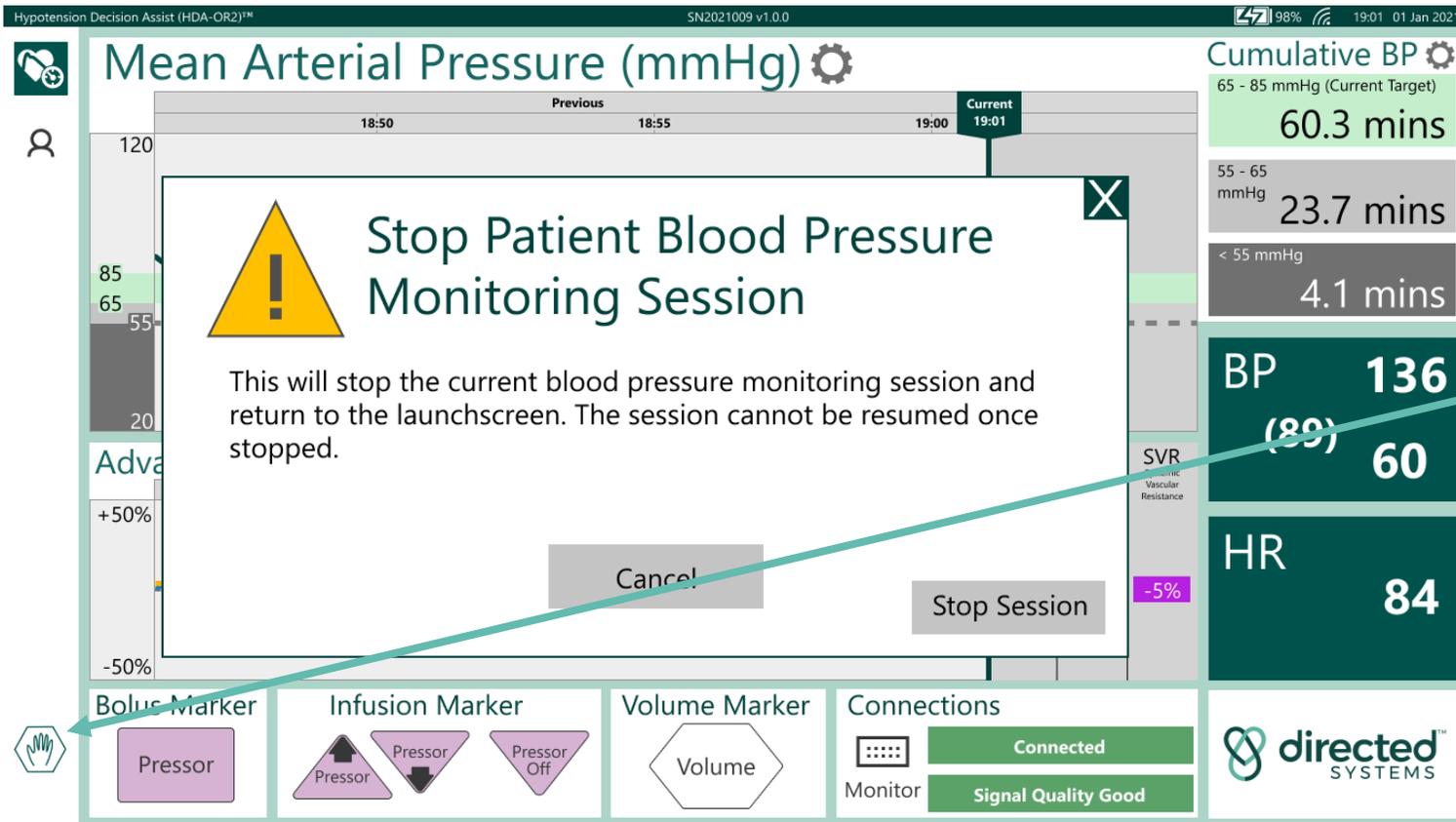
The marker list can be configured to match the local formulary. See instructions in the user manual and Set Up and Configuration presentation

How marker labels will appear



Marker labels will appear on the MAP trend and also the CO/HR/SVR trends

Stop Patient Blood Pressure Monitoring Session



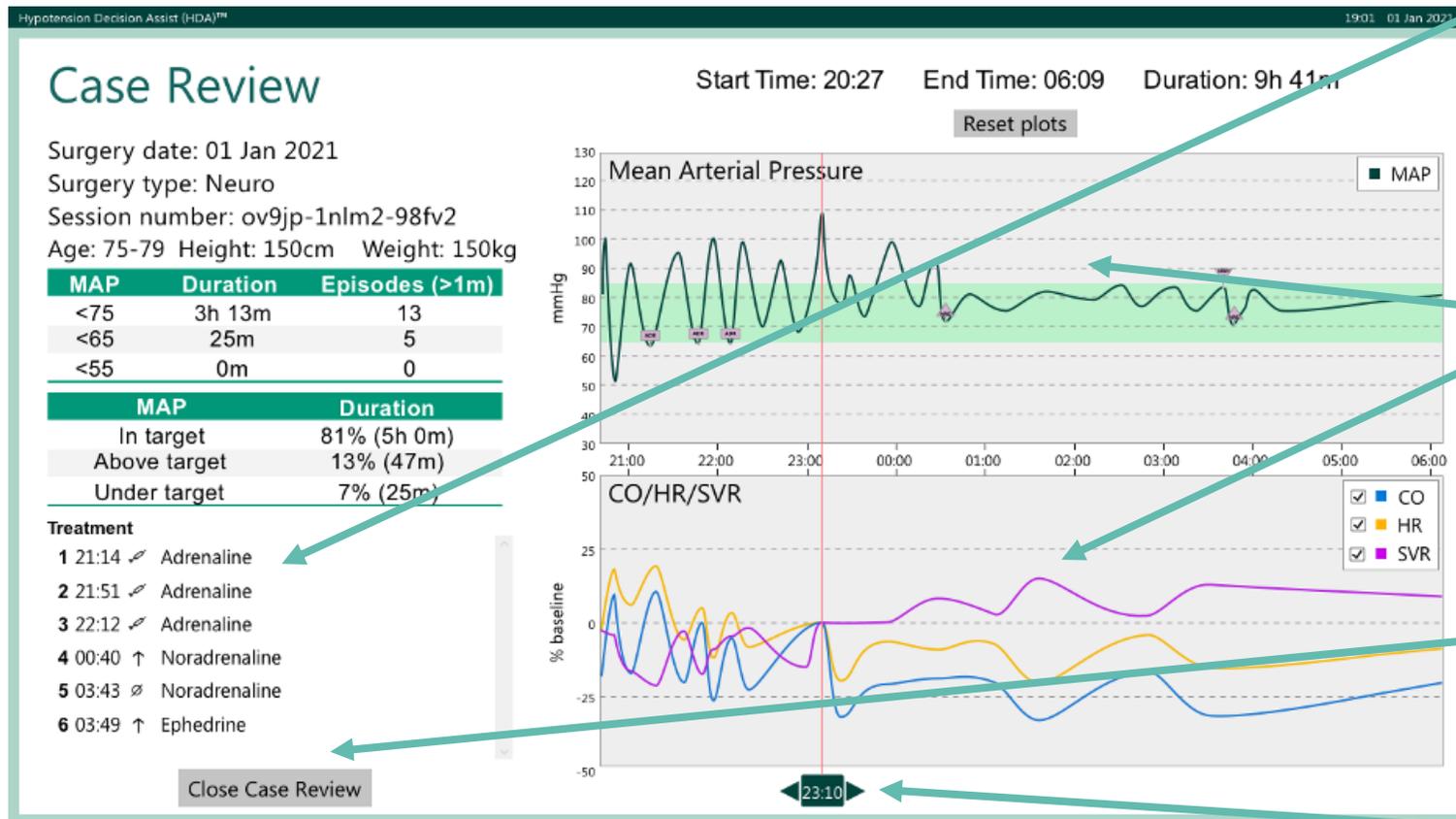
Touch 

You will be asked to confirm selection or cancel

If you confirm, monitoring session will end, and you will be taken back to a Case Review screen (see next slide).

Press Cancel and monitoring session will continue.

Case Review



Treatment marker record showing time and type of marker placement

MAP & CO/HR/SVR trend data screen

The charts can be zoomed with a pinch-zoom and scrolled

Press to return to the launch screen

Adjust baselines for relative parameters

Alerts and what they mean



ALERTS

Poor Signal Quality



Hypotension Decision Assist (HDA-OR2)™ SN2021009 v1.0.0 98% 19:01 01 Jan 2021

Mean Arterial Pressure (mmHg)

18:50 18:55 19:00 **Current 19:01**

Cumulative BP

65 - 85 mmHg (Current Target) **60.3 mins**

55 - 65 mmHg **23.7 mins**

< 55 mmHg **4.1 mins**

Advanced Parameters

+50%

-50%

Alert: Poor Signal Quality

Poor Signal Quality

The blood pressure signal quality is poor. Hypotension Decision Assist cannot compute accurate parameters. Check the blood pressure transducer.

CONTINUE

BP

(-) -

HR

-

Connections

Monitor **Connected**

Low signal quality

directed SYSTEMS

Bolus Marker Pressor

Infusion Marker Pressor Pressor Off

Volume Marker Volume

Shows quality of connection and signal strength. Will show pop-up alert if connection or signal quality poor or interrupted

Blood pressure signal loss



Hypotension Decision Assist (HDA-OR2)™ SN2021009 v1.0.0 98% 19:01 01 Jan 2021

Mean Arterial Pressure (mmHg) ⚙️

Cumulative BP ⚙️
65 - 85 mmHg (Current Target)

New blood pressure signal detected.

Press NEW to create a new blood pressure monitoring session **NEW**

Press CONTINUE to proceed with the current blood pressure monitoring session **CONTINUE**

Pressor: ↑ Pressor ↓ Pressor Off

Volume

Monitor: Connected, Signal Quality Good

directed SYSTEMS

30 minutes without valid BP signal, will trigger a pop-up alert

Auto session end detection



Hypotension Decision Assist (HDA-OR2)™ SN2021009 v1.0.0 98% 19:01 01 Jan 2021

Mean Arterial Pressure (mmHg)

Cumulative BP

65 - 85 mmHg (Current Target)

60.3 mins
23.7 mins
4.1 mins

BP -
(-) -

HR -

Connected
No signal

No Blood Pressure Signal

Hypotension Decision Assist has not received a valid blood pressure signal for 1hr. The blood pressure monitoring session will stop automatically in 60s.

Time Remaining: 60s

Continue Session

Pressor Pressor Pressor Off Volume Monitor

Where there has been no blood pressure signal for 1 hour, the system will automatically shut down the session and return to the splash screen.

You can over-ride this by touching "Continue Session"

Connection Loss



Hypotension Decision Assist (HDA-OR2)™ SN2021009 v1.0.0 98% 19:01 01 Jan 2021

Mean Arterial Pressure (mmHg)

18:50 18:55 19:00 **Current 19:01**

Advanced Para

+50%
-50%

Cumulative BP

65 - 85 mmHg (Current Target) **60.3 mins**
55 - 65 mmHg **23.7 mins**
< 55 mmHg **4.1 mins**

BP (-)

-

HR

-

Lost Connection

The connection to the patient monitor has been lost.
Check the cable connection.

CONTINUE

Connections

Monitor	Disconnected
	No signal

directed SYSTEMS

If cable connection becomes loose or unplugged an alert will show

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