



# bellavista™ Software 6.1 US e-learning module

# bellavista 6.1 US e-learning module

## Objectives

- Learn about the scope of the software changes
- Get detailed knowledge about the changes and enhancements for TargetVent
- Understand the Vt/kg setting in Configuration assist



# Release notes software version 6.1

Dear valued customer,

With this software release we have executed 33 changes and enhancements to deliver a substantially improved user experience by listening to your inputs and ideas. We're pleased to release this software to support you better in your daily routine and practice. This release is available for:

- bellavista™ 1000/1000select
- bellavista™ 1000e

The following pages will facilitate working with bellavista after the software update has been performed. We have made changes in these categories:

- Patient settings
- Configurability
- Ventilation settings
- Monitoring
- Service

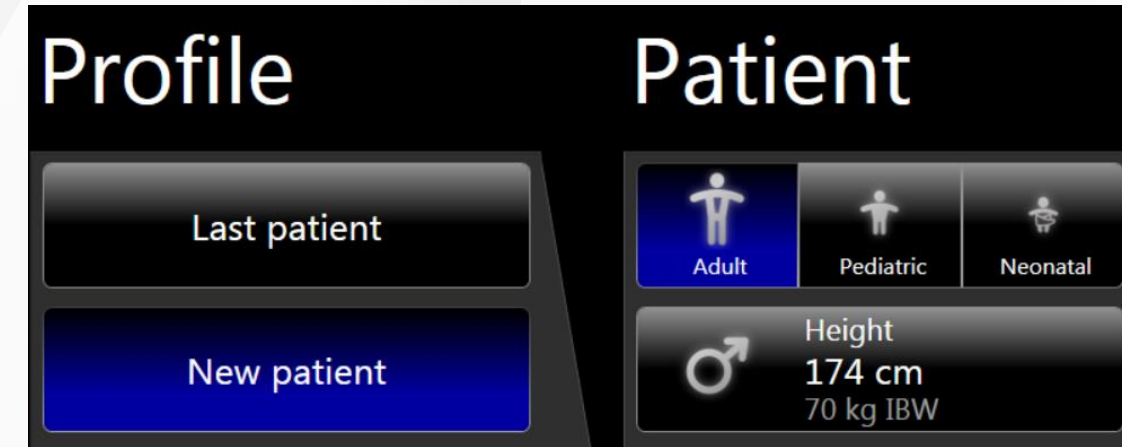


# 1. Patient settings

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# Mandatory height, weight and gender

With the 6.1 software, height, weight and gender are preset when starting up the ventilator. This enables bellavista™ to constantly calculate a Vt/kg monitoring value to ensure that additional lung protective monitoring is always available. When entering the start screen, bellavista™ automatically selects the largest patient population available and chooses preset settings for height and weight:



| Patient type | Adult                   | Pediatric | Neonatal |
|--------------|-------------------------|-----------|----------|
|              | Adult 170 cm,<br>female | 80 cm     | 2 kg     |

The default settings can be changed for individual profiles or with the "New Patient" profile. Height and weight settings can also be changed in the Ventilation Menu and Patient Info during ventilation. When starting up bellavista for the first time you will be prompted to decide for the default value, before starting ventilation.

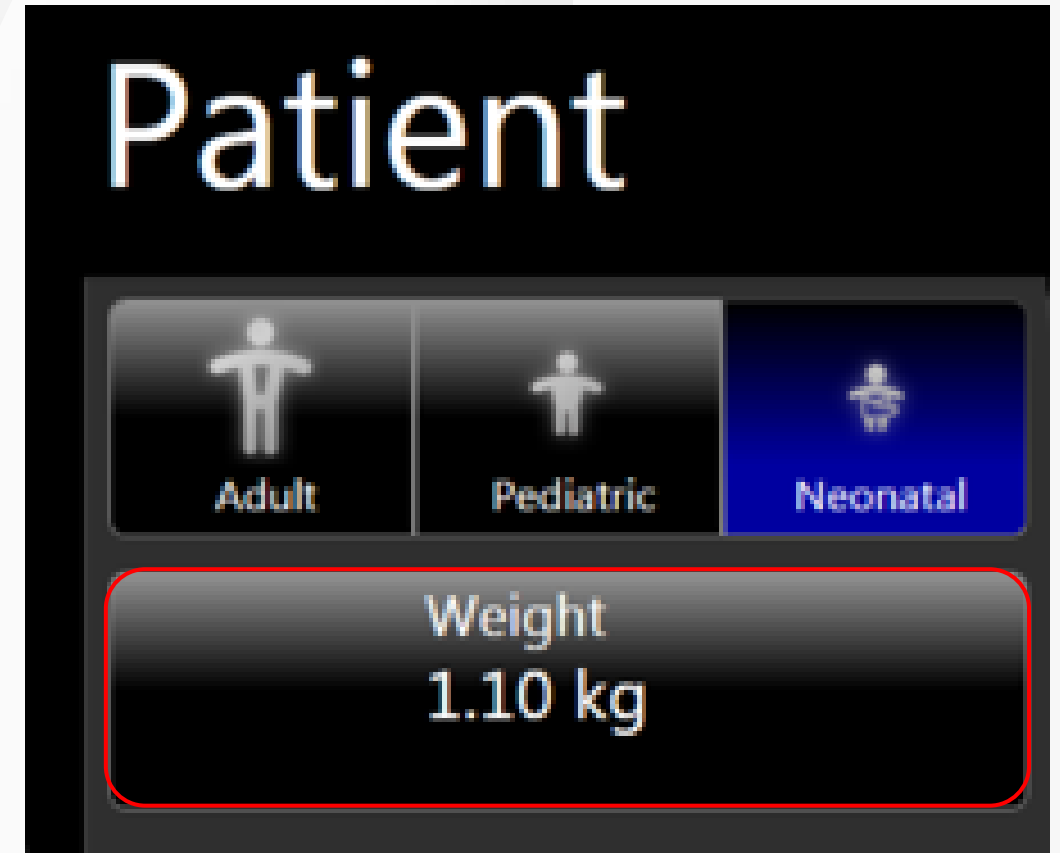
# Weight settings for neonatal patients

Weight settings for neonates and infants are now available with settings from 0.3-30 kg or 4.4 to 66 lbs, to enable a Vt/kg monitoring for the smallest patients ventilated with bellavista™.

The weight setting can be changed during ventilation to easily adapt to the growth of these patients. Weight settings can also be stored with any profile for individualized and customized ventilation settings.

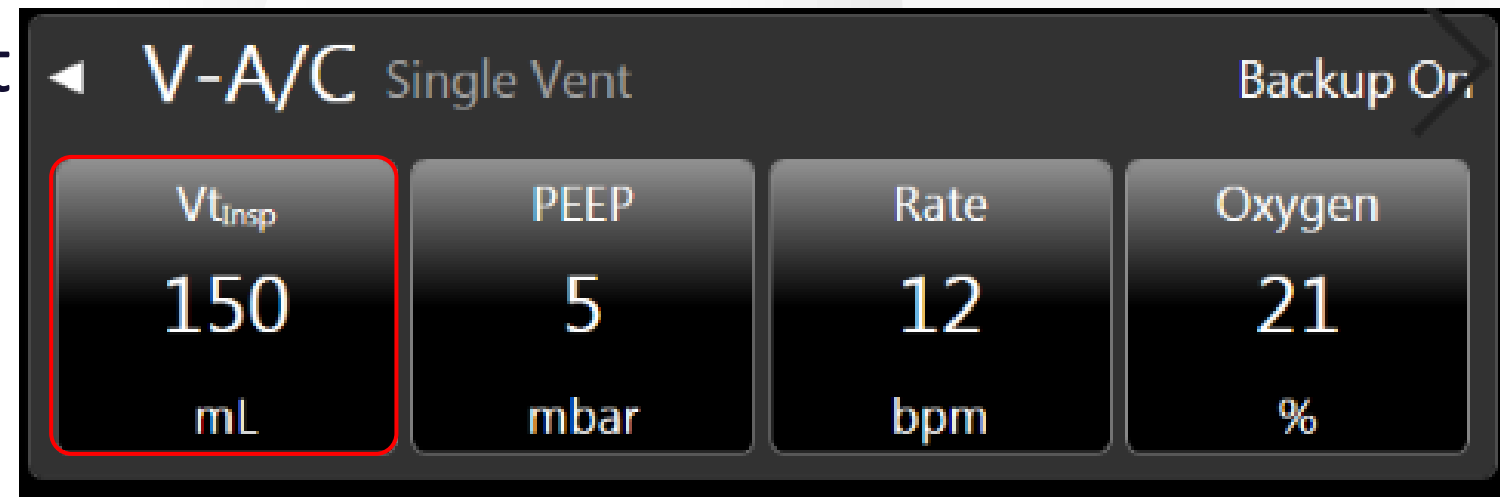
The increments for the weight settings are the following:

| Weight   | Increment |
|----------|-----------|
| 0.3–1 kg | 0.01 kg   |
| 1–5 kg   | 0.05 kg   |
| 5–30 kg  | 0.1 kg    |



# Minimal tidal volume for adult patients

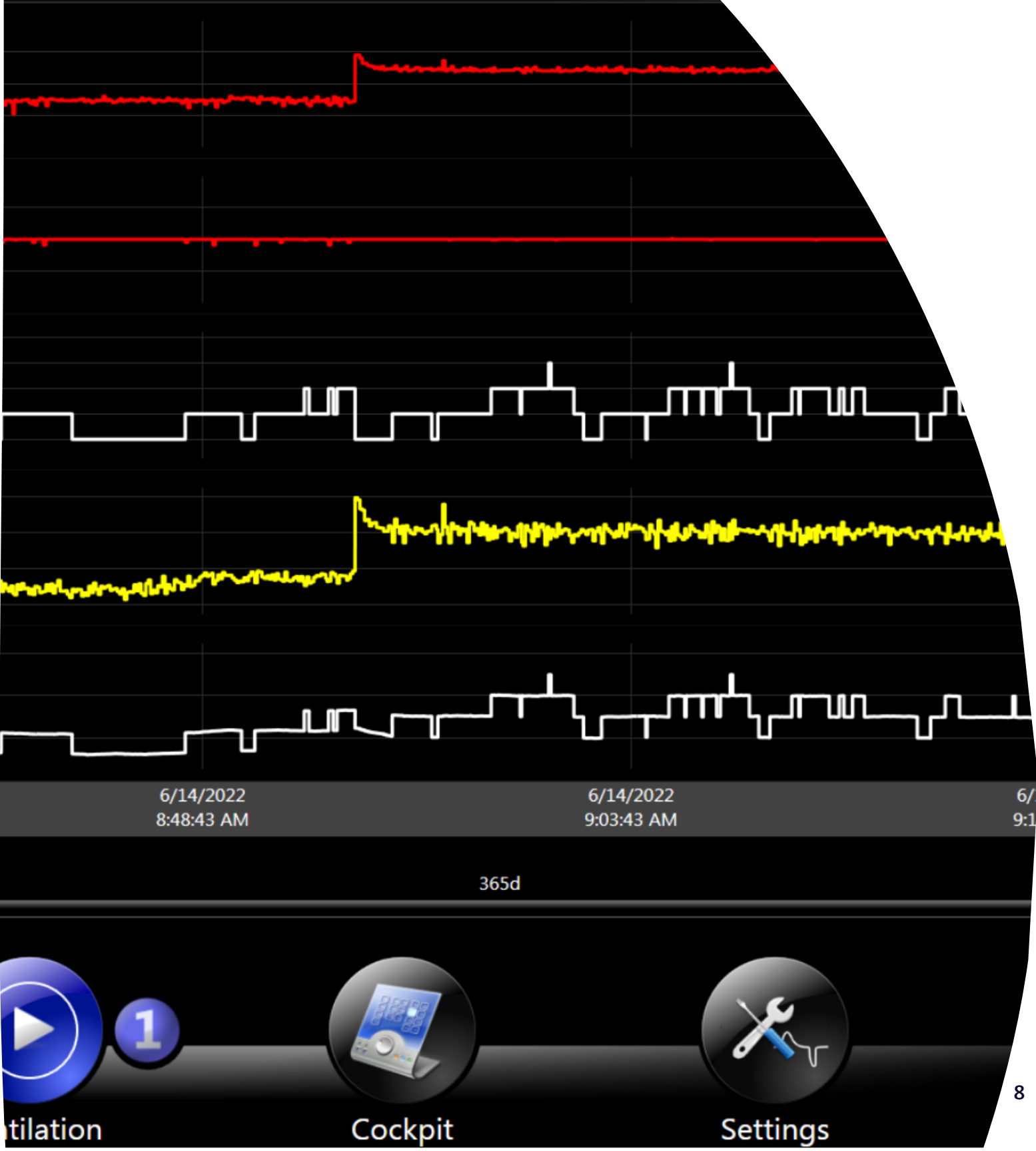
- To match with the new  $V_t/kg$  preferred settings we have enhanced the range for adult patients in target and volume controlled modes from 250 to 150 mL.
- Tidal volume alarms have been enhanced accordingly. This ensures lung protective ventilation for small adults with bellavista™.



# Reset of trending data with each new patient

All trending data will be reset when a new patient is chosen and when ventilation has commenced.

All trending data will still be stored and can be retrieved via Data Assist or the new "Export all data" button.







## 2. Ventilation settings

Release notes software version 6.1 US

# TargetVent integration

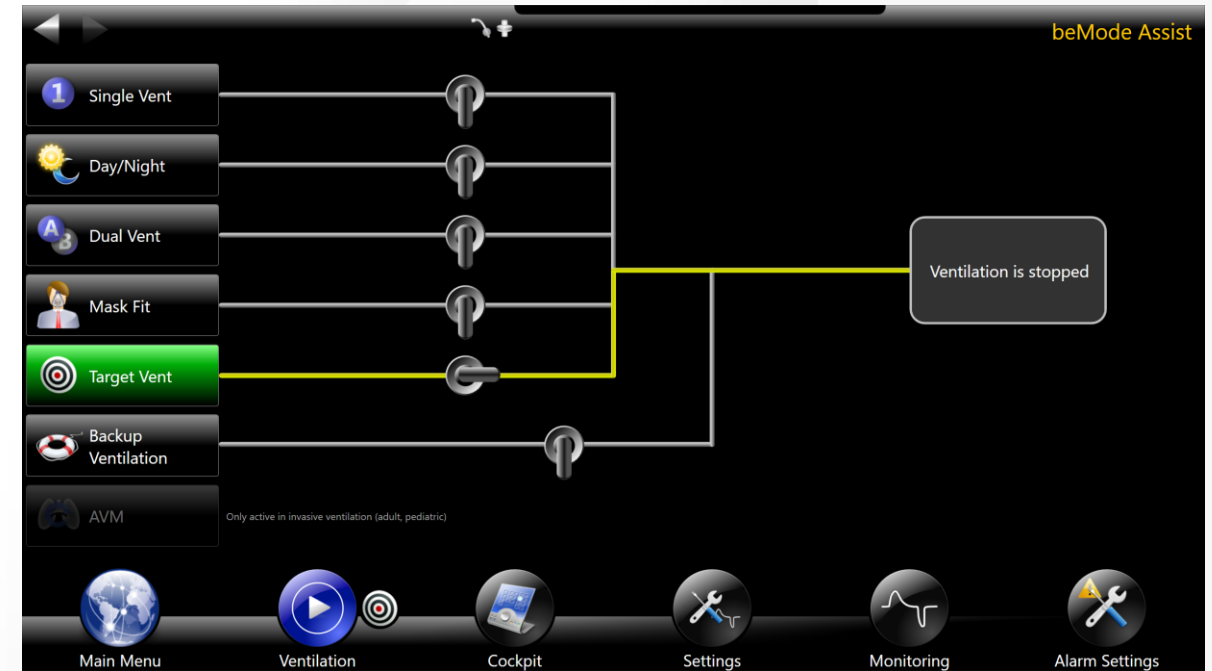
## beMode Integration

All TargetVent modes have been moved from an isolated beMode to SingleVent, which means they're now easily accessible and have joined the other SingleVent ventilation modes to facilitate your workflow.

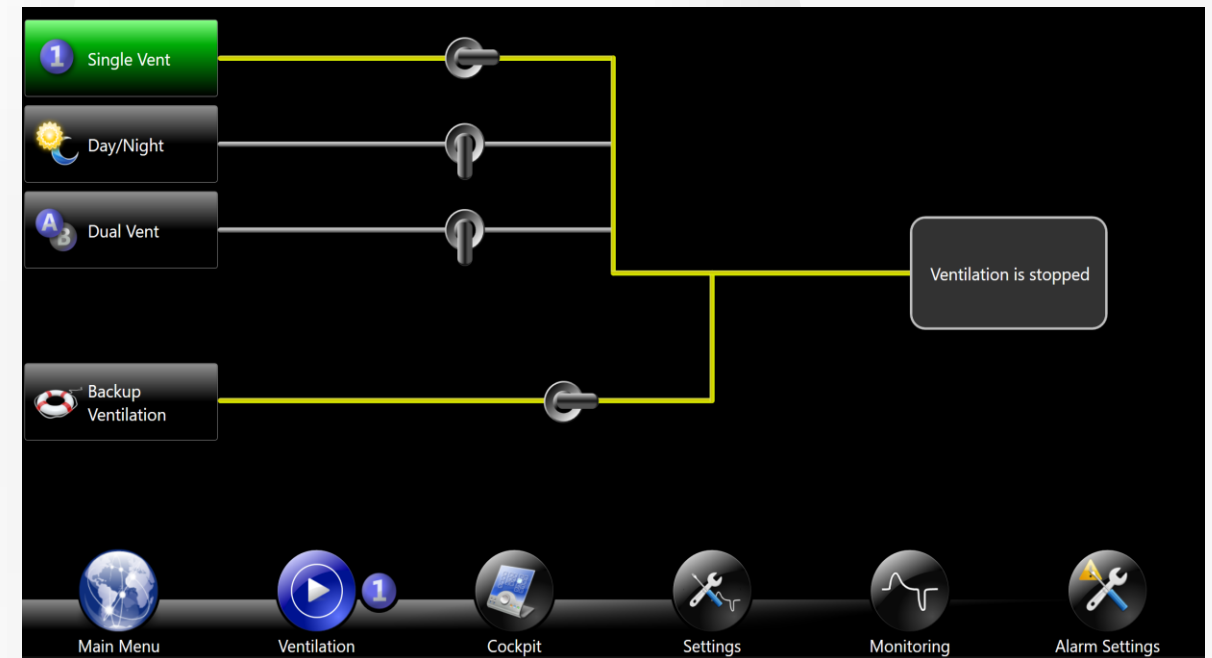
For the mode availability, please see table below:

| ICU Configuration          | Adult/Pediatric |              | Neonatal |              | IMC Configuration        | Adult/Pediatric |              | Neonatal |              |
|----------------------------|-----------------|--------------|----------|--------------|--------------------------|-----------------|--------------|----------|--------------|
|                            | Invasive        | Non-invasive | Invasive | Non-invasive |                          | Invasive        | Non-invasive | Invasive | Non-invasive |
| P-A/C <sub>Target*</sub>   | ✓               | ✓            | ✓        | ✓            | S/T <sub>Target*</sub>   | ✓               | ✓            | ✓        | ✓            |
| PC-SIMV <sub>Target*</sub> | ✓               | ✓            | ✓        | x            | S <sub>Target</sub>      | ✓               | ✓            | ✓        | ✓            |
| PSV <sub>Target</sub>      | ✓               | ✓            | ✓        | ✓            | P-A/C <sub>Target*</sub> | ✓               | ✓            | ✓        | ✓            |

\*available as Backup modes



TargetVent beMode selection with software 6.0



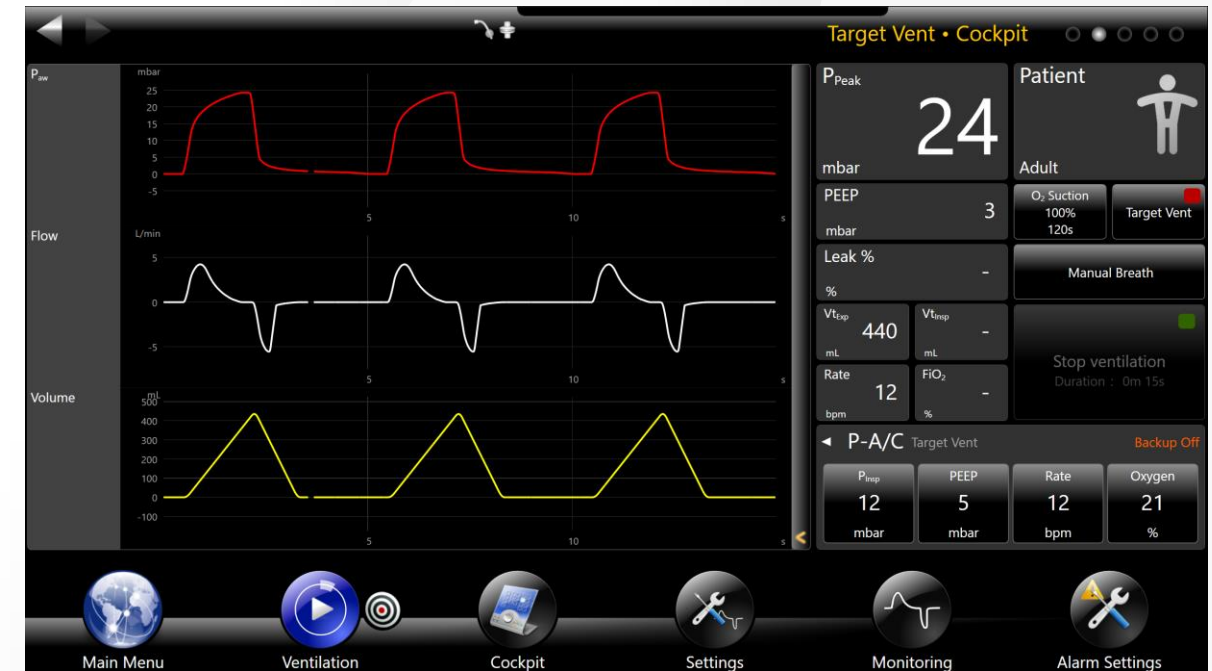
TargetVent now unified with SingleVent modes in 6.1

# TargetVent integration

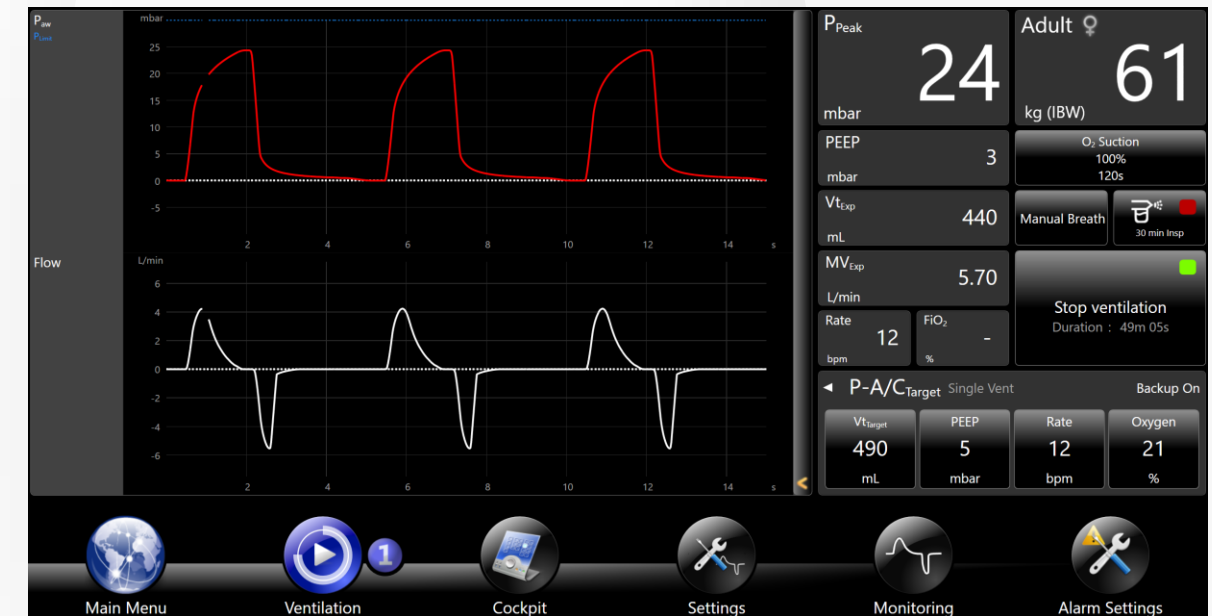
## Cockpit View

In Cockpit view the TargetVent modes act like any other SingleVent mode now, so no separate target volume activation is necessary anymore.

When a ventilation mode change is required, you can just enter the Settings Assist and adjust your settings. This enables a simple and easy operation.



TargetVent activation button in Cockpit view with software 6.0

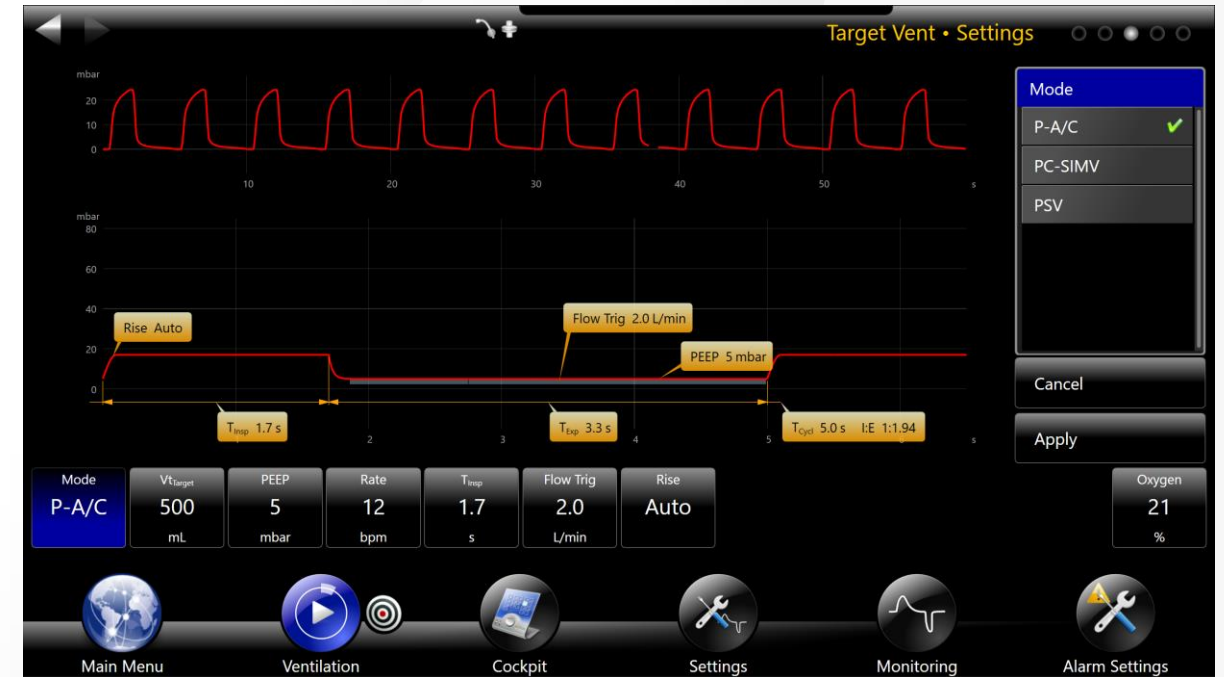


TargetVent as a direct operation mode in 6.1

# TargetVent integration

## Changing ventilation mode

When changing a mode in the Settings Assist, all enabled TargetVent modes are displayed in the new arranged mode table.



Settings Assist limited to beMode TargetVent modes with software 6.0

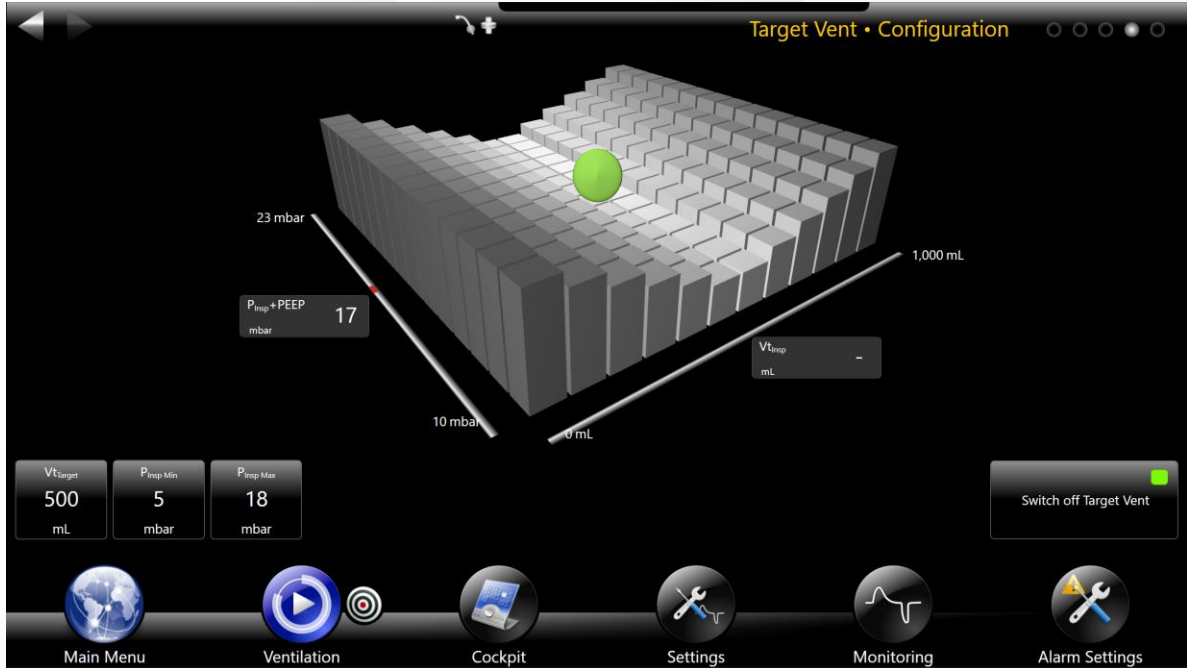


TargetVent modes available and the new ventilation mode table for better visibility in 6.1

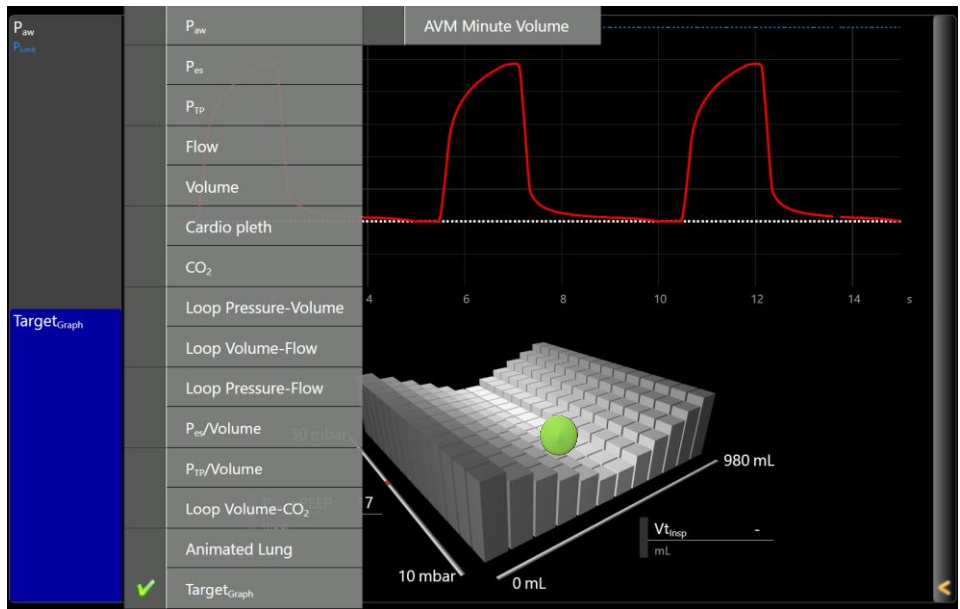
# TargetVent integration

## TargetGraph

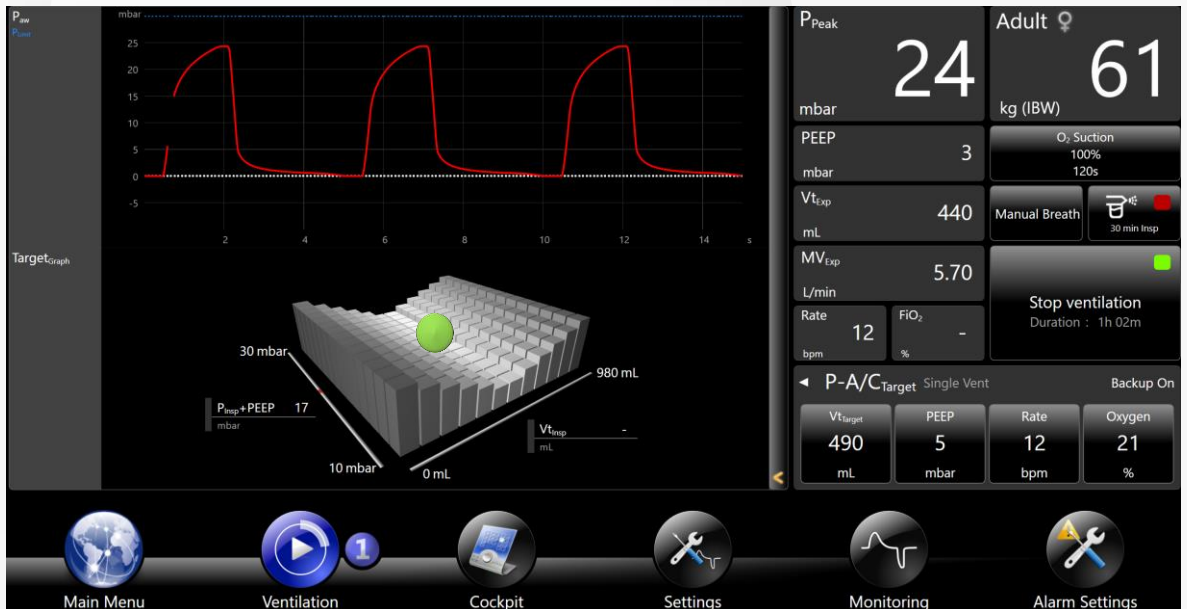
The TargetVent screen is now replaced by a regular curve element that is available like other curve elements in the context menu from the side bar.



TargetVent screen with software 6.0



Configuration of the Target graph in the curve element context menu



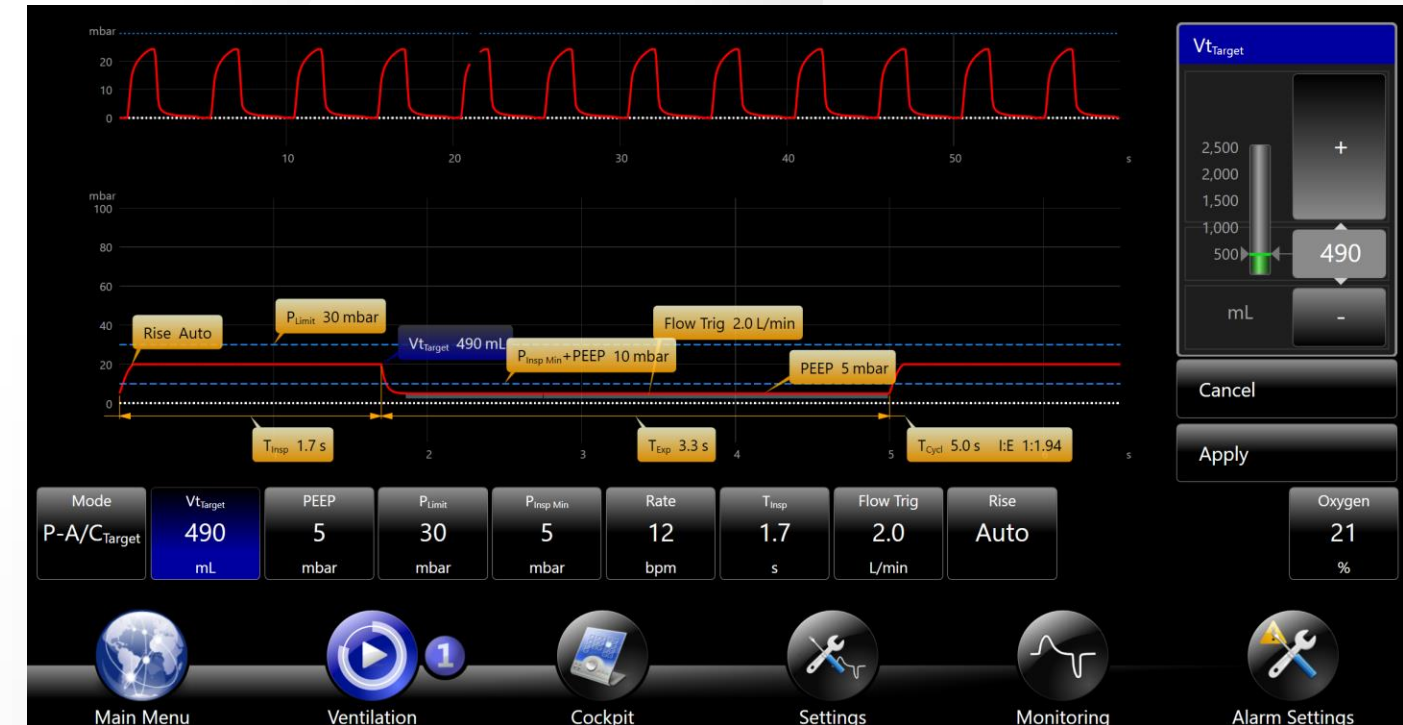
TargetVent graph now integrated as curve element in 6.1

# TargetVent integration

## Settings Assist

With 6.1, the ventilation settings in Target modes have been unified as well. All settings are now available in the settings bar.  $P_{\text{InspMax}}$  is now replaced by  $P_{\text{Limit}}$  (Fig.1) which includes the PEEP value like in AVM.  $P_{\text{InspMin}}$  is available too.

In the Settings Assist graphic,  $P_{\text{Limit}}$  and  $P_{\text{InspMin}}$  are visualized by a blue dotted line (Fig.2), so the inspiratory pressure range is instantly visible. The  $P_{\text{aw}}$  real-time curve shows the  $P_{\text{Limit}}$  with a dotted blue line as well, so you are always able to see where the pressure limit is set (Fig.3).



Settings Assist enhanced with pressure limits for  $P_{\text{Limit}}$  and  $P_{\text{InspMin}}$

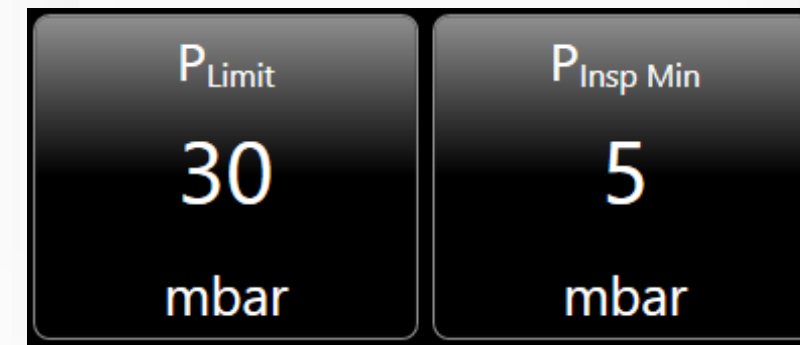


Fig.1  $P_{\text{Limit}}$  and  $P_{\text{InspMin}}$  integrated in the settings bar

# TargetVent integration

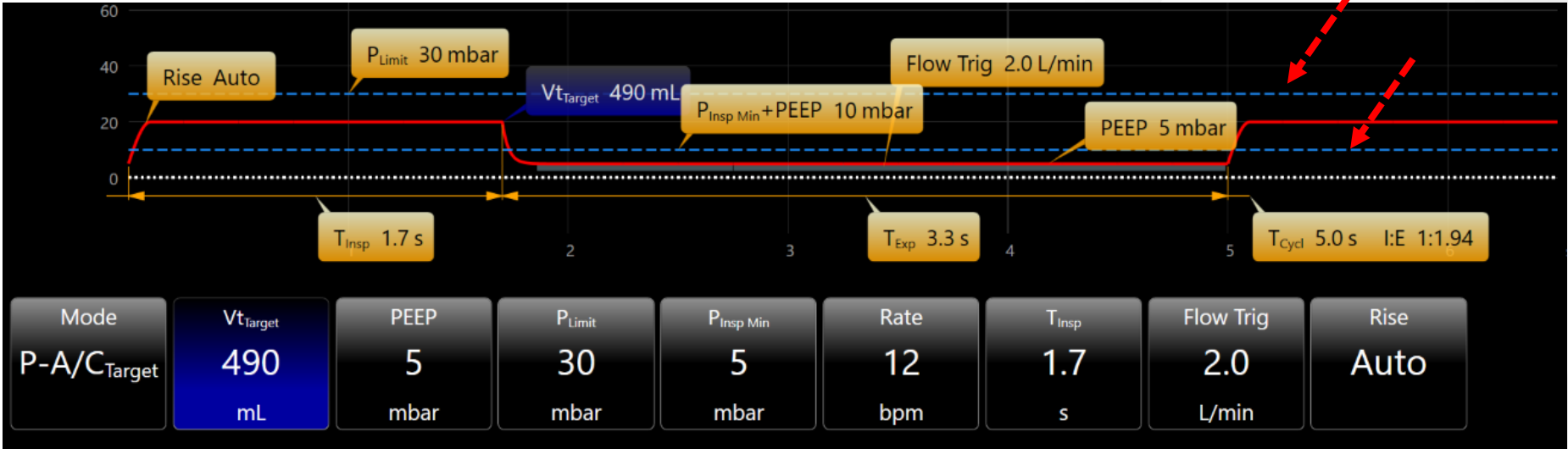


Fig. 2 Visualization of  $P_{Limit}$  and  $P_{InspMin}$  limits (Arrows) in the Settings Assist graphic

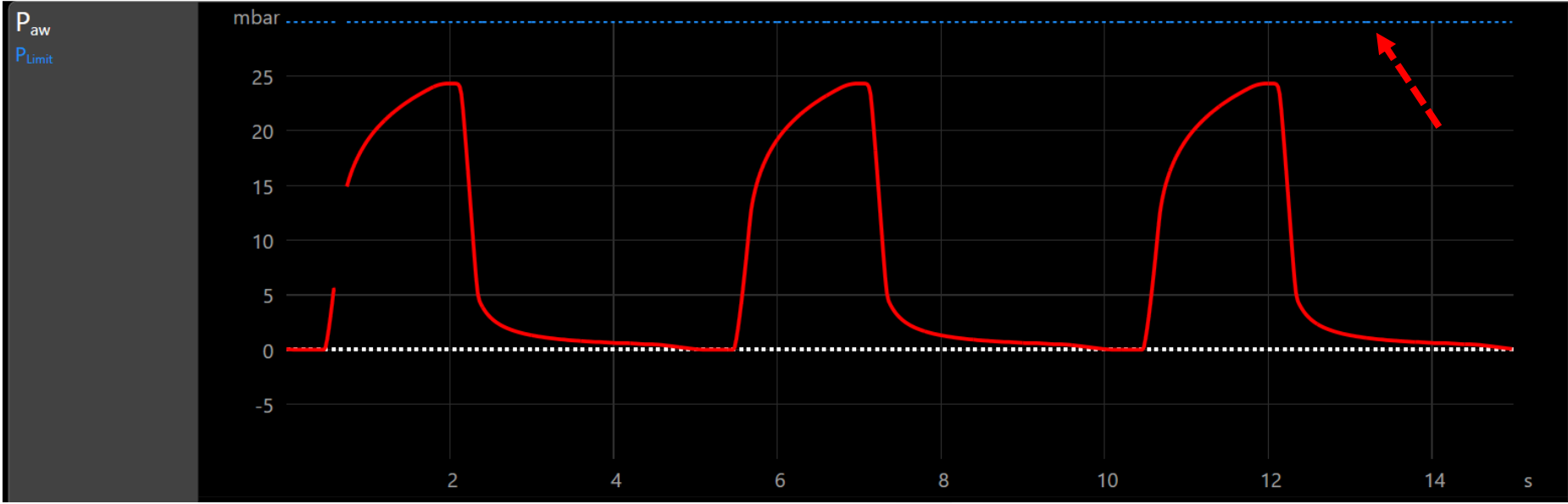


Fig.3 New dotted line (blue) to display  $P_{Limit}$  in Target modes

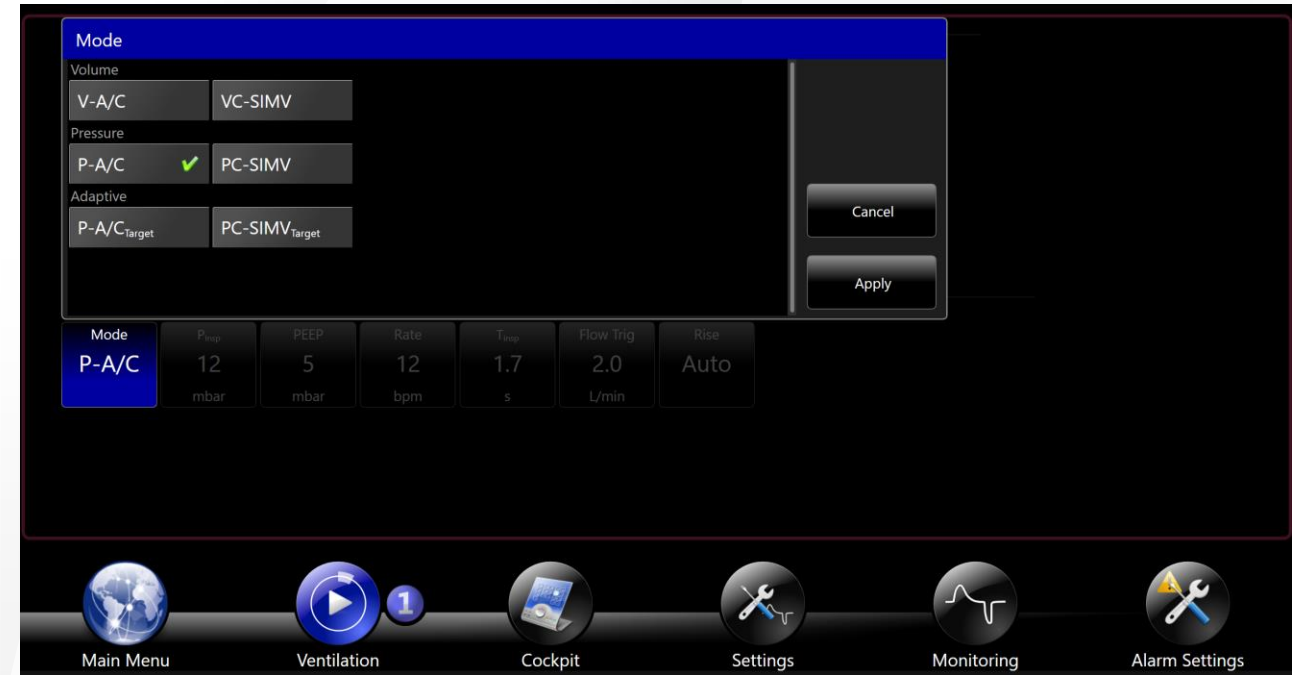
# TargetVent integration

## Backup modes and DualVent

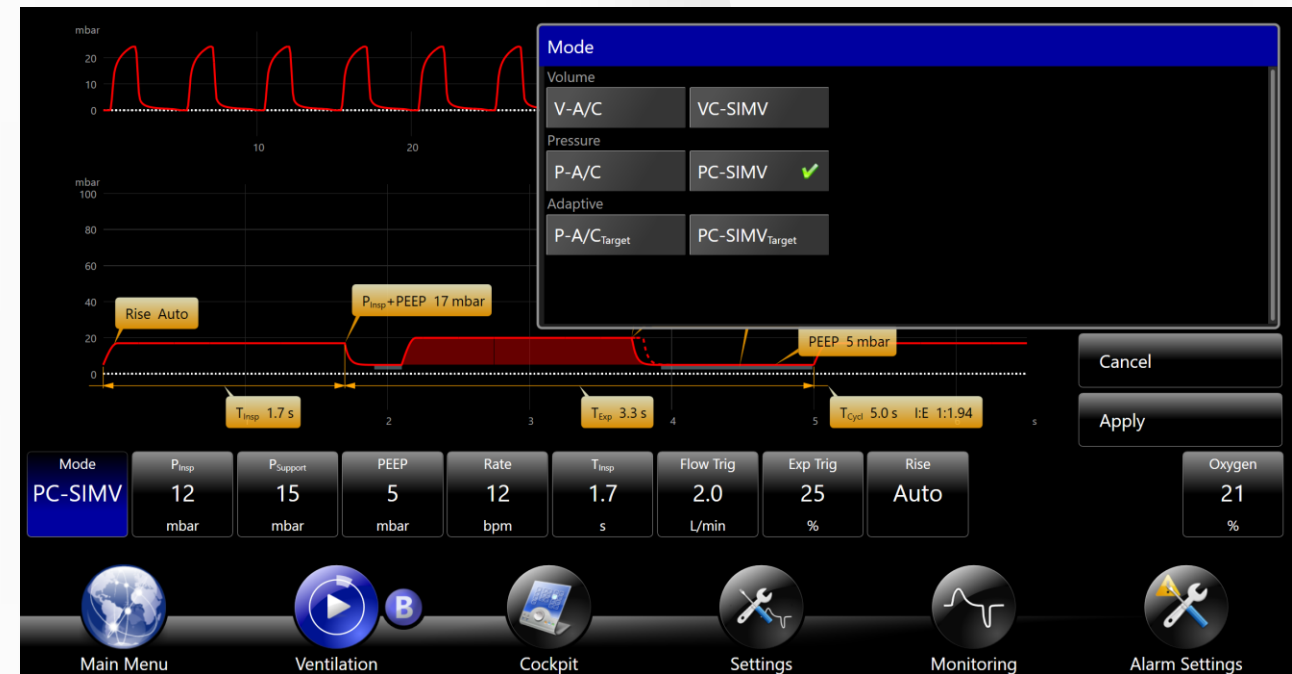
Target modes are now available in as Backup modes for Apnea ventilation.

Please see the table below for further detail:

| ICU Configuration           | Adult/Pediatric |          | Neonatal |          | IMC Configuration         | Adult/Pediatric |          | Neonatal |          |
|-----------------------------|-----------------|----------|----------|----------|---------------------------|-----------------|----------|----------|----------|
|                             | Backup          | DualVent | Backup   | DualVent |                           | Backup          | DualVent | Backup   | DualVent |
| P-A/C <sub>Target</sub> *   | ✓               | ✓        | ✓        | ✓        | S/T <sub>Target</sub> *   | ✓               | ✓        | ✓        | ✓        |
| PC-SIMV <sub>Target</sub> * | ✓               | ✓        | ✓        | ✓        | P-A/C <sub>Target</sub> * | ✓               | ✓        | ✓        | ✓        |
| PSV <sub>Target</sub>       | -               | ✓        | -        | ✓        |                           |                 |          |          |          |



Available Target backup modes in ICU configuration in 6.1



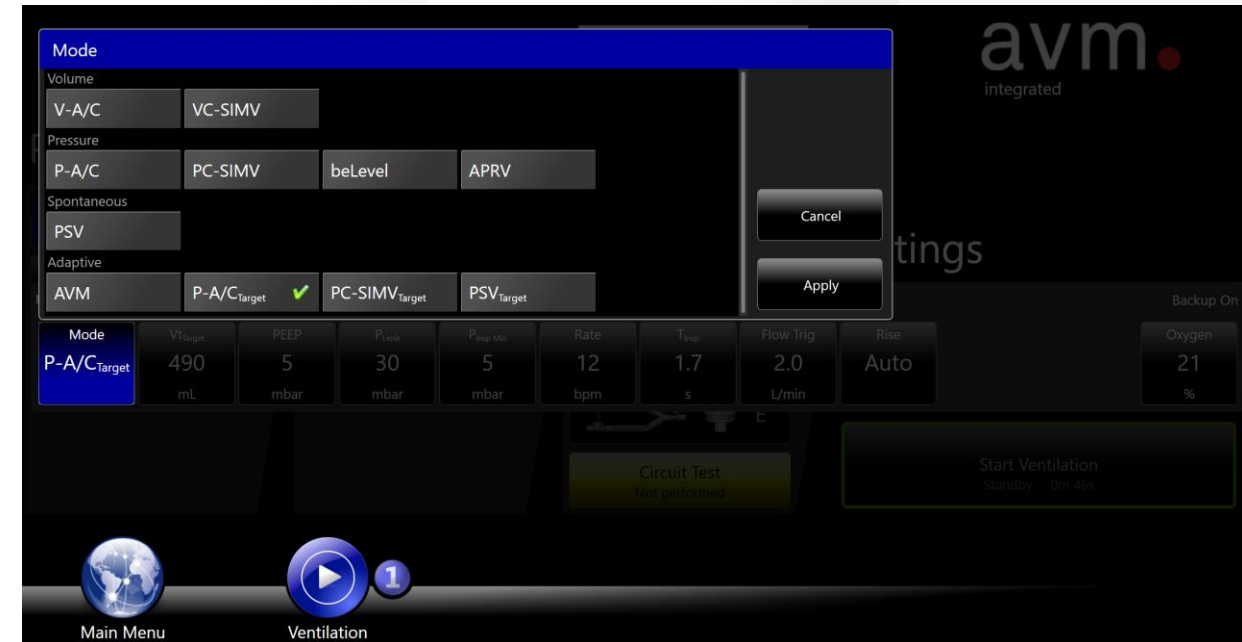
Selection of Target modes in DualVent in 6.1



# New Settings Assist and Start Screen ventilation mode table

Ventilation modes are now displayed with a table to enhance overview and visibility.

Modes are now consolidated by control variable (Volume, Pressure) or breath type (Spontaneous, Adaptive).



New ventilation mode table on Start Screen



New ventilation mode table in Settings Assist

## Enhanced settings takeover

Ventilation settings takeover is much more enhanced with 6.1. Whether you're switching from a volume or pressure controlled mode, the new takeover logic converts tidal volumes into inspiratory pressures or vice versa.

Settings which are not part of a certain mode will be displayed as default settings when switching between modes.

The only exception is the APRV ventilation mode where timing and pressures and also the monitoring is different from a conventional mode, so volumes, timing and pressures won't be taken over.

|         |                                |                      |           |           |                   |         |             |         |          |      |         |
|---------|--------------------------------|----------------------|-----------|-----------|-------------------|---------|-------------|---------|----------|------|---------|
| Mode    | V <sub>t</sub> <sub>Insp</sub> | P <sub>Support</sub> | PEEP      | Rate      | T <sub>Insp</sub> | Plateau | Press Trig  | Pattern | Exp Trig | Rise | Oxygen  |
| VC-SIMV | 420<br>mL                      | 15<br>mbar           | 6<br>mbar | 17<br>bpm | 1.4<br>s          | 0<br>%  | 1.0<br>mbar | Dec50   | 25<br>%  | Auto | 21<br>% |

Initial settings in VC-SIMV mode

|       |                   |           |           |                   |             |      |         |
|-------|-------------------|-----------|-----------|-------------------|-------------|------|---------|
| Mode  | P <sub>Insp</sub> | PEEP      | Rate      | T <sub>Insp</sub> | Press Trig  | Rise | Oxygen  |
| P-A/C | 16<br>mbar        | 6<br>mbar | 17<br>bpm | 1.4<br>s          | 1.0<br>mbar | Auto | 21<br>% |

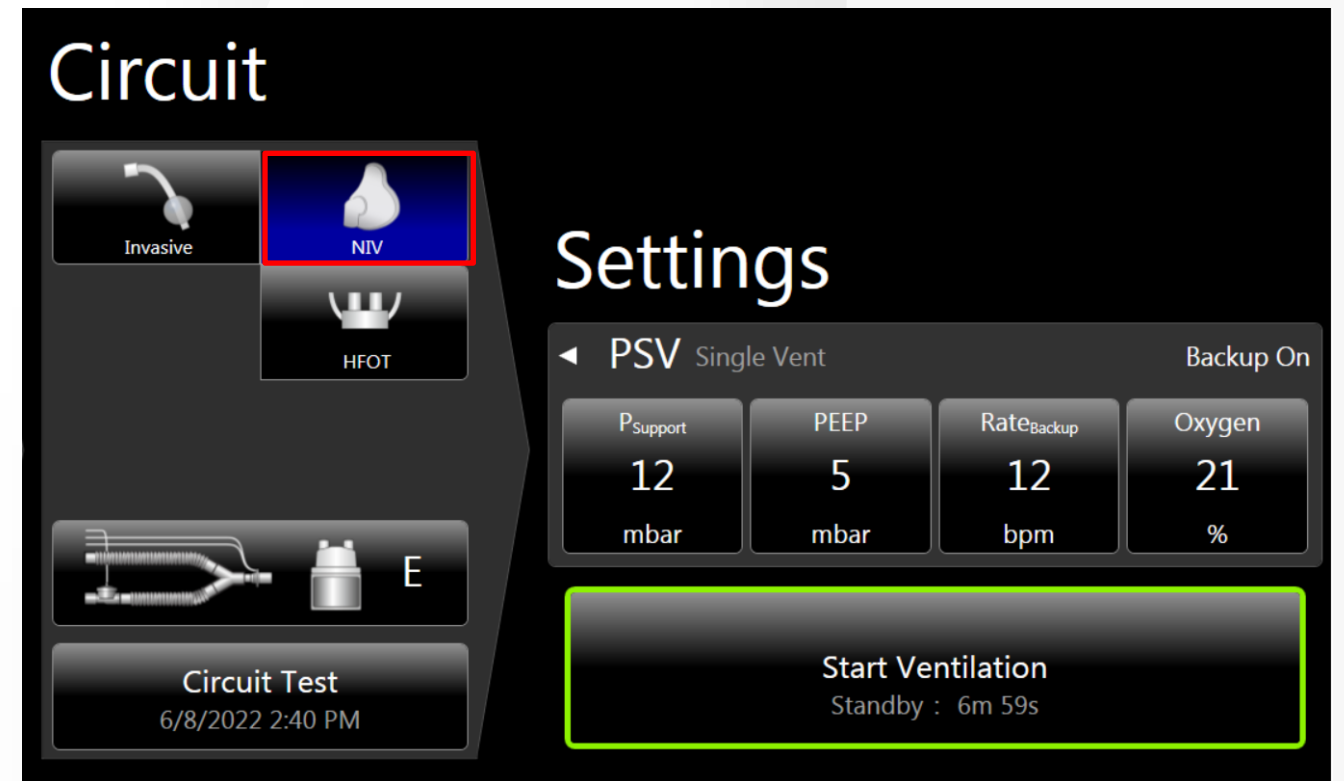
Setting takeover converts volume into inspiratory pressure when switched from a volume into a pressure mode

|                         |                                  |           |                    |                       |           |                   |             |      |         |
|-------------------------|----------------------------------|-----------|--------------------|-----------------------|-----------|-------------------|-------------|------|---------|
| Mode                    | V <sub>t</sub> <sub>Target</sub> | PEEP      | P <sub>Limit</sub> | P <sub>Insp</sub> Min | Rate      | T <sub>Insp</sub> | Press Trig  | Rise | Oxygen  |
| P-A/C <sub>Target</sub> | 400<br>mL                        | 6<br>mbar | 35<br>mbar         | 5<br>mbar             | 17<br>bpm | 1.4<br>s          | 1.0<br>mbar | Auto | 21<br>% |

Setting takeover converts pressure into target volume when taken over from a pressure mode

# New default mode for NIV ventilation

PSV will be automatically selected when switching to NIV instead of P-A/C.



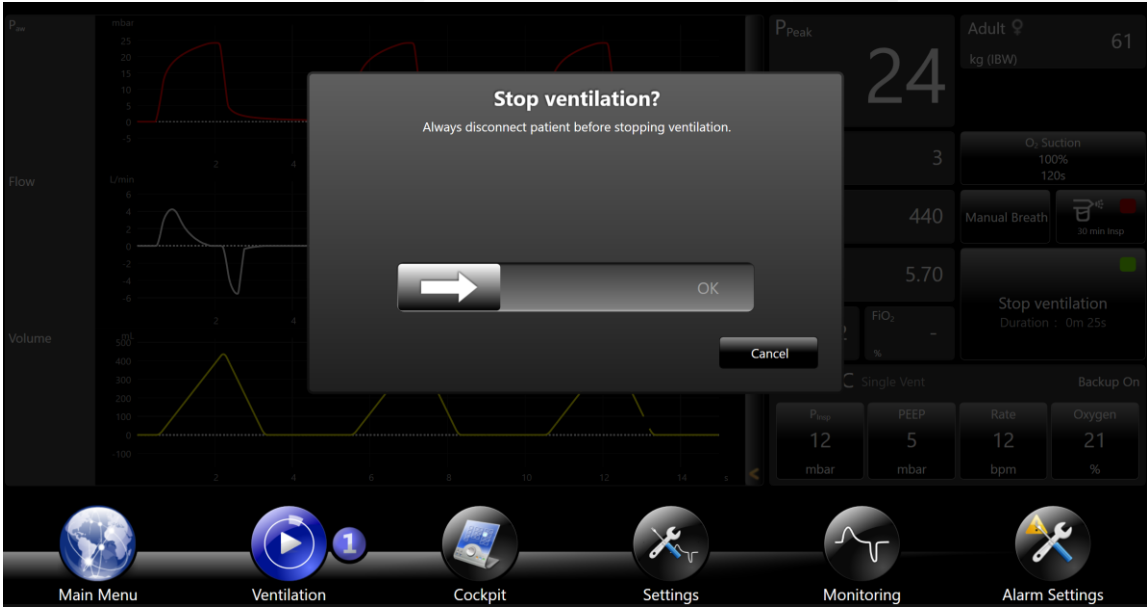
PSV is always default when switching to NIV

# Preventing Standby when still connected to a patient

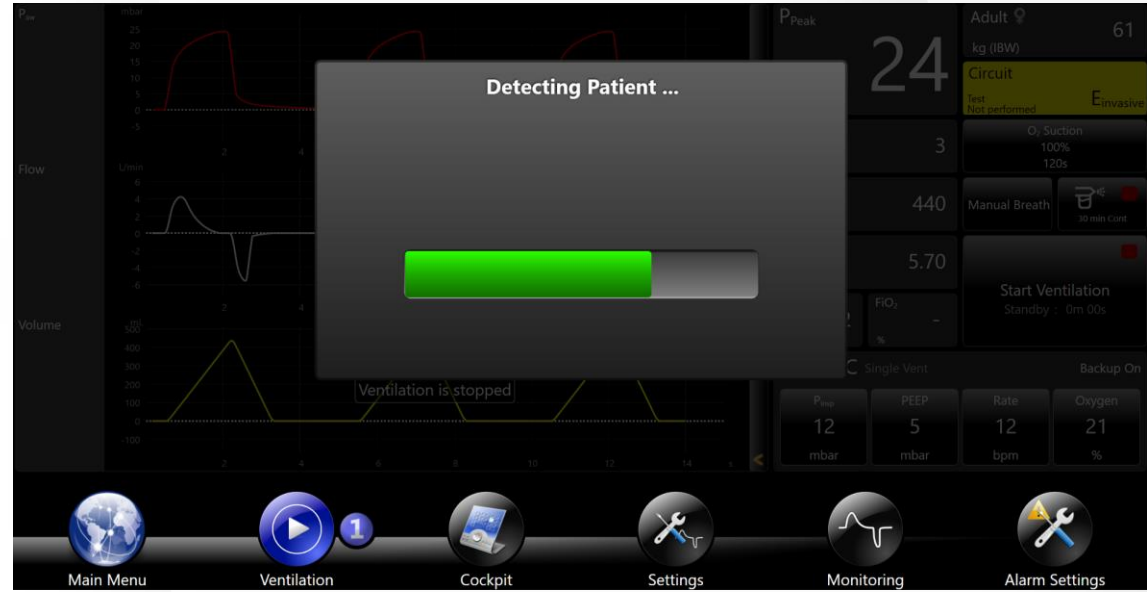
With 6.1 bellavista detects if a patient is still connected when switching to Standby.

When a patient is still connected, ventilation resumes after a detection phase of about two seconds. A confirmation window shows up asking the user to either continue ventilation or stop ventilation in case of a potentially wrong detection.

This feature is only available for invasive Adult/Pediatric ventilation with proximal flow sensor (Circuit D and E) and with PEEP values  $\geq 2$  mbar.



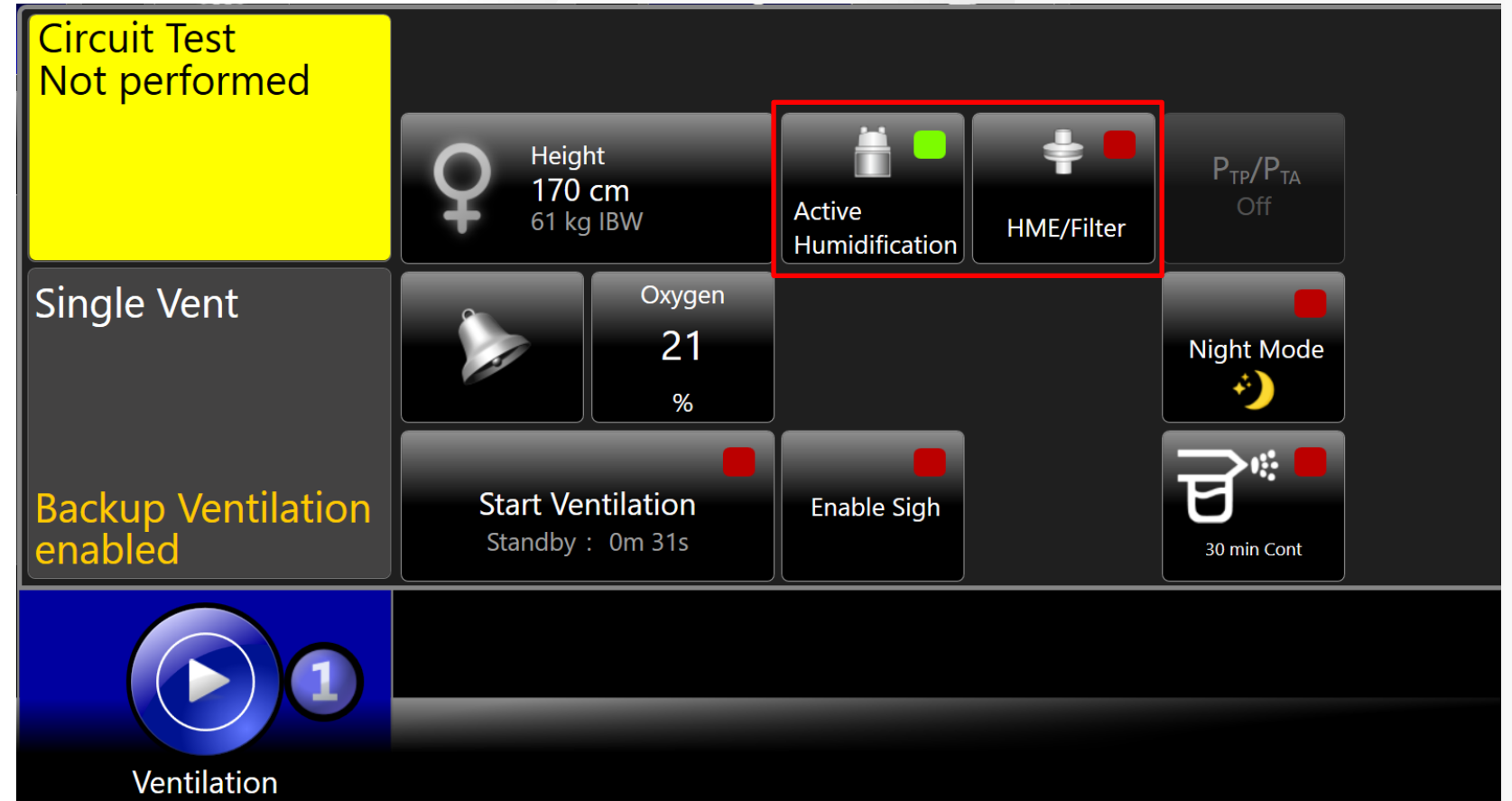
When stopping ventilation you are prompted to disconnect patient



Detecting if a patient is still connected when ventilation has been stopped.

## Humidification selection available in ventilation menu

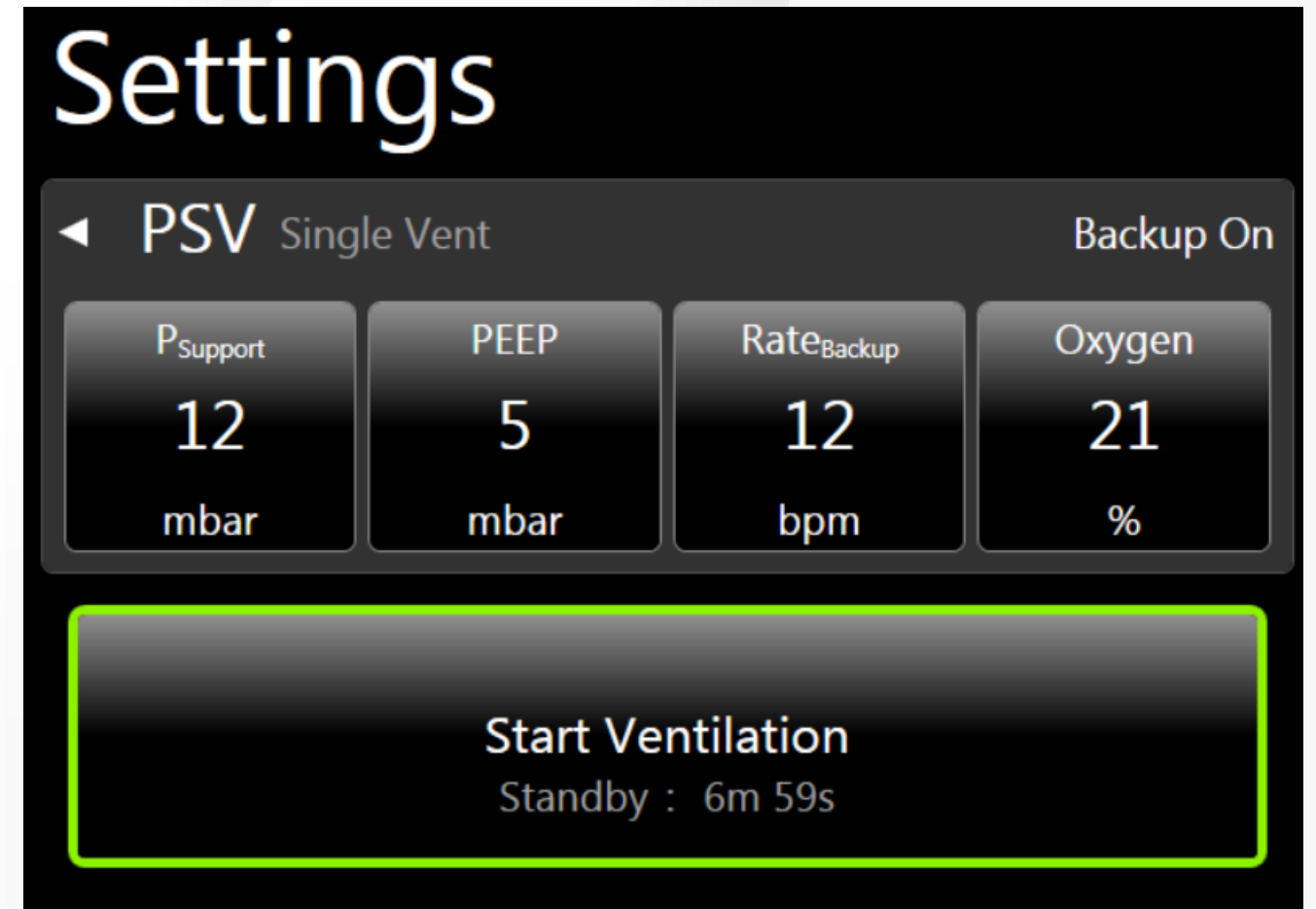
The humidification type is selectable during ventilation now. In the ventilation menu you can toggle the humidification type between active humidification and HME/Filter.



Humidification type available now in ventilation menu

## Highlighted Start Ventilation button

To enhance visibility the “Start Ventilation” button on the Start Screen is now highlighted with a green border.



Highlighted Start ventilation button

## New circuit test memory

Previously performed circuit tests will be taken over to new patient settings or profiles when they match:

- Patient type
- Circuit type

to allow starting ventilation with the circuit and flow sensor calibration from an already prepared and switched off device.

bellavista™ will remind you with a confirmation after 30 days when a new circuit test hasn't been performed. Always execute a circuit test with:

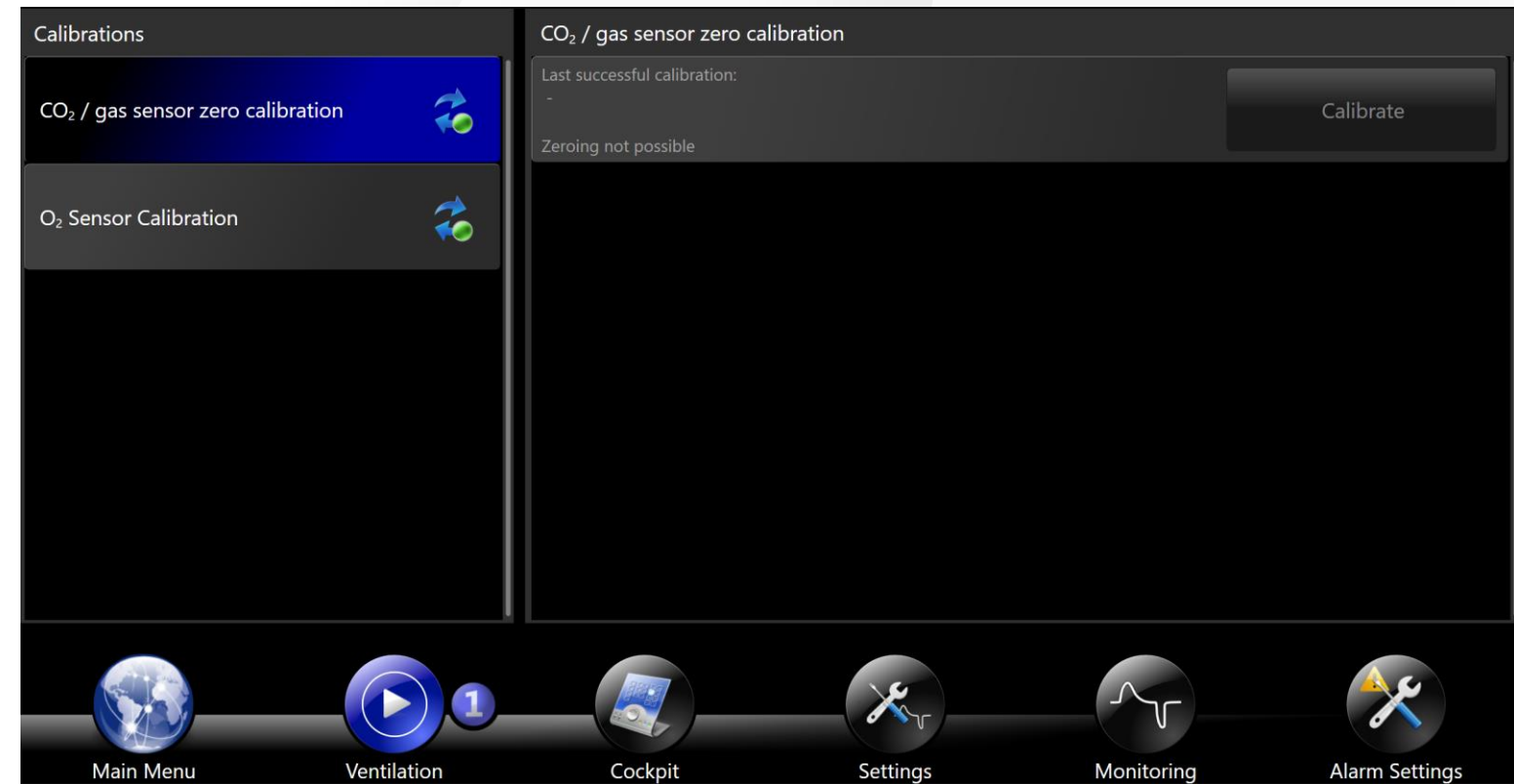
- Each new patient
- Each new flow sensor or circuit
- With each “Calibrate flow sensor alarm”



Performed circuit test are now valid as long as patient and circuit type are not changed

## Sidestream CO<sub>2</sub> calibration

bellavista™ supports the newest Sidestream ISA device from Masimo and when connected manual calibration are not longer supported since the ISA device has a self-calibration routine.



Sensor calibration is inactive when connected to a sidestream sensor





# 3. Monitoring

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# AVM Target Graph facelift

The AVM Target Graph has been updated to increase situation awareness and enhance visibility. The differences are:

## Highlighted protection window

- The protection window is now highlighted green to enhance visibility

## New target and patient symbols

- The target and patient symbol has also been changed for visibility reasons
- A legend has been implemented to for better understanding which symbol belongs to patient or target

## Monitoring differences

- Height information has been changed to IBW
- %MinVol and Target MinVol are now displayed in the upper left corner of the graph



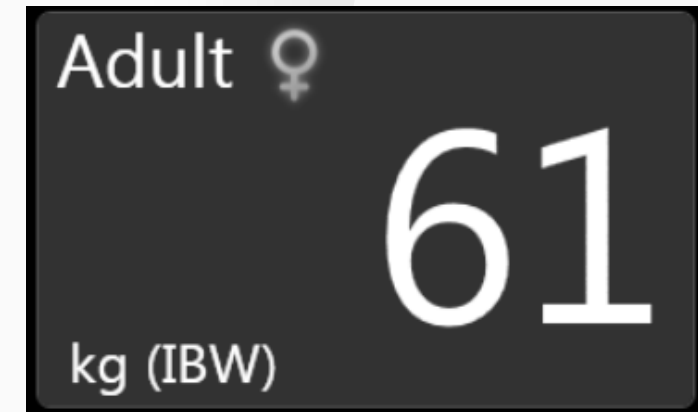
Updated AVM Target Graph

# New "Patient" monitoring value

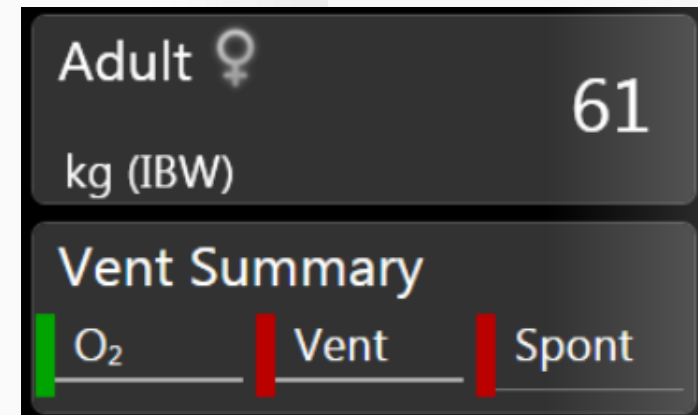
With 6.1 it is even easier now to check your patient settings during ventilation.

The "Patient" monitoring value is offering more information about your patient settings.

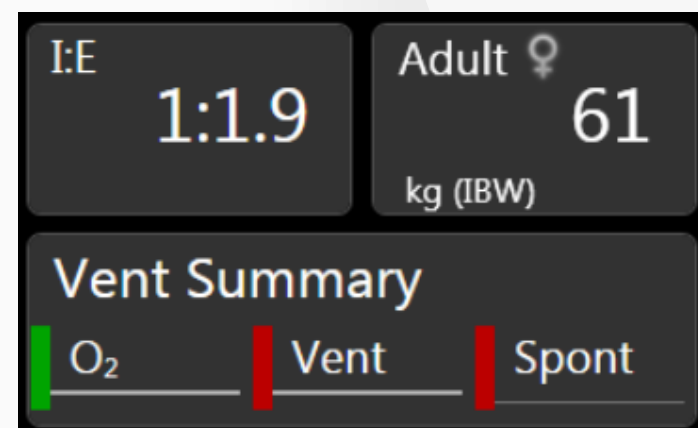
Additionally to the patient group information, the ideal body weight (or weight for neonatal) is displayed together with the chosen gender in all tile sizes.



Large Tile



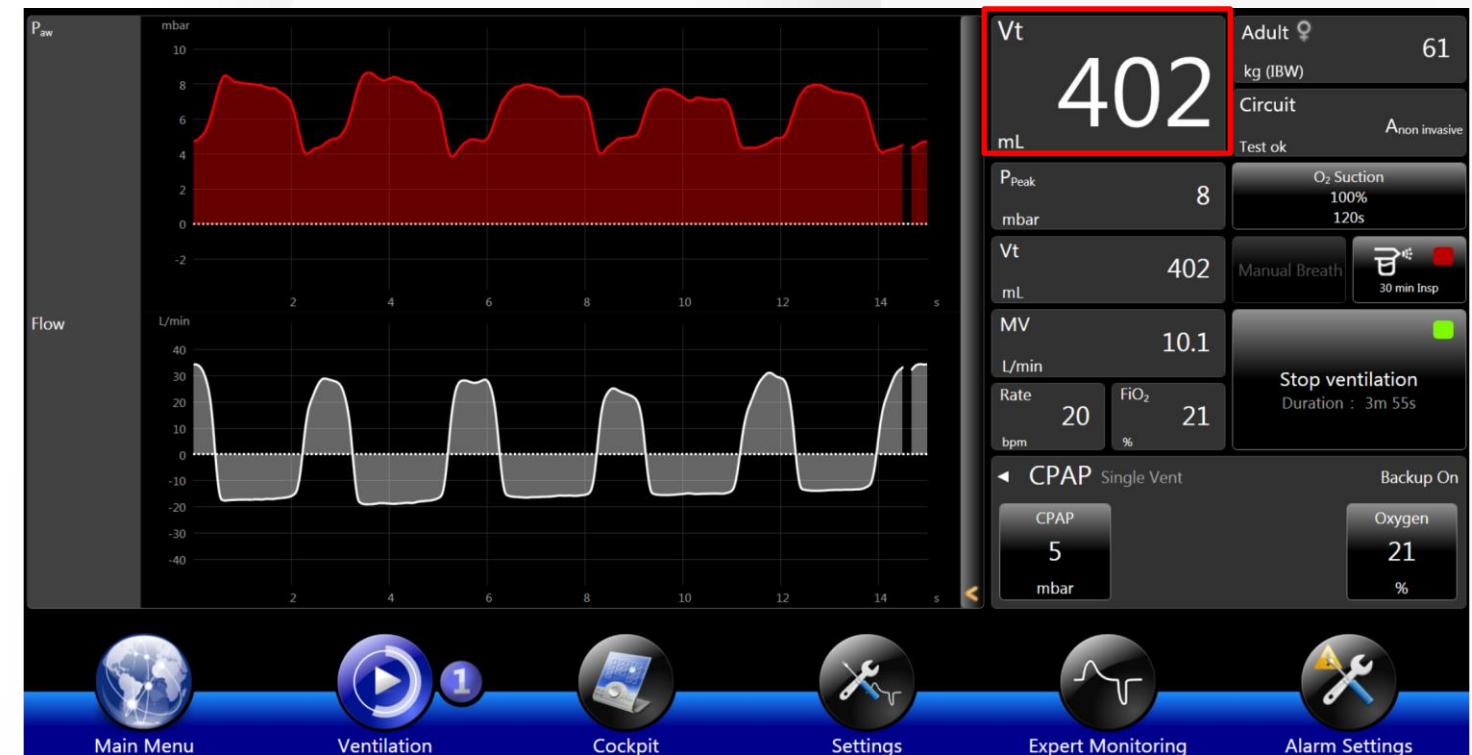
Medium Tile



Small Tile

# Tidal volume available with in CPAP with "A" circuit

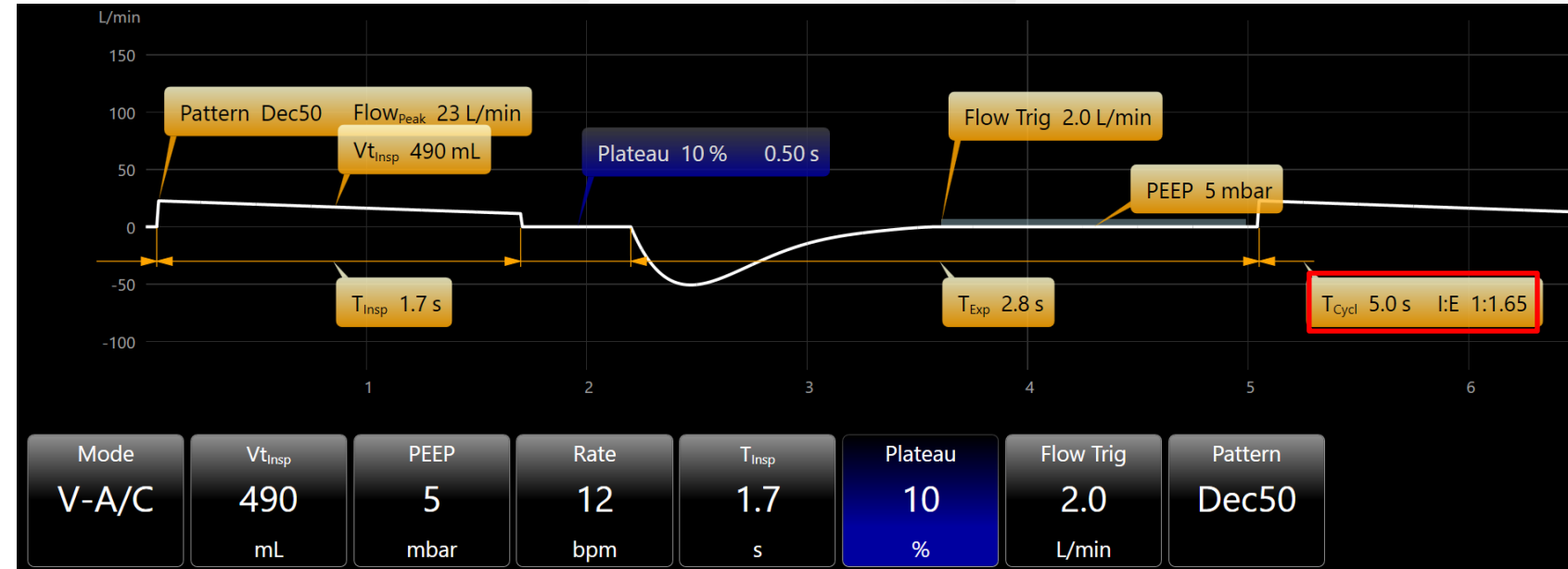
Tidal Volume (Vt) is available now, when using an «A» circuit for non-invasive ventilation.



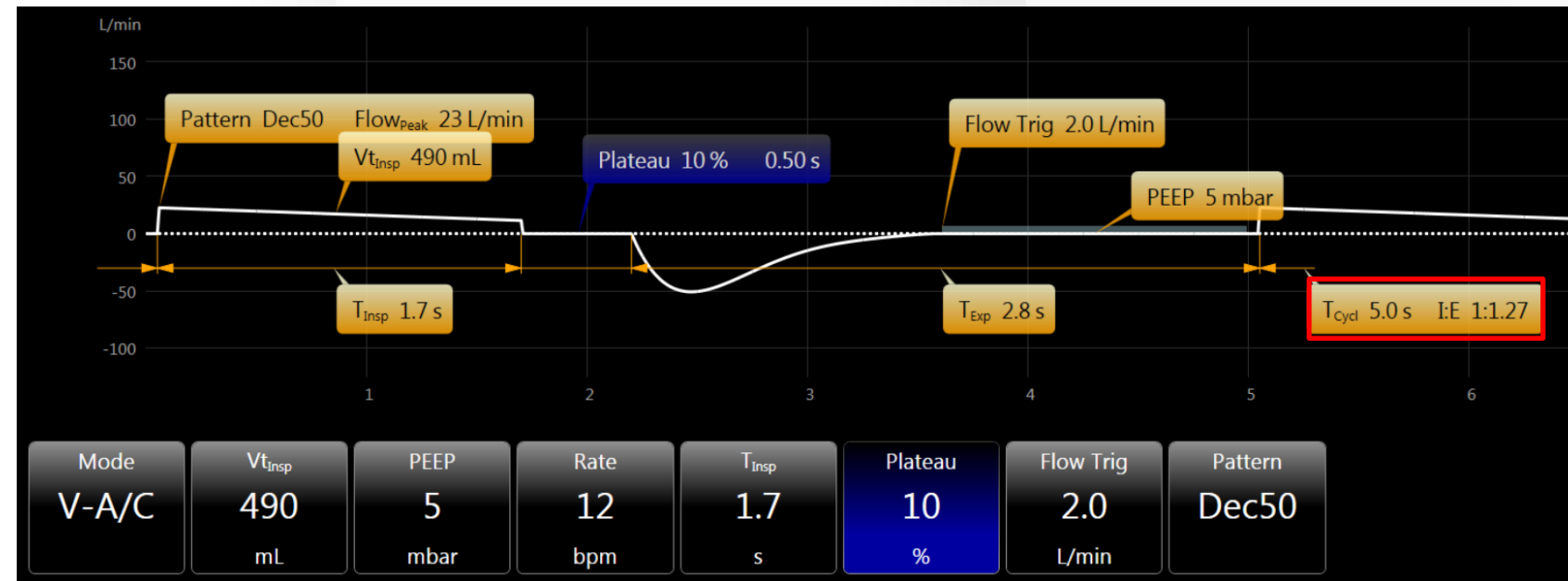
Tidal volume in CPAP with «A» circuit

# Updated I:E graphic in Settings Assist for volume controlled modes

In volume controlled modes, the settings graphic has been updated to calculate I:E ratios by including the plateau time in the inspiratory time setting.



Settings Assist in volume controlled modes with 6.0 with excluded plateau time for I:E ratio calculation



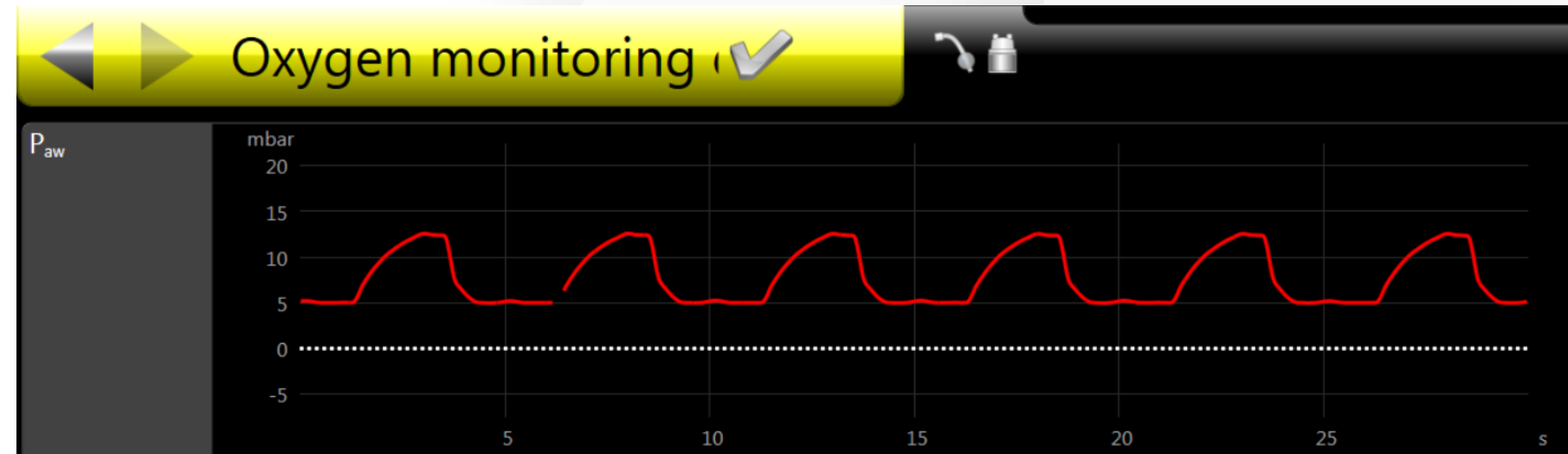
Settings Assist in volume controlled modes with 6.1. Plateau time is now included in I:E ratio calculation

# Alarm priority change for disabled oxygen sensor

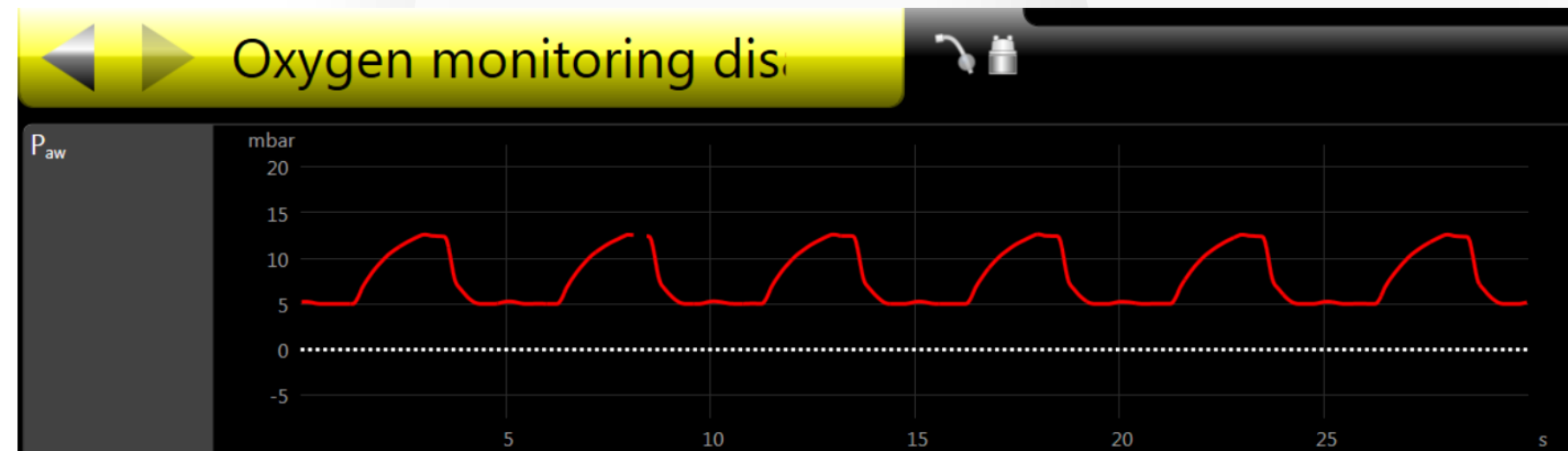
When oxygen monitoring has been disabled in Configuration Assist, a medium priority alarm is triggered. Initially this alarm is acoustical and visual until the alarm is acknowledged by touching the checkmark.

After that the alarm will visually stay active until the oxygen sensor is enabled again. The alarm will stay active after restart.

It is important to monitor oxygen with an external oxygen measurement device and to replace and activate the oxygen sensor as soon as possible.



Oxygen monitoring disabled alarm (ID225) alarms acoustically until acknowledged

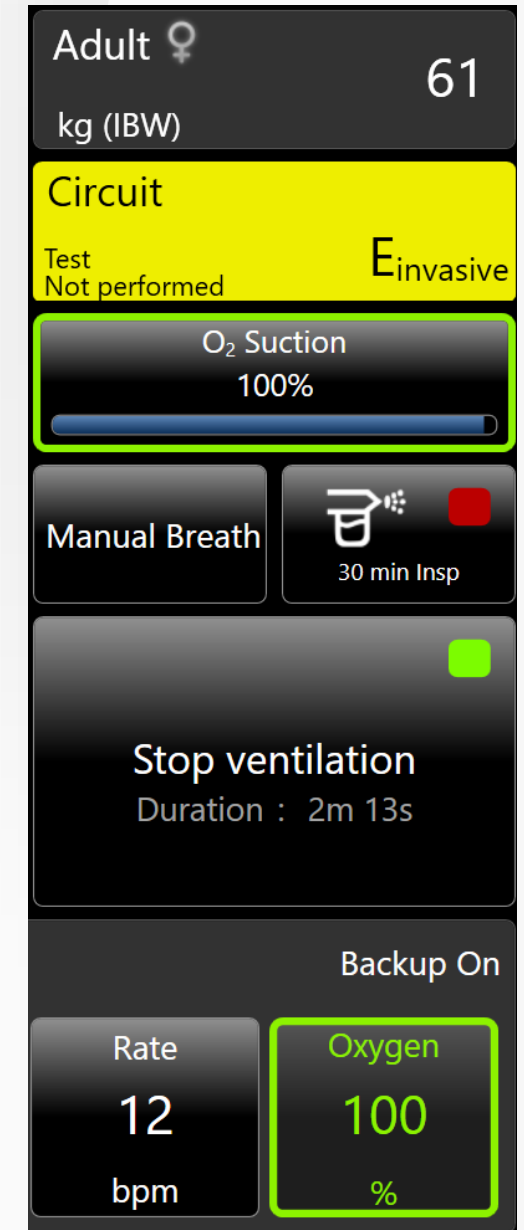


Oxygen monitoring disabled alarm (ID225) stays silently active after confirmation

# O<sub>2</sub> suction displays temporarily delivered FiO<sub>2</sub>

When an O<sub>2</sub> suction maneuver is performed, the 6.1 software highlights the active maneuver and displays the temporarily delivered oxygen during the suction maneuver or O<sub>2</sub> flush.

After the maneuver, the FiO<sub>2</sub> setting switches back to the previous value.



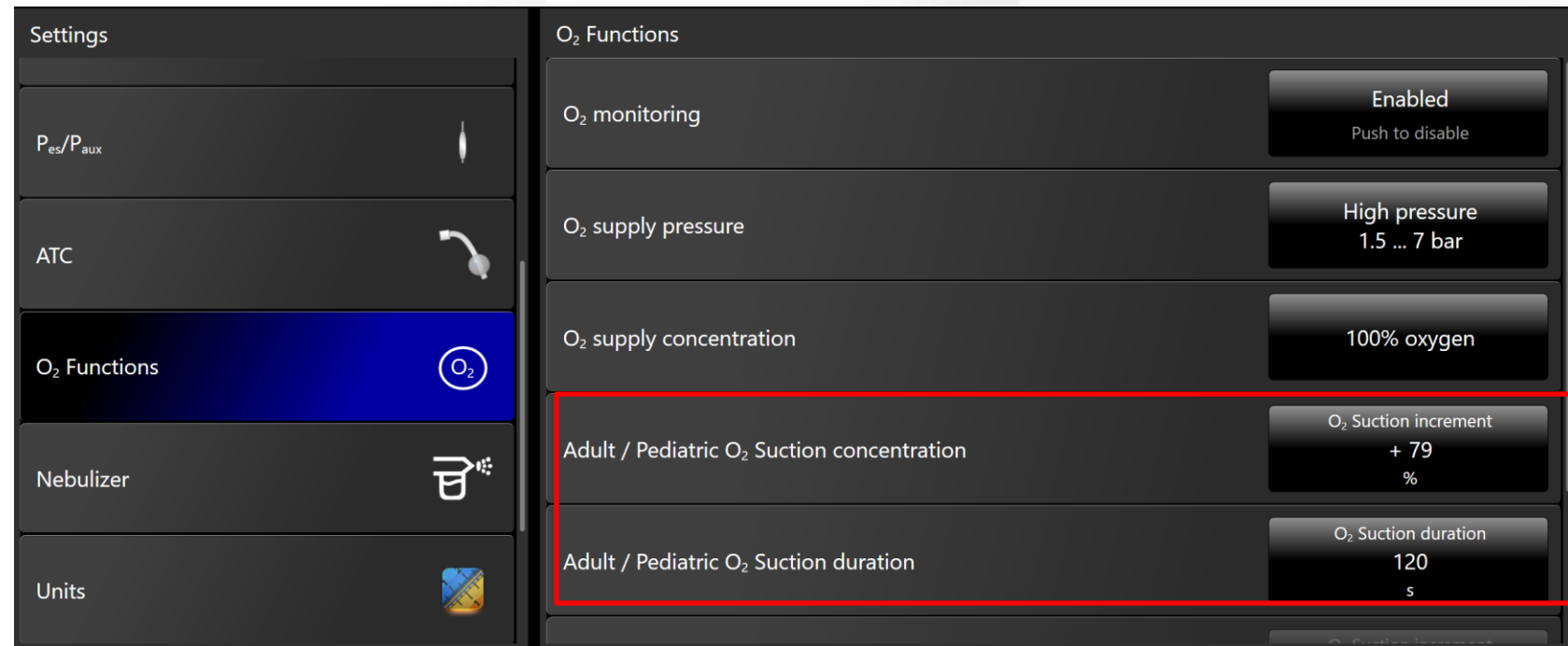
O<sub>2</sub> suction now highlighted the current oxygen concentration during suction maneuver

# O<sub>2</sub> suction configurable for adult and pediatric patients

High oxygen concentration can be harmful, when applied too often. So with the new bellavista software, the O<sub>2</sub> suction concentration and duration can be configured like for neonatal patients.

The duration can be adjusted between 60 and 120 seconds. The O<sub>2</sub> suction concentration can be adjusted between +5-+79% oxygen.

The setting is persistent, so once configured it will apply to all settings and profiles.



O<sub>2</sub> suction concentration and duration are now configurable for adult and pediatric patients



# New Alarms -Eventlog

Any applied user input, start up and tests of the device will be stored in the Eventlog of bellavista. All alarms and events occurring are saved. The alarm and event list remains saved even in the event of a power failure.

The stored alarms and events will not remain in case of a software update.

The captured events are:

- Ventilation settings
- Configuration changes
- Connectivity (SpO2, CO2, HL7 etc.)
- Alarm settings and muting
- Start up/Shutdown
- Calibrations
- Export/Import, Download

Up to 5000 events and alarms are stored.

Device events like e.g. changes in the Configuration Assist are displayed with the «Device Event» icon



Patient events like e.g. changes of ventilation settings are displayed with the «Patient Event» icon



Various events which do not fall under the abovementioned events are summarized with the «Various Event» icon



# Alarms -Eventlog

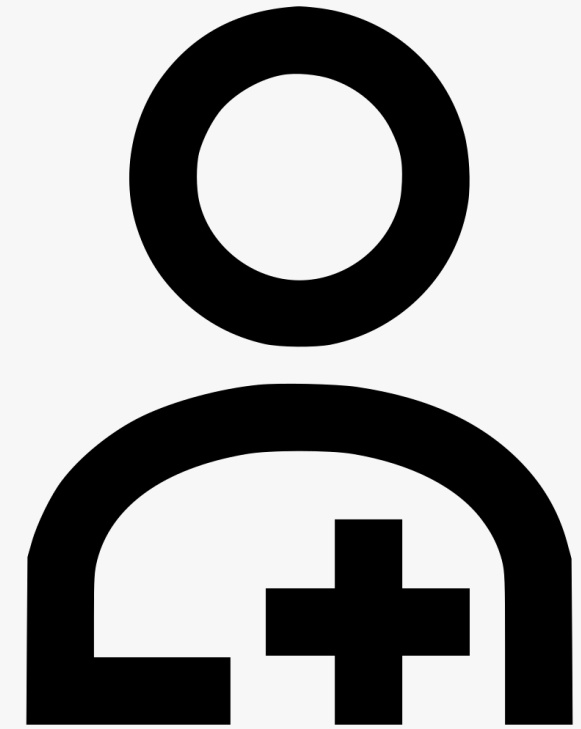
Description of the Alarms-Eventlog screen



| Symbol | Description                                   |
|--------|---|
| 1      | Event type                                    |
| 2      | Category (Alarms, Events)                     |
| 3      | Date and time                                 |
| 4      | Alarm or Event Message                        |
| 5      | Tabs for alarms or events only, or all events |
| 6      | Page counter                                  |
| 7      | Number of total entries                       |

# Updated Nurse call behavior

When nurse call is connected to bellavista, the alarm on the nurse call is muted when the alarm is muted on bellavista.





## 4. Service menu

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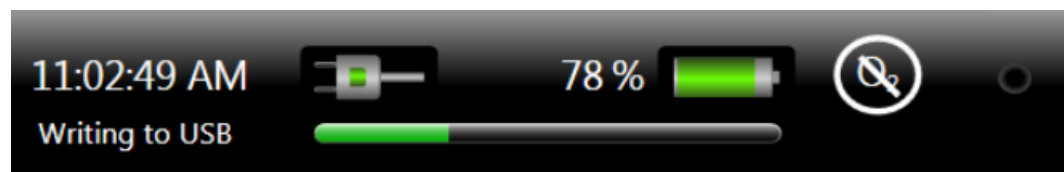
# "Export all data" button

To capture all data available on bellavista™ at once we created the "Export all data" button in the service menu (password protected)

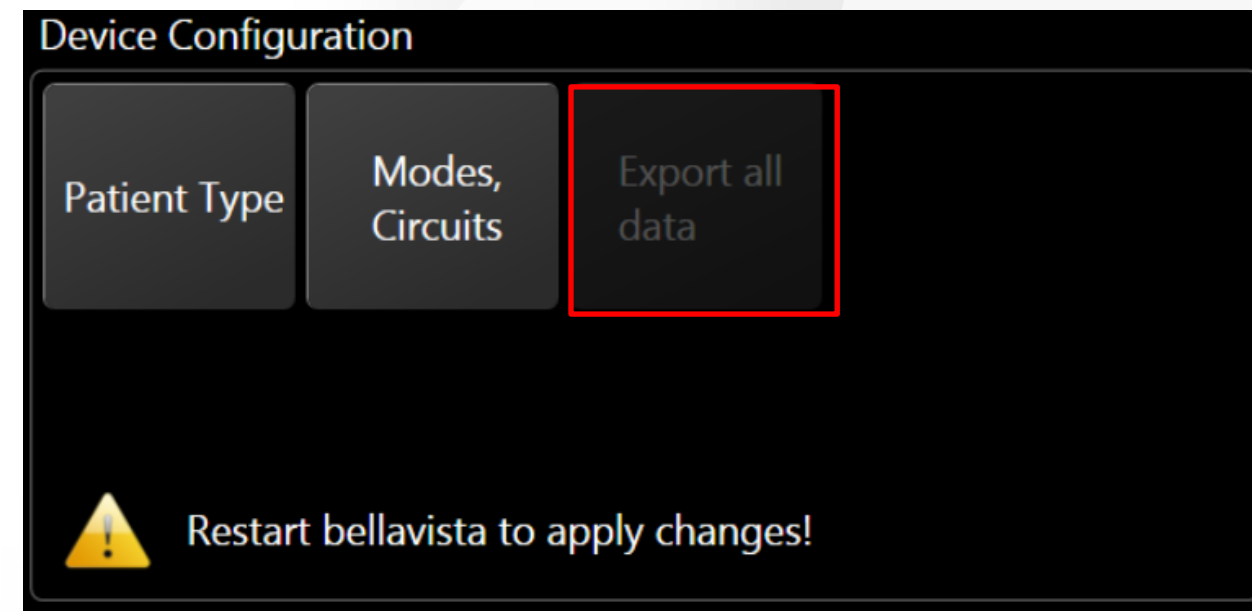
When bellavista™ is in Standby and by entering the service menu, the "Export all data" button is located in the device configuration section. When a USB stick is plugged in, the button will be activated.

Once touched, the download process will start. Please note that the USB stick does not need to be "bellavista ready". Due to the possibly significant amount of data the download process can take up to 20 minutes, so please download only when the ventilator is not urgently needed. After the download is performed a confirmation window will show up and the USB stick can be removed.

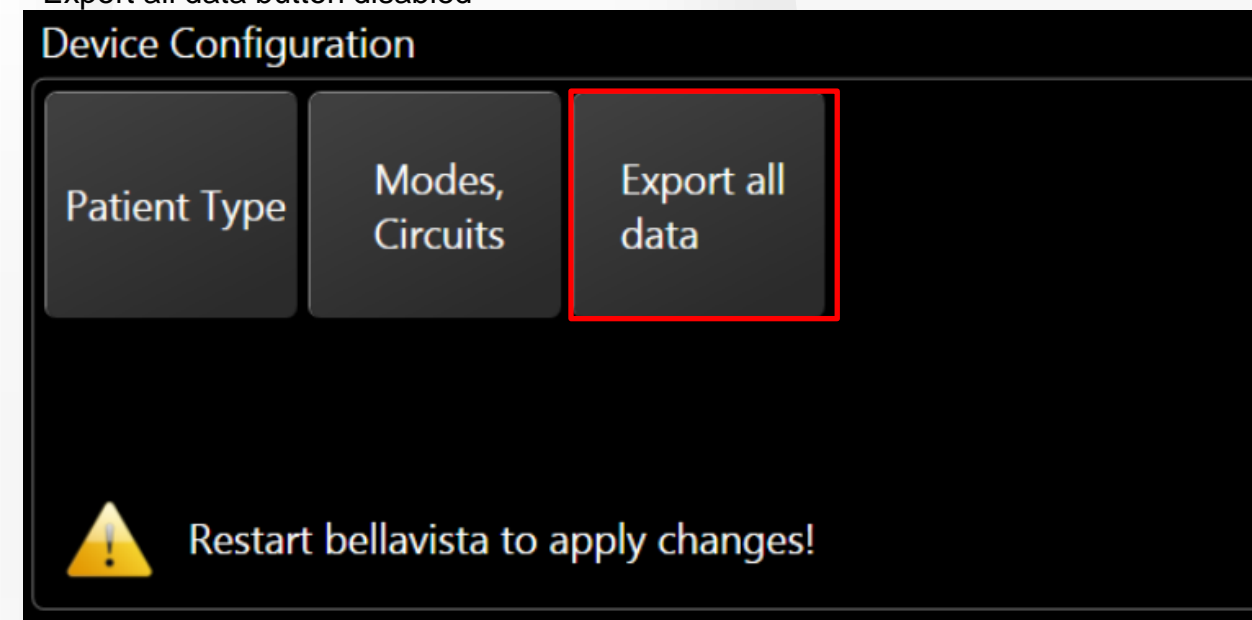
A .zip file is created now which can be sent over e-mail or uploaded to a cloud platform to be processed or analysed by TechSupport, Clinical Support or Product Management.



All data download in progress



Export all data button disabled



After plugging an USB stick into bellavista the Export button is enabled



# Knowledge check

# 1. How many events and alarms are stored in the new Alarms-Event Log?

- a. 1000 events
- b. 2000 alarms only
- c. 5000 events and alarms
- d. Alarms and events are stored over a months period

## 2. Weight for neonatal can be set now between...?

- a. 0-5 kg
- b. 0.5-10 kg
- c. 5-50 kg
- d. 0.3-30 kg



### 3. TargetVent modes can still be switched off within the mode setting.

- a. True
- b. False

## 4. Performed circuit tests are only voided when...

- a. Changing the patient group
- b. Changing the circuit type
- c. Changing the ventilation type
- d. Changing the patient group and circuit type
- e. Circuit tests can't be voided anymore

## 5. The new minimal tidal volume for adult patients is?

- a. 250 mL
- b. 110 mL
- c. 150 mL
- d. 300 mL
- e. is calculated with IBW



## Global Headquarters

Vyairé Medical, Inc.  
26125 N. Riverwoods Blvd.  
Mettawa, IL 60045  
USA

[vyaire.com](http://vyaire.com)

