User manual version 3.5

qube**CONTROL**

Version of 01/05/2022

Welcome to SKILLQUBE

We are delighted that you have chosen to become a part of the worldwide network of SKILLQUBE. We at SKILLQUBE have made it our mission to revolutionise simulations in (pre-)clinical care. With our Mission360, we want to sustainably support all areas of learning with relevant input — and the learning cycle is at the heart of our mission.
 In addition to the qubeSERIES simulation systems, which include our ECG simulators, ventilator simulators and audio/video debriefing systems, we also offer realistic simulation phantoms such as the SIMBODIES. In addition to AHA-certified training programmes such as ACLS, PALS and BLS, we also offer our own simulation trainer courses. We have put all our expertise as well as our heart and soul into the development of our simulation products with the aim of offering you the best and most successful training experience possible. We are constantly developing and expanding our range of products to help make simulations part of your everyday life.

SKILLQUBE - Passion for Innovation

Contents

General information

Overview

In order to be able to offer high-quality training to all participants, different products are combined in the training. However, the greatest challenge in this context is to combine the available technology with the training and to incorporate it in such a way that the learning objectives are achieved.

Please make sure that the software is always up-to-date to guarantee a safe and reliable use. You can see which version of the software is currently installed on the right below the software logo.

Using Apple as a terminal device

Since the assessment software can run on various terminal devices, such as iPhone, iPod, iPad, etc., please consult the respective manual in case of questions about your terminal device:

https://support.apple.com/de_DE/manuals/

Follow the following links to look up important functions that are used regularly:

Wi-Fi connection:
https://support.apple.com/de-de/guide/ipad/ipad2db29c3a/ipados

Opening the control centre on the iPad:
https://support.apple.com/de-de/HT210974

Downloading apps from the AppStore:
https://support.apple.com/de-de/guide/ipad/ipad9b4cea76/ipados

Turning the iPad on/off:
https://support.apple.com/de-lu/guide/ipad/ipad63d30b5a/ipados
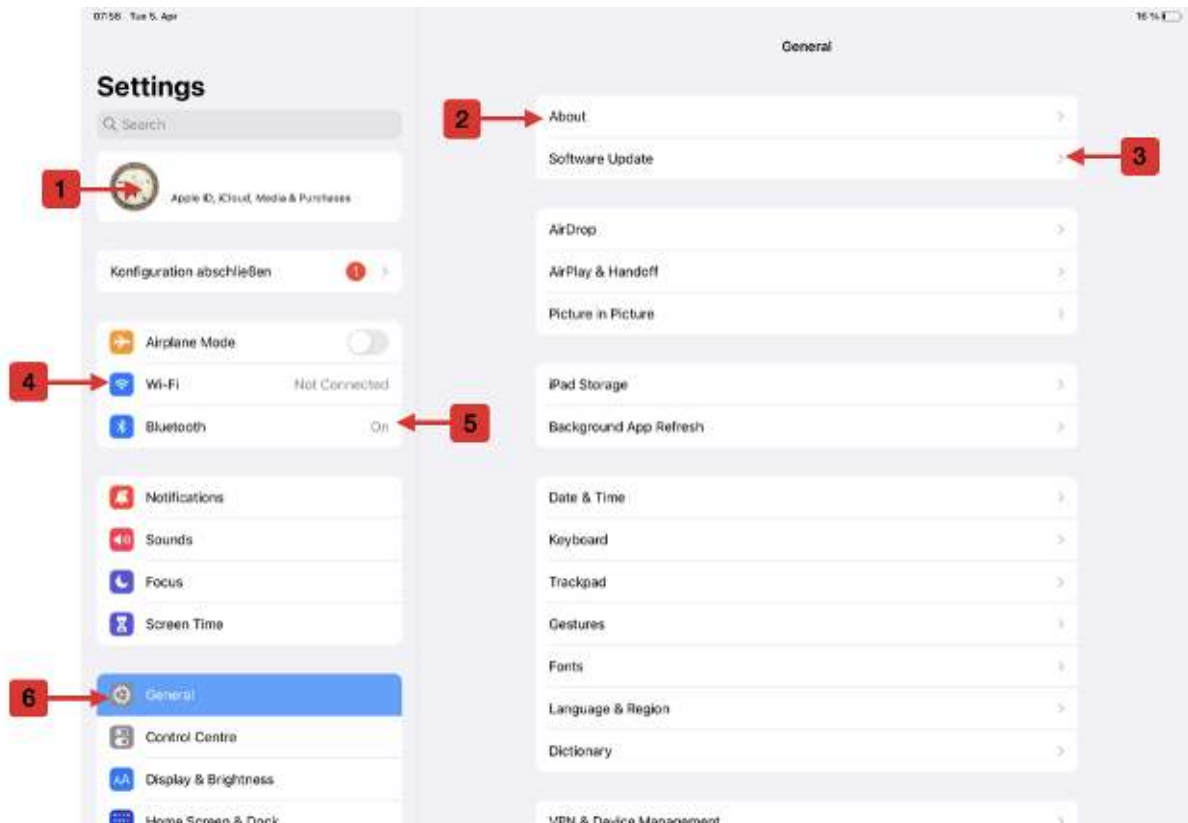
Information about the iPad

If you are using a SKILLQUBE system, you need to have knowledge about the software as well as the iPad device itself. All settings that are made on the iPad are crucial for a successful training as it can be influenced by them. Below, you will find general information about the iPad and its settings.


1. AppleID – This is created by you or the organisation
2. About – Here you will find the name of the iPad. This information is important, for example, when contacting the support.
3. Software update and version – Here, you will find information about the current software version of the terminal device and you can install updates.
4. Wi-Fi settings – Here, you can connect and delete Wi-Fi networks
5. Turn on and manage Bluetooth
6. General settings of the iPad

Wi-Fi

During the training, it must be ensured that the Wi-Fi network provided by SKILLQUBE is used (via the Wi-Fi router included in the system). If you have connected to another Wi-Fi network, you must delete it again (https://support.apple.com/de-de/HT208941).

qubeCONTROL app settings

The app settings are settings that can be set specifically for the apps used. We use them for setting user-specific contents of monitors and the controller. Below, you will find related information:
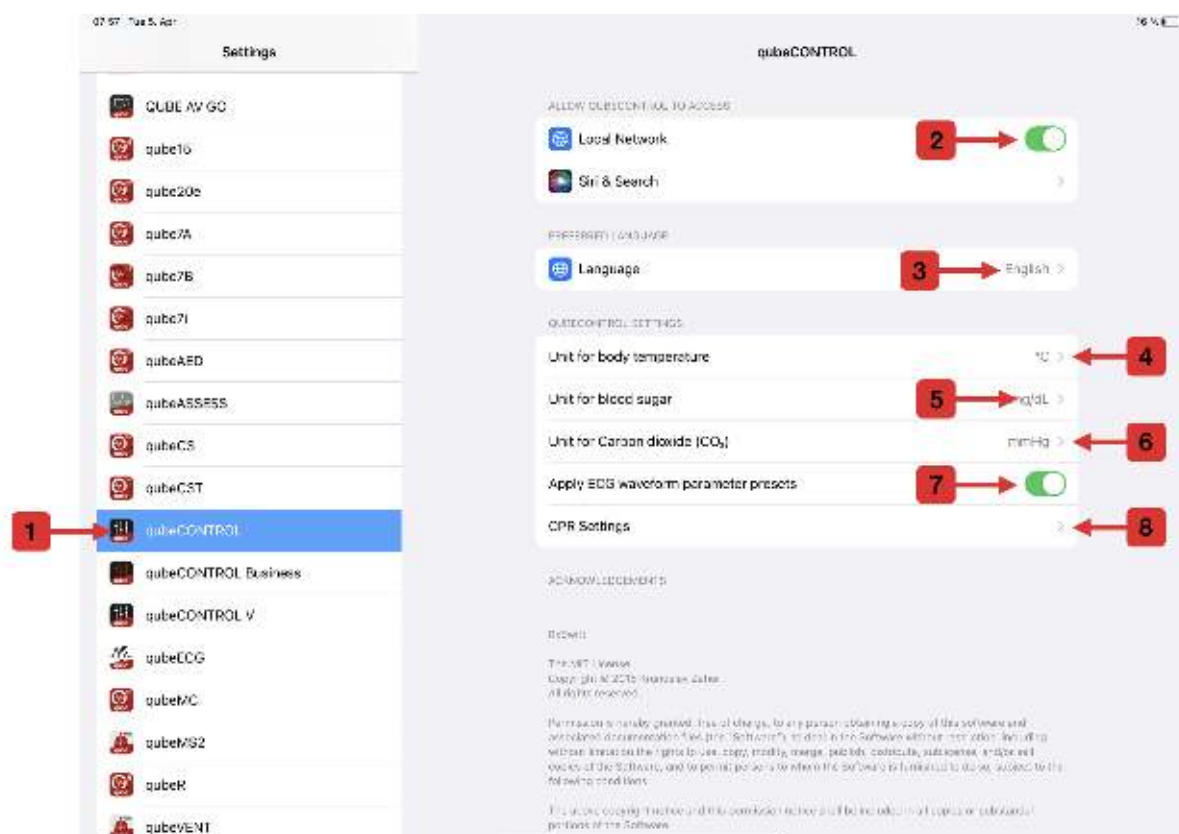
1. Selection of the app to be set
2. Local Network – Local networks must always be turned on so that the apps can be connected and found.
3. Language – Set your preferred language for the app.
4. Unit for body temperature – Choose between °F and °C.
5. Unit for blood sugar – Choose between mg/dl and mmol/l.
6. Unit for carbon dioxide – Choose between mmHg and kPa.
7. ECG parameter presets – When selecting an ECG in the app, preset vital values are automatically applied. **Power tip: If you have multiple systems in use, make identical settings! This will spare your trainers unnecessary confusion.**
8. Settings of the reanimation standards such as pressure depth and speed

Monitors app settings

The monitors have different settings just like the controller. These may vary slightly depending on the monitor.
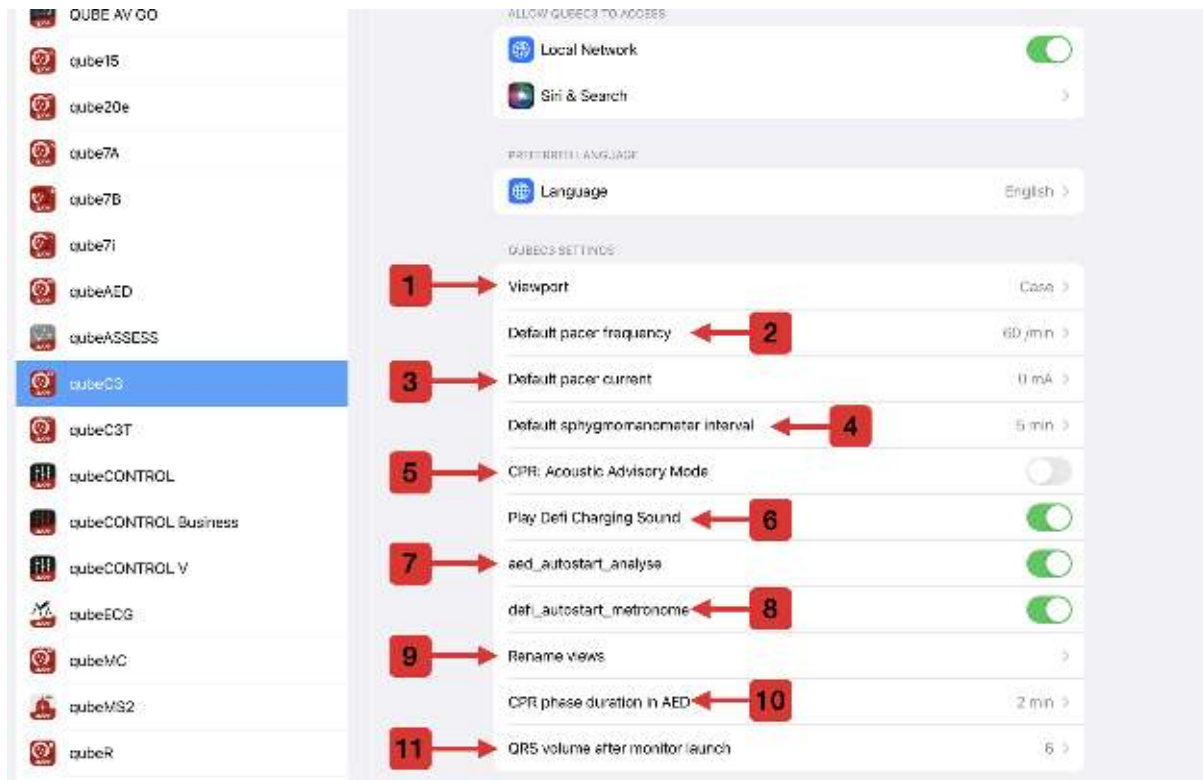
1. Viewport of the system – Depending on the size of the iPad, the display of the monitor can be enlarged or reduced.
2. Default desired pacer frequency
3. Default mA – Power at the start of the pacer
4. Default interval of the non-invasive blood pressure measurement
5. Turning the CPR acoustic advisory mode on/off
6. Turning the charging sound of the defibrillator on/off
7. Turning the AED autostart analysis on/ off
8. Turning the automatic start of the metronome on/off
9. Renaming views on the monitor
10. CPR phase duration in AED mode.
11. Set volume at monitor launch

Controller overview

1. Login to the cloud – This is required to be able to download the scenarios created in the qubeCLOUD and then use them on the controller.
2. Activating and deactivating the vital parameters on the monitor
3. Connection centre – Here you can connect all monitors, qubeASSESS and all sensors to the device
4. CPR dashboard – If the CPR sensor is connected, the pressure depth and speed are shown here
5. Pressing "Start" will start a scenario. During the current scenario, the set values are sent to the monitor by pressing this button (which is then named "Send").
6. The vital values can be adjusted via the sliders and selecting the waveforms
7. Control elements for qubeASSESS. Here you can set all the values you want to display in the app.
8. Control element for the ventilation device. Use this to control the ventilation device and select clinical pictures with stored values.
9. Settings for reanimation with activation of artefacts and further information for the trainer
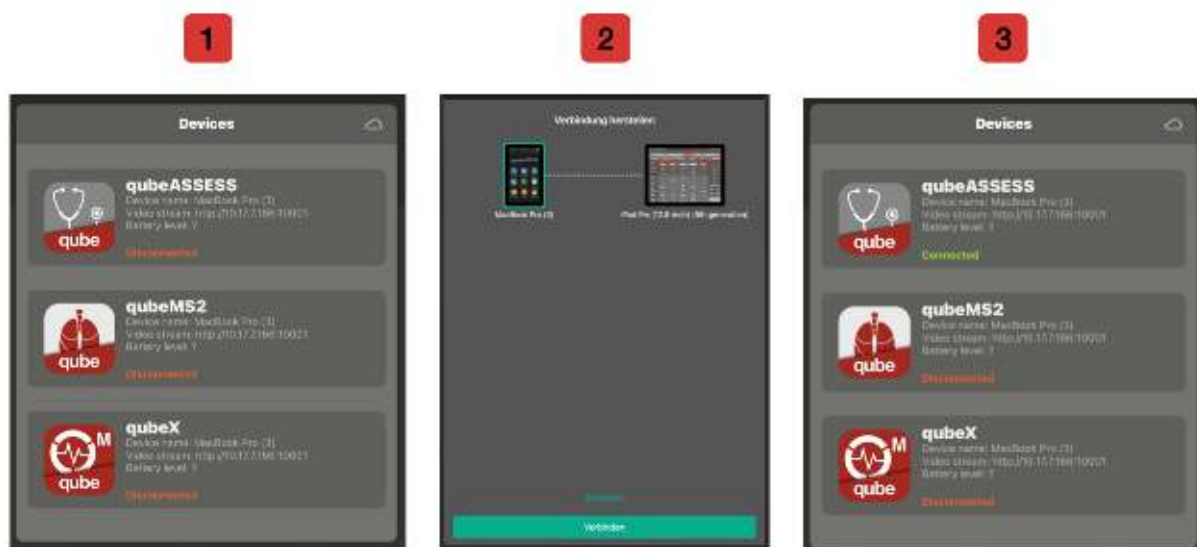
Connecting the monitors

For the system to function properly, the required devices must be connected to the monitor. In addition to the monitor, this also includes the ventilation device and qubeASSESS. The sensors are also connected in this menu.

Connecting the monitor, assessment and ventilation device

To connect the monitor, press the red flashing "Connect Device" field on the upper right. All devices that are available in the vicinity are now displayed (sensors are only searched and displayed after a monitor has been successfully connected).
After you have pressed the "Connect device" field, the dialogue is opened as shown in the figure. Now, tap the desired device. You will then be prompted to confirm the connection to the device. This is shown below in the figure with the steps 1, 2 and 3. After successful connection, the connected device is indicated in green.


Connecting CPR sensors

Once a monitor is connected, another button appears in the dialogue. The available sensors are searched by pressing this button. The sensor is selected by tapping on it. Where applicable, the sensor must be calibrated before use. **Power tip: Calibrate the sensor before the training as this can be a little time-consuming.**

qubeASSESS control

qubeASSESS displays all values that can be important for a scenario but cannot be displayed on the monitor.

Temperature and blood sugar measurement

The qubeASSESS software can be used to display the temperature and blood sugar. To set these values, tap on the desired field (1) to open the corresponding menu. Here you can adjust the value using the slider (2).
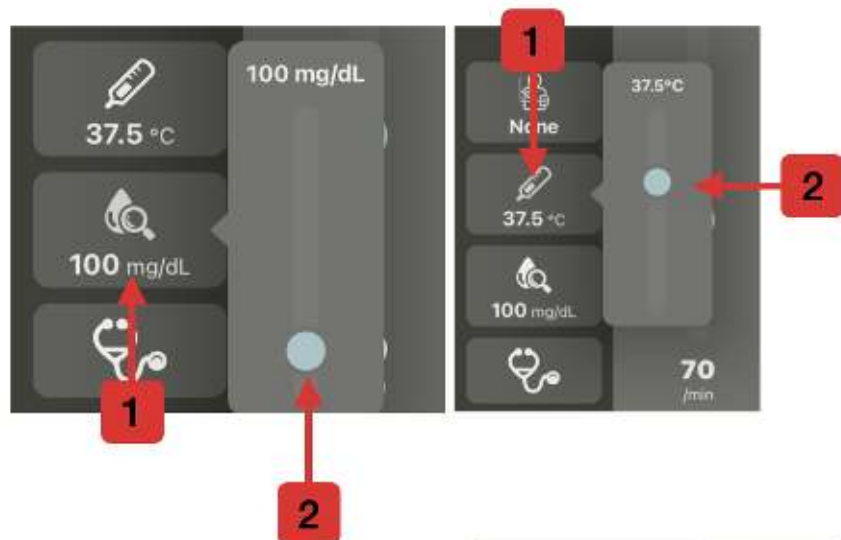
Auscultation

When opening the auscultation on qubeASSESS, you can listen to various auscultation sounds. The stethoscope (1) icon opens the view with the auscultation options. Tap on the respective fields to change the sounds: (2) for the abdomen sounds, (3) for the heart sounds or (4) for the lung sounds.
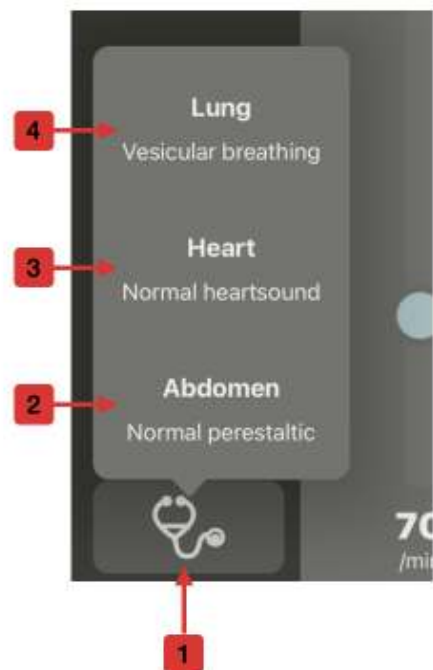
Sending media

The controller can be used to send various media available on the iPad or integrated in a scenario to qubeASSESS or the monitor. If both a monitor and the assessment are connected, they are sent to both devices. If only one of them is connected, the media are only sent to the connected device.
Press (1) to open the media available on the iPad (2). Once you have selected the medium you want to send, a dialogue will open asking if you want to send the picture or not (3).

Pager and CO detector

The pager & room CO (1) menu enables you to activate either the pager or the CO detector on qubeASSESS. The tab bar allows you to select what you want to set. Tapping on the (2) will open the pager. Here you can enter free texts (4) which are then displayed on the pager. Tap on (3) to open the CO alarm menu and set the value via the slider (5).
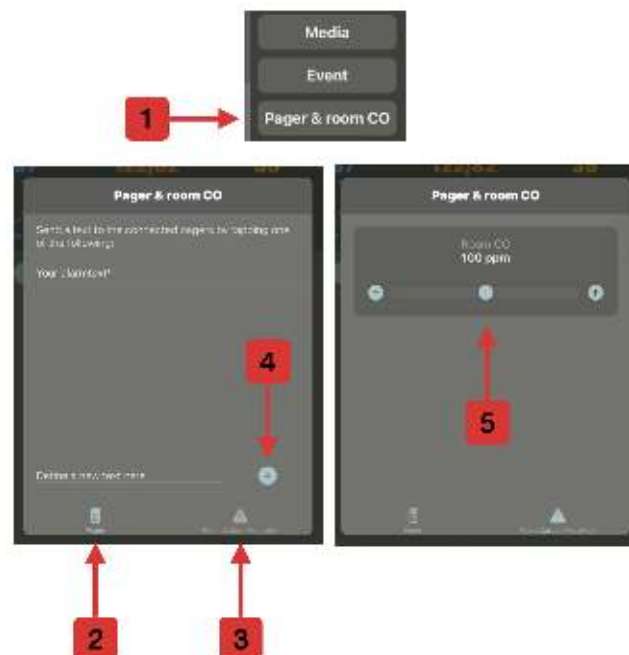
Adjusting the vital values and waveforms

The system has a variety of waveforms and setting options that are described in more detail below.

1. Initially, the buttons in the upper area are all grey, as shown in (2). Tapping the individual buttons activates them and they light up red. For the ECG, it is also asked which ECG electrodes are used. This can be changed at any time later on.
2. View of the disabled mode
3. Slider for setting the values. The value can be adjusted upwards and downwards using the slider. For the blood pressure, there are 2 sliders with which the systolic and diastolic values can be adjusted. When the lock (5) is closed, they are dependent of each other. If the lock (5) is open, they can be moved independently of each other.
4. Tapping on the waveform opens the context menu for the selection of further waveforms as well as ECG variations. These will be described in more detail below.
5. Turning the dependency of the systole and the diastole on/off
6. Selecting the etCO2 waveform

When turning off the values, you are asked again whether you really want to turn them off. This has to be confirmed separately to avoid accidental deactivations.

Turning the ECG on

When tapping on "ECG" (1) to turn it on, a dialogue box is opened in which you have to select which electrodes are connected (2). This is due to the fact that the behaviour of the monitors varies depending on the cables connected. The type of the connected electrodes can be changed by tapping on (3).

- **Regular pads** only – Only defibrillation electrodes are connected
- CPR feedback pads only – Defibrillation electrodes are connected to allow CPR feedback to be displayed if the monitor allows this.
- **6 leads ECG** – Only one 6 leads ECG is connected. Accordingly, only the leads according to Einthoven and Goldberger are displayed.
- **12 leads ECG** – All leads according to Einthoven, Goldberger and Wilson can be displayed.
- **6 leads ECG & regular pads** – A 6 leads ECG (see above) and the normal defibrillation electrodes are connected
- **12 leads ECG & regular pads** - A 12 leads ECG (see above) and the normal defibrillation electrodes are connected
- 6 leads ECG & CPR pads - A 6 leads ECG (see above) with defibrillation electrodes which can display CPR feedback are connected
- 12 leads ECG & CPR pads - A 12 leads ECG (see above) with defibrillation electrodes which can display CPR feedback are connected
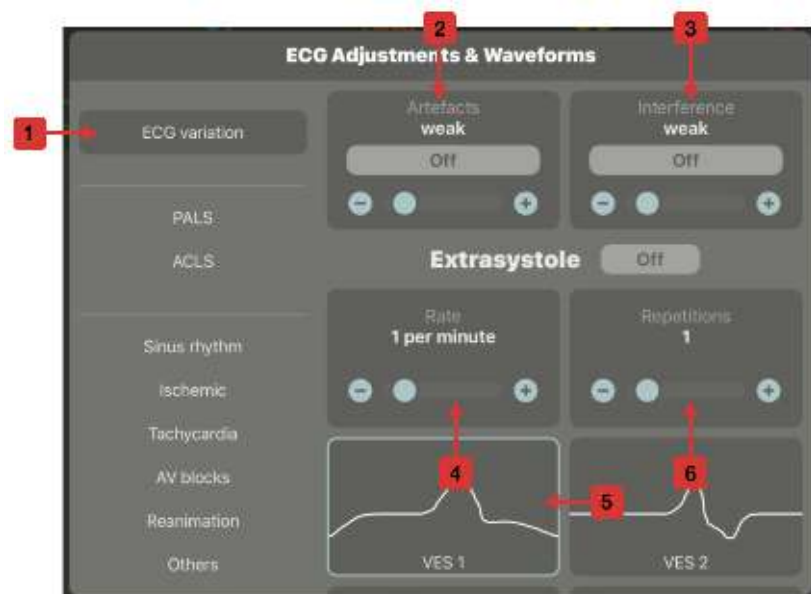
ECG waveforms

In order to be able to increase the realism of the simulation, different ECG waveforms as well as different variations such as extrasystoles are required for the selection. When opening the ECG waveforms as described above, the menu in which all waveforms can be selected is displayed. The ECG variations can be set by tapping on (1). They are discussed in more detail in the following chapter. When tapping on PALS or ACLS (2), a selection of ECGs which are usually expected in these course formats is displayed. Below this, you will find various folders with diverse ECGs (3). In order to select an ECG, press the desired ECG (4) on the right.
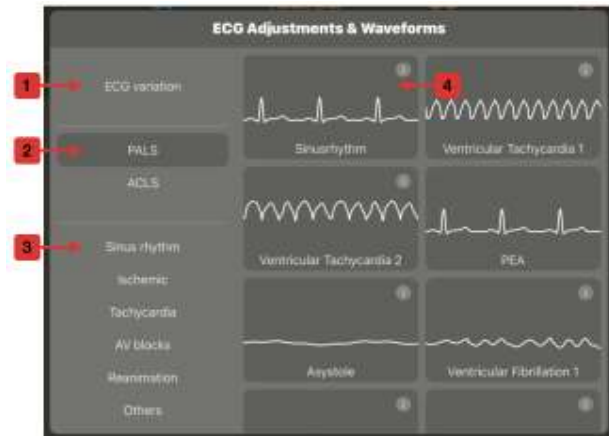

ECG variations

Once you have selected the variations (1), a menu opens up in which you can adjust them. Here you can set ECG artefacts (2) as well as electrical faults (3), which can be adjusted continuously via the slider. It is also possible to activate extrasystoles. You can set how often they should be displayed per minute (4) and with which repetition (6). In order to display more variations in the extrasystoles, different ones can be selected (5).

ICU intensive care values

In addition to the intraarterial blood pressure measurement, the menu for selecting the intensive care values is opened via the selection button of the waveforms. The numerical values are displayed on qubeASSESS as well as on the monitors that have this capability.

Once you have opened the menu, the numerical parameters (1) will be displayed directly. Like all other values, you can turn them on and off (2) and change the value via the slider (3). In addition to the numerical fields, you also have a selection of the waveforms you can display (4).
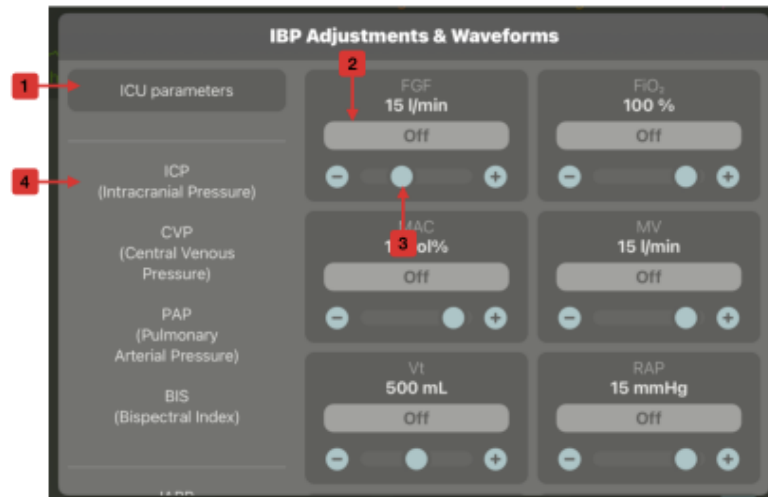
Like all other values, you can turn the waveforms on and off via the button (5). The waveforms have different settings that can be made. The mean value can be set via the slider (6) and the size of the waveform can be defined via the amplitude (7). In order to be able to simulate variations, it is possible to select different waveforms (8).

A special waveform is the pulmonary artery pressure. Instead of the amplitude and the mean value, you have to adjust the systolic and diastolic pressures which define the height of the waveform.
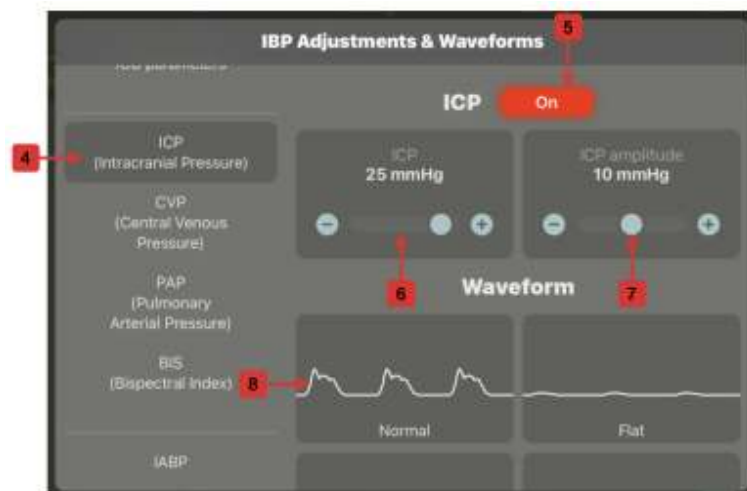

Sending data

After you have made all settings, you can send the data. This can be done in the lower right corner of the controller. If the field is grey (1), no new data is available. If the field is no

longer greyed out (2), there is a data record waiting to be sent. A trend time can be set by pressing + and -. This causes the newly set value not to increase or decrease immediately but over the set time.
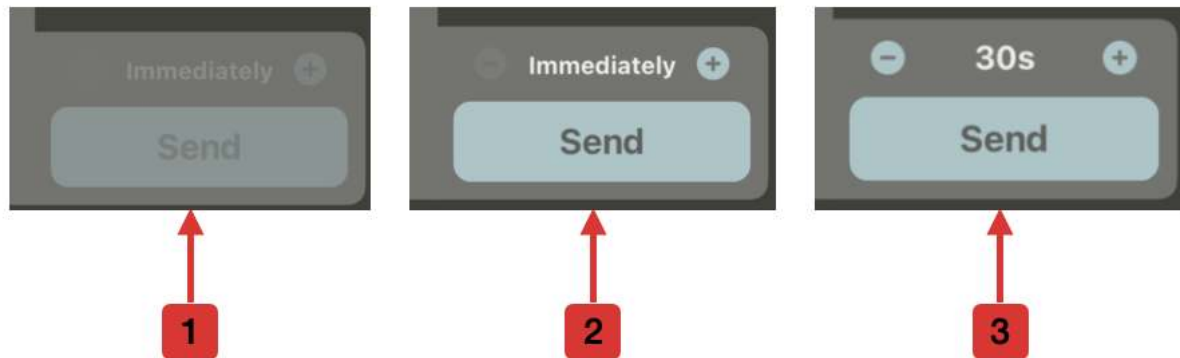

If you want to cancel the trend you have to move the slider. This opens a dialogue that asks you whether you want to cancel or continue the trend.

Manual CPR

The controller has various functions in order to support the trainer during the reanimation. You can bring in each rhythm as a pulseless electrical activity (1). Here, all values – except for the heart rate – immediately fall to 0. In a reanimation scenario, you can access the manual CPR dashboard (2). During the chest compressions, you can bring in artefacts (3, 4) which are then automatically displayed in the monitor.
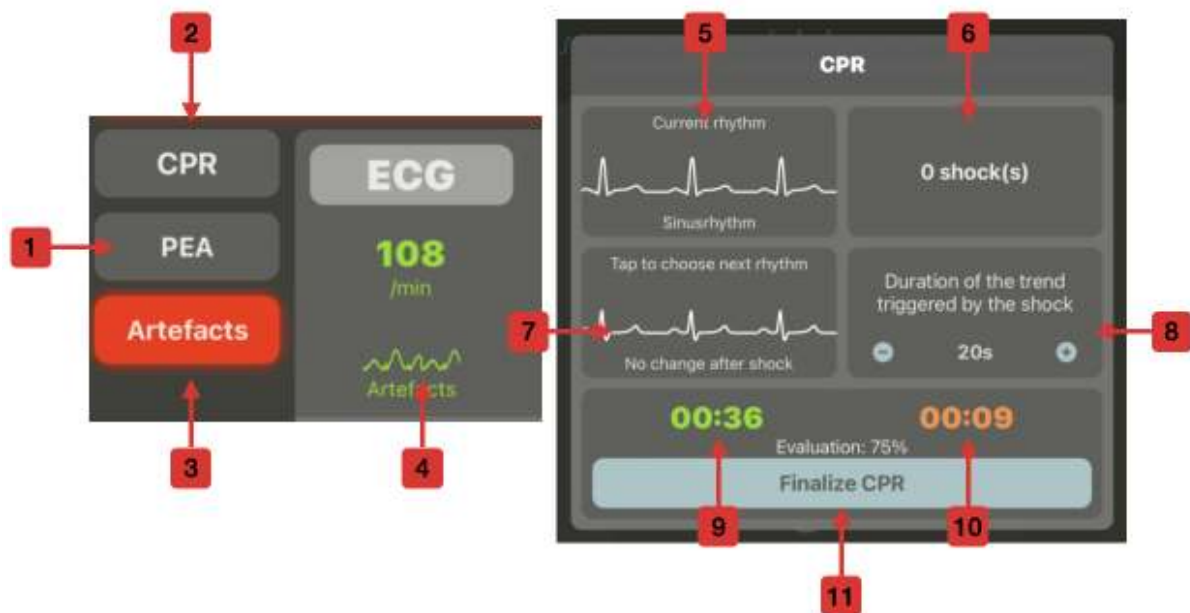

You will find various kinds of information in the manual CPR dashboard. For instance, the current rhythm (5) as well as the number of shocks delivered (6) are displayed. Trainers can define which rhythm should be automatically simulated after a defibrillation (7). Here, there is also the possibility of defining a time profile (8). This means that during the next defibrillation the chosen rhythm is applied and the vital values change over the set time.

In the bottom area, you will find information on the CPR fraction. The green clock (9) runs when the artefacts are switched on. The red clock (10) runs when the artefacts are turned off. In the centre, the chest compression fraction is indicated in per cent, i.e. the ratio of compression time to total reanimation time. When you exit the scenario, also press "Finalize CPR" (11) to save the current values.

Menu and adjustments

In addition to the already known settings, you can also make further settings in the system. You can make settings at the bottom left that are directly related to the scenario and use the menu with logs and other options on the right.

Adjustments

The settings include information and parameters relevant for the scenario. For instance you can set the pacer threshold (1) which defines which current intensity must be set on the monitor so that each spike is answered with a chamber complex. The values can be adjusted using the "+" and "-" buttons and the sliders (3). Likewise, the pulse difference between the electrical and mechanical heart rate can be set by means of the PP difference (2). If there is poor perfusion (4) in the limbs, this can be displayed by pressing the On/Off button. Some monitors are able to measure CO in the blood (5). This can then be displayed by pressing the On/Off button. If the monitor volume is too low at the start of the training, you can increase it via the settings (6).
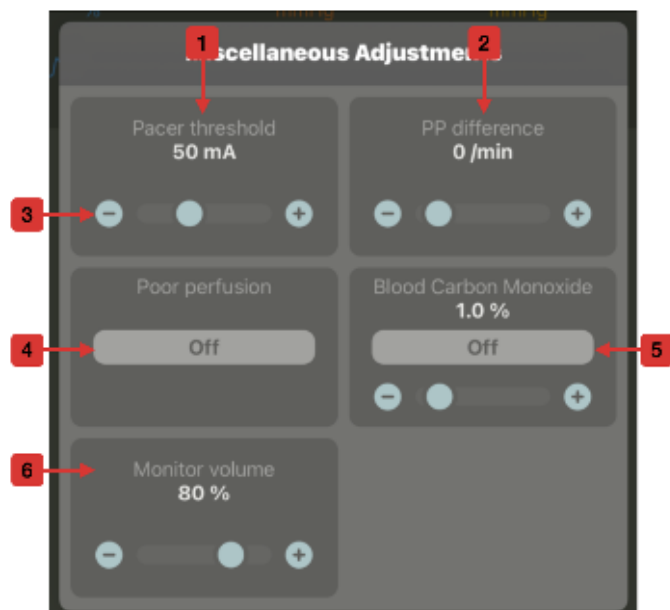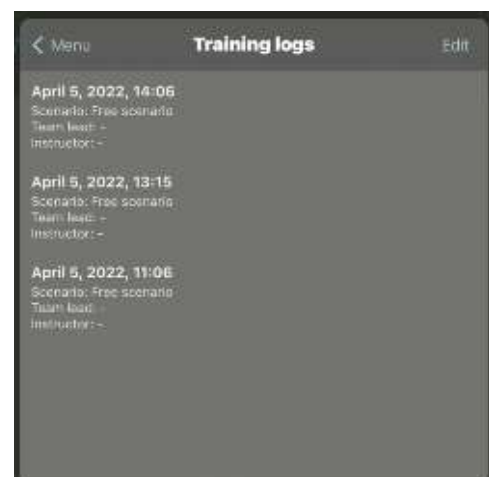
The menu

Tapping on the menu opens an overview with various options.
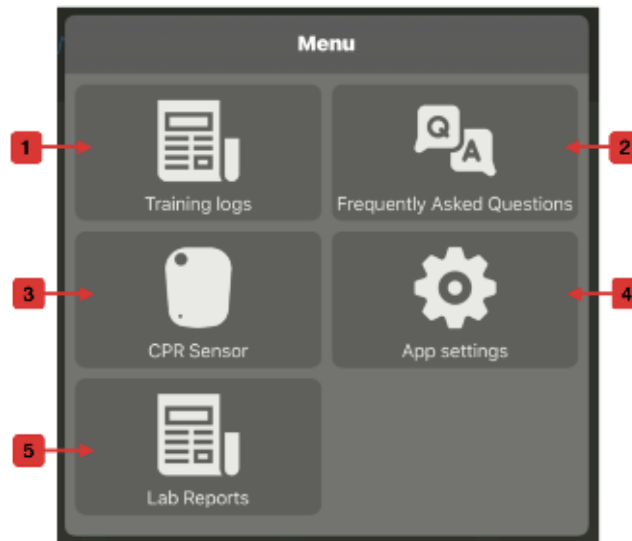
1. Opening the training log. This is created automatically for each scenario.
2. If the iPad has an internet connection, this will direct you to the FAQs
3. Sensor settings: Here you can adjust the pressure depth as well as the speed for adults, children and adolescents
4. Tap this button to open the app settings directly to make further settings (see above).
5. Opens the option to create lab reports and send them to qubeASSESS.

Training logs

The log collects all information that is created during the scenario. The log can be deleted or exported by swiping to the left – similar to an email programme. The log can be exported as a PDF file and then be printed directly or sent via email. Deleted logs are deleted irrevocably and cannot be recovered. If the scenario is recorded with a CPR sensor, an evaluation can also be found in the log. Here, you can switch over via the tab bar at the bottom of the log.

The lab

As described above, you can also send lab reports to qubeASSESS. The respective setting options can be accessed via the menu.

You can select existing labs from the library (1) or create new labs (2). When creating a new lab, you can add new values by pressing "+" (4) or delete existing values by pressing "-" (3). You can change the values according to your preferences using the slider. Press "Export Report" (6) to preview the lab (5). Now, press "Send Report" to send the lab report to qubeASSESS or the monitor.

CPR dashboard with sensor

To make the reanimation training more realistic and easier for the trainer, the CPR sensor can be integrated into the qubeSERIES. It then displays the pressure depth and the rate and supports the automatic switch-on and switch-off of the artefacts.

Connecting the sensor

In order for the sensor to be connected, you must ensure that the controller is connected to the monitor and Bluetooth is activated on all devices. The sensor is connected to the monitor and then sends the data to the controller. Once you have connected a monitor, you can use the "Find Sensor" button in the connection centre to find all sensors in the vicinity. When connecting, the sensor may prompt the trainer to calibrate it. **Power tip: Calibrate the sensor before the start of the training or lesson to avoid stress.**
The calibration process is shown in an animation in the controller and can be performed by the trainers according to the animation. After successful calibration, the sensor is ready for use.

Working with the sensor

If the sensor is connected and the scenario is started, the trainer must also inform the system that the reanimation has begun, so that the recorded data is displayed correctly in the time profile. If this is not ensured, data such as CPR Fraction (CCF) or other data cannot be collected correctly.
If the participants start the CPR and the trainer has forgotten to record this, the system automatically asks whether the CPR is performed after 10 seconds. The data from the last 10 seconds is then taken into account accordingly. The same applies to the termination of the CPR. Here, the trainers are asked whether the CPR is finished after 10 seconds. After confirmation, the last 10 seconds are not evaluated. This ensures that the data is always correct.

Dashboard

The dashboard displays various kinds of information about the reanimation and the sensor. At the top left (1), the battery level of the sensor is displayed, so that the trainer can replace it if the charge level is too low. The total time of the CPR duration is displayed in the upper right corner (2). Press "STOP" (3) to terminate the reanimation and save all collected data. Press "Group" (4) to inform the system that reanimation is now performed. If you have selected participants, they can also be selected by name and the data is then explicitly collected only for them.

Next to it, the CPR fraction is displayed (5) which indicates the thorax compression fraction in percent relative to the total CPR duration. The "Hands Off" (6) and "Hands On" (7) times specify the respective value in numbers.

The field on the left displays the rate (8) and the pressure depth (9). Here, the number of total compressions, the number of compressions in the correct rate and the number of compressions in the correct depth are recorded.

The two graphs in the bottom area of the dashboard indicate whether the participants were in the predetermined frequency range (10) and how the pressure depth (11) was in the course. If the points and bars are in the green area, the actions were correct.

Using scenarios from the cloud

In training, many things happen at the same time, which is why it is important to take as much of the pressure off the trainer while they are controlling the scenario. This can be implemented in a smart way with the scenarios that can be created in the qubeCLOUD. In order for these to be played on qubeCONTROL, you have to log in to the qubeCLOUD with your login details.

Login to the qubeCLOUD

You need the login details in order to log in to the qubeCLOUD. You will receive these from your contact person for the simulation systems. Tap on "Login" at the top right and then enter your username and password in the dialogue that appears. The login is then carried out. An active internet connection must be available for this purpose.

Selecting the scenario and user

Tap "Select Scenario" in the upper area of qubeCONTROL in order to open the scenario selection. If an active internet connection is available, the system starts to update itself. The current status and progress are displayed (1). If the update is not started automatically, you can also activate it manually (3). First, select a scenario you want to simulate (2) and then you can add the participants (4) to the scenario.
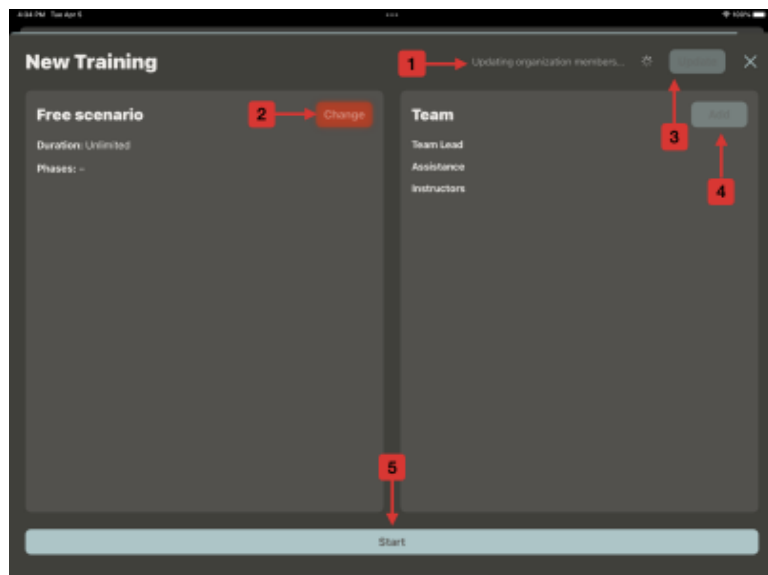
Selecting the scenario

After you have clicked on the flashing red button "Select Scenario", another window is opened in which all scenarios are displayed that are released in the qubeCLOUD. After the scenario is selected, a short text explains what the scenario is about (1). If you do not want to play this scenario, you can tap on "Change" (2) to select another scenario. If you do not want to add participants to the scenario, you can start the scenario by tapping on "Load" (3).


Selecting users

If you want to select users, tap on "Add" (1) on the right. The user selection (2) is opened. By tapping on a participant, you can choose whether they should be the team leader (3), an instructor (4) or an assistant (5) in the scenario. After the selection, tap on "Done" (6). The overview with the participants (7) is then opened again. Tap on "Load" (8) to start the scenario.
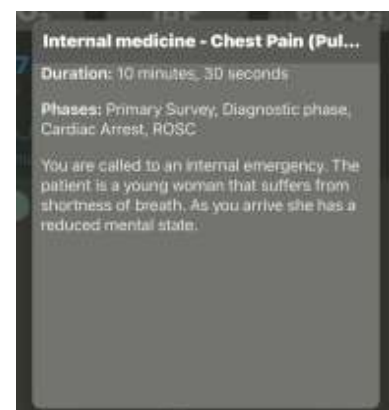
Starting the scenario

After the scenario and users have been selected, the controller starts in the scenario view. All actions that must be executed in the current phase (3, 4, 5, 6) are displayed in the bottom area (1). If an action has been completed, it can be tapped so that it is marked as completed by a white border and noted in the log. If there are icons in the actions, they are automatically marked as completed by the system when the action has been executed (for example, during blood pressure measurement or the ECG printout). At the top left (2) and right (7), the scenario progress and the defined scenario duration are indicated, respectively. If the time is exceeded, the trainer will be informed but they can continue the scenario normally.

In the lower right corner, you can find more information or different contents. The first icon (8) can be tapped to display information about the scenario. With the clipboard icon (9), you can access the checklists stored in the scenario and check them by tapping the individual points. They are then documented in the log as well. With the media icon (10), the media assigned to the scenario can be called up. The pause symbol (11) can be tapped to start, pause or end the scenario.
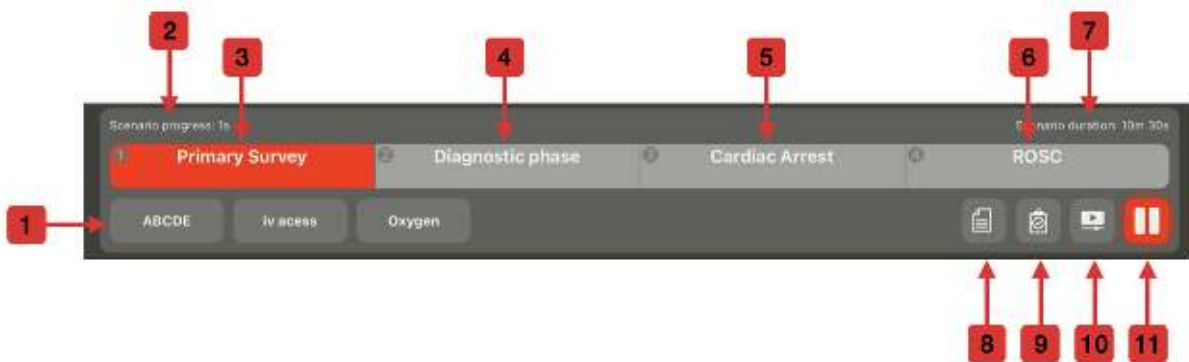

Description (8)

As with the selection of the scenario, the scenario information can be called up again by tapping on the icon (8) – for example for a briefing.

Checklists (9)

Tapping on the corresponding icon will open the window with all the checklists (1) and algorithms (2) assigned to the scenario. The subdivision gives the trainer a quick overview. After selecting the desired checklist, you can uncheck the corresponding points by tapping on them (3). By tapping on "Back", you can get back to the overview and select a new checklist.
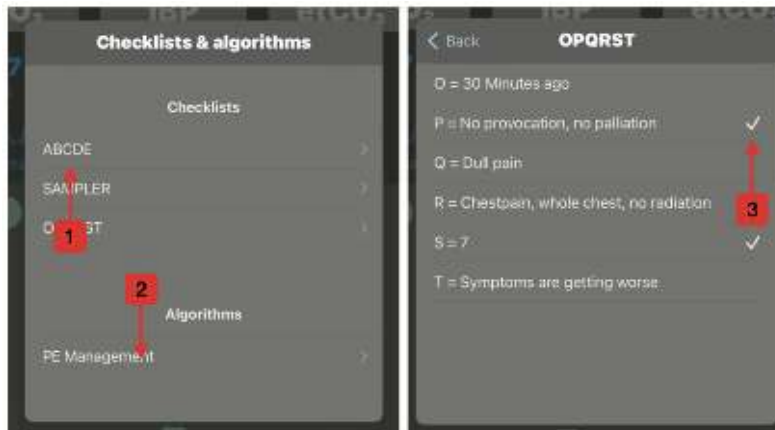
Media (10)

By pressing the media icon (10), the window with the media associated with the scenario will be opened. Sending the media works exactly the same as sending normal iPad media. Here, however, the media are specified directly in the qubeCLOUD and you do not have to search for them. You can send pictures, videos and PDFs as media. To send the medium (1), tap on the desired file and send it to the monitor or qubeASSESS.
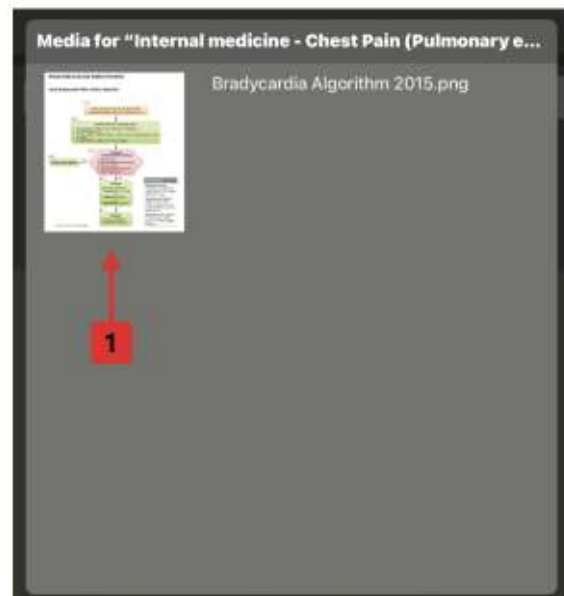
Scenario progress

There are various automations that lead through the scenario to enable the trainer to execute the scenario more easily. As described above, the illustrated actions with the icon (1) are automatically marked as completed when the action has been carried out on the monitor – an ECG has been recorded in this case.

The red colour indicates the current phase. Phases can be changed manually or automatically. When changing the phase manually, the trainer must tap on the phase and confirm that they want to end the current phase and start a new one. When all actions have been marked as completed, the trainer will be informed and asked if the new phase should be started. Phases are changed automatically with each defibrillation or when the programmed duration of a phase has expired.

The duration and trend are set in the cloud and cause physiological transitions to make the simulation more realistic. The trend is displayed by colouring the grey phase red from left to right (3). At the same time, the vital values change from the previous phase to the set values in the current phase. The duration ends a phase.
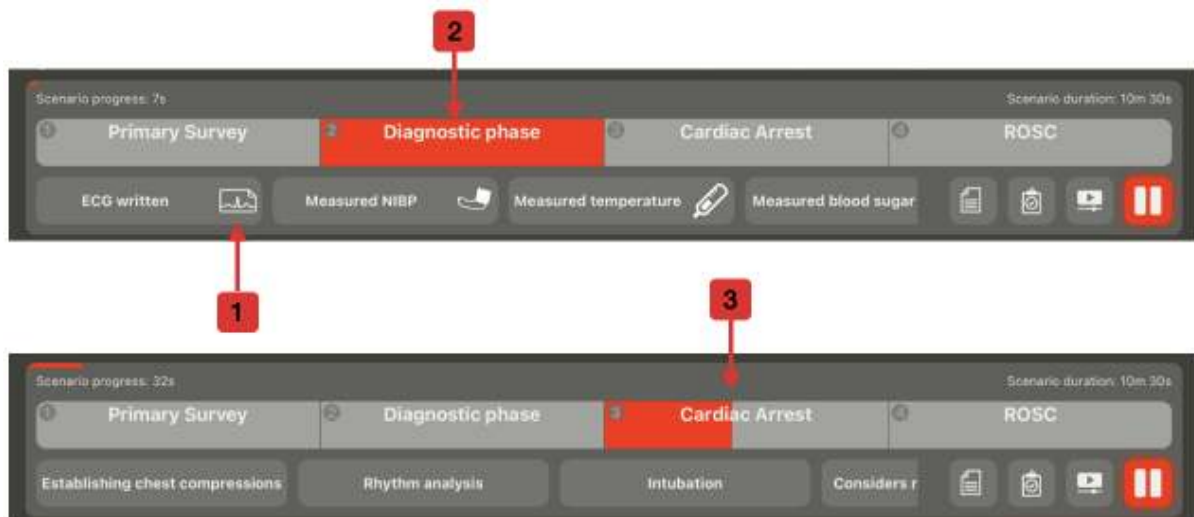
Imprint

SKILLQUBE GmbH

Schafäckerweg 24, 69168 Wiesloch, Germany

Amtsgericht [district court] – Registergericht [court of registration] – Mannheim HRB 716968 [commercial register]

Headquarters: Wiesloch – CEO: Julia Wallburg, *Prokuristen* [company officers with statutory authority under German law]: Georg Hirsch, Thorben Schreyer

Email: info@skillqube.com

Website: www.skillqube.com

Phone: +49 (0) 6222 / 38 62 65

Fax: +49 (0) 6222 / 38 63 65

VAT identification no.: DE 289937847

Online dispute resolution according to Art. 14(1) of the regulation on online dispute resolution for consumer disputes: The European Commission provides a platform for online dispute resolution (ODR): http://ec.europa.eu/consumers/odr/