

USER'S GUIDE

ALS Cardiac Training Simulator

BT-ACTB



BT Inc.

BEST TECHNOLOGY & BETTER TOMORROW

1. Cautions

Please read carefully to ensure correct usage and user's safety through understanding of the product.

- ① Use only components provided or approved by BT Inc.
- ② Do not use the product for purposes other than described in the manual.
- ③ If you disassemble or modify the product without any permission by BT Inc, the warranty will be void. Also, making imitated or altered products for commercial purposes are prohibited by law.
- ④ If the product is overheating or emits a burning odor during usage, turn off the power switch, unplug the power adaptor and call the customer service center.
- ⑤ Keep the product away from water and moisture area.
- ⑥ Do not use the product near strong magnetic fields or high voltage power lines.
- ⑦ Do not use the product and unplug the power adapter during lightning storms.
It can cause malfunction of the product and increase the risk of an electric shock.
- ⑧ The product may malfunction under the extreme weather conditions.
(Operation temperature : 0°C~40°C (32°F~104°F), Storage temperature : -10°C~50°C (14°F~122°F))
- ⑨ Do not keep the product near hot or cold environments as possible. Deterioration of product or internal damage may occur from extreme weather conditions.
- ⑩ Never clean the product with chemicals such as solvent, benzene or thinner as these may cause fire ignition or surface deterioration.
- ⑪ Do not install other programs or software to the provided tablet.
It may cause software malfunction.
- ⑫ BT Inc. can change or adjust the product specification without any notice in order to improve the product.

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2. Product composition

2-1. Components



Full body manikin



Power adaptor



Laptop for AppFacilitator

2-2. How to store the product



※ The neck protector must be worn during storage or transportation.

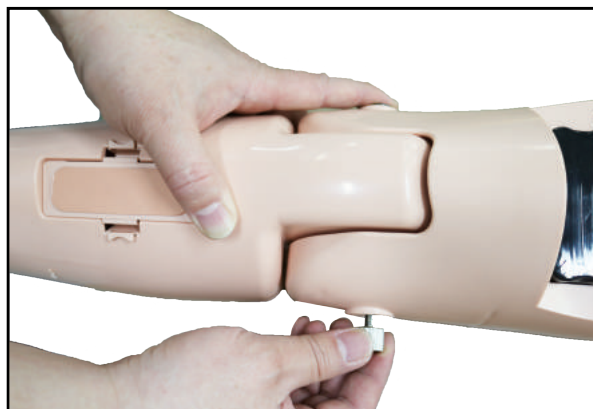
2-3. Assemble/Disassemble the legs



1. Connect the cables and tubes.



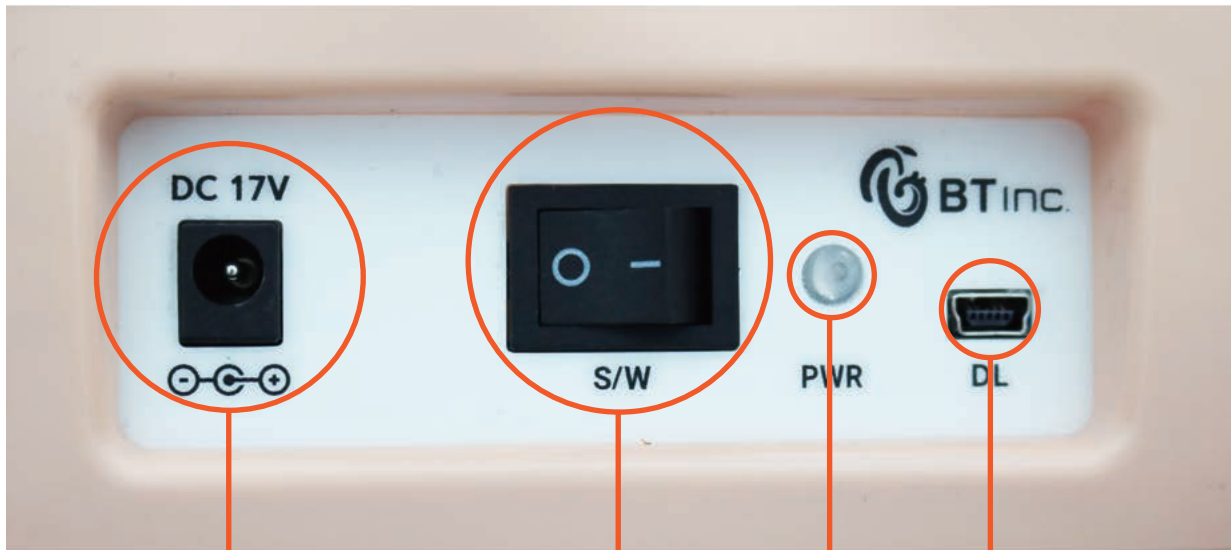
2. Insert the hinge pin.



3. Assemble the knob bolt.

*** Disassembly is the reverse order of assembly.**

2-4. Manikin power supply



DC power connection(17V)

Power button

Power LED

Enginner port only

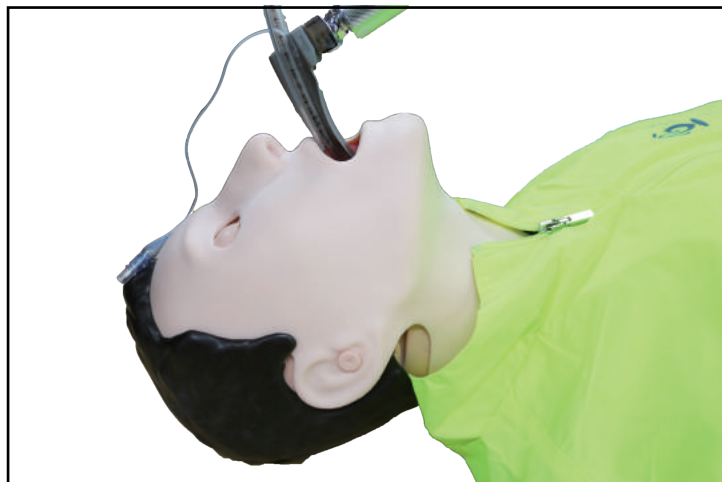
3. Function

3-1. Eyes



- ① Light Reflex / Consensual Light Reflex
- ② Adjust pupil size
 - 1~8mm
- ③ Adjust light reflex speed
 - Prompt / Slow
- ④ Eyelids : Open / Closed

3-2. Airway management



- ① Head Tilt / Chin Lift
- ② Jaw Thrust
- ③ Bag-Valve-Mask ventilation
- ④ Oral / Nasal Intubation
 - ETT / LMA / I-gel / Combi-tube
 - Detect Normal / Right mainstem intubation
- ⑤ Detect esophagus Intubation and gastric inflation
- ⑥ Measure force on incisors
- ⑦ Airway obstruction
- ⑧ Needle decompression

3-3. Circulation



① 3-4 Lead ECG

② Defibrillation and cardioversion

- Defibrillation waveform
- CPR waveform

③ Heart sounds auscultation (2 sites)

- Aortic valve / Mitral valve

④ Pulse

- Pulse sites
 - Radial / Brachial artery (Left arm)
 - Left / Right Carotid artery
 - Left / Right Femoral artery
 - Left / Right Dorsalis artery
- Pulse intensity
 - Strong / Moderate / Weak

⑤ NiBP

- Palpation
- Auscultation

⑥ ABP waveform (Software)

⑦ PAP waveform (Software)

3-4. Breathing



- ① Spontaneous breathing
 - Unilateral and bilateral chest rise
 - Normal breathing sound
- ② Lung sounds auscultation (4 sites)
 - Chest Front Left Up / Down
 - Chest Front Right Up / Down
- ③ SPO2 waveform (Software)
- ④ ETCO2 waveform (Software)

3-5. CPR



- ① Chest compression
 - Compression depth
 - Hand position (Correct/Upper/Lower/Left/Right)
 - Compression rate
 - Incomplete release
 - Hands-off time
- ② Artificial respiration
 - Ventilation volume
 - Ventilation time
 - Ventilation per minute

3-6. Vascular access

- ① IV (Right arm)
- ② IO (Right tibia / Right humerus)
- ③ IM (Right humerus)
- ④ Medication (Software)

3-7. Speech

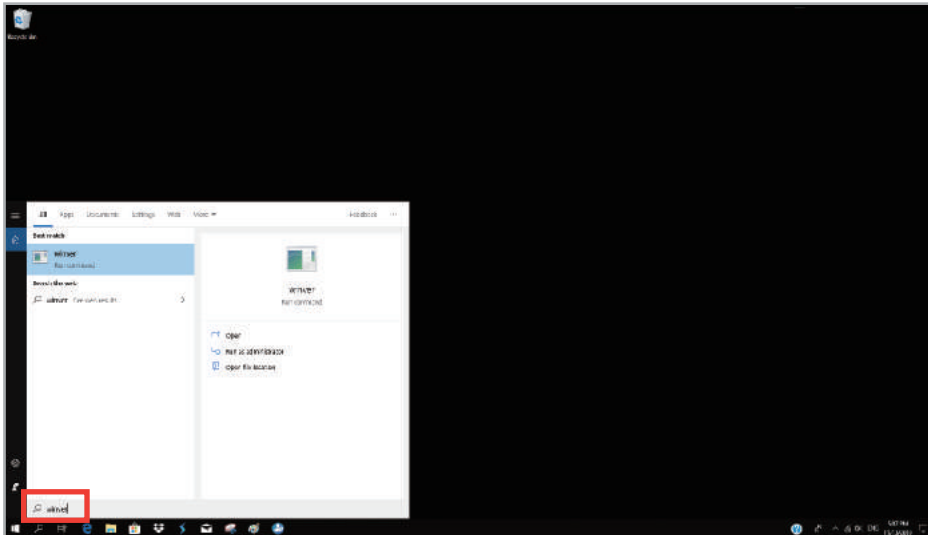
- ① Vocal sounds
 - 10 cases

4. Checking O/S specification

4-1. O/S Specification

Minimum System requirements : **Windows 10, Version 1809 or later**

- ① Search **winver** at the search box next to windows start menu icon.



- ② Window version can be checked at the pop-up screen.

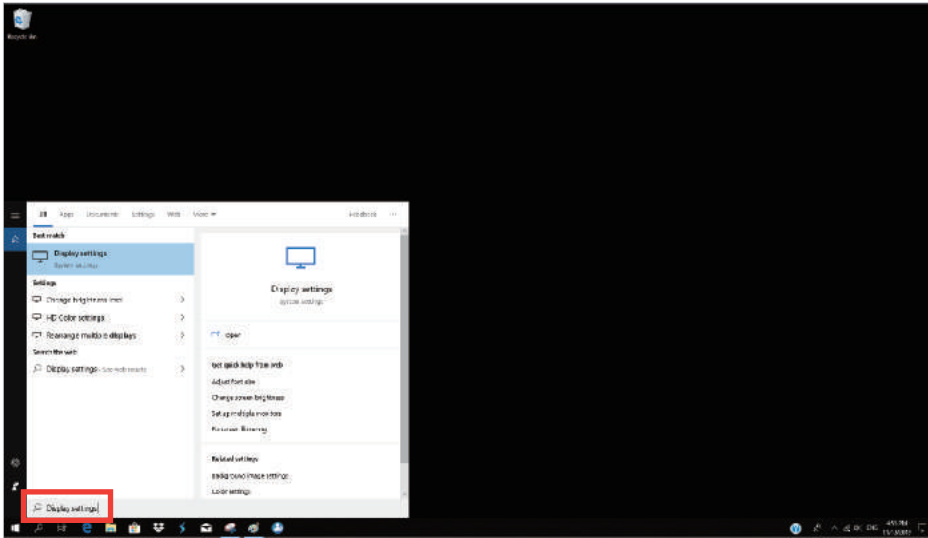


5. Checking H/W specification

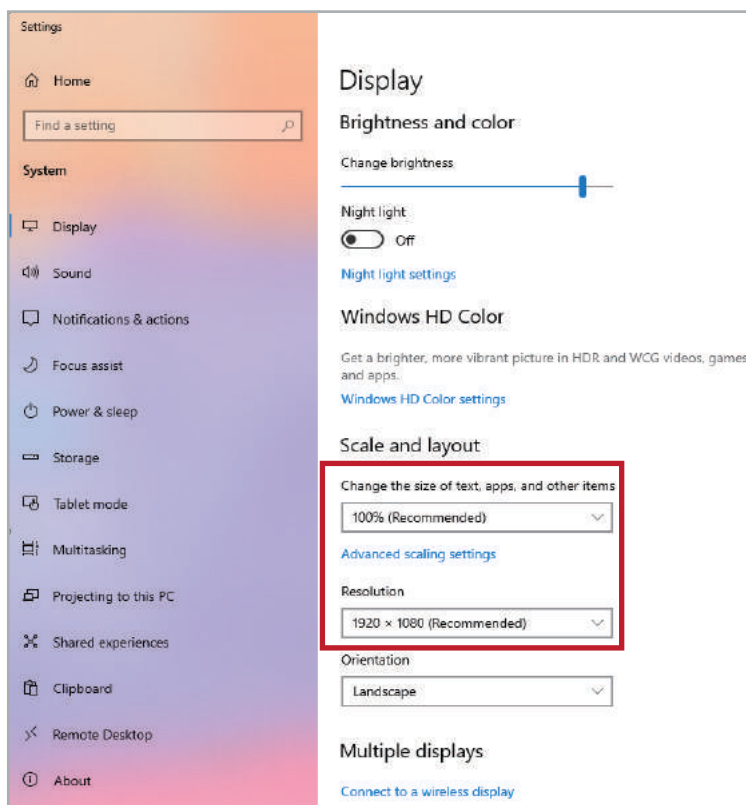
5-1. H/W Specification

- Resolution : 1920 X 1080
- Text Size : 100%

① Search **Display settings** at the search box next to windows start menu icon.



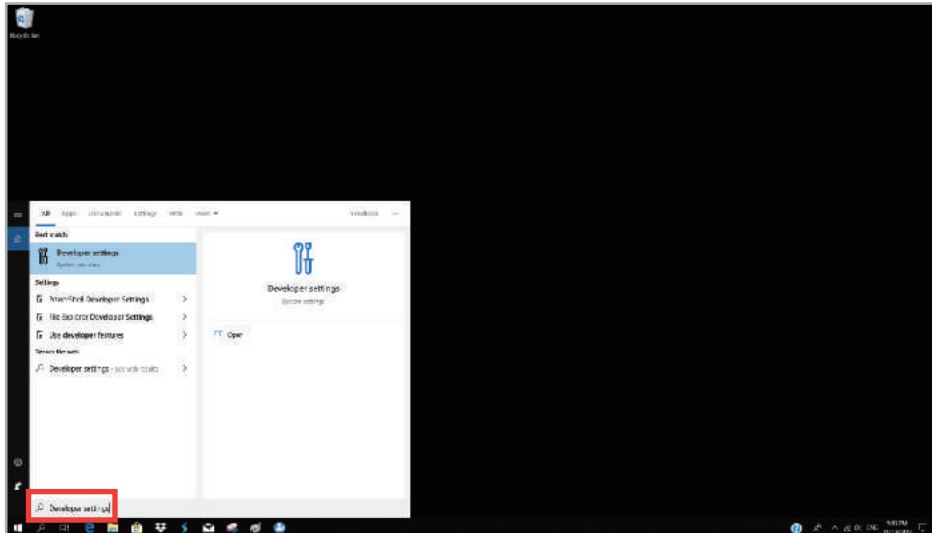
② Set the Change the **Text size** and **Resolution** as below.



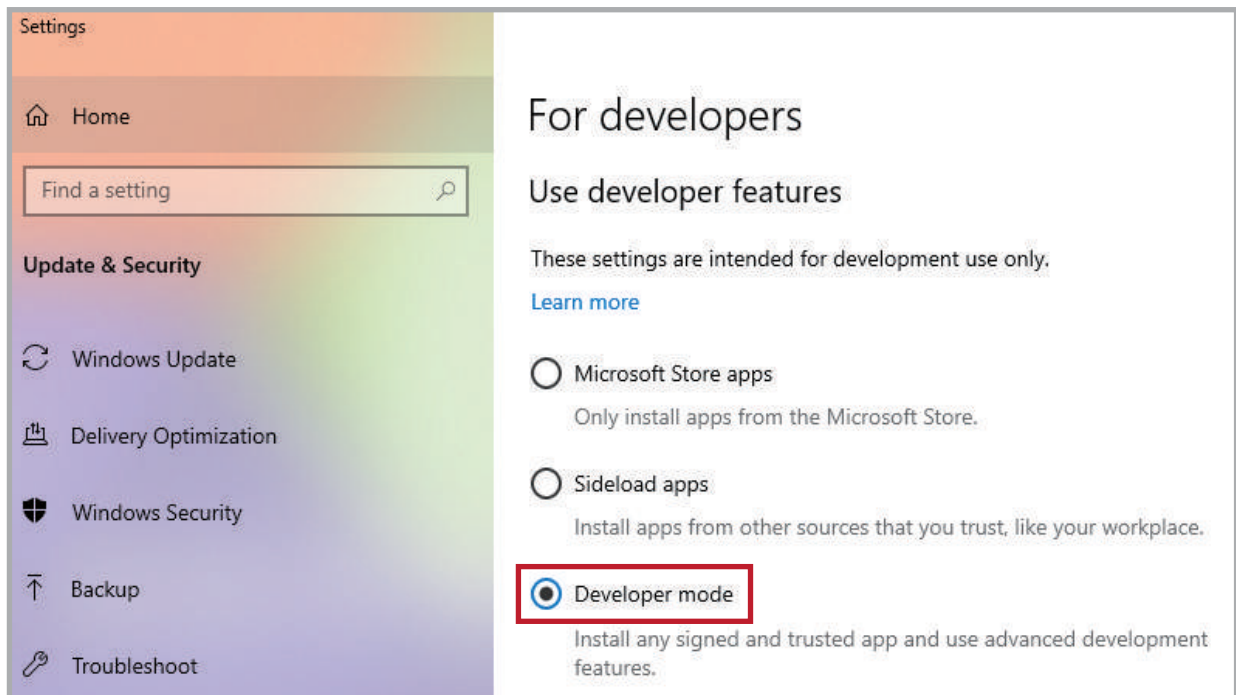
6. Install application

6-1. Developer settings

- ① Search **Developer settings** at the search box next to windows start menu icon.

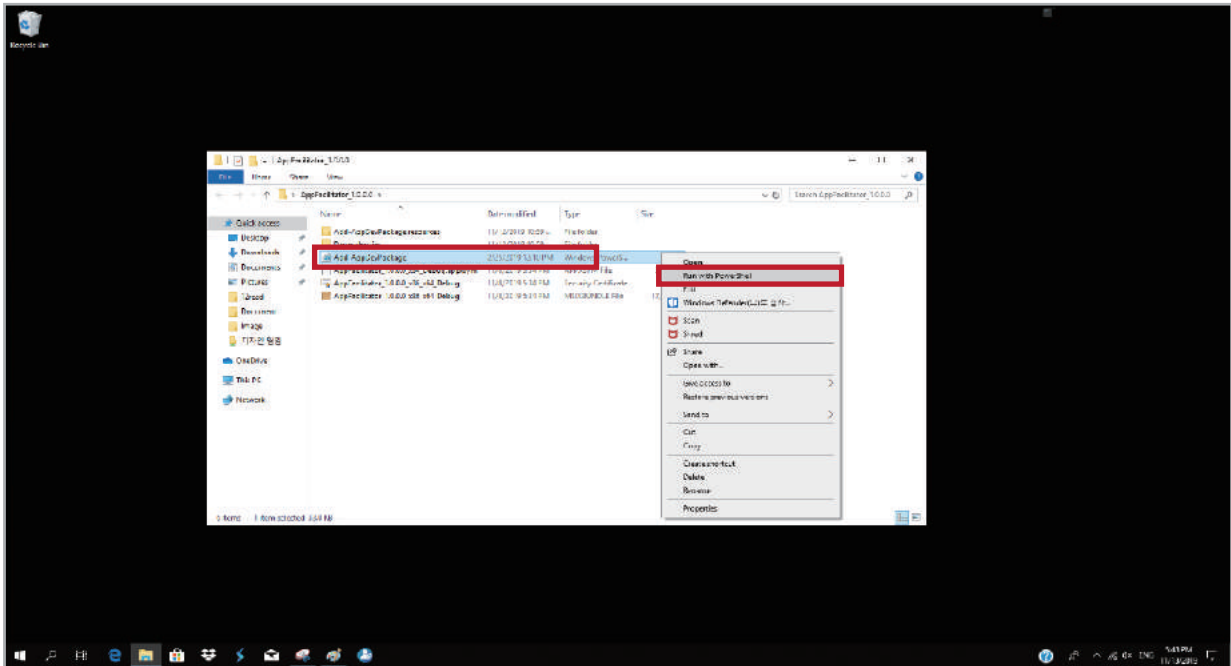


- ② Activate **Developer mode** at the screen.

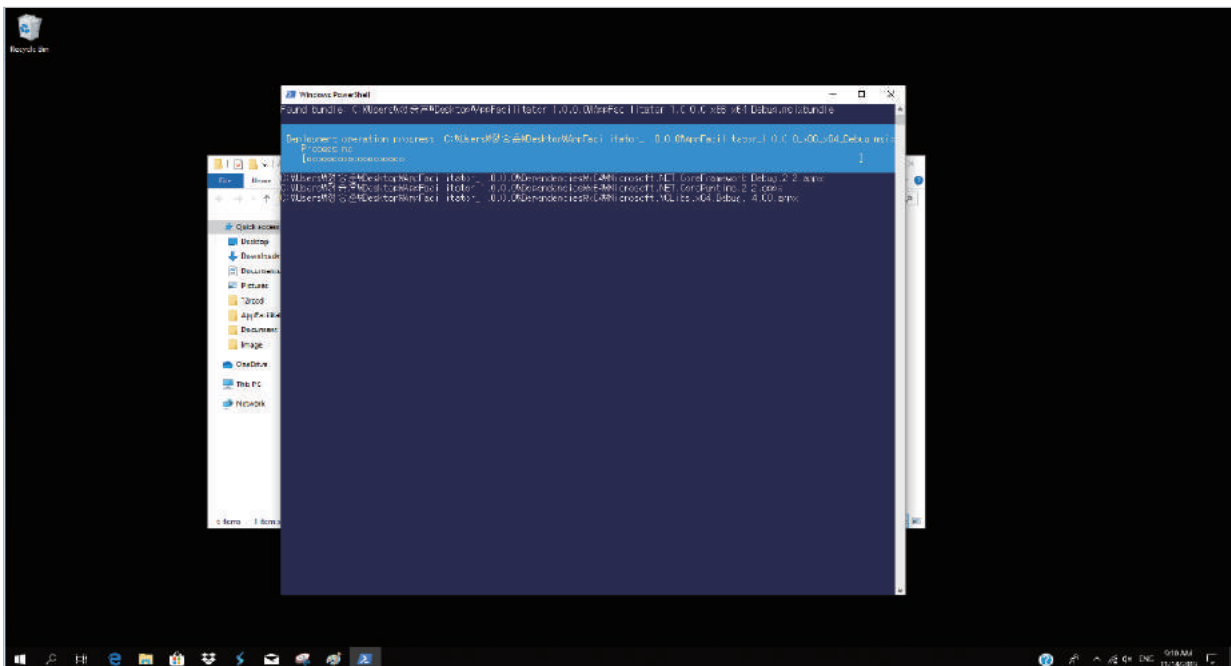


6-2. Install app package file

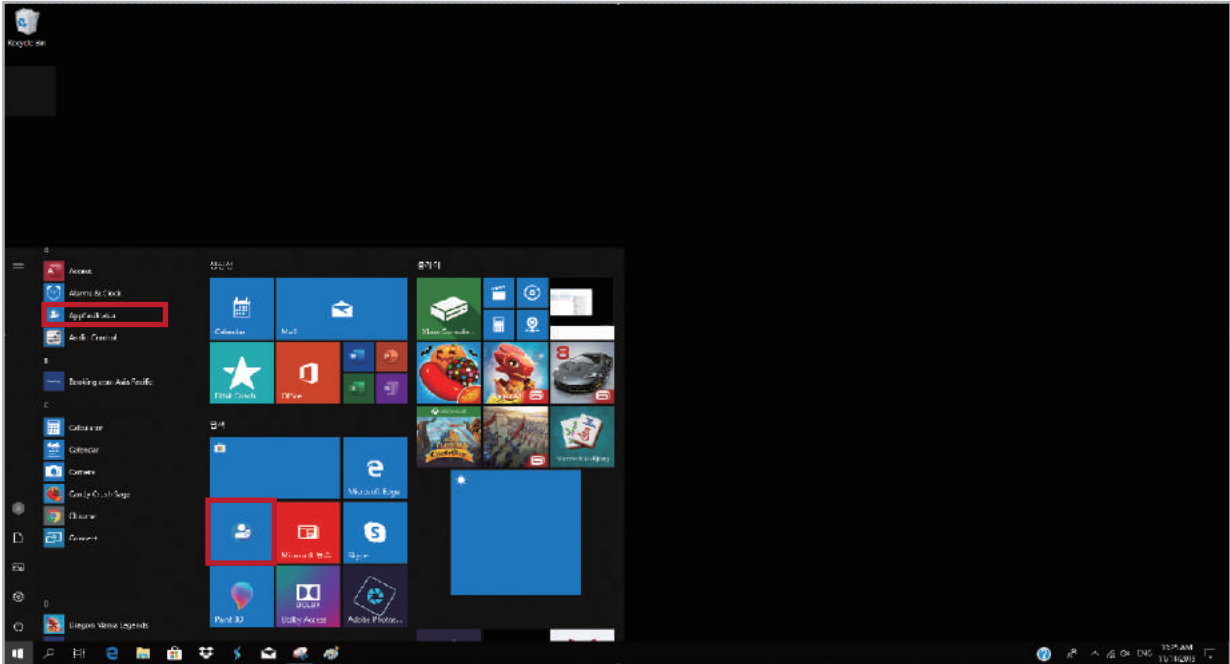
① Open the app package folder and start the PowerShell by clicking the right mouse button.



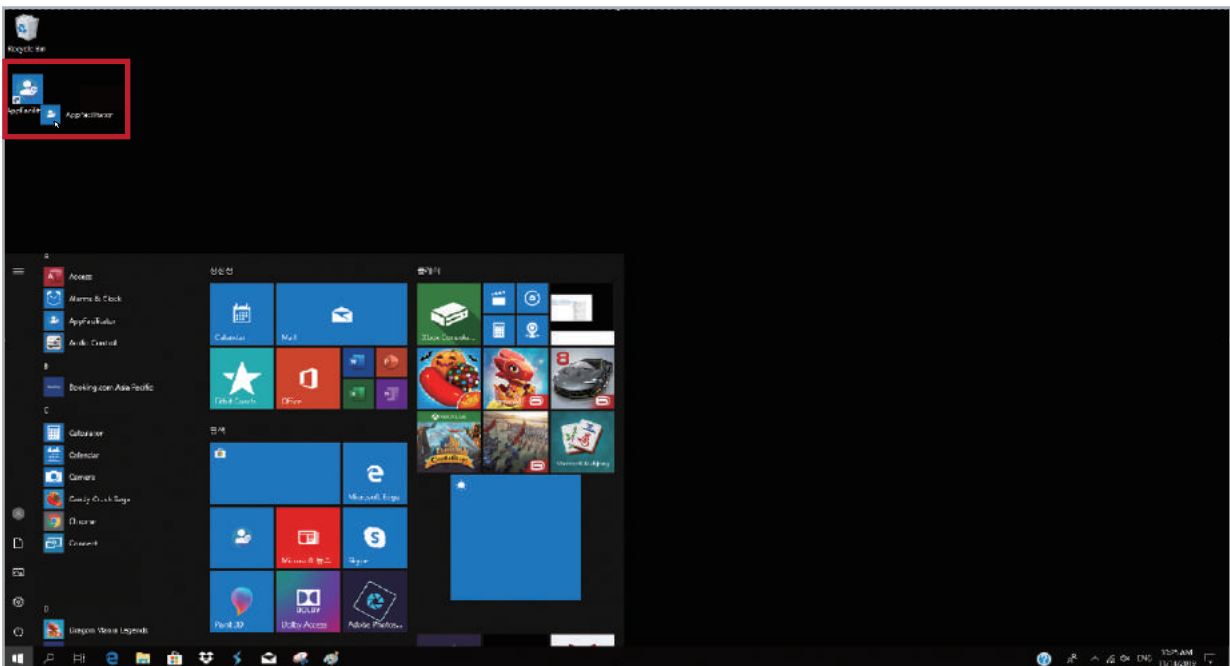
② Install the app by following instructions.
– It may take some time depending on the PC's specification.



③ When the installation is completed the app will be on the windows start menu.



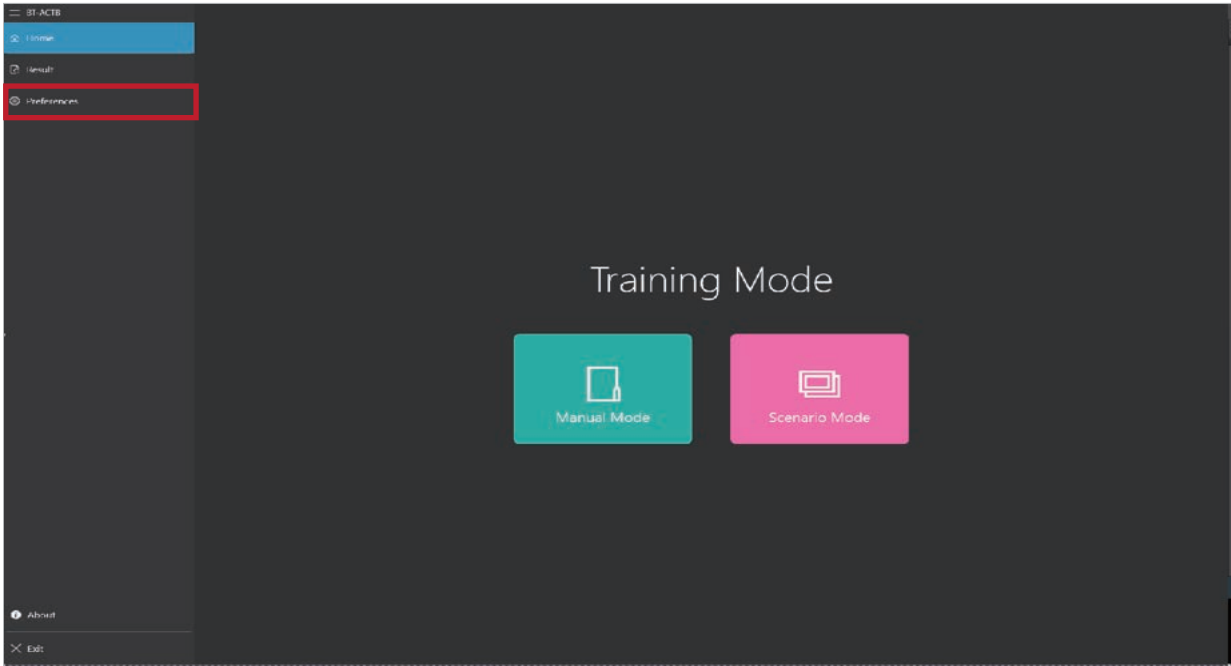
④ The app can be moved to the desktop screen by dragging the mouse.



7. Start Application

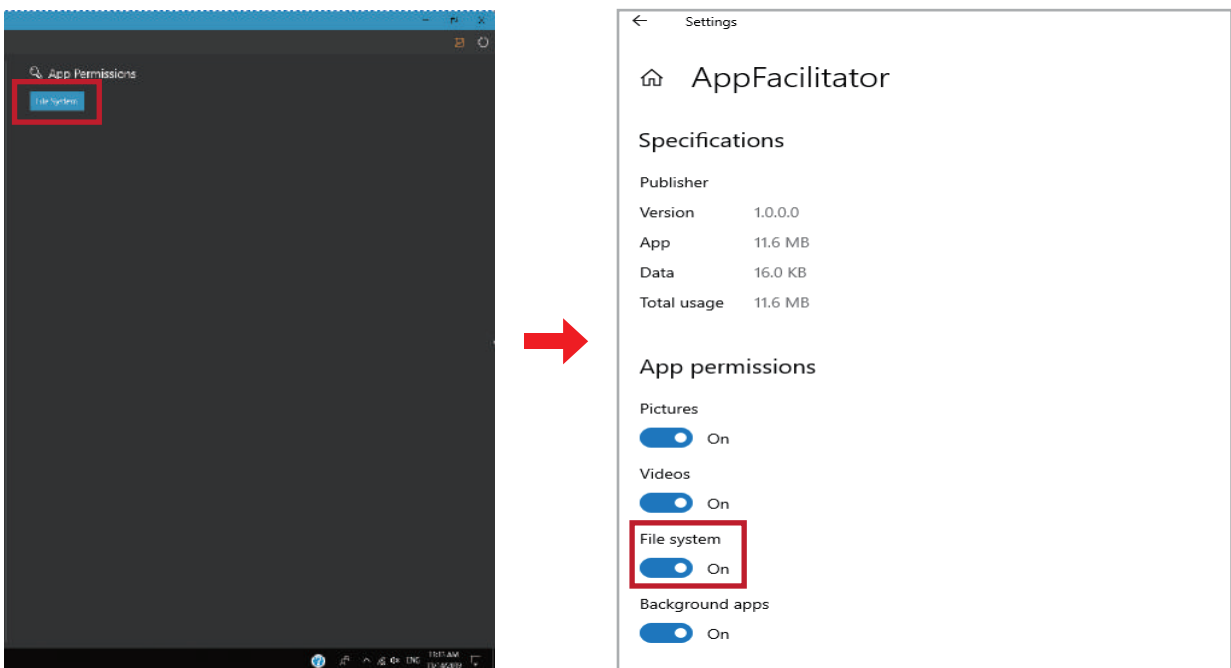
7-1. Application Settings

- ① Start the app and select **Preferences menu** at the left side.



< Home screen >

- ② Select the file system from the **App setting permissions** at the right side of the screen.

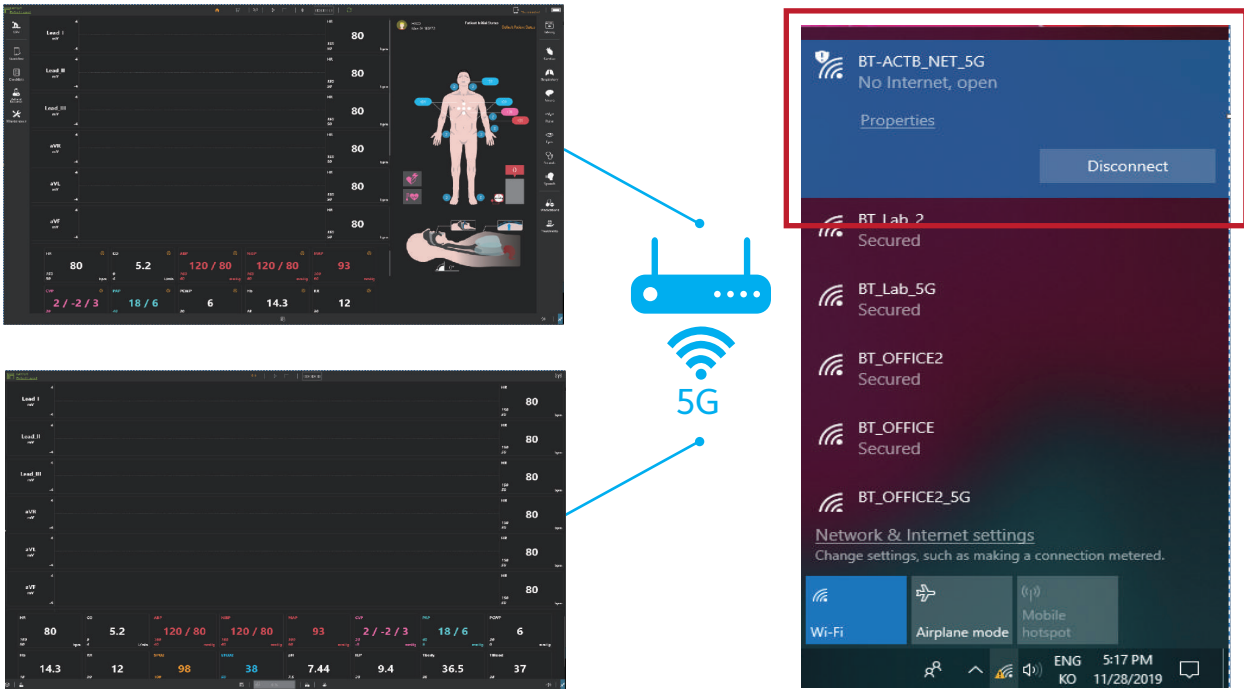


- ③ Activate the file system at the app permissions screen.
- ④ When the app is automatically closed, **restart** the app.

7-2. Connct AppFacilitator and AppMonitor

① Connect Wi-Fi

– Connect **AppFacilitator** and **AppMonitor** to the offered Wi-Fi router.

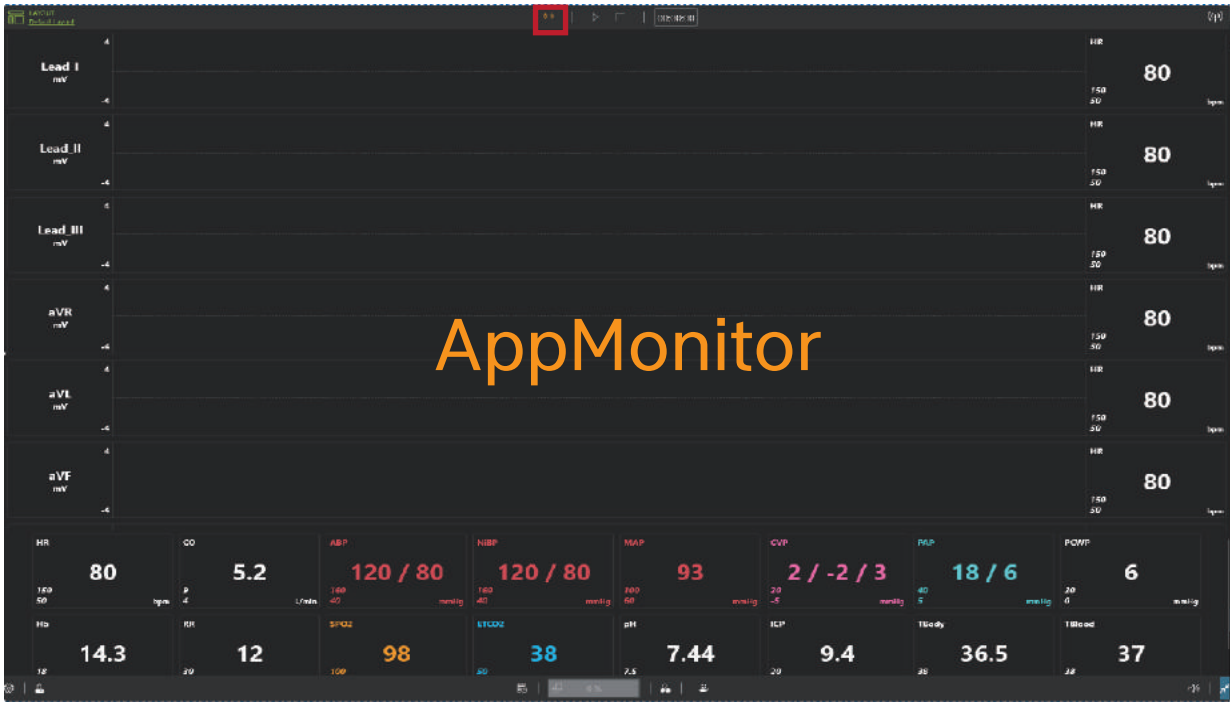


② AppFacilitator Settings

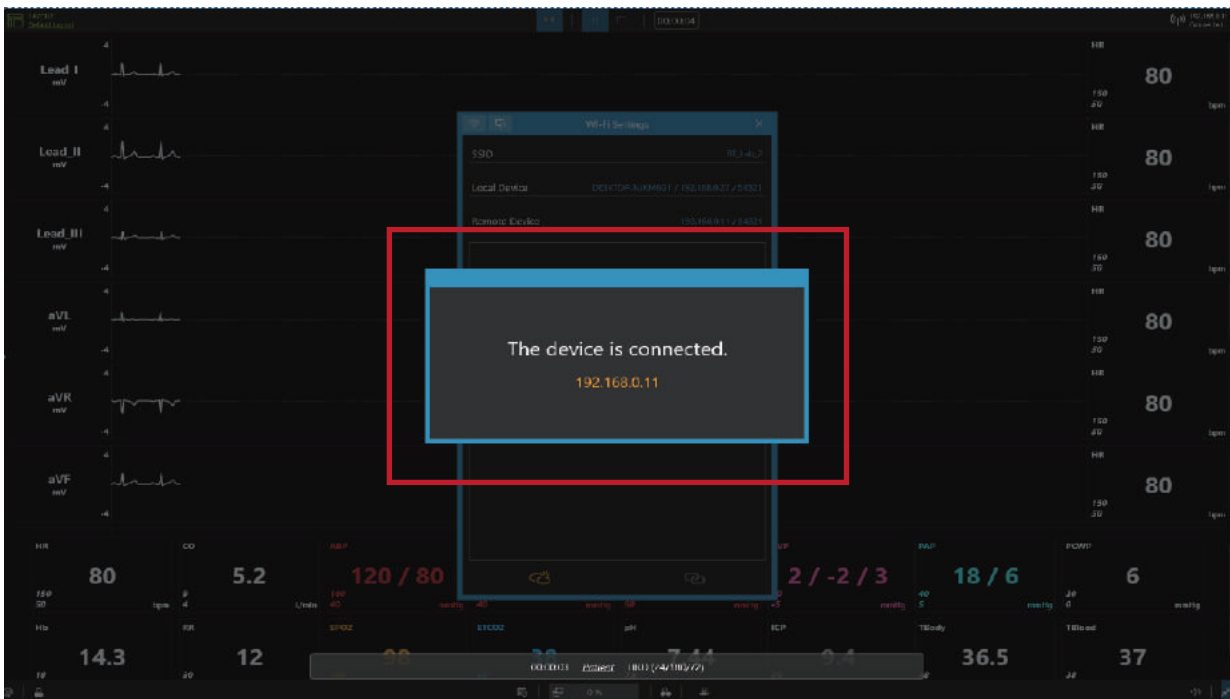
– Click the **Start** button at the top menu.



- ③ AppMonitor Settings
- Click the **Wi-Fi button** at the top menu.

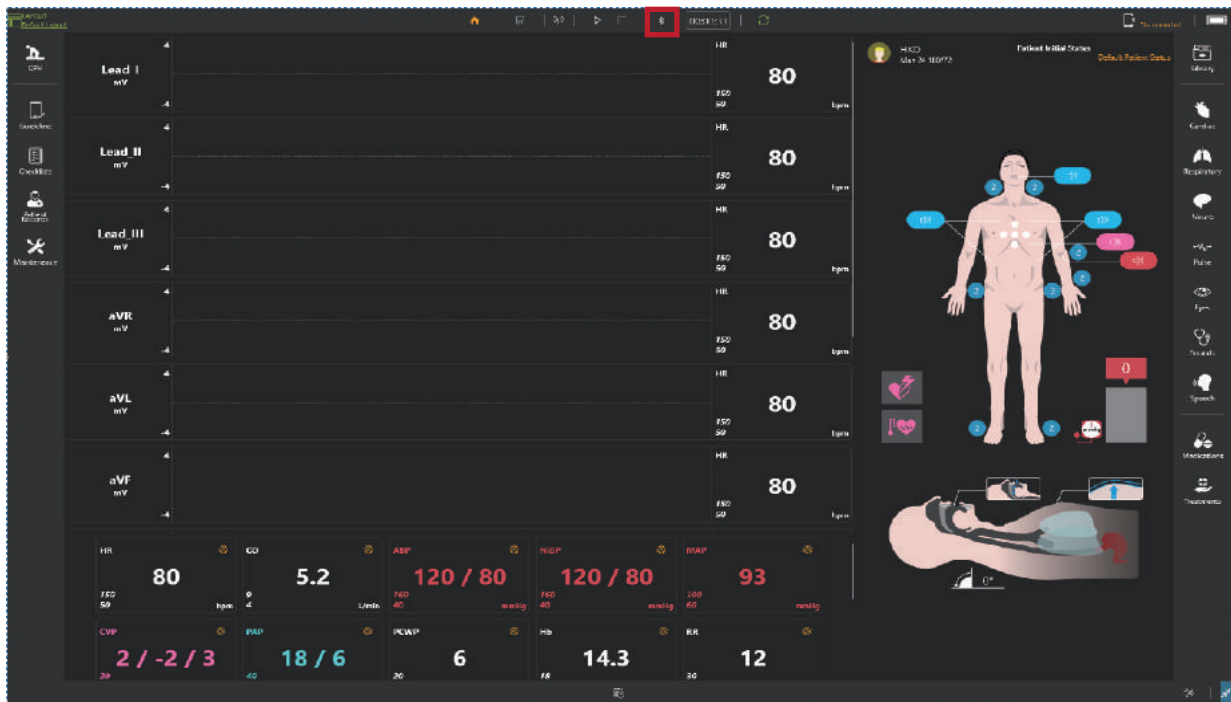


- ④ When the two apps are connected, you can see the message as shown below.

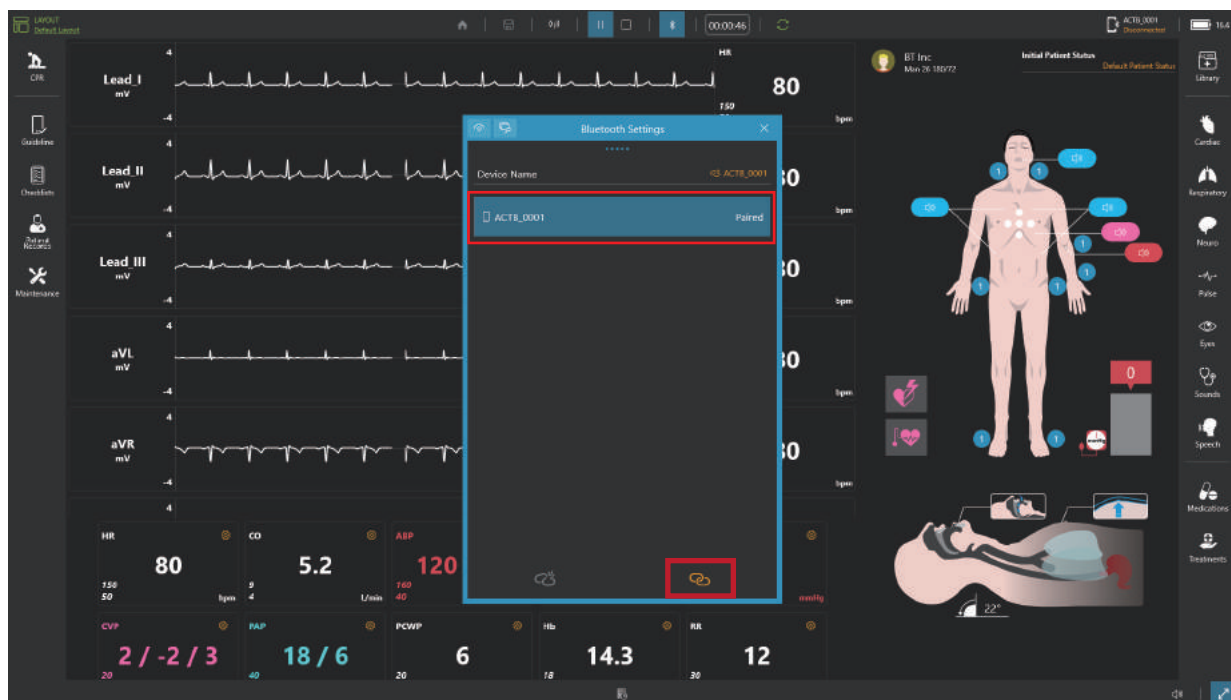


7-3. Connect AppFacilitator and Manikin

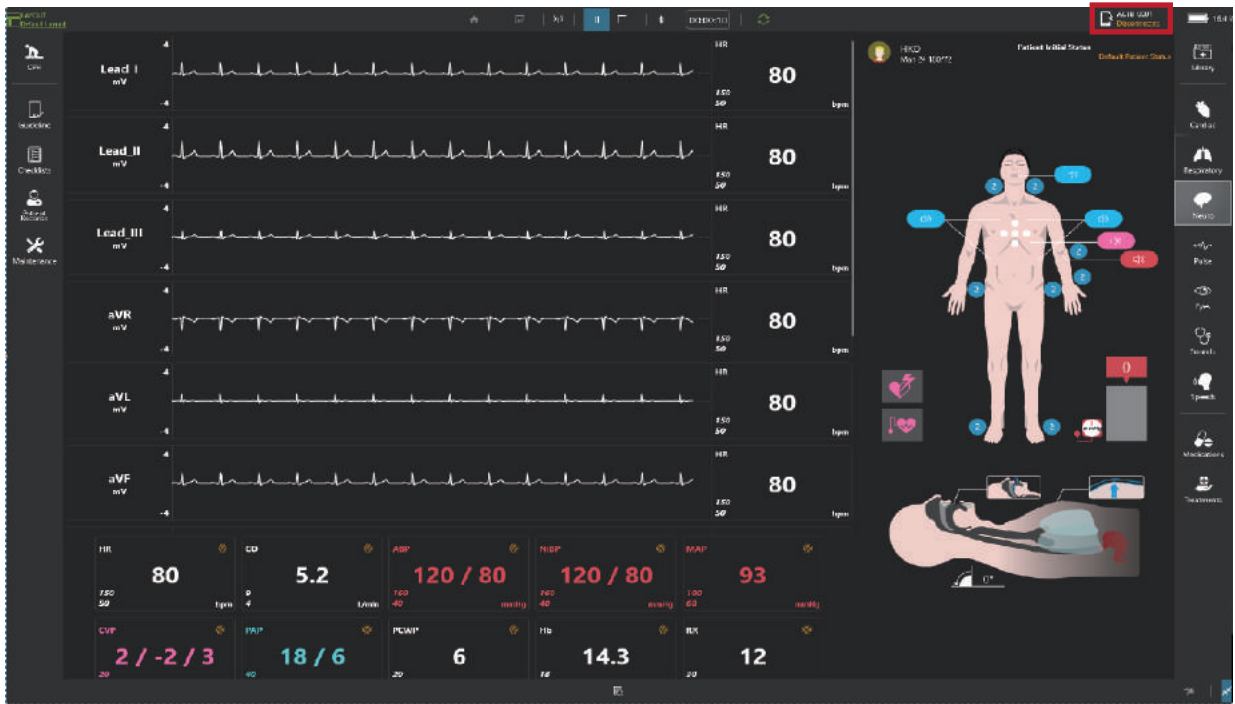
- ① Turn the manikin power on.
- ② Click the **Bluetooth** button at the top menu.



- ③ Find the **manikin's serial number** on the Bluetooth list and connect it with the manikin.



④ The Bluetooth connection state can be checked in the upper-right corner.

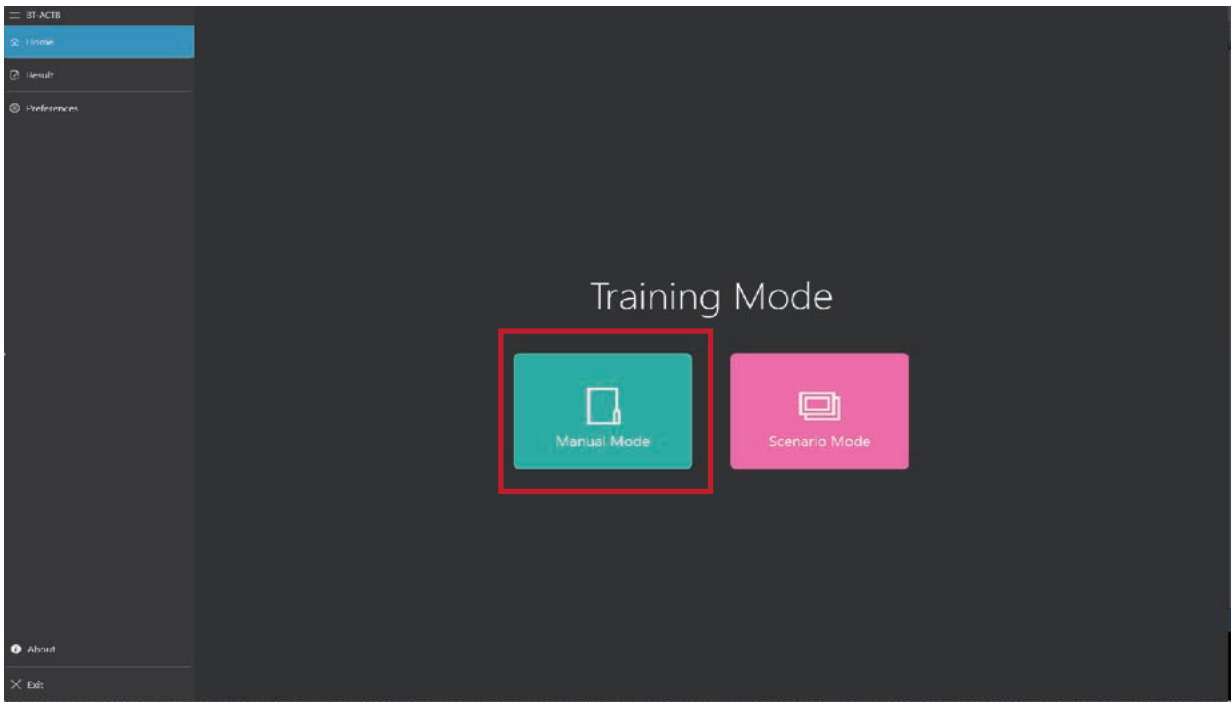


※ If the manikin is not paired, proceed with the pairing.

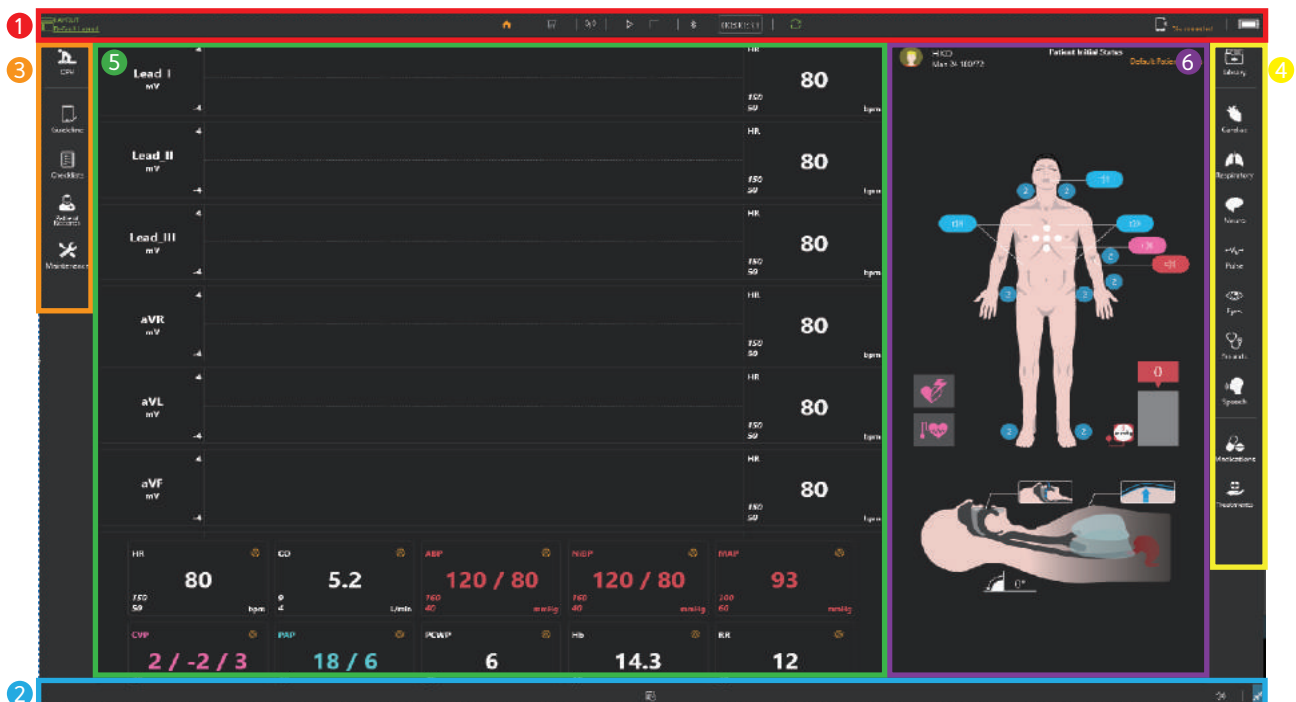
8. AppFacilitator Feature

8-1. Manual mode

- ① Select "Manual mode" from the home screen.

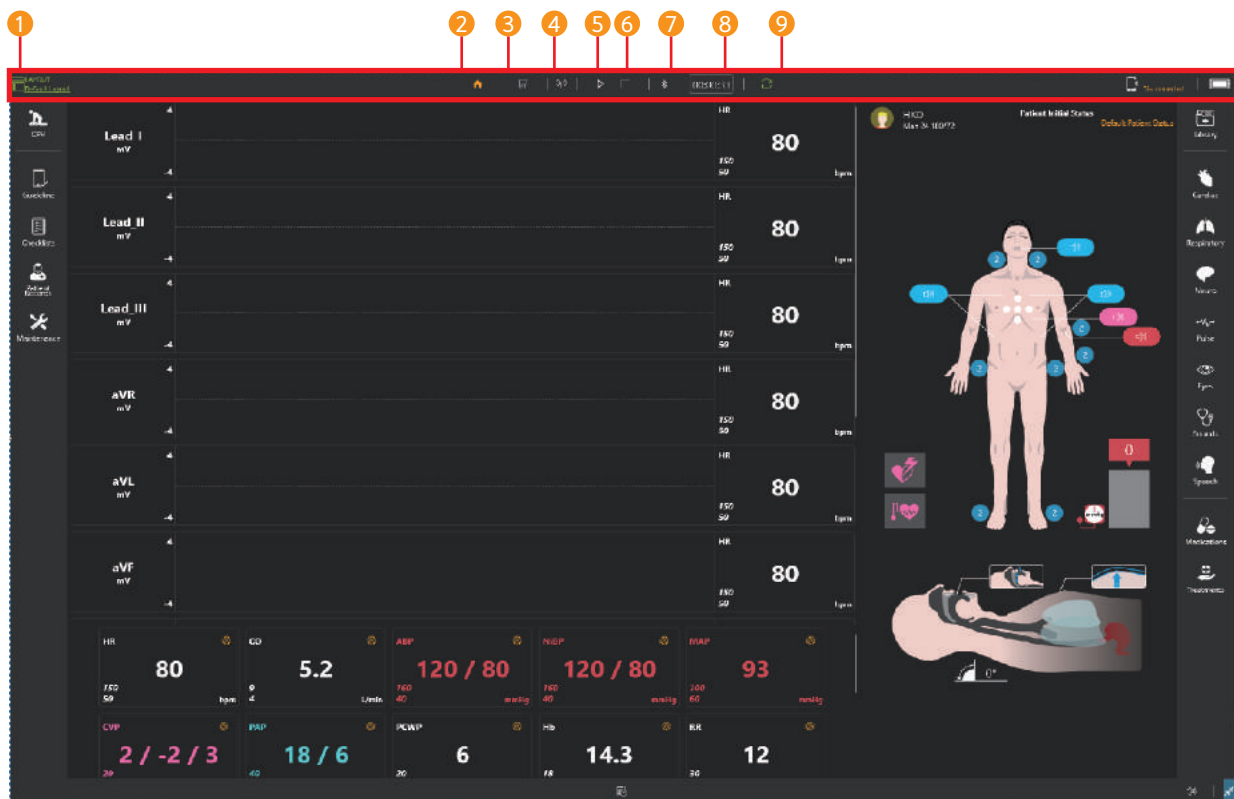











- ② Layout of manual mode



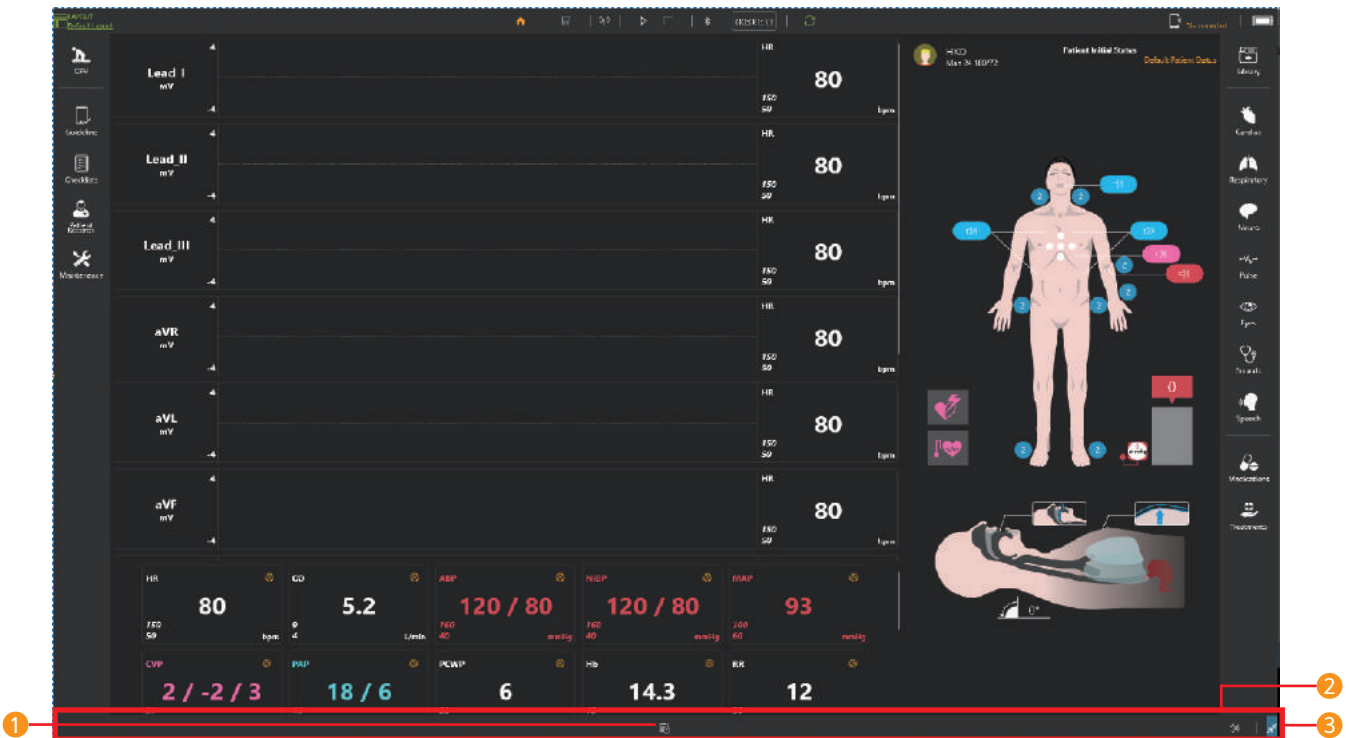
- ① Top menu
- ② Bottom menu
- ③ Left menu
- ④ Right menu
- ⑤ Patient monitor
- ⑥ Patient status viewer

8-2. Top menu



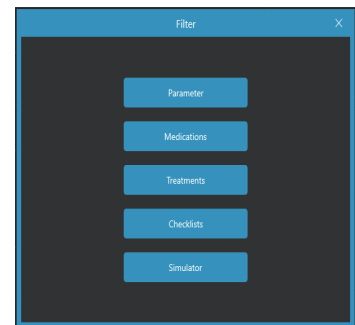
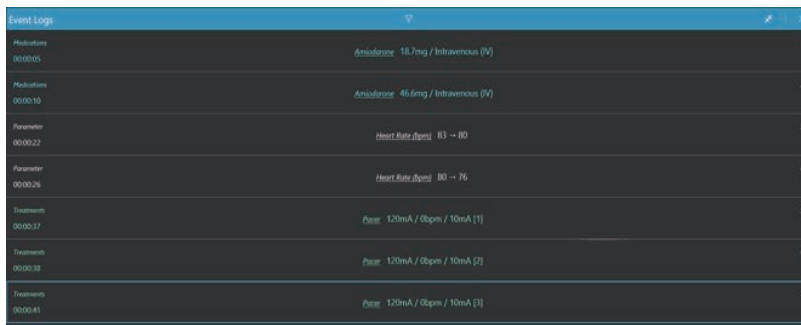
- ① Patient monitor settings  : Change settings of the layout of patient monitor and the audio.
- ② Home  : Go to the home screen.
- ③ Save results  : Save the training result.
- ④ Wi-Fi settings  : Connect with AppMonitor.
- ⑤ Start training  : Start and pause the training.
- ⑥ End training  : End the training.
- ⑦ Bluetooth settings  : Connect AppFacilitator to Manikin.
- ⑧ Training time  : Display the training time.
- ⑨ Synchronize  : Synchronize the layout of AppFacilitator and AppMonitor.

8-3. Bottom menu



1 Event Logs

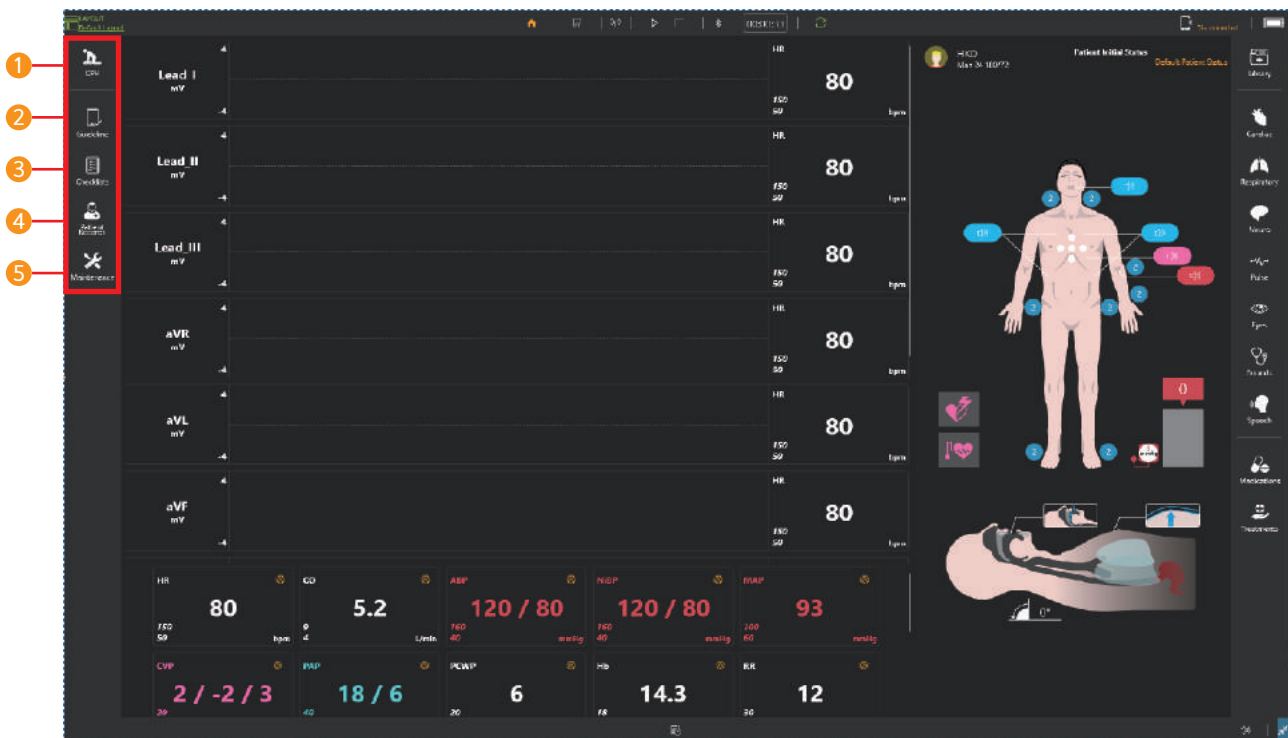
- Record changes to parameters, medications, treatments, checklists, and simulators.
- You can select and view the items you want by using the filter.



2 Mute : Turn the sound ON/OFF.

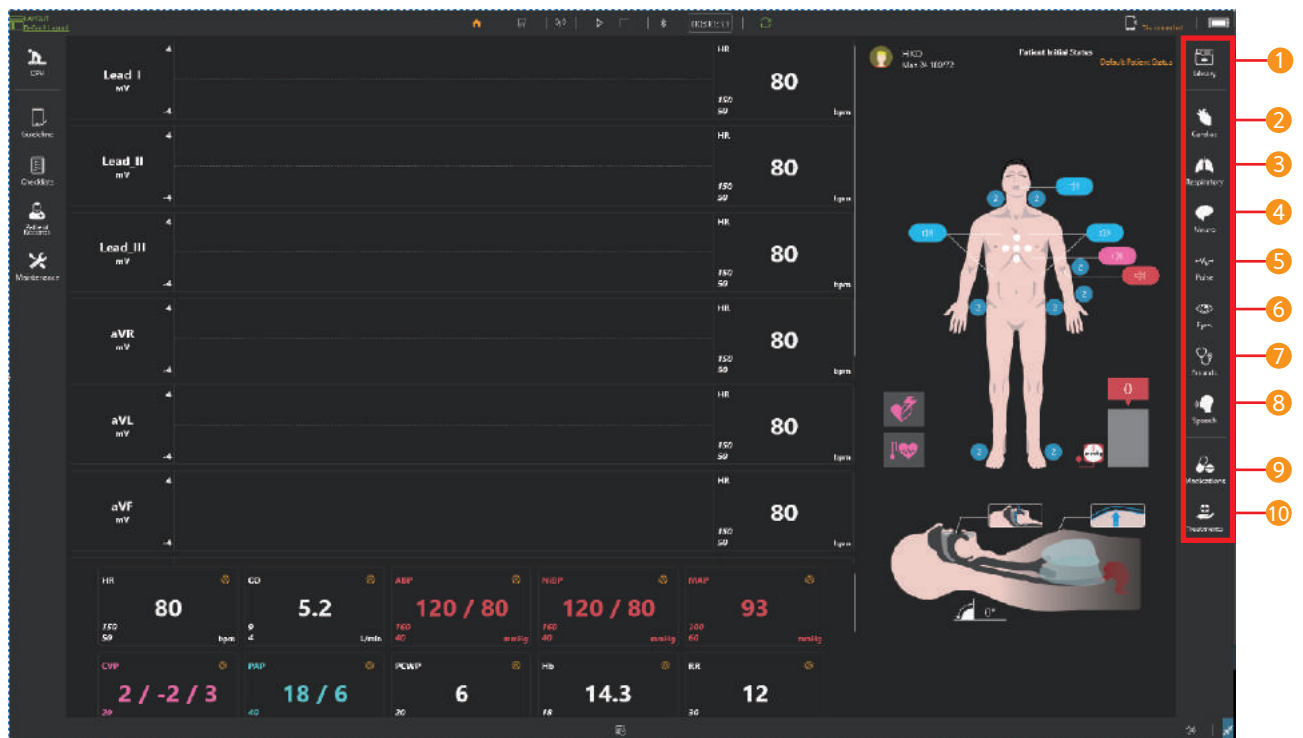
3 Full screen mode : Turn on and off full screen mode.

8-4. Left menu



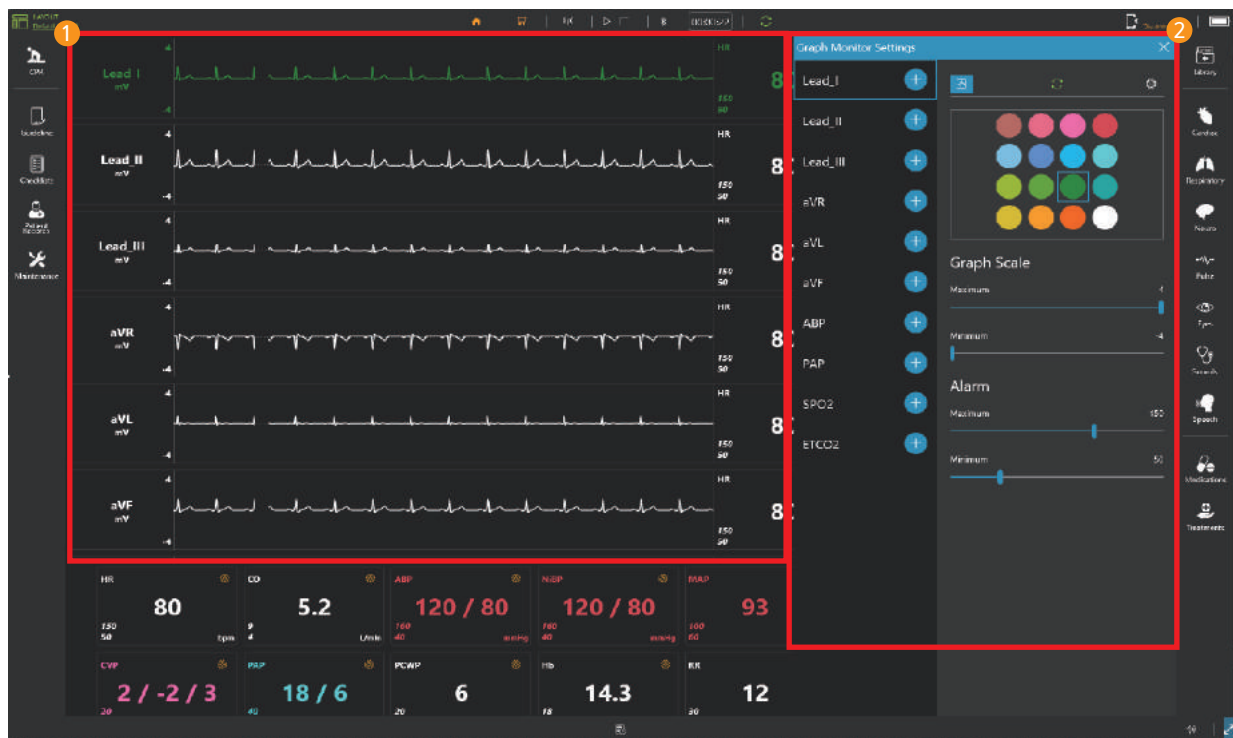
- ① **CPR** : Show the CPR feedback in real-time with graph and chart.
- ② **Guidelines** : You can create CPR guidelines.
- ③ **Checklists** : You can create the checklist for the training.
- ④ **Patient Records**
 - Set or check the patient profile.
 - Send the patient history and diagnostic result.
 - Set or check the initial patient status.
- ⑤ **Maintenance** : Check the pneumatic operation status of the simulator.

8-5. Right menu



- 1 **Library** : You can set and save patient parameters at once.
- 2 **Cardiac** : You can set cardiac parameters such as cardiac rhythm, heart rate, cardiac output.
- 3 **Respiratory** : You can set respiratory parameters such as chest rising, airway obstruction, respiratory rate.
- 4 **Neuro** : You can set nervous parameters such as ICP, body temperature.
- 5 **Pulse** : You can adjust pulse status and the intensity.
- 6 **Eyes** : You can set the pupil status.
- 7 **Sounds** : You can set heart sounds, lung sounds and Korotkoff sounds.
- 8 **Speech** : You can set the speech and the breathing sound.
- 9 **Medications** : You can make medications needed for the training.
- 10 **Treatments** : You can train defibrillation, pacing, oxygen therapy.

8-6. Patient monitor (Graph monitor)



1 Graph monitor

- Display ECG, ABP, PAP, ETCO2 waveform.
- You can change the ECG waveform.

2 Graph monitor settings

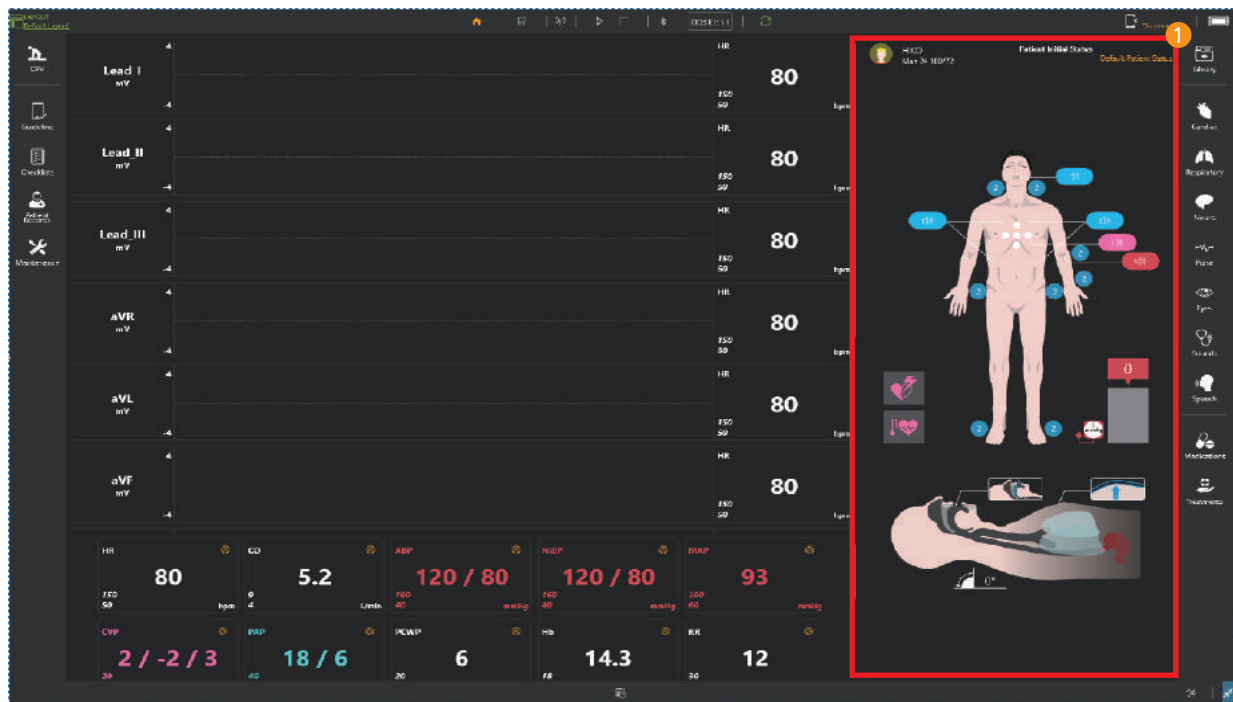
- You can add or delete waveforms to the graph monitor.
- You can change the color of the waveform.
- You can block the waveform's signal.
- You can adjust the graph scale.
- You can set the alarm.

8-7. Patient monitor (Numeric monitor)



- 1 **Numeric monitor**
 - Display numeric values such as HR, CO, ABP.
- 2 **Numeric monitor settings**
 - You can add or delete patient parameters in the numeric monitor.
 - You can change the color of the patient parameters.
 - You can show or hide patient parameters.
 - You can set the alarm.

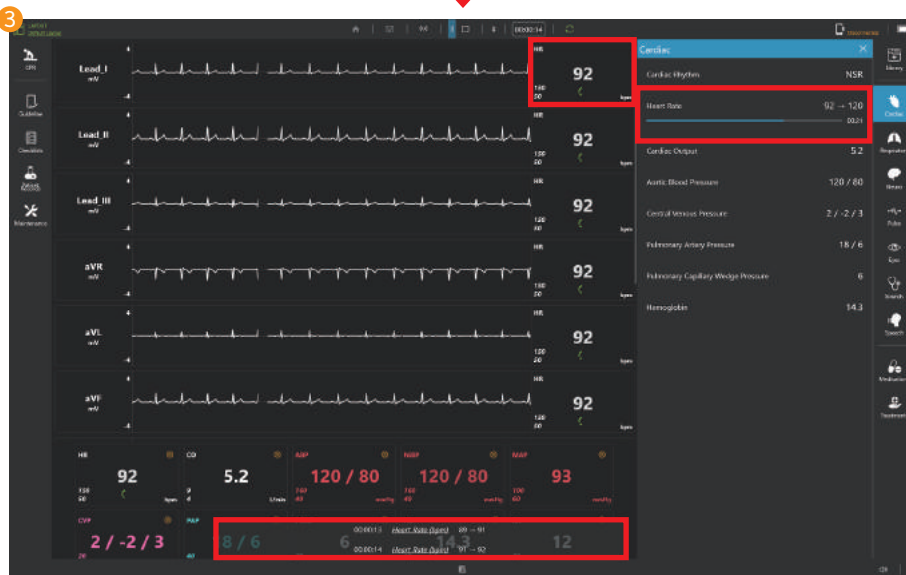
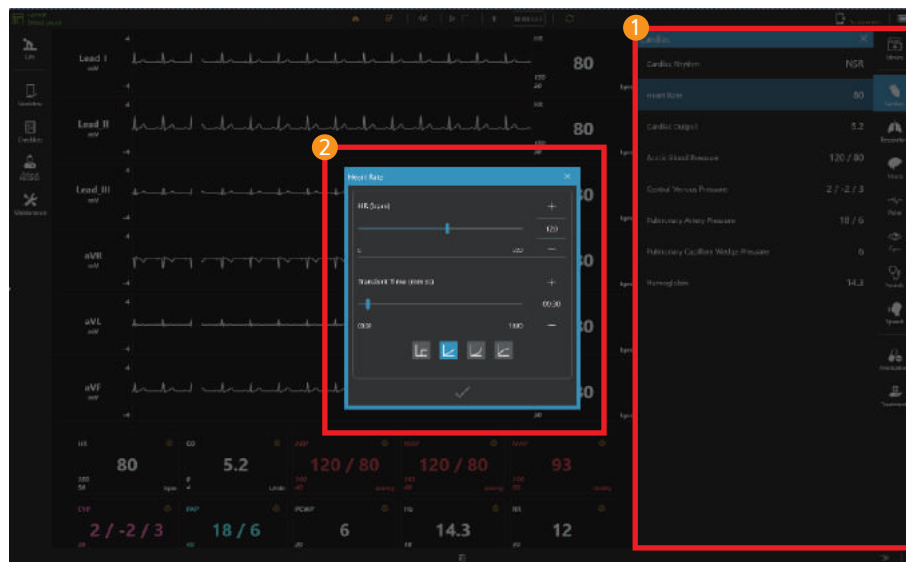
8-8. Patient status viewer



1 Display or change the current patient status.

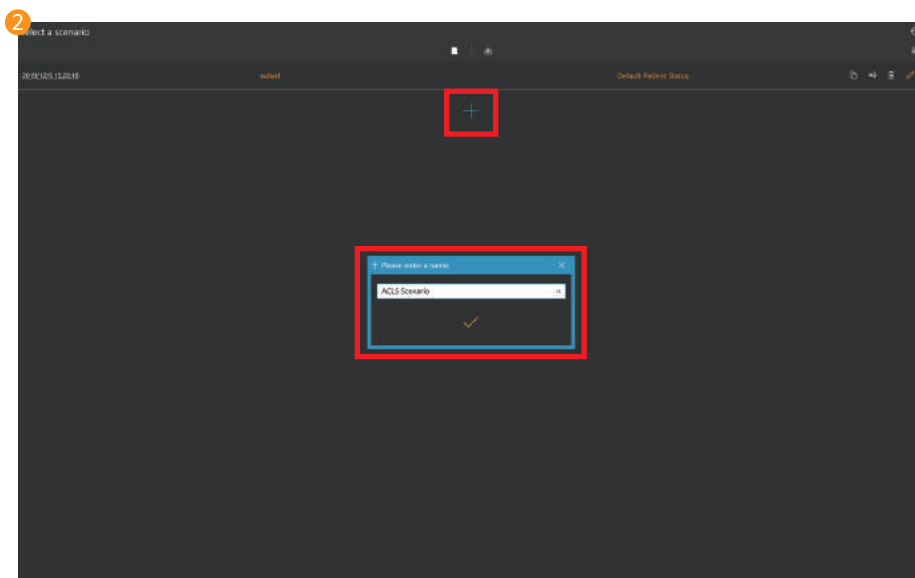
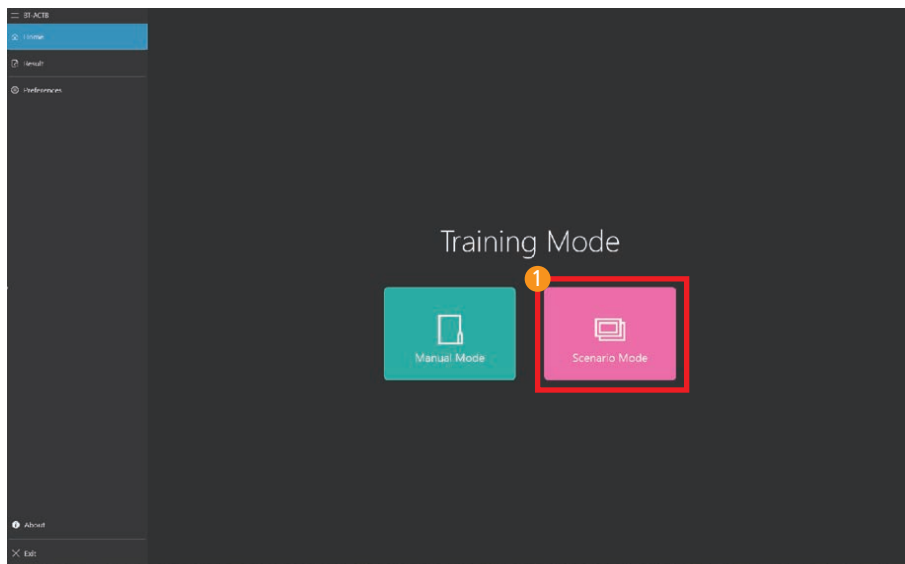
- Display the patient profile.
- Display the hand position during chest compression.
- Display the pulse intensity and the position of palpation.
- Display the cuff pressure.
- Display heart sounds, lung sounds and the Korotkoff sounds status.
- Display the airway angle.
- Display the jaw thrust maneuver.
- Display the force on incisor.
- Display the position of intubation.
- Display the stomach inflation.
- Display the chest rising and the airway obstruction.
- Display the pneumothorax setting.

8-9. Change the patient status

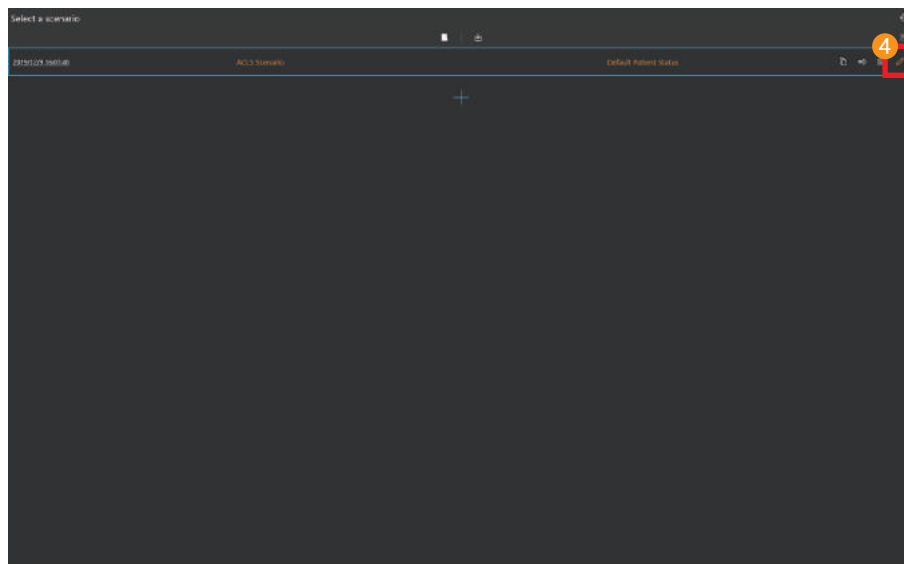
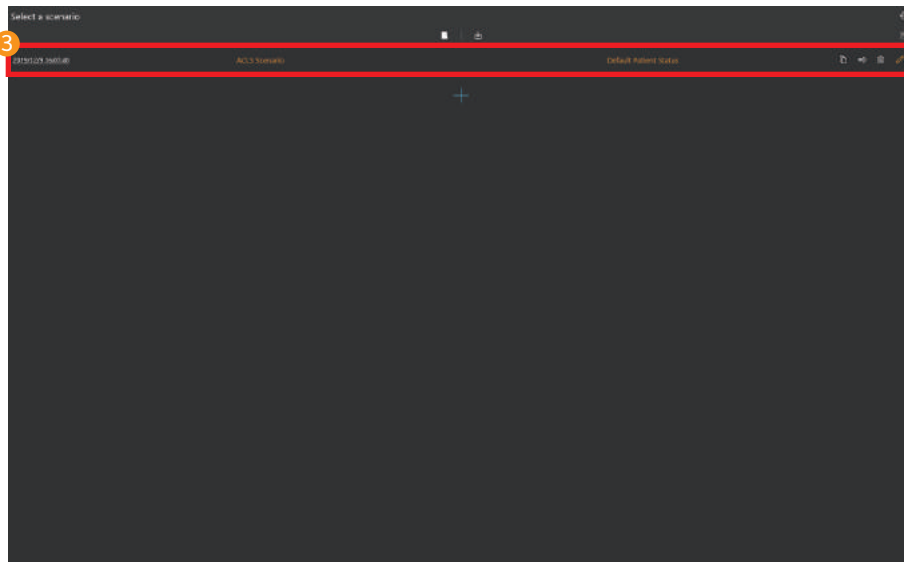


- 1 Select patient parameter menu**
 - Select the patient parameter menu that you want to change.
- 2 Set the parameter**
 - Change the parameter and transient time.
- 3 Check the patient status**
 - When the parameter is changed, you can check the changed value at the marked place in the above picture.

8–10. Scenario mode



- 1 **Start scenario mode**
 - Select the scenario mode from the home screen.
- 2 **Create a scenario**
 - Click the add scenario button and enter a scenario name.

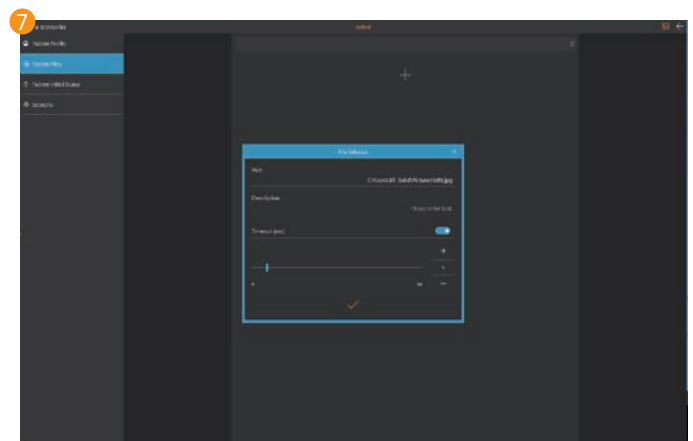
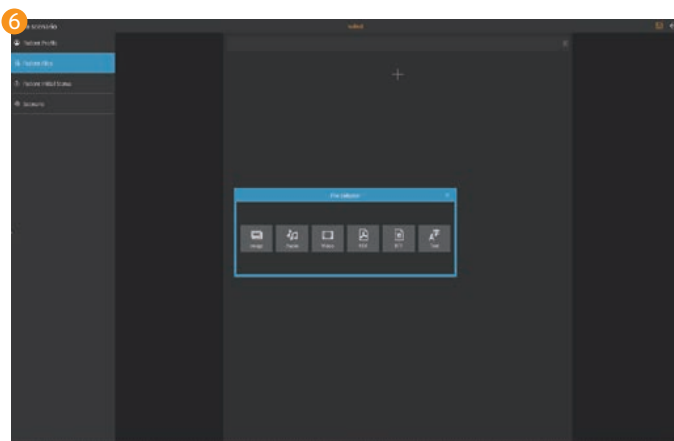
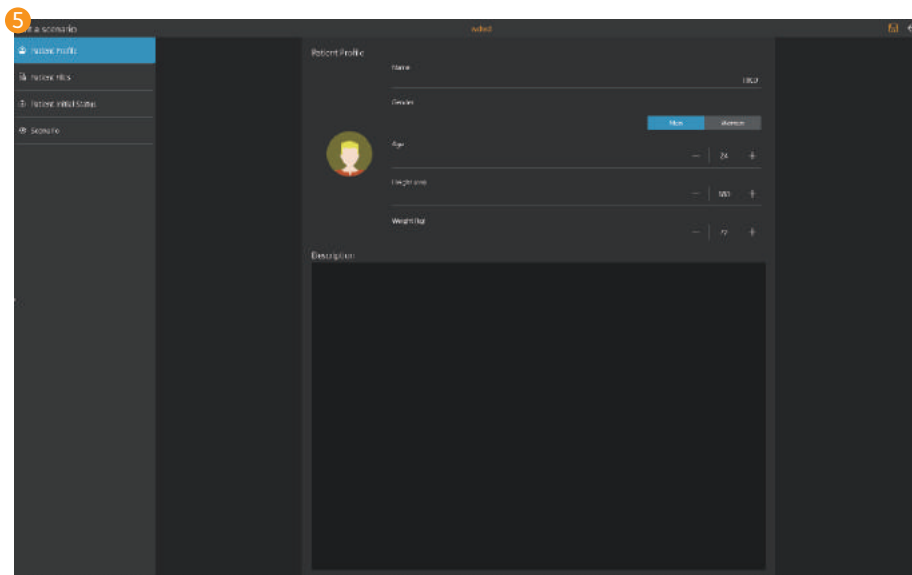


3 Confirm scenario creation

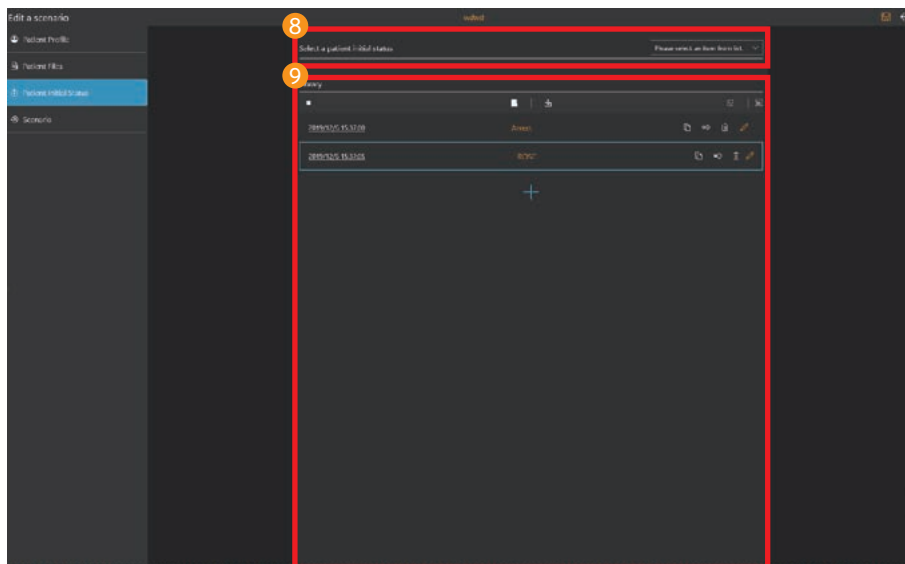
- You can check the scenario created date and name.
- You can check the selected initial patient status.
- You can change the scenario name.
- You can delete the scenario.
- You can copy the scenario.
- You can export or import scenarios.

4 Edit the scenario

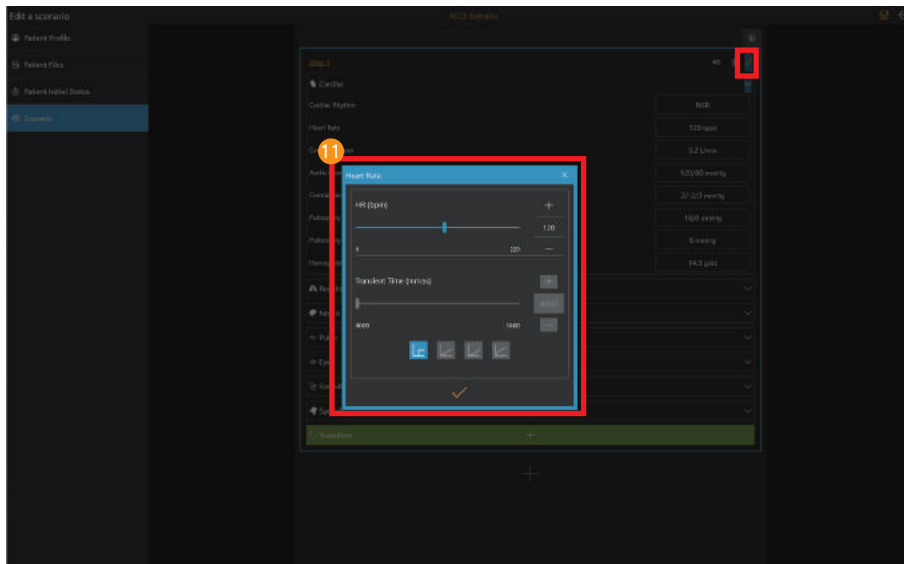
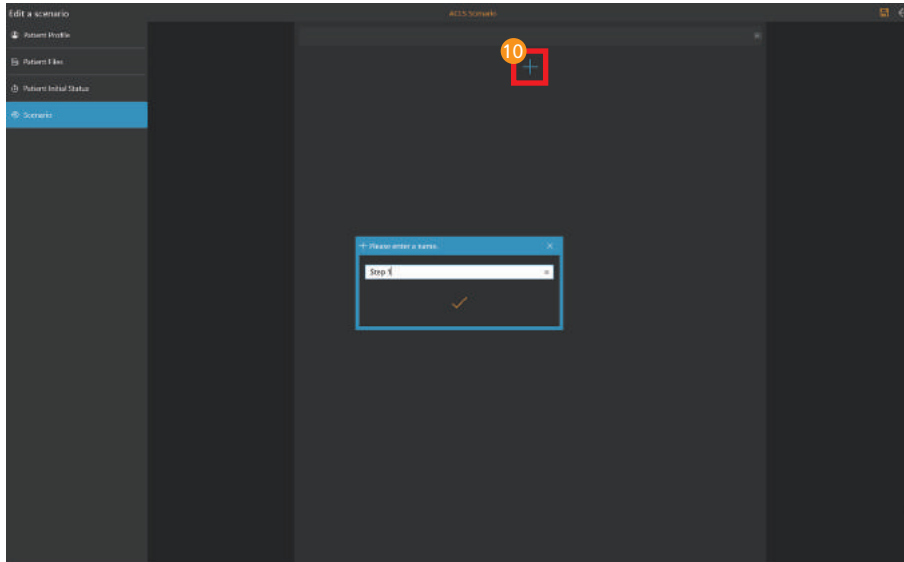
- Click the Edit button and edit the scenario.



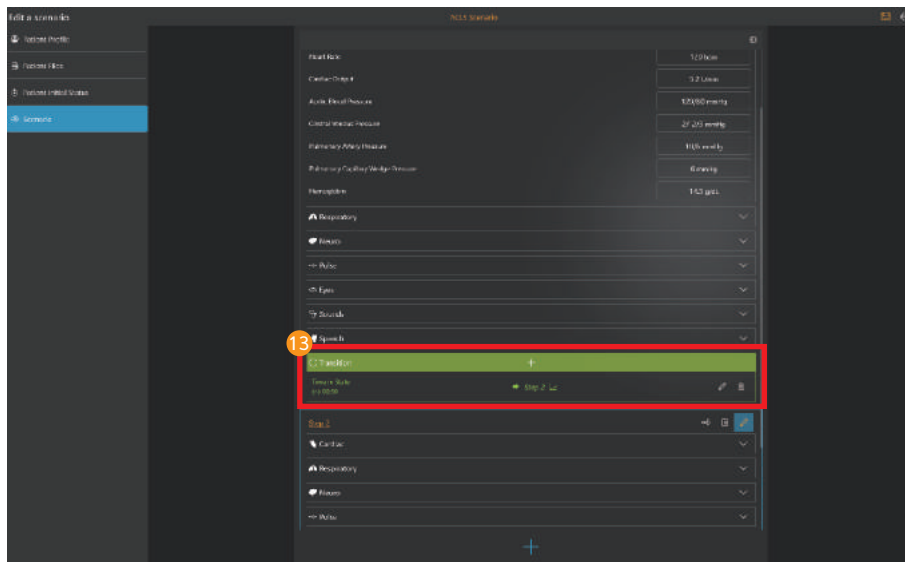
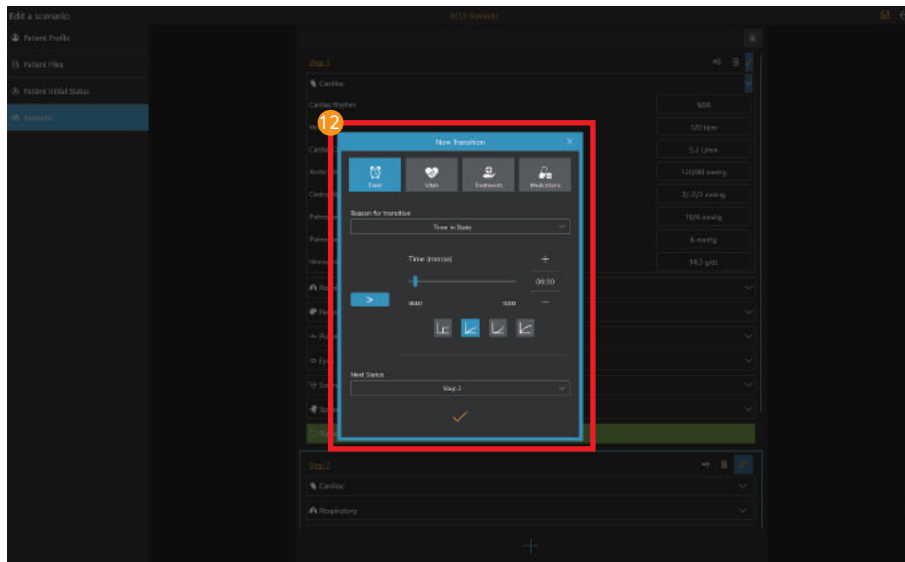
- 5 Set the patient profile
 - Set the patient's name, gender, age, height and weight.
 - Record the brief information about the patient.
- 6 Add patient file
 - File can be saved as image, audio, video, PDF, RTF, text format.
- 7 Setting up patient files
 - When adding the file, you can add the brief description and set the display expiration time.



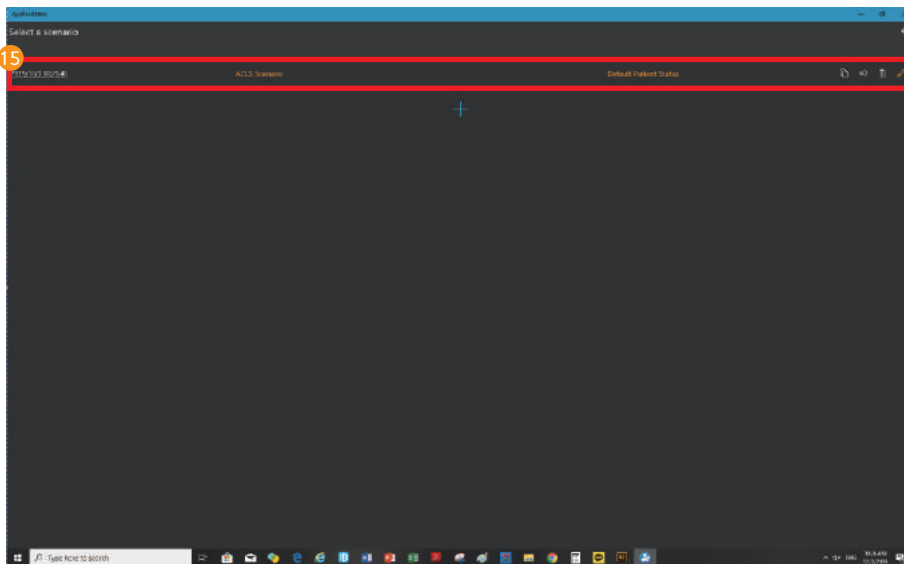
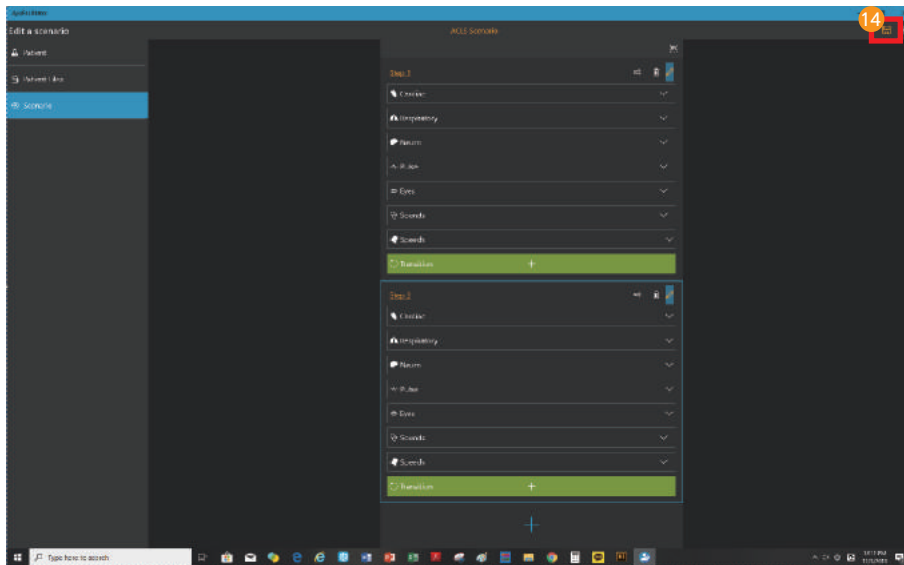
- 8 Select the initial patient status
 - Select the initial patient status from the library.
- 9 Create new patient status
 - You can create a new patient status.
 - You can change the patient status name.
 - You can delete the patient status.
 - You can copy the patient status.
 - You can export or import patient status.



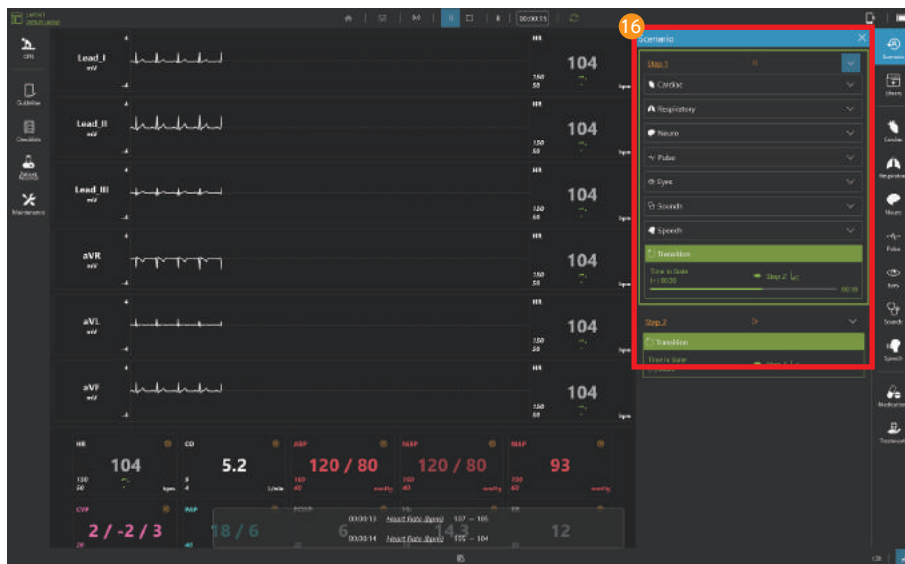
- 10 Add patient status
 - Click the add button to create a patient status needed for the training.
- 11 Set the patient status
 - Click the edit button to change the patient status.



- 12 Create transition
 - You can create transition conditions for changing patient status.
 - There are timer, vital signs, treatments and medications for the transition.
- 13 Check the transition
 - Check the transition condition and the next patient status.

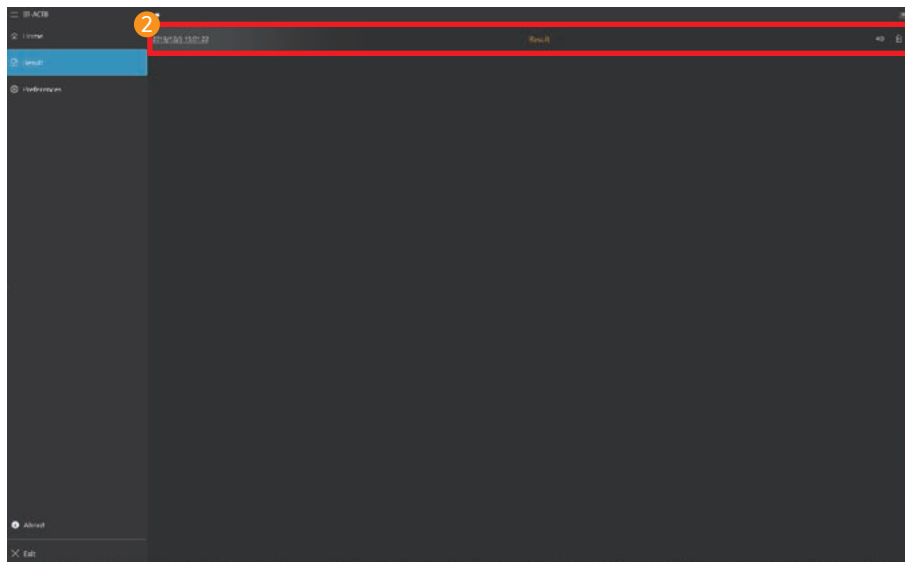
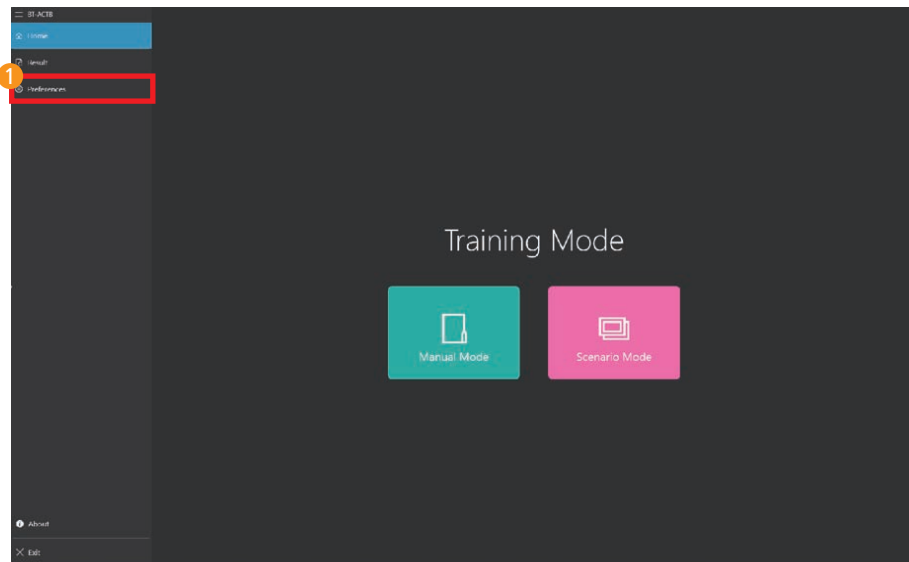


- 14 Save the scenario
 - Click the save button to save the scenario.
- 15 Start the scenario
 - Select the scenario for the training from the scenario list.

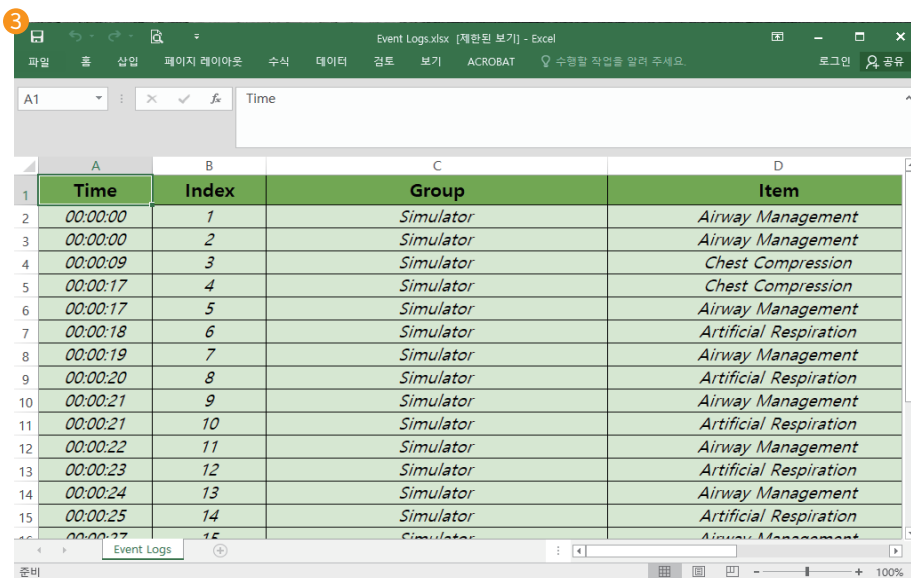
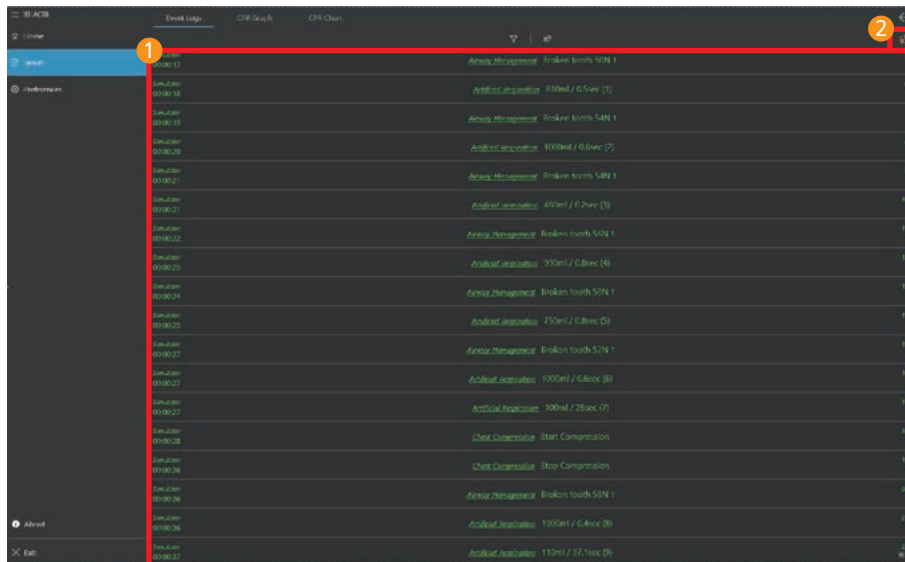


- 16 Run the scenario
- Can start or stop the scenario from the scenario menu.
 - Can check the set patient status.

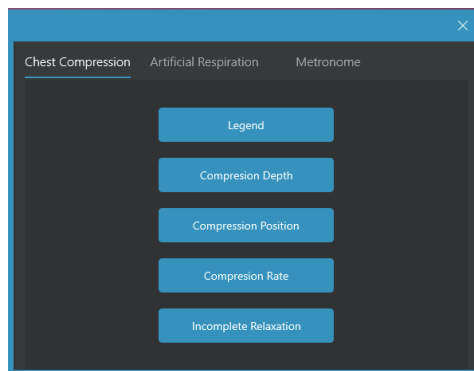
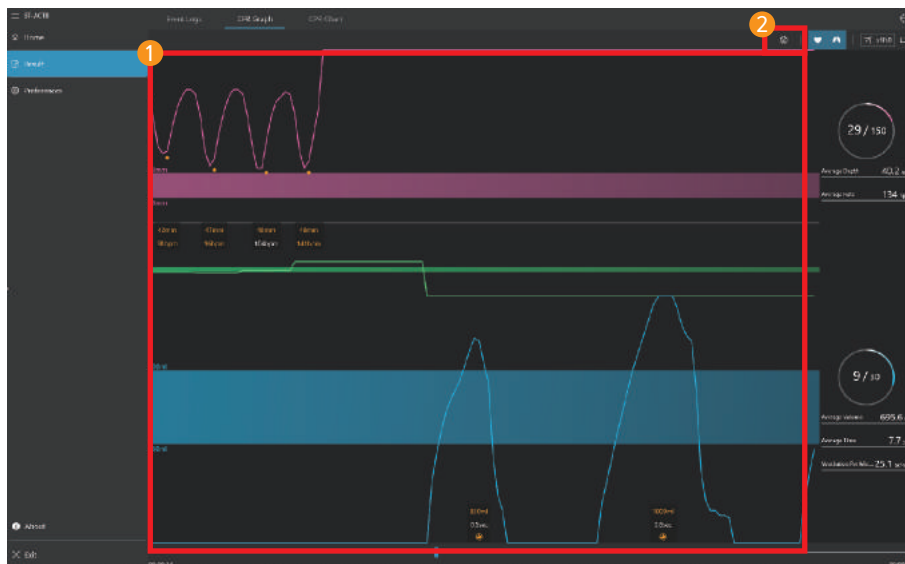
8-11. View results



- 1 **Select result viewer**
 - Select result viewer from the home screen.
- 2 **View saved results**
 - Select the desired result from the result list.



- 1 Review the event logs
 - Review the data such as changed parameters during the training.
 - You can view event logs by grouping them.
- 2 Export to excel file
 - You can export the event logs as an excel file format.
- 3 Save excel file
 - You can edit the event logs in Excel or save it with a another name.

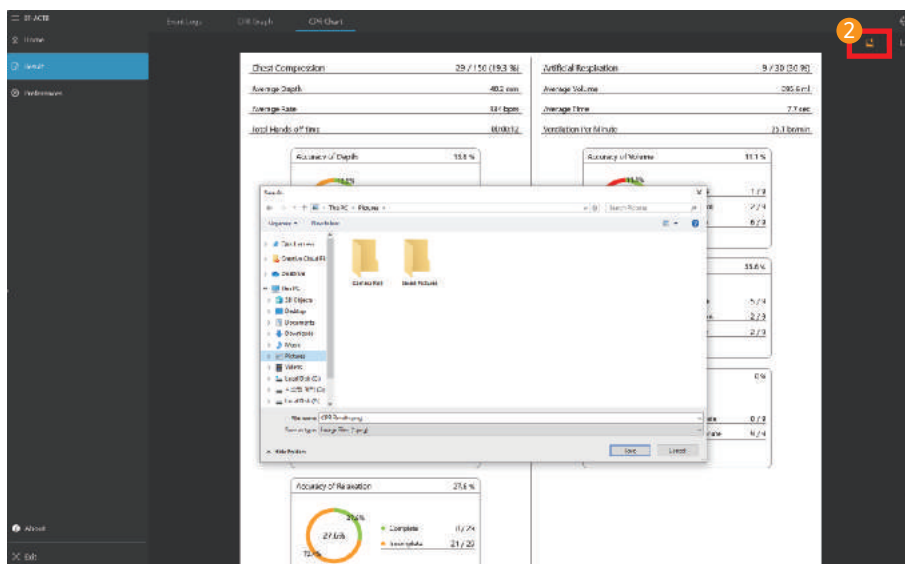
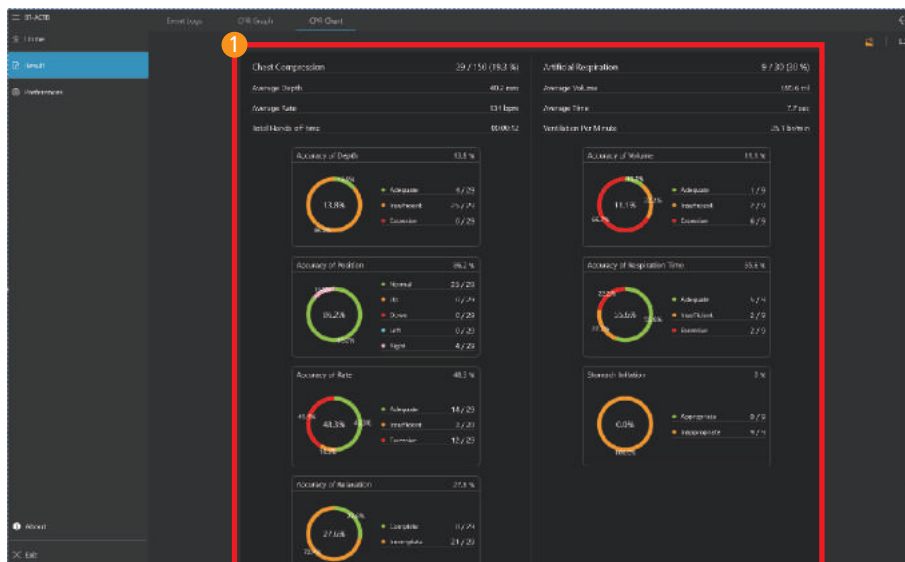


1 View CPR Graph

- Chest compression and ventilation data can be review.
- You can check the CPR data at the desired time using the graph search function.

2 CPR graph options

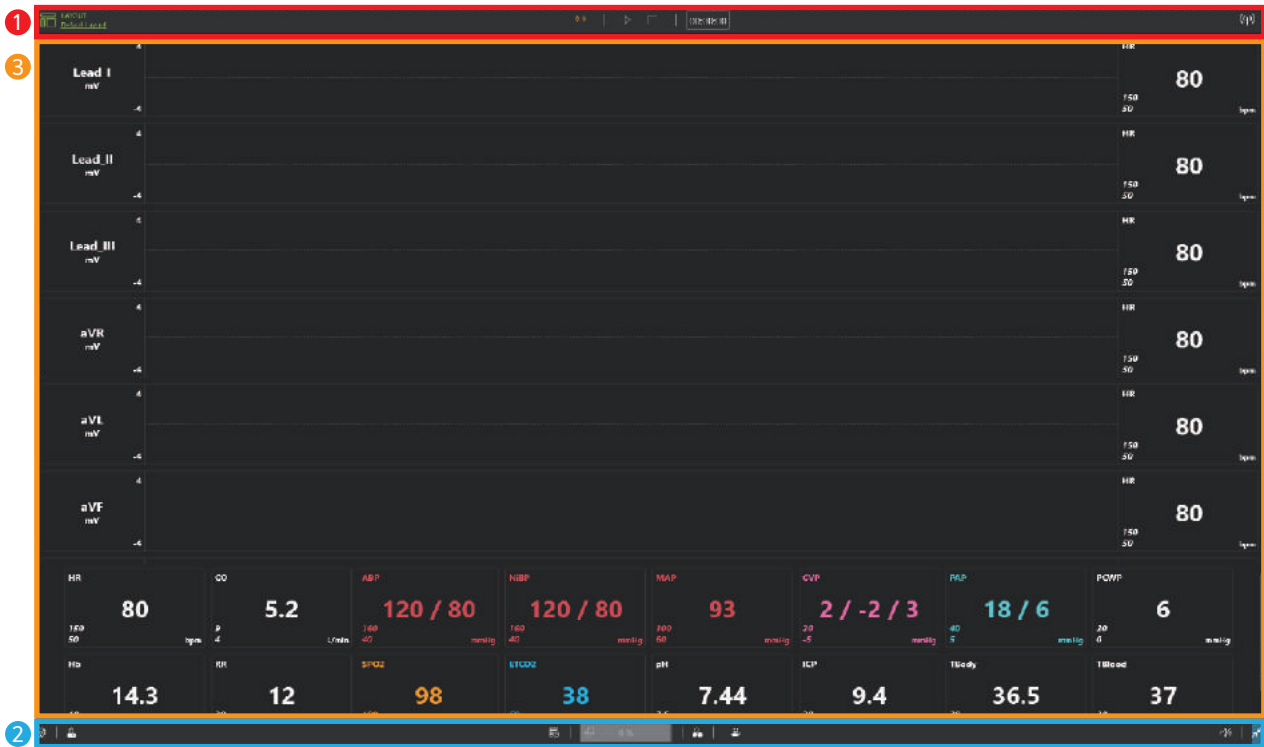
- Show or hide chest compressions and ventilation data generated during CPR training.



- 1 View CPR chart
 - You can see the CPR results as a chart.
- 2 Export to image file
 - Export or print in image file format.

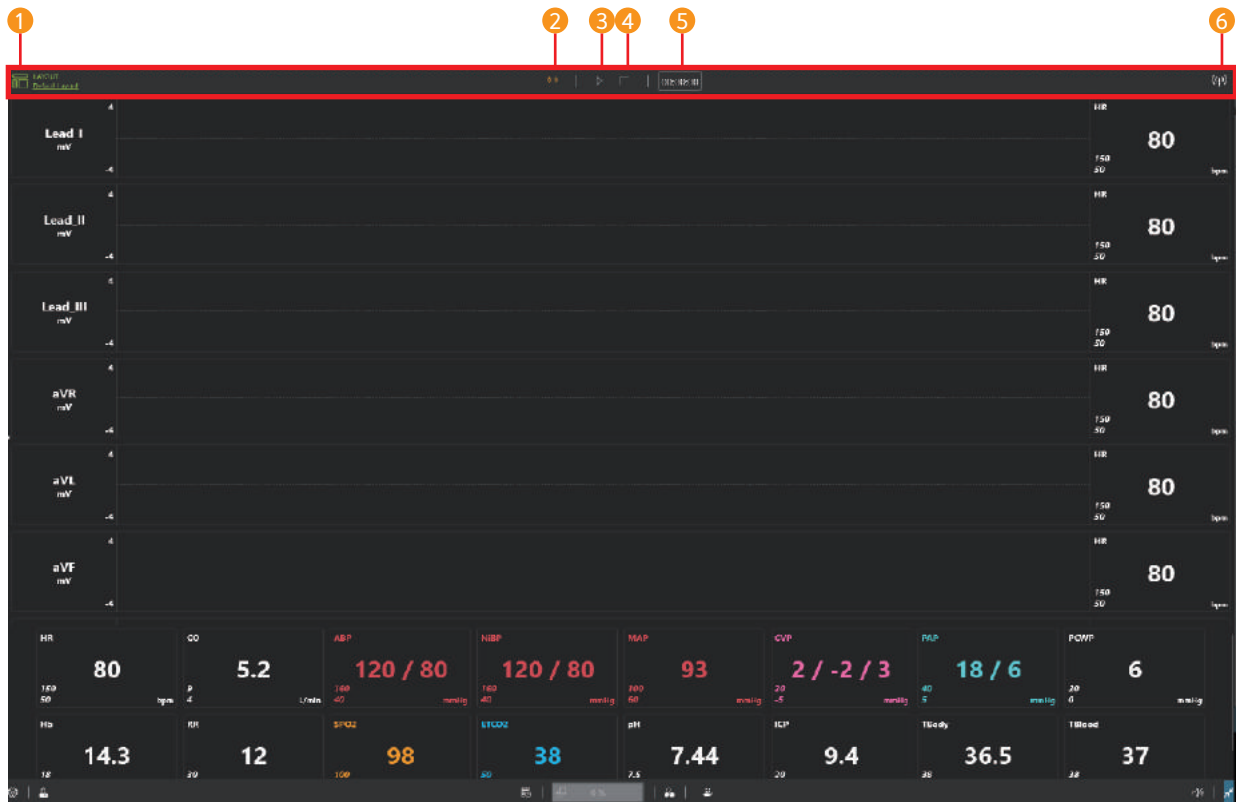
9. AppMonitor Feature








9-1. Patient monitor



① Top menu ② Bottom menu ③ Patient monitor











9-2. Top menu



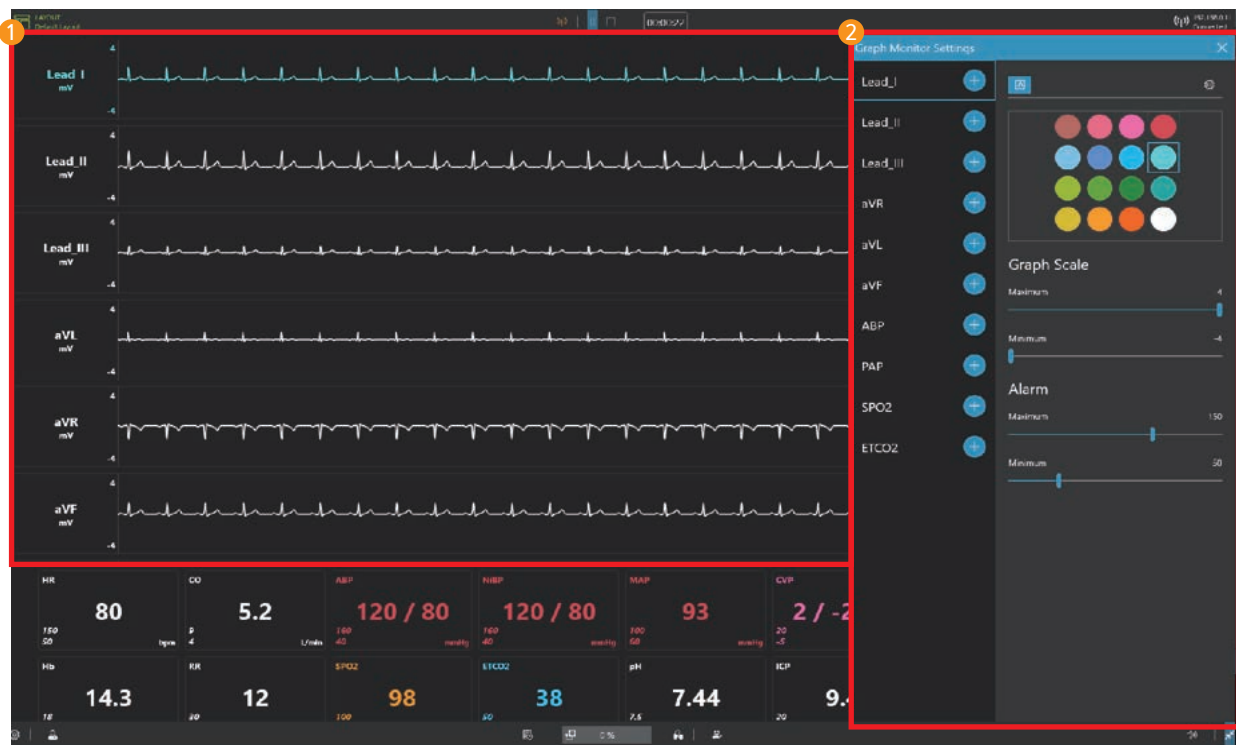
- ① Patient monitor settings  : Change settings of the layout of patient monitor, the audio and NIBP.
- ② Wi-Fi settings  : Connect with AppFacilitator.
- ③ Start training   : Displays the training start and stop status.
- ④ End training  : Displays the training end status.
- ⑤ Training time  : Display the training time.
- ⑥ Wi-Fi status  : Show connection status with AppFacilitator.

9-3. Bottom menu



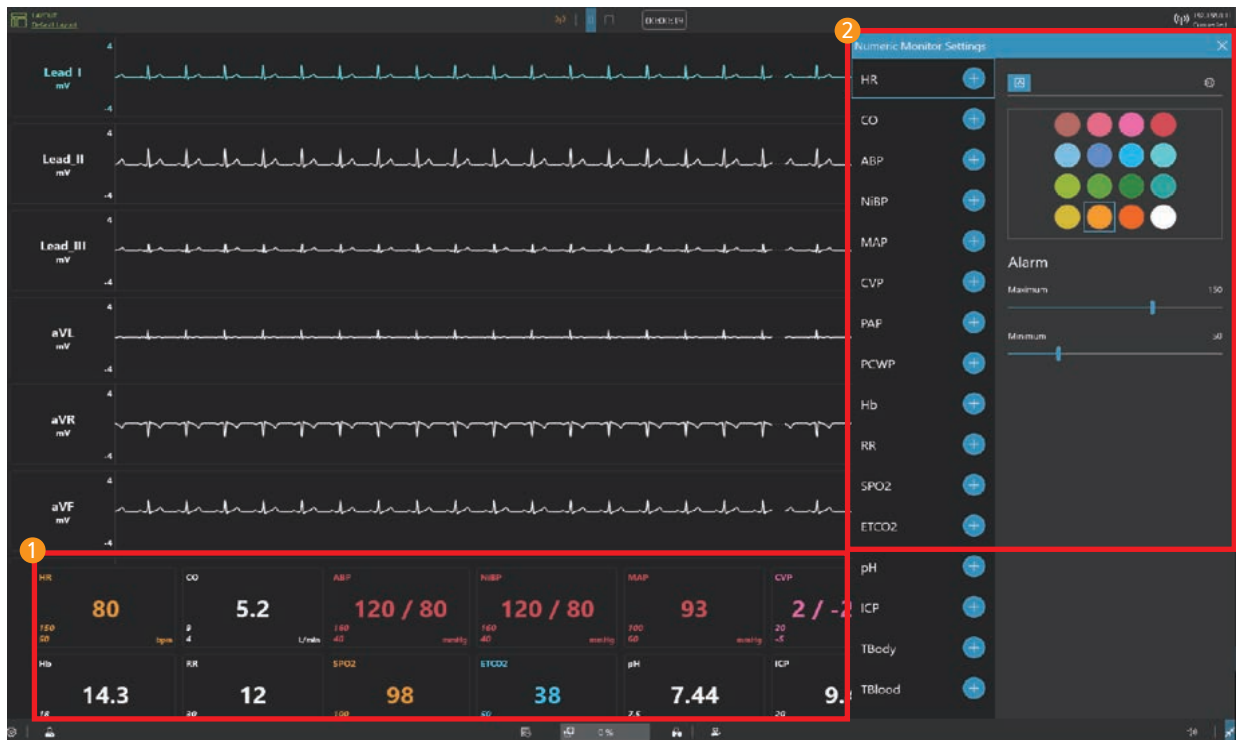
- 1 **Settings**  : You can check the preferences and S/W information.
- 2 **Patient records**  : You can check the patient profile, patient history and diagnostic result.
- 3 **Snapshot**  : Record the current patient status and print.
- 4 **NIBP**  0% : You can start measuring NIBP.
- 5 **Medications**  : You can make medications needed for the training.
- 6 **Treatments**  : You can train defibrillation, pacing, oxygen therapy.
- 7 **Mute**   : Turn the sound ON/OFF.
- 8 **Full screen mode**   : Turn on and off full screen mode.

9-4. Patient monitor (Graph monitor)



- 1 Graph monitor
 - Display ECG, ABP, PAP, ETCO2 waveform.
- 2 Graph monitor settings
 - You can add or delete waveforms to the graph monitor.
 - You can change the color of the waveform.
 - You can block the waveform's signal.
 - You can adjust the graph scale.
 - You can set the alarm.

9-5. Patient monitor (Numeric monitor)



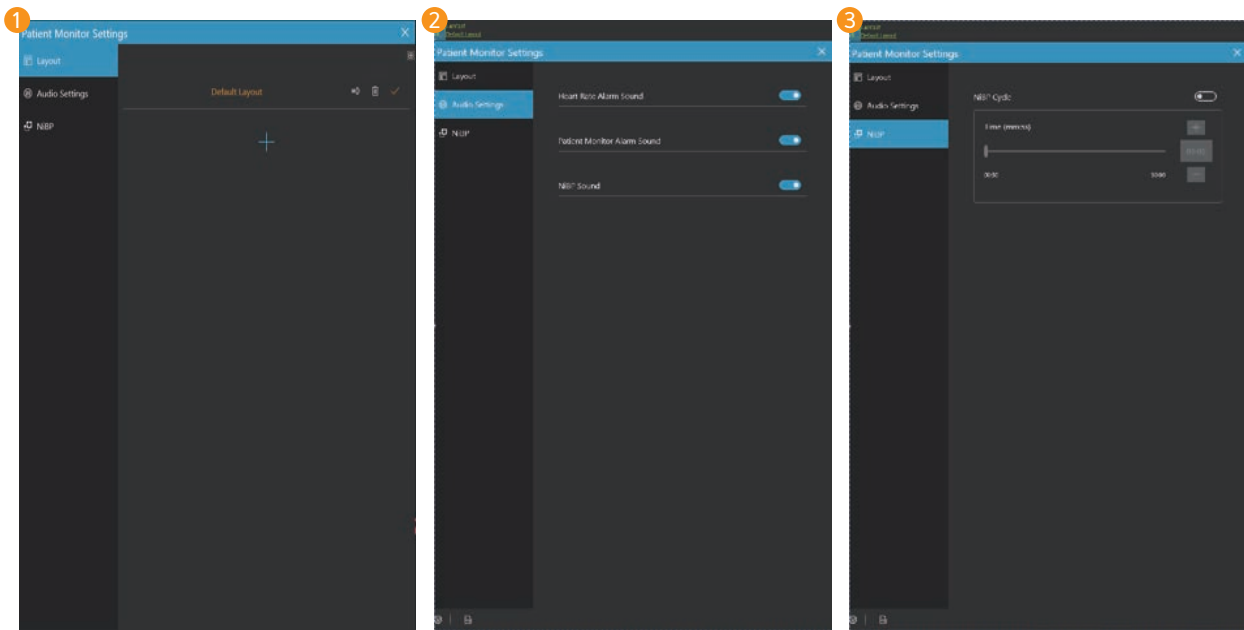
1 Numeric monitor

– Display numeric values such as HR, CO, ABP.

2 Numeric monitor settings

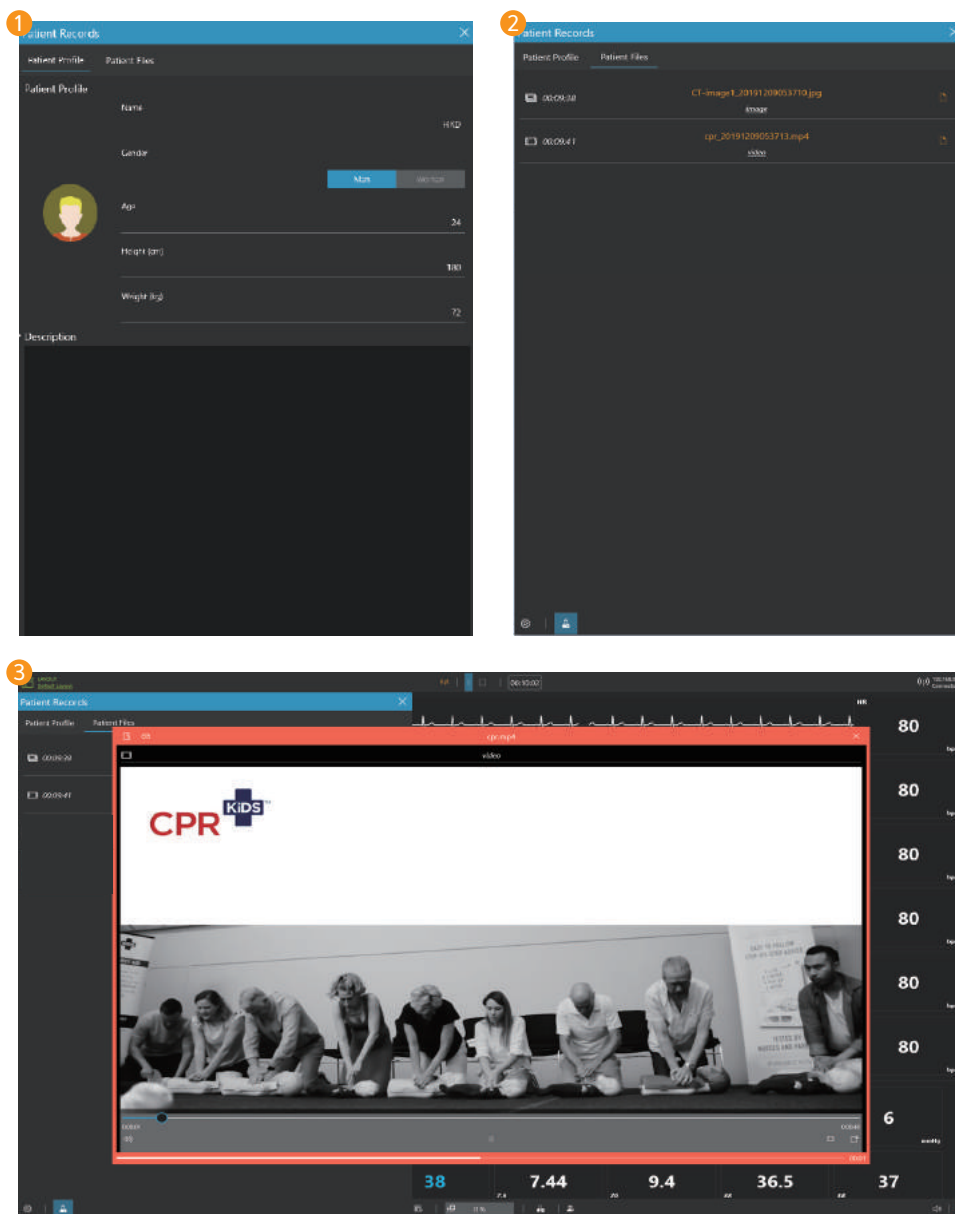
- You can add or delete patient parameters in the numeric monitor.
- You can change the color of the patient parameters.
- You can show or hide patient parameters.
- You can set the alarm.

9-6. Patient monitor settings



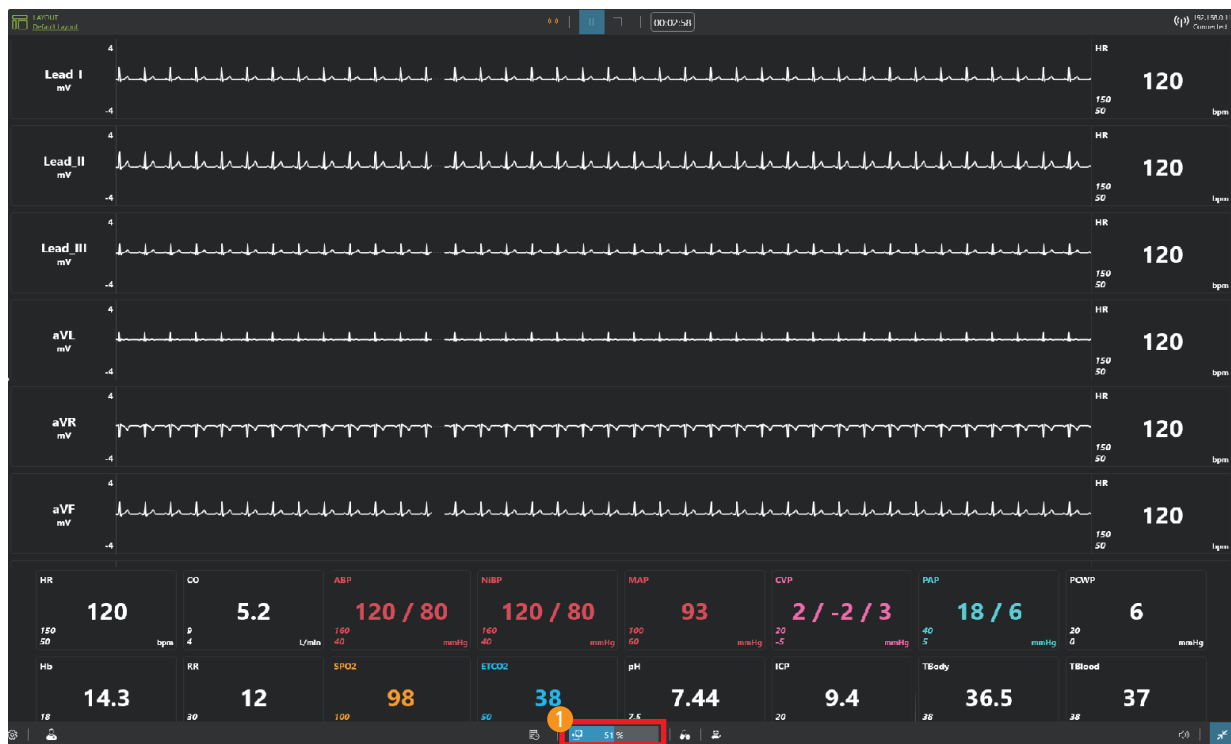
- 1 Patient monitor layout settings
 - You can save and load the layout of the graph monitor and numeric monitor.
- 2 Audio settings
 - You can set the heart rate alarm, patient monitor alarm, and NiBP sound.
- 3 NiBP settings
 - You can set the NiBP auto cycling.

9-7. Patient records



- 1 Patient profile
 - You can check the current patient profile.
- 2 Patient files
 - Patient files sent from AppFacilitator are saved.
- 3 Check the patient file
 - Click the open file button to view the patient file.

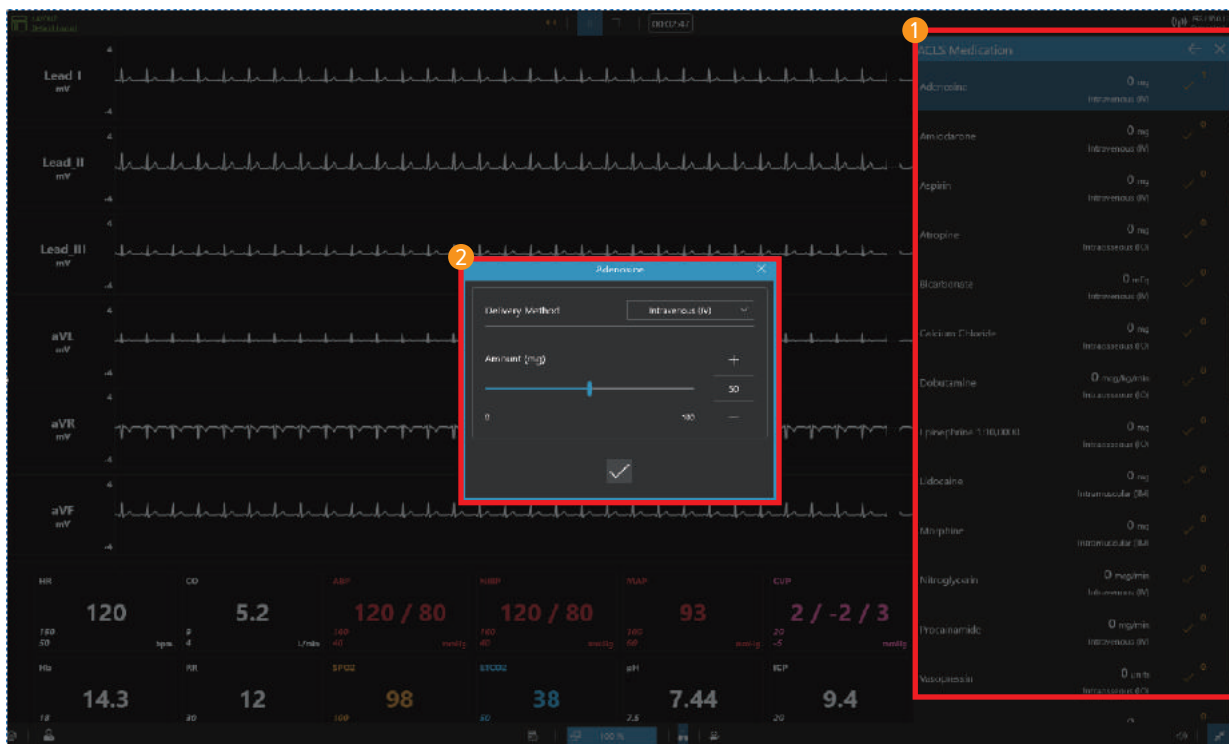
9-8. NiBP



1 Measure NiBP

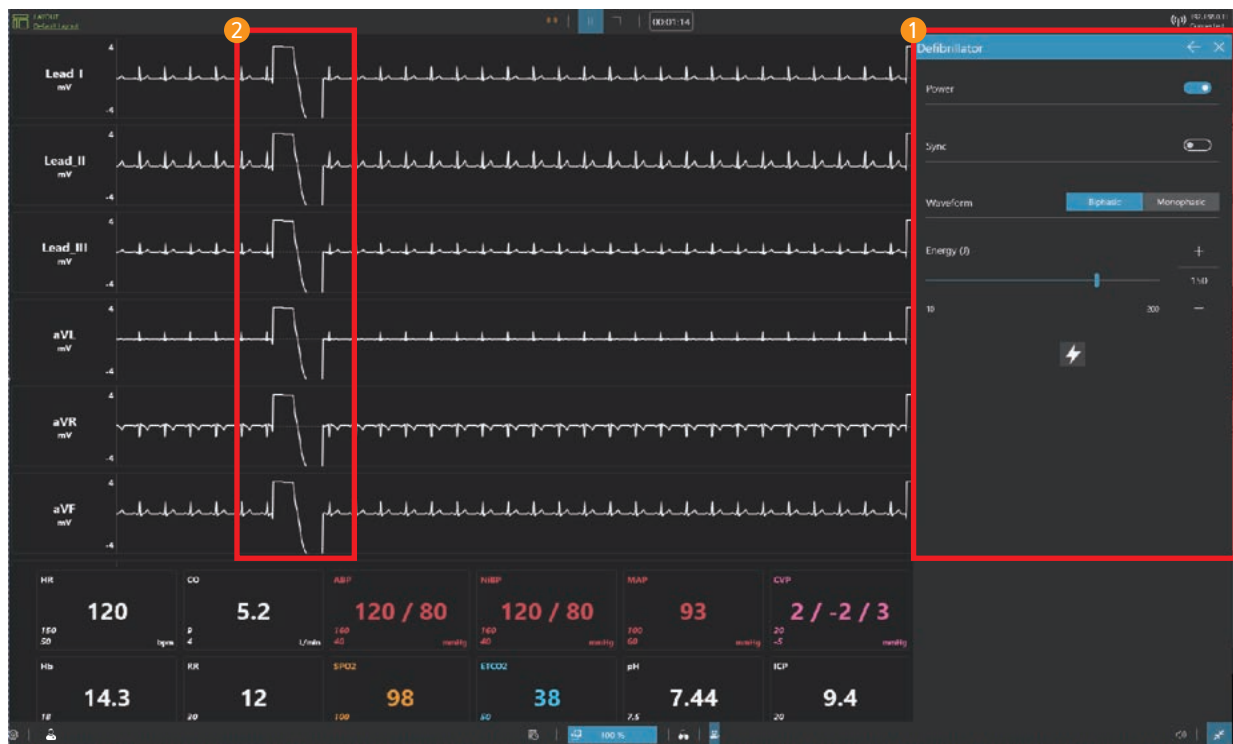
- Click the mouse to start the NiBP measurement.
- NiBP is automatically measured when the NiBP auto cycling is set.

9-9. Medications



- 1 **Create a medication**
 - You can make medications needed for the training.
- 2 **Administration of medication**
 - Select the type of medication and set the dosage and medication method.

9–10. Defibrillator



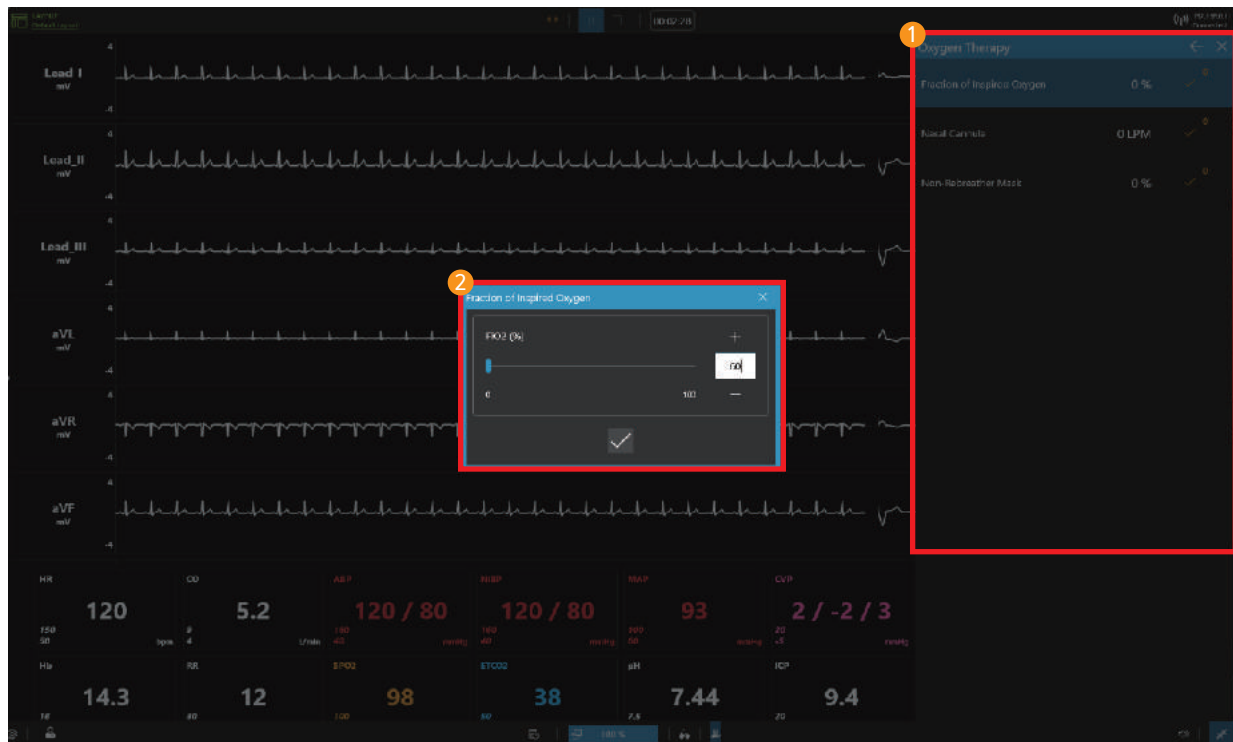
- 1 Defibrillator
 - You can train synchronous and asynchronous defibrillation.
 - You can select the type and energy of the defibrillation waveform.
- 2 Defibrillation waveform
 - Defibrillation waveforms are displayed on the ECG graph during defibrillation.

9-11. Pacer



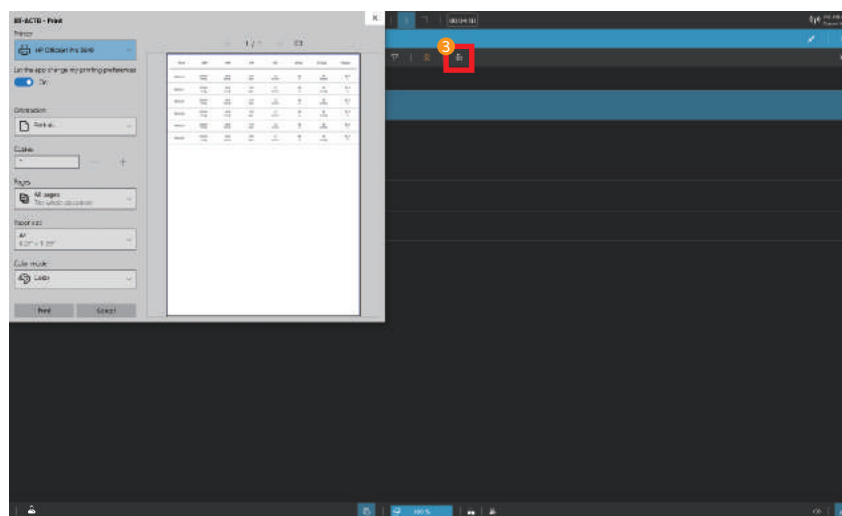
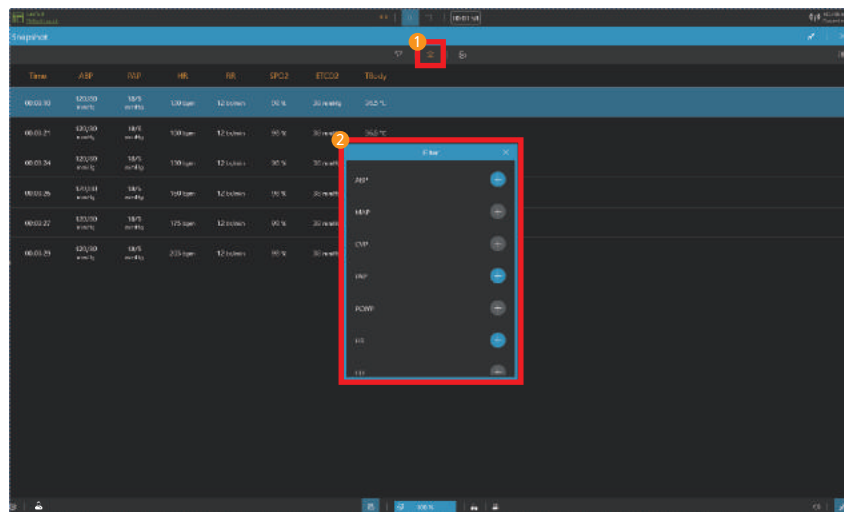
- 1 Pacer**
 - You can set pacing current and rate.
 - You can set the patient threshold current.
- 2 Capture beats**
 - When pacing current is applied, capture beats are displayed on ECG graph.

9–12. Oxygen therapy



- 1 **Select oxygen therapy**
 - You can choose the oxygen therapy that such as fraction of inspired oxygen and nasal cannula.
- 2 **Set the oxygen therapy**
 - You can set appropriate FiO_2 and flow rate for the patient treatment.

9-13. Snapshot



- 1 Record the patient status
 - Click the capture button to record the current patient status
- 2 Set filters
 - Use the filter to add or delete the currently recorded patient status parameters.
- 3 Print snapshot
 - Click the print button to print the snapshot.

Precautions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.