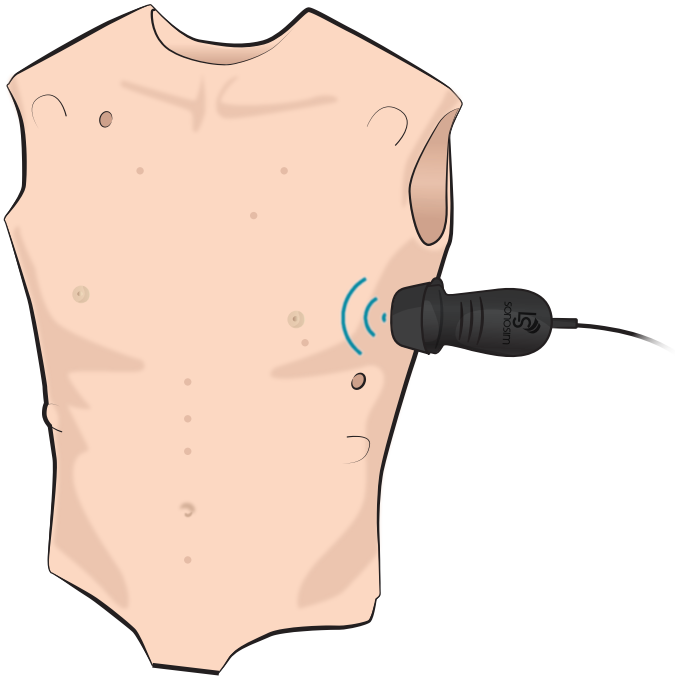
EN

Laerdal-SonoSim
Ultrasound Solution

User Guide



www.laerdal.com

Laerdal
helping save lives

SonoSim

Contents

Introduction

The Laerdal-SonoSim Ultrasound Solution (LSUS) enables real patient-based ultrasound cases into the SimMan family and SimMom simulators. Users can now incorporate real ultrasound cases diagnostic scanning into full-scale simulations with pathological findings.

The LSUS 2.0 software features dynamic control of the heart and respiratory rate resulting in immediate changes to the ultrasound images on the Ultrasound PC. This feature can be utilized during the set-up of a scenario, or in the middle of a scenario.

Paired with a complementary subscription to Scenario Cloud, the LSUS offers a complete simulation package for the SimMan family and SimMom simulators. Credentials are needed in order to access and download the ultrasound LLEAP scenarios. Contact your Laerdal representative if you have not recieved your login credentials.

This User Guide outlines how to set up and run the LSUS.

Items included in this Upgrade Kit:

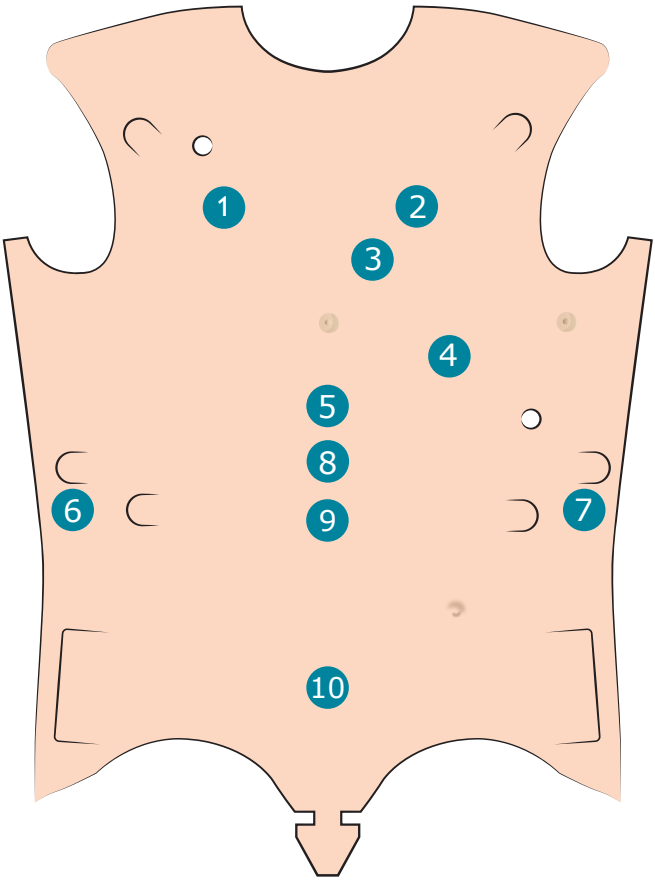
SimMan and SimMom
- Laerdal-SonoSim Tags,
- LS Probe,
- Quick Setup Guide.

SimMom only
- Gravid and non-gravid,
- chest skin,
- supporting foam for additional skins.

Additional items needed
- Ultrasound PC (purchased separately),
- LSUS 2.0 subscription to access to all compatible simulator Content Bundles (purchased separately).

For SimMan

Laerdal-SonoSim Tags are embedded in the skin for easy identification.



1. Right Chest
2. Left Chest
3. Parasternal
4. Apical
5. Subcostal
6. Right Upper Quadrant
7. Left Upper Quadrant
8. Proximal IVC
9. Mid Aorta
10. Suprapubic

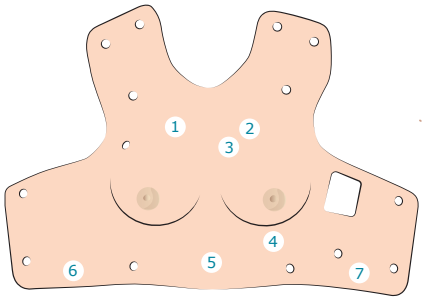
⚠ Caution

Do not bend or apply excessive force on the Laerdal-SonoSim tags, as this could damage them.

Tag Location Overview

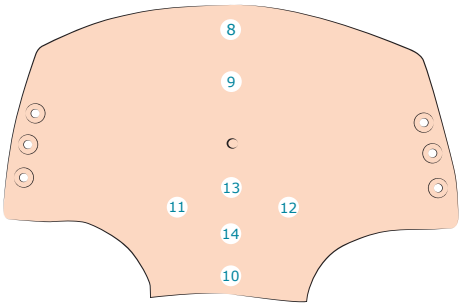
For SimMom - White Tags

Chest Skin
1. Right Chest
2. Left Chest
3. Parasternal
4. Apical
5. Subcostal
6. Right Upper Quadrant
7. Left Upper Quadrant



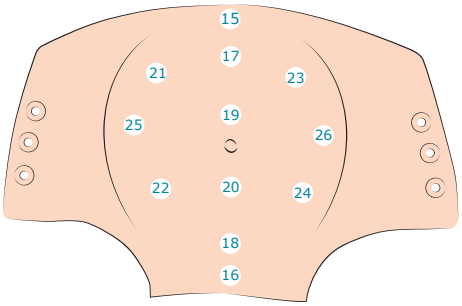
Chest Skin

Non-Gravid Belly Skin
8. Proximal IVC
9. Mid Aorta
10. Suprapubic
11. Right Adnexa
12. Left Adnexa
13. Upper Uterus
14. Lower Uterus



Non-Gravid Belly Skin

Gravid Belly Skin
15. Proximal IVC
16. Suprapubic
17. Upper Uterus
18. Lower Uterus
19. Supraumbilical
20. Infraumbilical
21. Parauterine Right Upper Quadrant
22. Parauterine Right Lower Quadrant
23. Parauterine LUQ
24. Parauterine LLQ
25. Parauterine RMQ
26. Parauterine LMQ



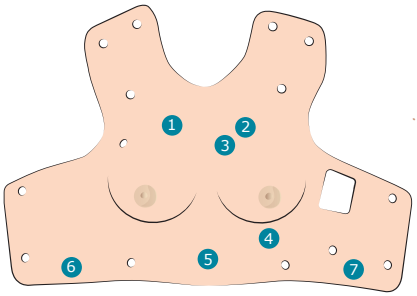
Gravid Belly Skin

⚠ Caution

Do not bend or apply excessive force on the Laerdal-SonoSim tags, as this could damage them.

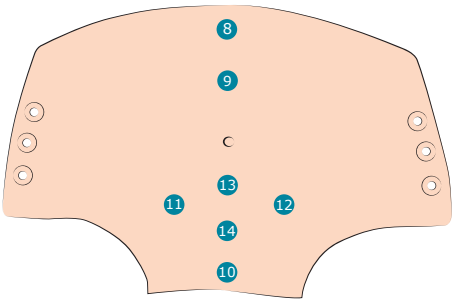
For SimMom - Blue Tags

Chest Skin
1. Right Chest
2. Left Chest
3. Parasternal
4. Apical
5. Subcostal
6. Right Upper Quadrant
7. Left Upper Quadrant



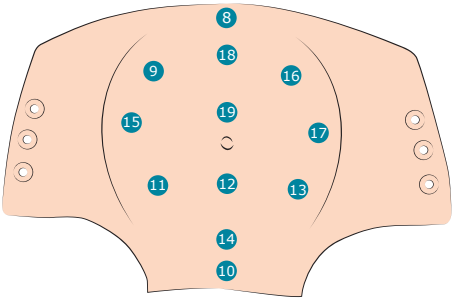
Chest Skin

Non-Gravid Belly Skin
8. Proximal IVC
9. Mid Aorta
10. Suprapubic
11. Right Adnexa
12. Left Adnexa
13. Upper Uterus
14. Lower Uterus



Non-Gravid Belly Skin

Gravid Belly Skin
15. Proximal IVC
16. Parauterine Right Upper Quadrant
17. Suprapubic
18. Parauterine Right Lower Quadrant
19. Infraumbilical
20. Parauterine Left Lower Quadrant
21. Lower Uterus
22. Parauterine Right Mid Quadrant
23. Parauterine Left Upper Quadrant
24. Parauterine Left Mid Quadrant
25. Upper Uterus
26. Supraumbilical



Gravid Belly Skin

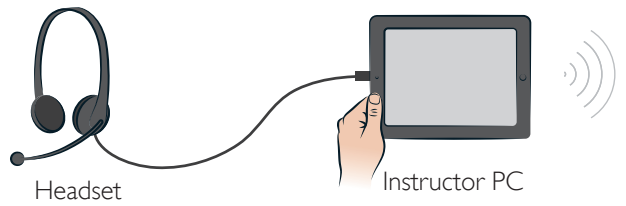
⚠ Caution

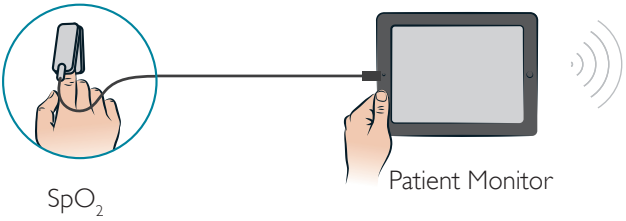
Do not bend or apply excessive force on the Laerdal-SonoSim tags, as this could damage them.

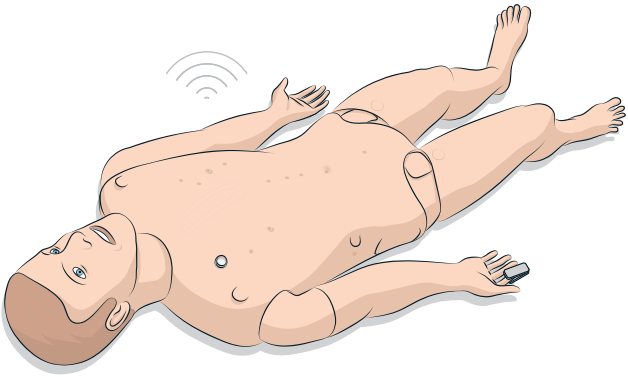
Note

LSUS software version 2.27.4 or lower for SimMom were shipped with blue tags embedded into the skins. LSUS software version 2.31.0 and higher are shipped with white tags embedded into the skin. Both tags are compatible with the product.

System Configuration



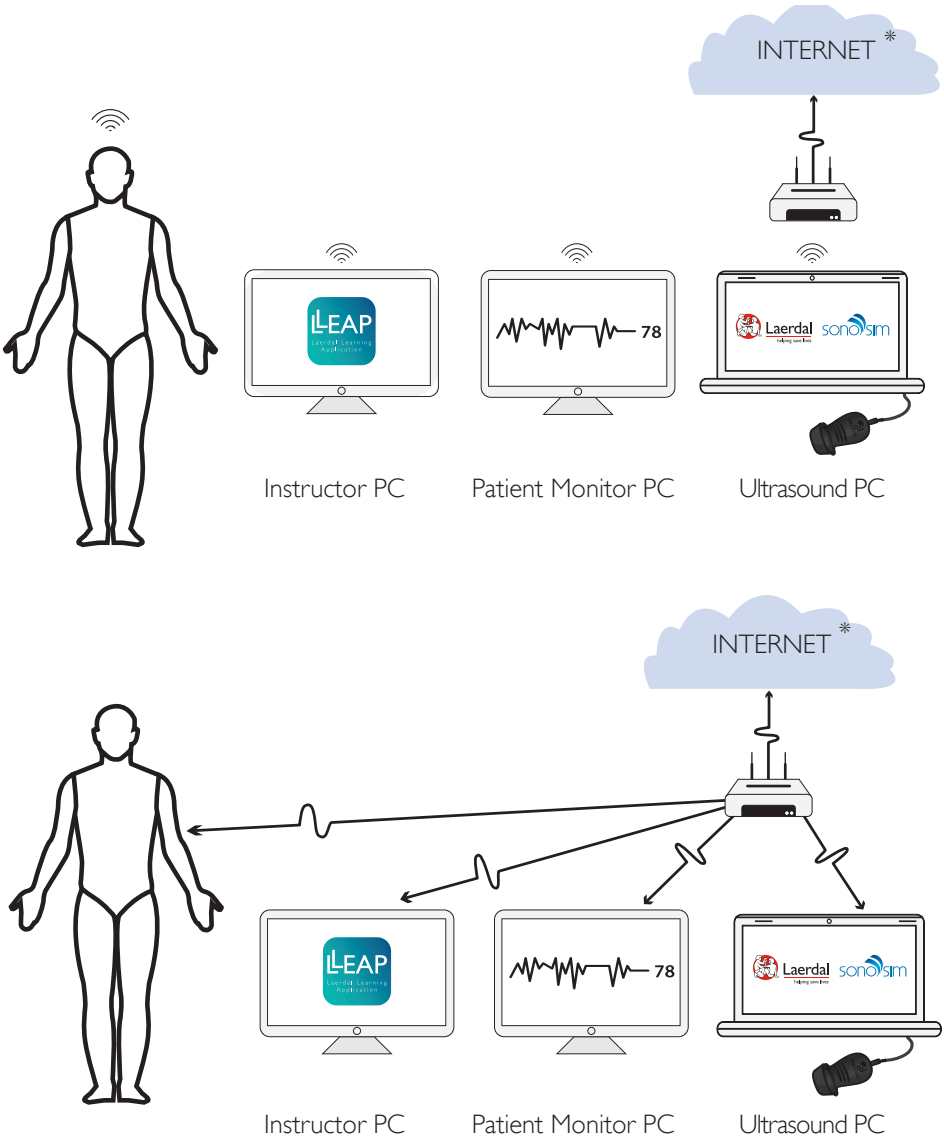




Note

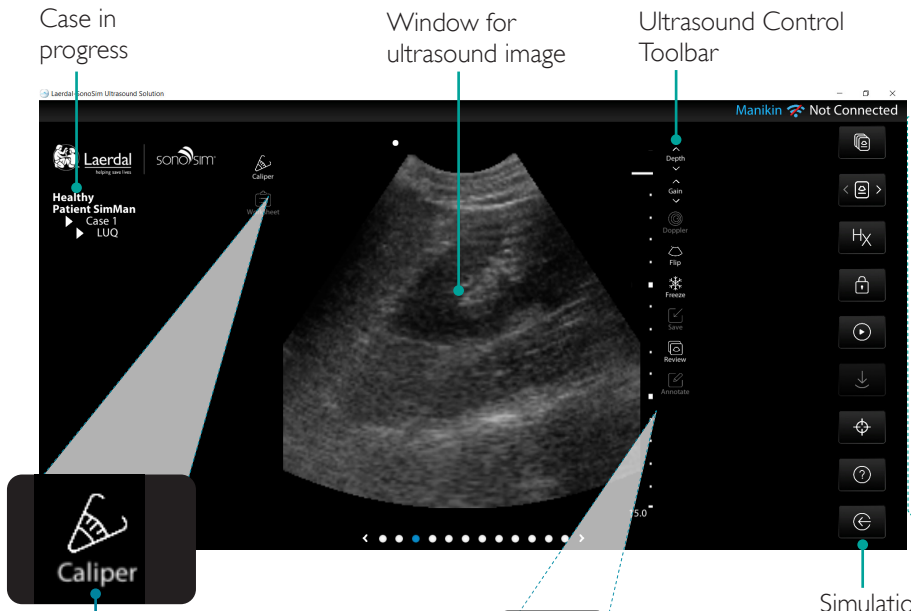
SimMan ALS / SimMom Link Box network must be configured to be found via the High Bandwidth Internet Network.

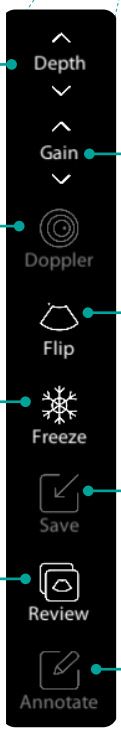
Connect to the Internet to enable all features.



**For LSUS software version 2.31.0 and above, Internet connection is optional. However, Internet connection is necessary to receive the most up-to-date content (Findings videos, Doppler clips,etc.) and to download software updates.*

Ultrasound PC Overview





Click arrows to adjust depth of ultrasound view.

Click arrows to adjust brightness of ultrasound view.

Displays power, color-flow, pulsed-wave, and M-mode Doppler as available.

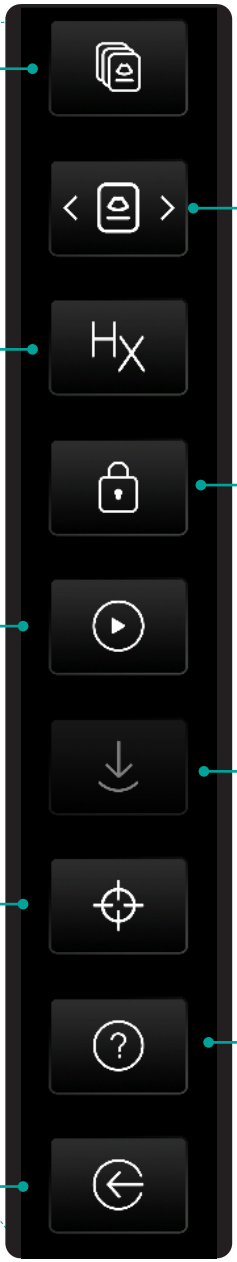
Allows displayed image to be flipped for different imaging conventions.

Click to freeze view. Click again to un-freeze view.

Saves the frozen view.

Review saved images.

Only available when the image is frozen. Saved image can be annotated and archived for future use.



Case List
Available training cases sorted by emergency care protocol

Case
Navigate through hands-on training cases.

Case History
Brief patient history.

Lock
Locking the ulstrasound image.

Findings
Plays ultrasound scan findings with narration by an expert.

Compress button
Click and hold to perform compression when available.

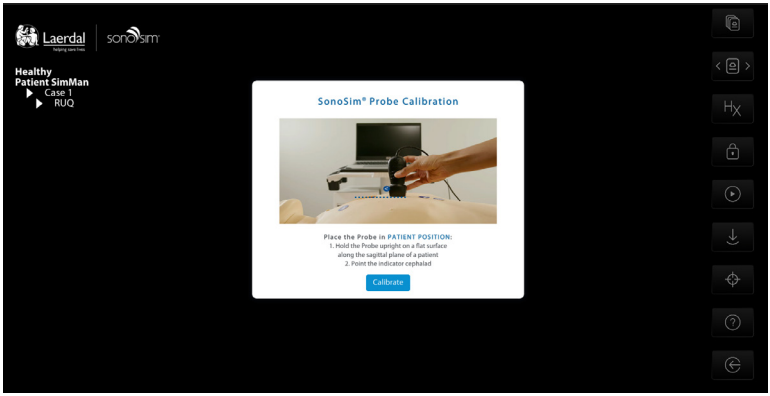
Calibrate
Instructions on how to calibrate the Probe.

Help
Access User Guide.

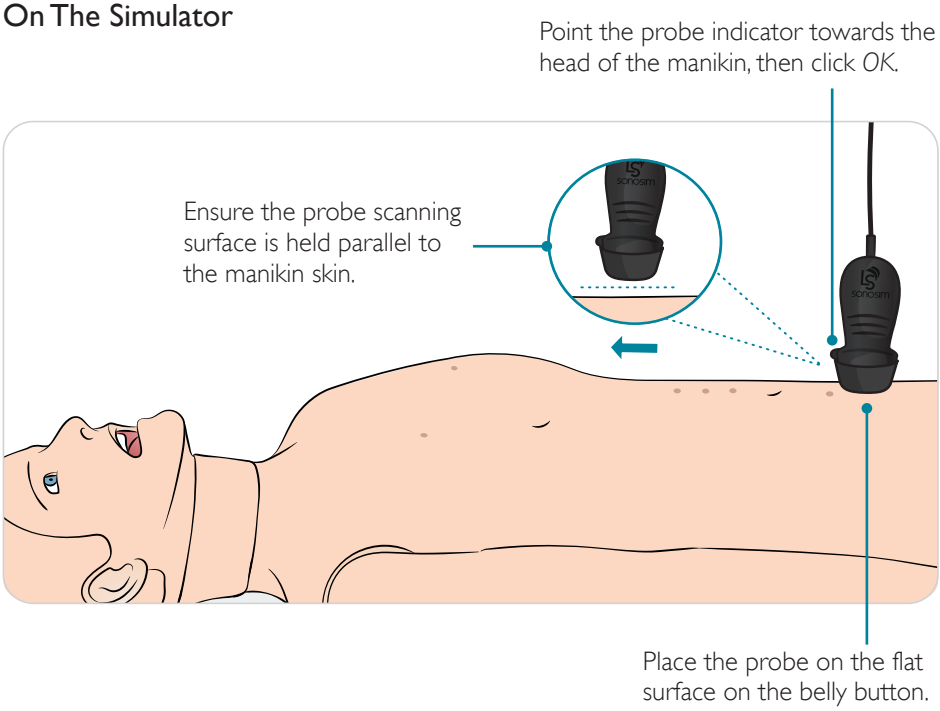
Close
Quits the application.

Probe Calibration for SimMan Family

Follow the on-screen instructions to calibrate the probe for SimMan.



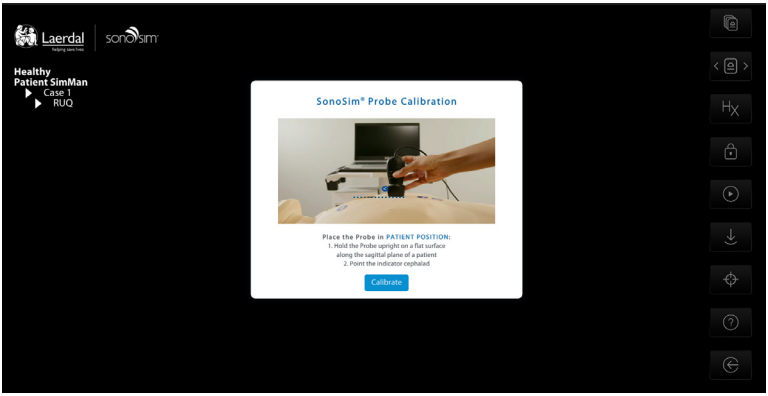
On The Simulator



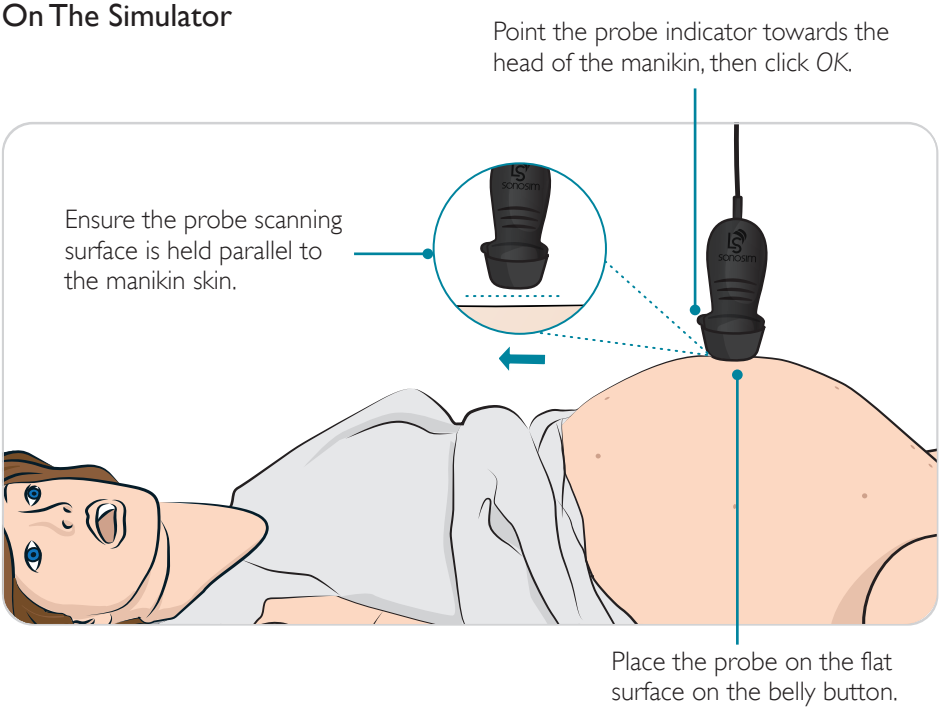
The probe is now ready for use.

Probe Calibration for SimMom

Follow the on-screen instructions to calibrate the probe for SimMom.



On The Simulator

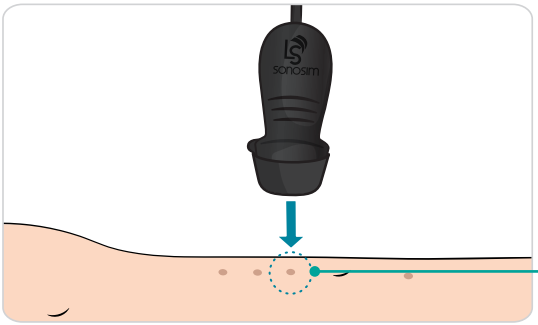


The probe is now ready for use.

Recalibrate the Probe

Recalibrate the probe according to Probe Calibration at the beginning of each new scenario. See Calibration.

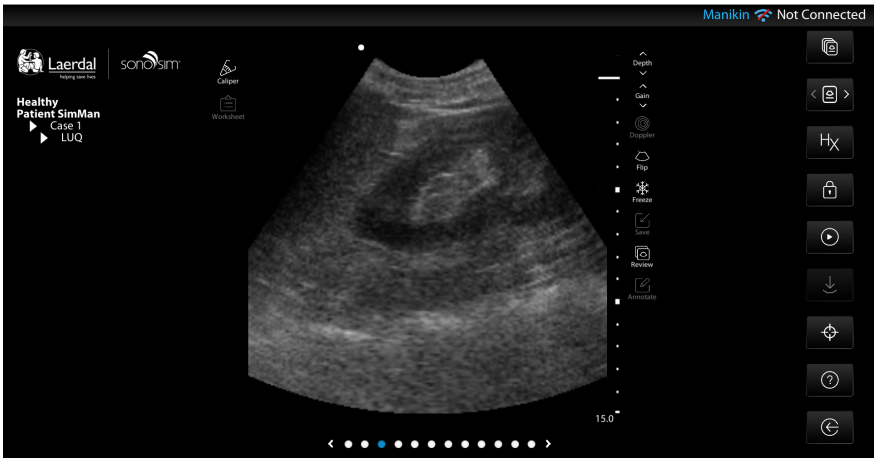
Scanning



Place the Probe on one of the imaging-window indicator symbols on the manikin skin to start scanning.

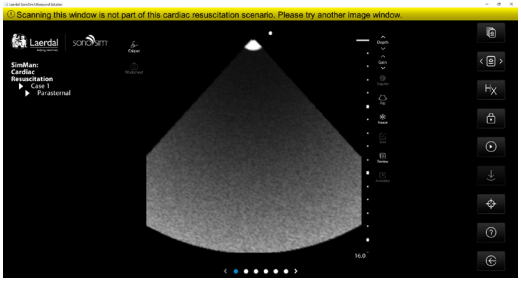
Imaging-window indicator symbols

Each point is positioned over designated imaging windows that display real patient-based ultrasound images.



Note

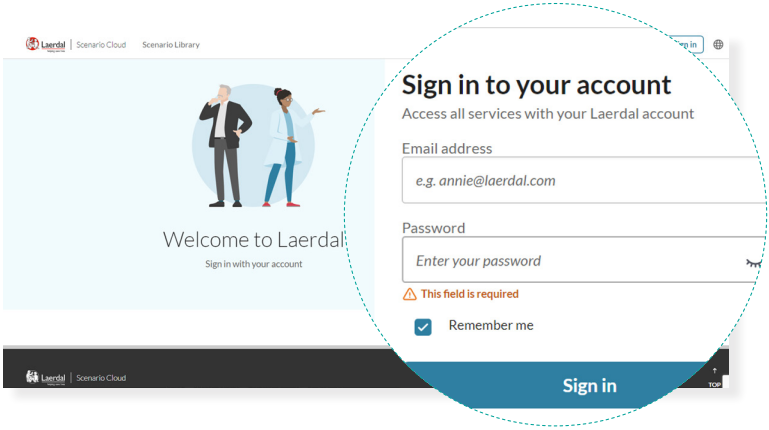
If you scan over an imaging window that is not part of the selected case, a message will be displayed, e.g., "This image window is not part of this trauma care case."



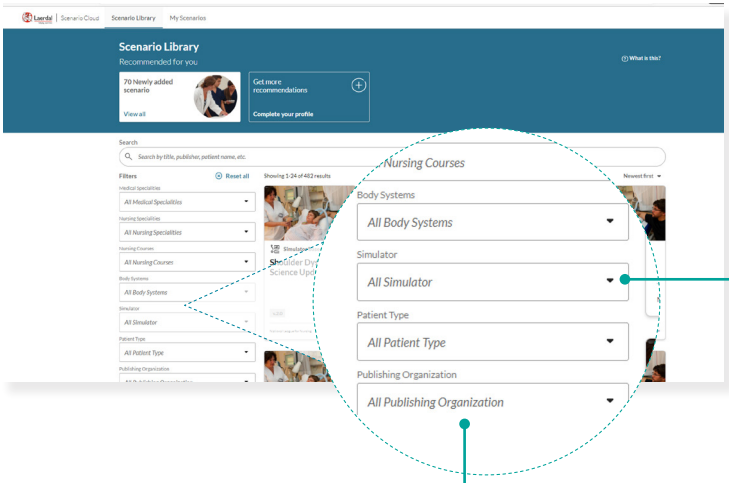
A subscription to Scenario Cloud is included with the LSUS to access and download the Laerdal SonoSim LLEAP Scenarios.

Log into Scenario Cloud Account

1. On a computer, go to https://scenariocloud.laerdal.com/
2. Sign into the Scenario Cloud account using the provided credentials.



3. Use *Filters* to locate the Laerdal SonoSim LLEAP scenarios.

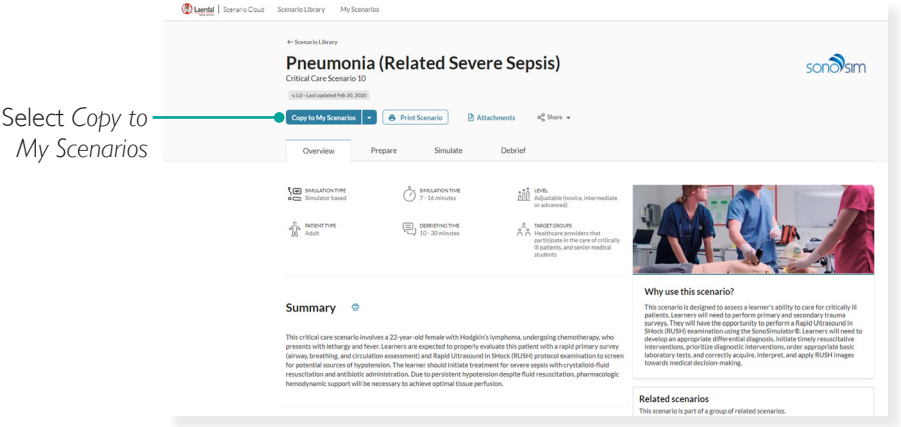


4. Select either SimMan3G or SimMom.

5. Select SonoSim.

Once the filters are applied, all corresponding Laerdal SonoSim LLEAP scenarios are displayed.

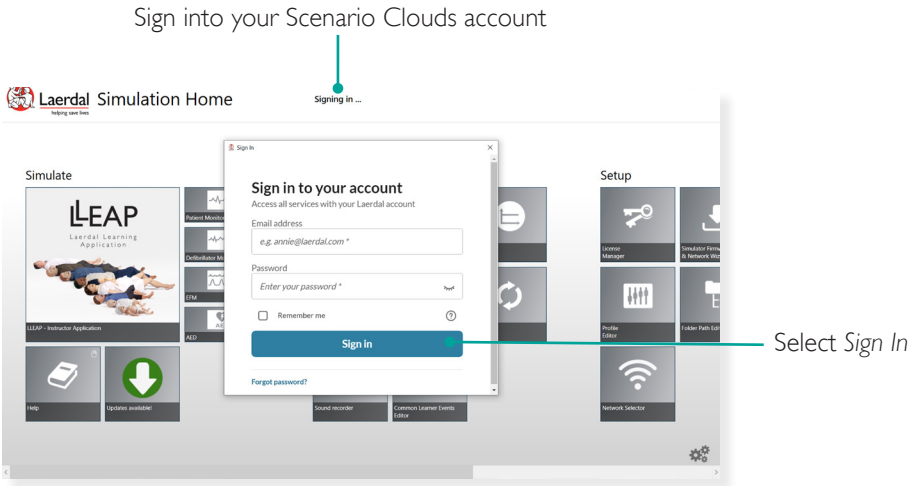
6. Select the scenarios you want to download on the Instructor PC.



7. Repeat this step to download more scenarios.

Syncing My Scenario folder with Instructor PC

Ensure that the Instructor PC is connected to internet.



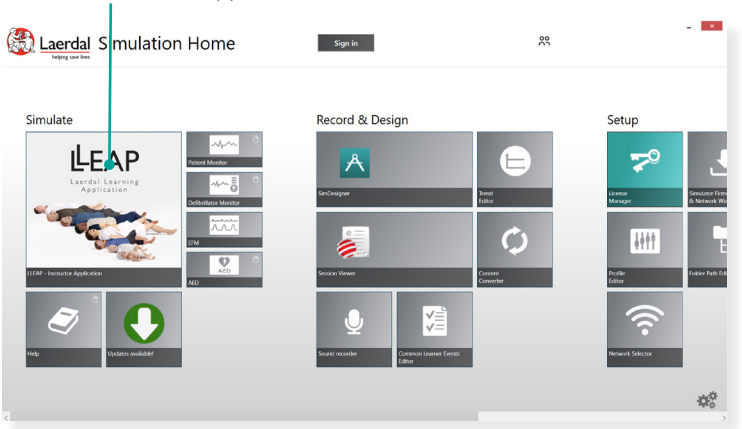
Once signed in, the *My Scenarios* folder on the Instructor PC synchronizes with the *My Scenarios* folder on the Ultrasound PC.

Ensure the System is set up as shown in Wireless / Wired Setup Overview.

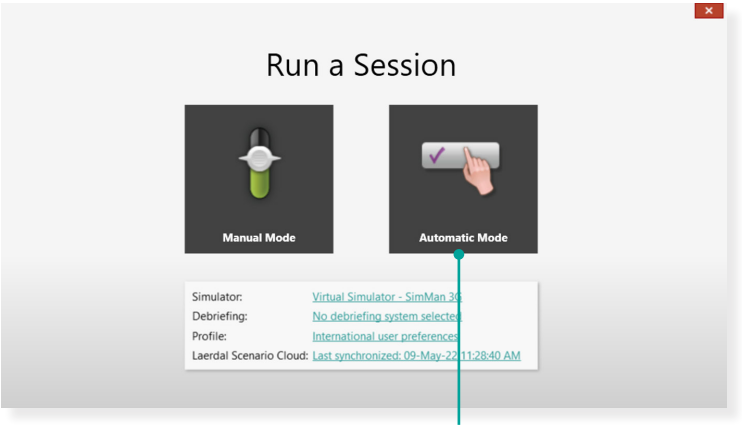
1. Select the Laerdal SonoSim scenario from the *My Scenario* folder.
2. Select the simulator and debriefing system and connect.
3. Select *OK*.

On the Instructor PC

1. Select *LLEAP Instructor Application.*



2. Select the Simulator.
3. Select the Debriefing System.

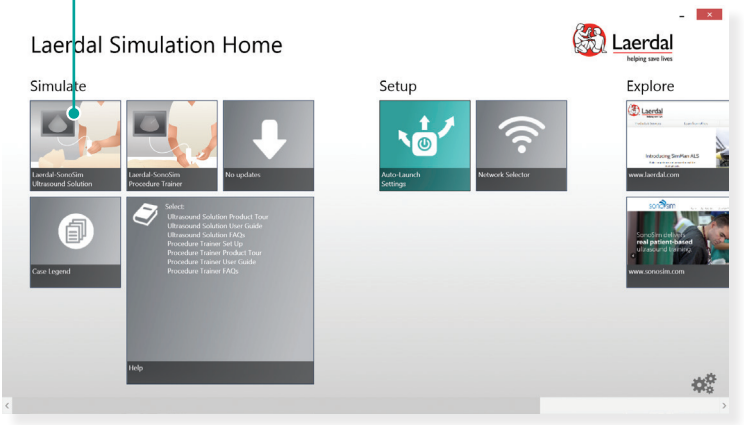


4. Select *Automatic Mode.*

5. From the *My Scenario* list select Laerdal SonoSim Scenario to be run and select *OK*.

On the Ultrasound PC

1. Select *Laerdal-SonoSim Ultrasound Solution*.



2. In the Laerdal Selector window, select to connect to the same simulator that is connected to on the Instructor PC.

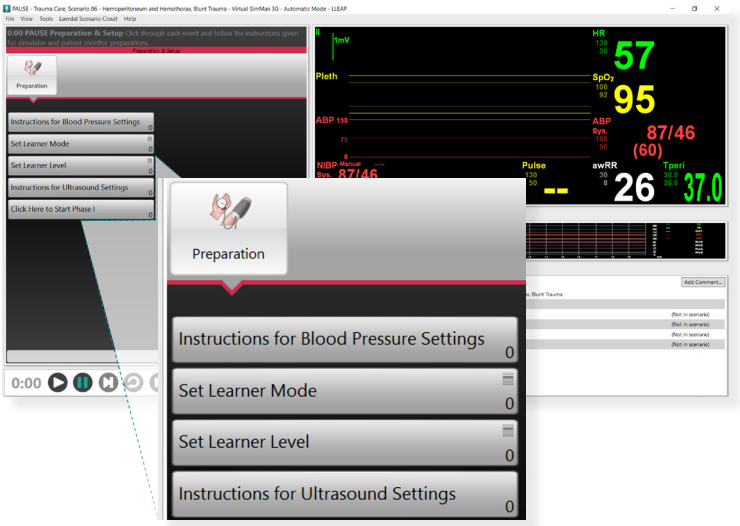
The ultrasound case selected on the Instructor PC will automatically load.

3. Follow the on-screen prompts to calibrate the probe.

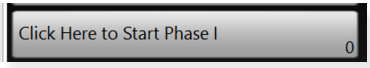
The ultrasound case is now ready to be used.

On The Instructor PC

Before starting the programmed scenario you can configure it using the following *Preperation* tabs. More detailed information about scenario configuration can be found in the scenario support material.

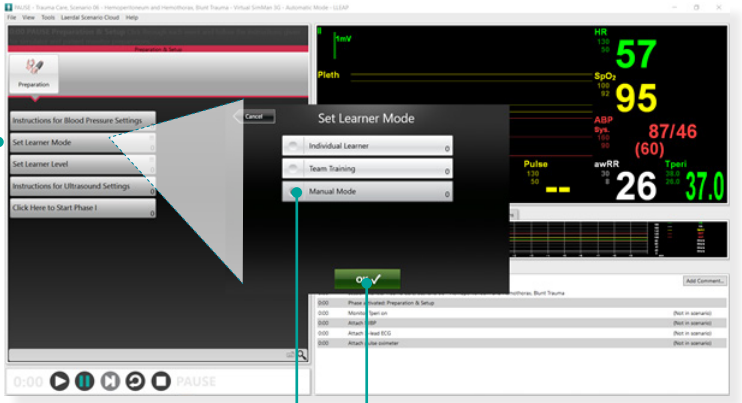


Once configured select *Click here to Start Phase 1.*



Running Laerdal SonoSim Scenarios - Manual Mode

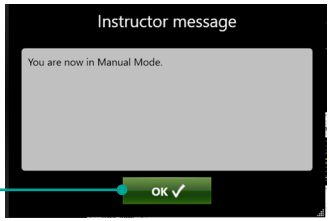
See Running Laerdal SonoSim Scenarios Automatic Mode and follow the scenario selection steps on the Instructor PC and Ultrasound PC. Then follow these steps:



1. Select *Set Learner Mode.*

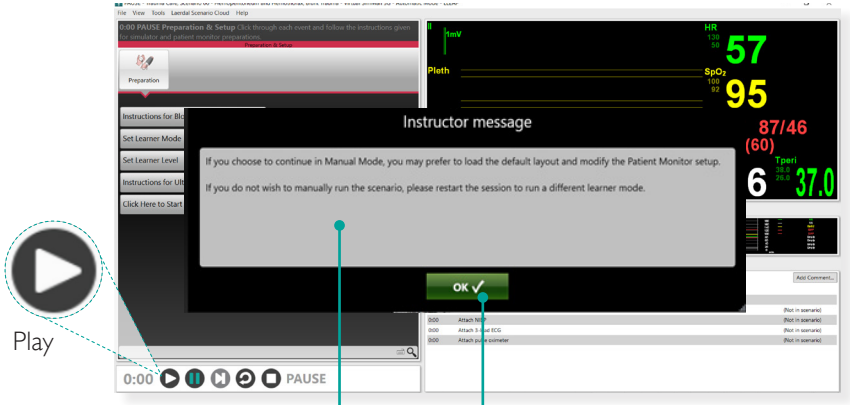
2. Select *Manual Mode.*

3. Select *OK.*



4. Select *OK.*

A window opens confirming that *You are now in Manual Mode.*



Play

Scenario starts with an Instructor message.

5. Select *OK* to close the window.

Note

All physiological parameters and simulator functions can be changed by the Instructor. The ultrasound image shows the heart and respiratory rate set in LLEAP.

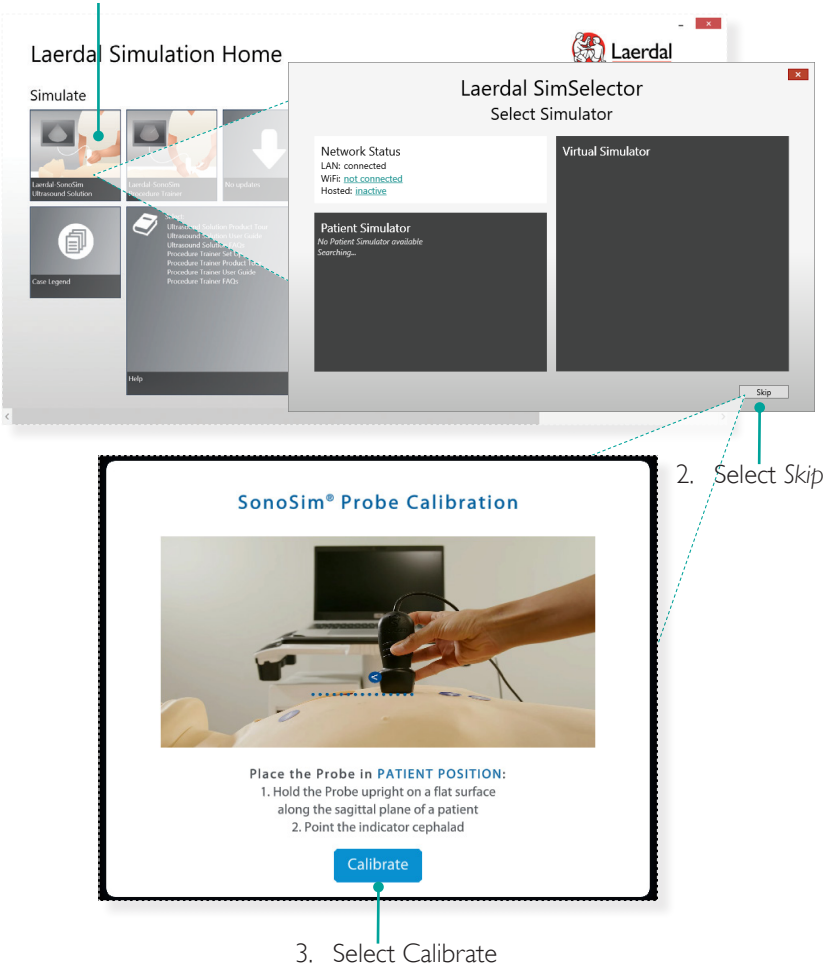
Allows the Instructor to show a normal ultrasound pathology at all ultrasounds image locations available.

Note

When using the SimMan Simulator, the Healthy Patient SimMan Case will load by default. Follow the on-screen prompt to calibrate the probe before starting the Case.

On the Ultrasound PC

1. Select Laerdal-SonoSim Ultrasound Solution.



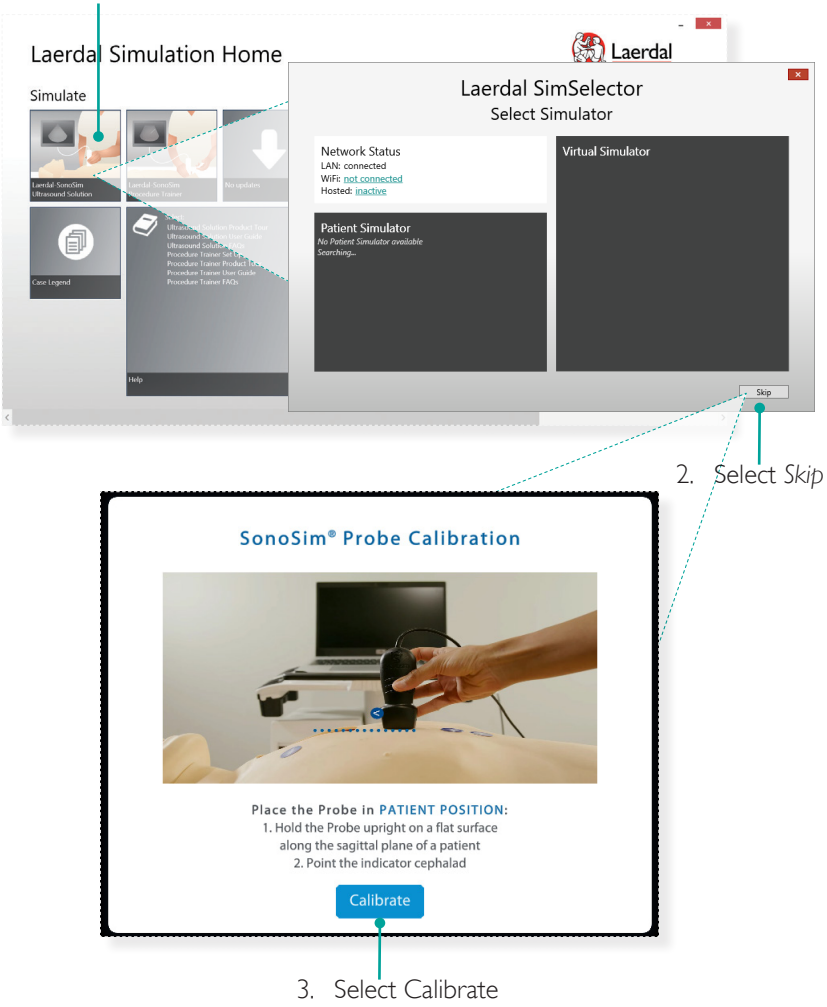
The Healty Patient Ultrasound Case is ready to use.

Running a Healthy Patient Ultrasound Case - SimMom

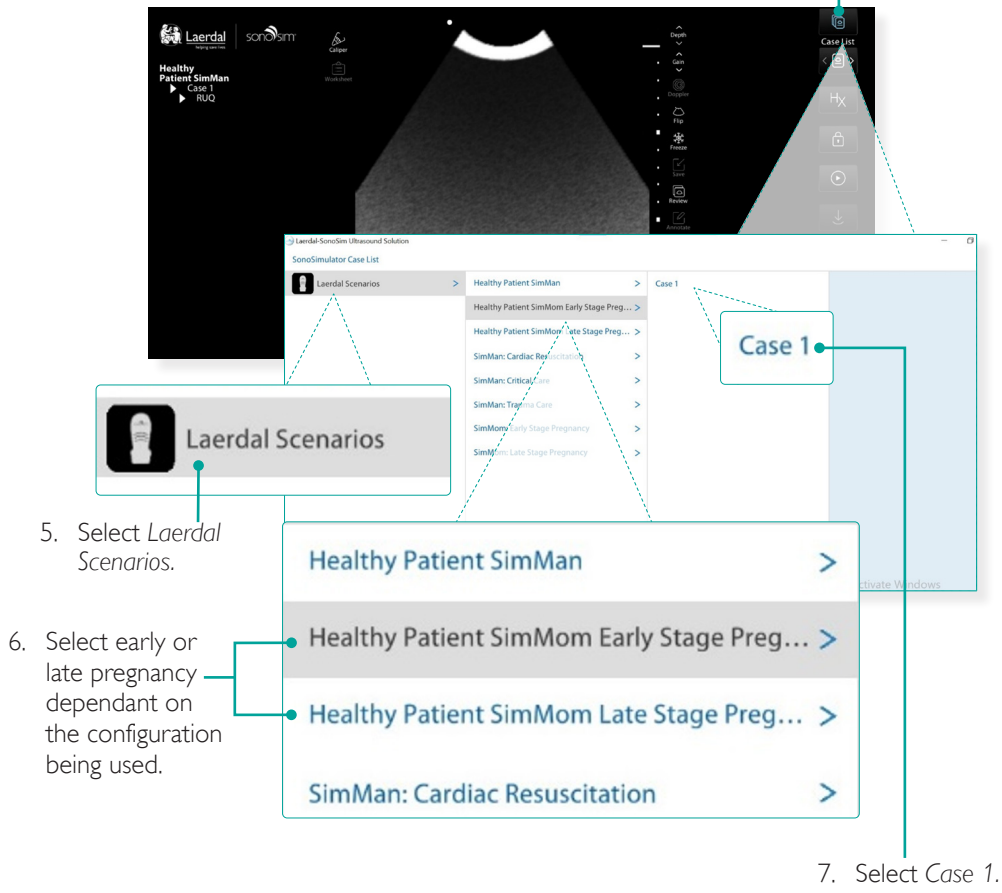
Allows the Instructor to show a normal ultrasound pathology at all ultrasounds image locations available.

On the Ultrasound PC

1. Select Laerdal-SonoSim Ultrasound Solution.



4. Select *Case List.*



5. Select *Laerdal Scenarios.*

6. Select early or late pregnancy dependant on the configuration being used.

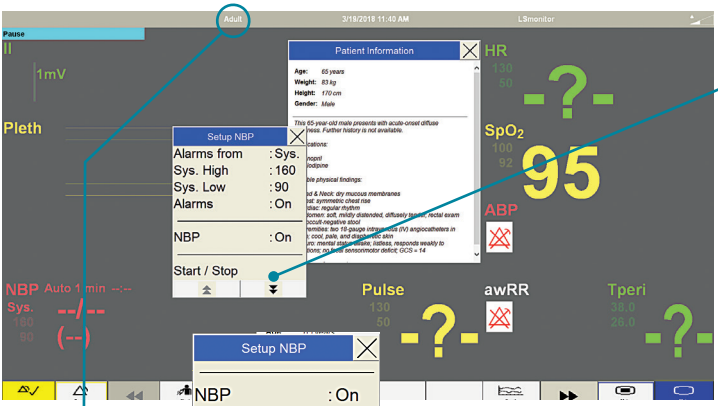
7. Select *Case 1.*

8. Follow the on-screen prompt to calibarate the probe.

The Healthy Patient Ultrasound Case is ready for use.

Blood Pressure Settings

On the Patient Monitor, select the NBP (non-invasive blood pressure) parameter setting.

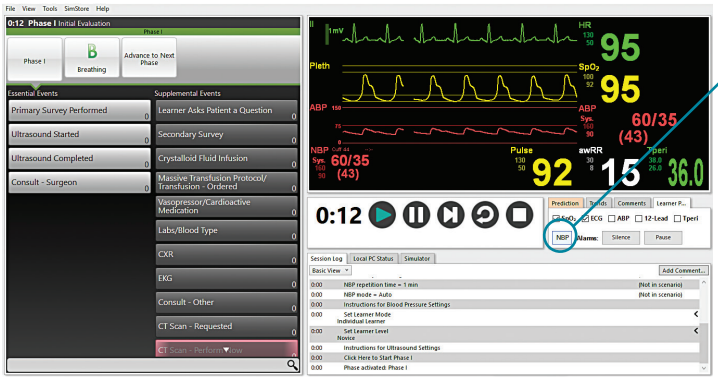


Click the downward arrows to reveal options for *Repetition Time* and *Auto/Manual* modes

Choose *1 min* from Repetition Time sub-menu

Select Auto on *Auto/Manual* sub-menu. The patient monitor will now display confirmation of your configuration

Redisplay the Learner Brief/Patient Information on the Patient Monitor by clicking *Adult* at the top of the screen.



On the Instructor Monitor click the *Learner Patient Monitor Buttons* tab and select *NBP* to start cycling blood pressure on the Patient Monitor.

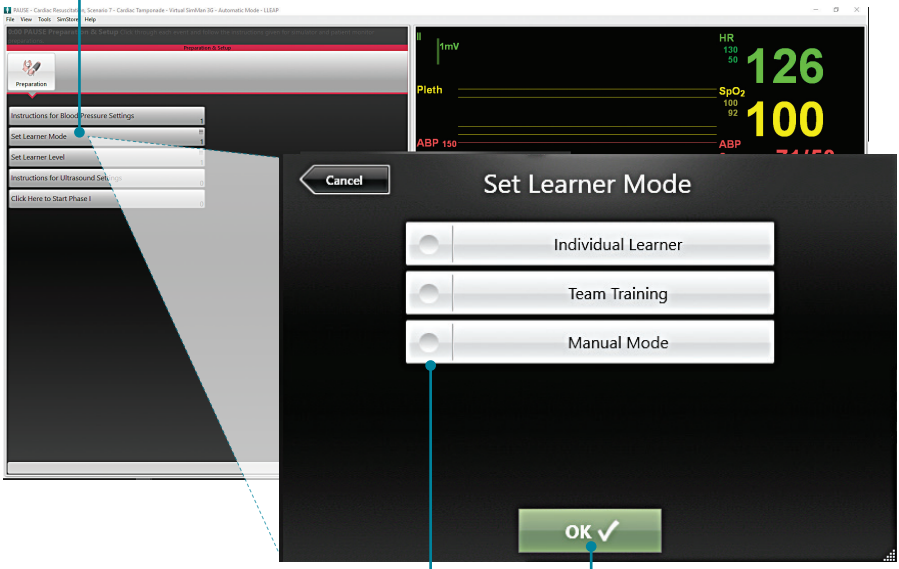
Learner Modes

There are three modes in each scenario:

- **Individual-Learner Mode**
  Used to examine an individual learner's medical decision-making. Includes Pre-programmed audio responses for every order requested in the scenario. Also provides closed-loop communication between the learner and the scenario itself.
- **Team-Training Mode**
  Used to examine an individual learner's medical decision-making. Includes Pre-programmed audio responses for every order requested in the scenario. Also provides closed-loop communication between the learner and the scenario itself.
- **Manual Mode**
  Allows instructors to program their own scenarios using LLEAP software.

Set Learner Mode

1. Select *Set Learner Mode*.

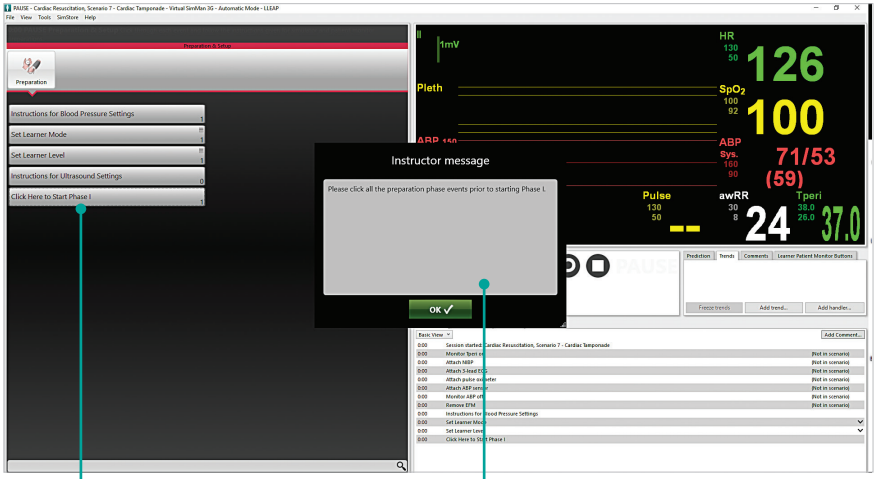


2. Select the desired mode.

3. Select *OK*.

Starting the Scenario

As the final step, the instructor will have to select *Click Here to Start Phase I* to proceed.



Select *Click Here to Start Phase I*

If all preparation events have not been selected, the instructor will receive a message reminding them to select all preparations.

Scenario Progressing

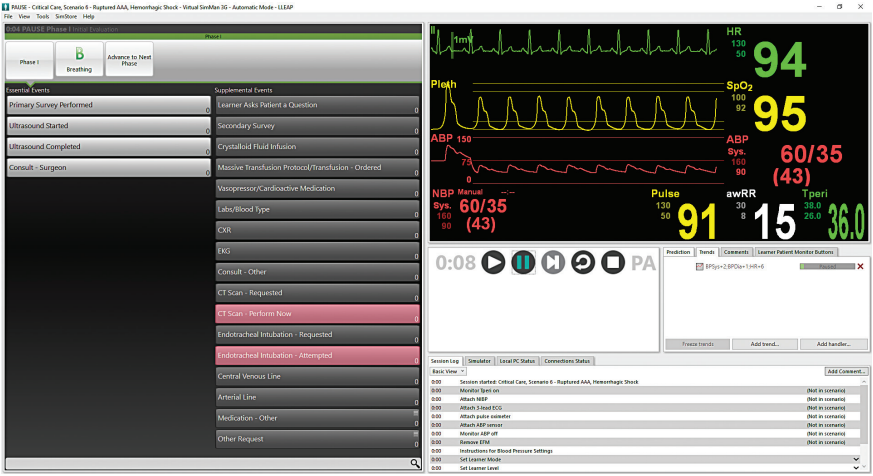
A scenario is made of one or multiple phases, each providing a selection of specific relevant events. Once the scenario has started, the Instructor registers every event as they occur during the session.

There are three different ways to go from one scenario to another:

- Complete all essential events,
- exceed allotted time,
- skip to the next phase.

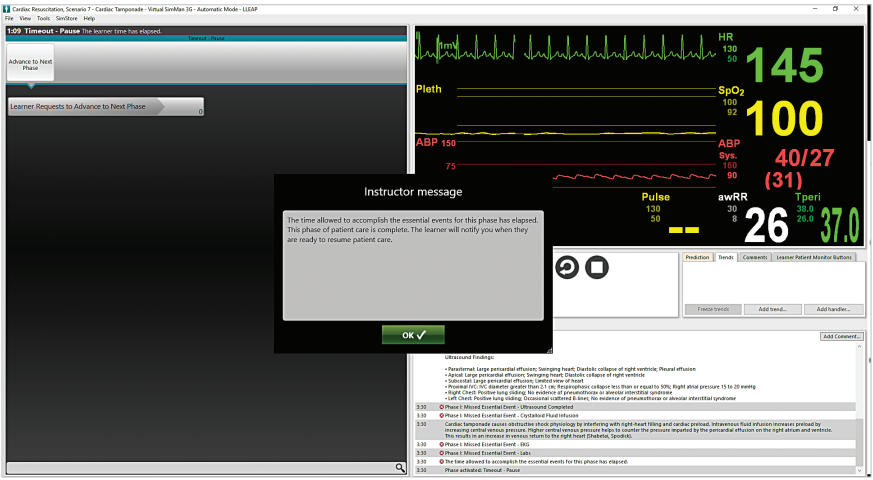
Completing Essential Events

The Learner needs to perform all essential events in order to complete a phase of patient care.



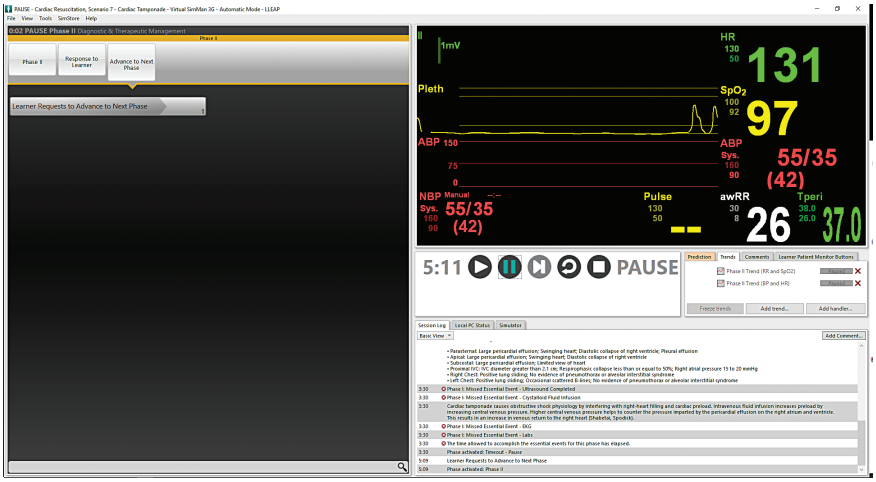
Exceeding Allotted Time

Each learner is given a specific time to complete a phase dependent on the learner mode selected. This allotted time gets shorter the more advanced the learner is.

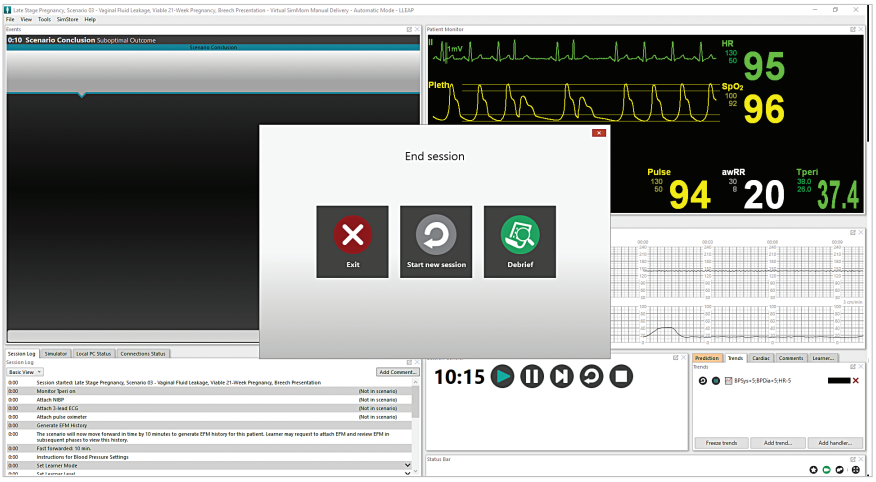


Requesting the Next Phase

The Learner can request to advance to the next *Phase* of patient care.

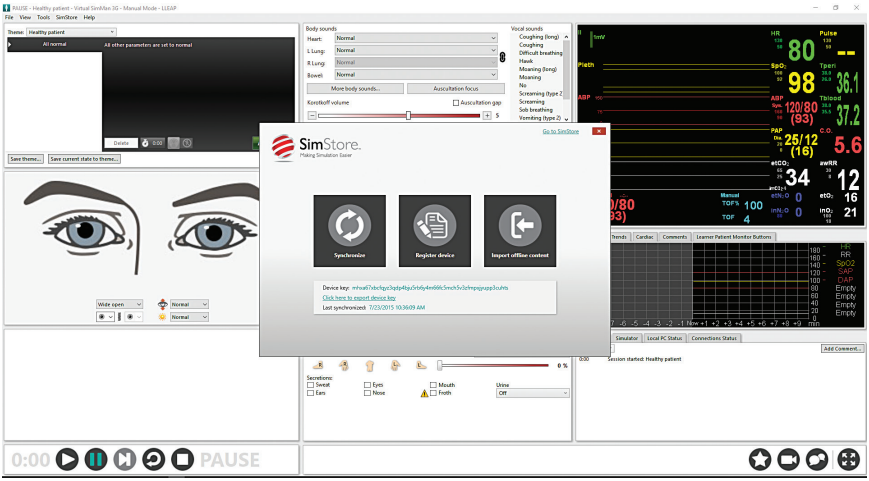


Once the Learner has completed the session, the Instructor selects *End the Session*. This will end the current scenario and store all relevant details to be used for the debriefing session. The Instructor can conduct a debriefing session using a combination of the *Session Viewer* and the SonoSimulator.



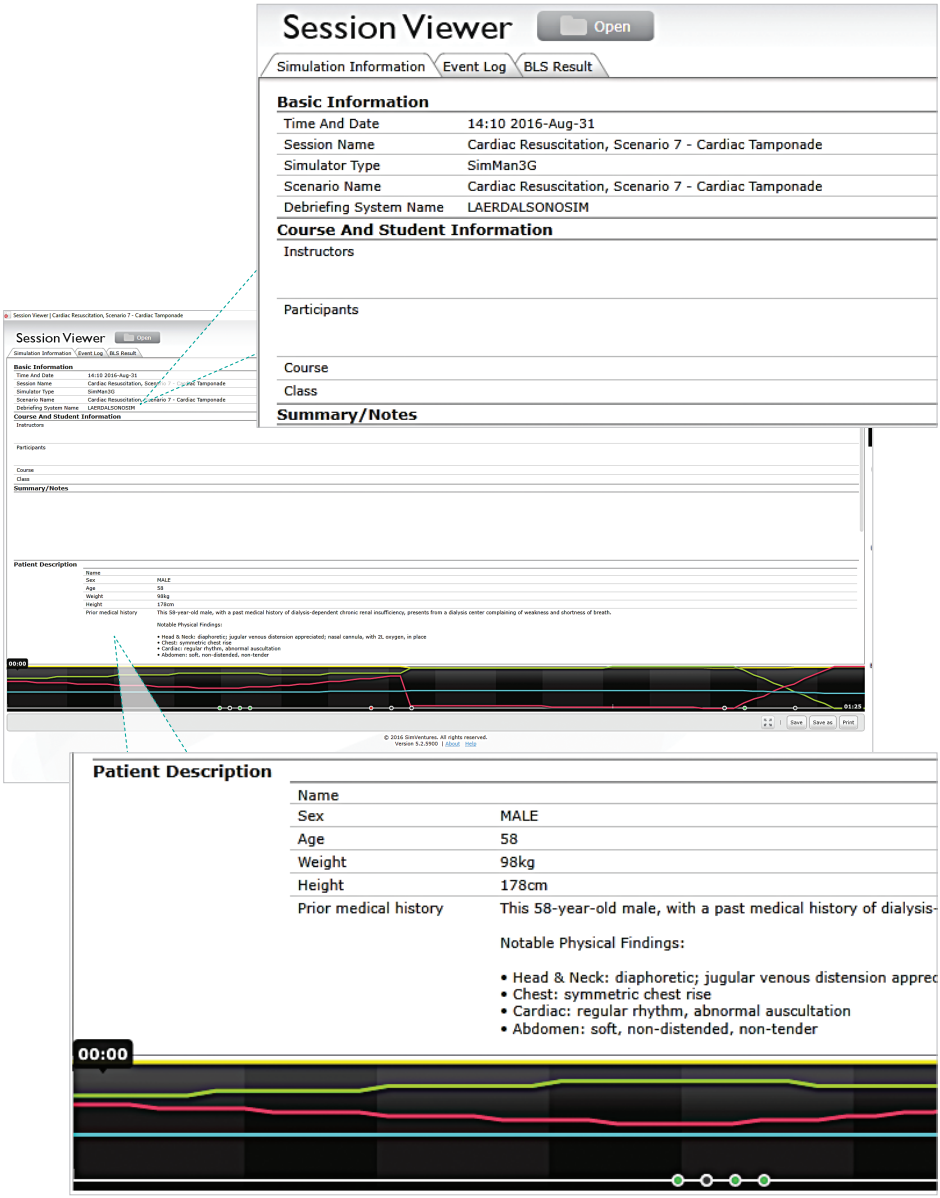
Laerdal Software

The Instructor can use either *Session Viewer*, which is part of the LLEAP platform, or purchase *SimView Server* separately. Both debriefing applications include a *Simulation Information* and an *Event Log* tab that record each session run. Video camera and screen capture recordings made during the session can also be reviewed.



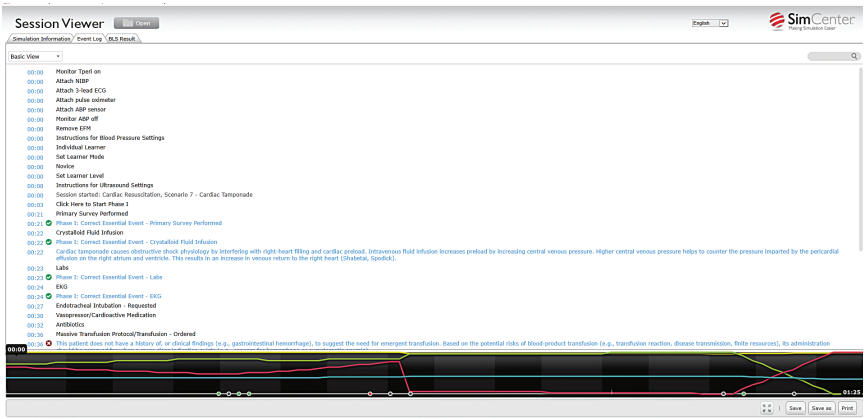
Simulation Information

This section is an overview of the session and includes information such as the date and time, instructors, participants, and summary notes.



Event Log

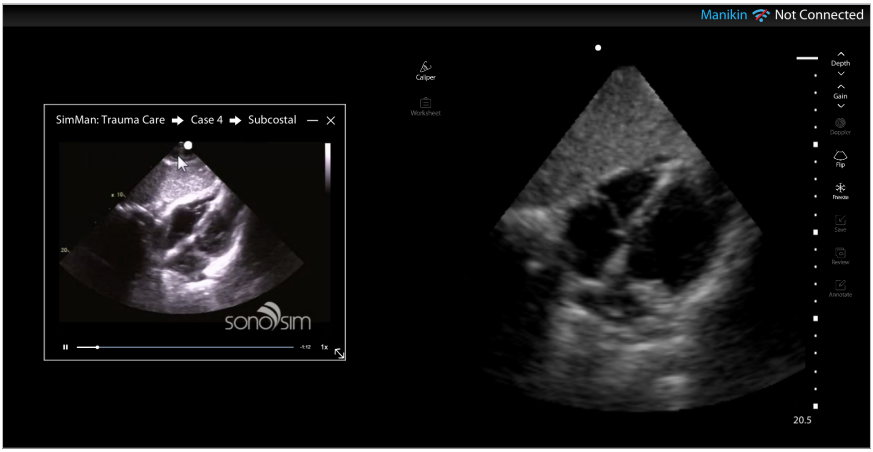
This section provides a time-stamped log of all events of the scenario session. This includes events that were performed by the learner as well as events that were not executed. Examples: the start and end of a phase, explanations for critical events with cited references, and ultrasound findings, if ultrasound has been initiated.



SonoSimulator

The Instructor can provide the Learner with a comprehensive summary of the ultrasound findings for the scenario by using the SonoSimulator.

Using the case that was completed (e.g., Trauma Care 6), select the *Findings* button on the SonoSimulator interface. This provides a narrated version of the original ultrasound clip and explains what learners should recognize while scanning a corresponding SonoSim case.



Manufacturer: Laerdal Medical AS
P.O. Box 377
Tanke Svilandsgate 30, 4002 Stavanger, Norway
T: (+47) 51 51 17 00

20-12745 Rev C

www.laerdal.com

Laerdal
helping save lives