SimMom™

Directions for Use

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Regulatory Information

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

Caution

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

CE The product is in compliance with the essential requirements of Council Directive 2004/108/EC on electromagnetic compatibility (EMC).
The product is in compliance with Council Directive 2011/65/EU on restriction of the use of certain hazardous substances (RoHS).

Dispose of in accordance with local requirements and regulations.

Disclaimer

Use of the SimMom patient simulation system to train personnel should be undertaken under supervision of suitably trained technical or medical personnel with an understanding of educational principles as well as recognized medical protocols. As with all manikins or other such training devices, there may be approximations, variations and inaccuracies in anatomical features and the physiological modeling. This being the case, Laerdal does not guarantee that all features are completely accurate.

Global Warranty

See the Laerdal Global Warranty Booklet or see www.laerdal.com.

Country of origin - SimMom is made in USA.

Laerdal Medical
P.O. Box 38
226 FM 116
Gatesville, Texas 76528, USA

General Care

To maintain manikin skins, wash hands before use and place the manikin on a clean surface. Laerdal recommends the following:

– Use gloves during simulation scenarios. Avoid using colored plastic gloves, as they may cause discoloration of the manikin skin.

– Do not use felt-tipped markers, ink pens, acetone, iodine, or other staining medications near the manikin. Take care not to place the manikin on newsprint or colored paper. Staining may be permanent.

– Clean manikin skins with mild soap and water.

– If a training session involves the use of fluids in the IV arm or blood and urine bags, drain the arm immediately following the training session.

– Use only Laerdal Airway Lubricant for airway lubrication, and apply liberally.

– Use only SimMom & PROMPT Birthing Lubricant (Laerdal Catalogue No. 377-18850) to lubricate baby, cervix, birth canal, and modules. Do not use any other lubricant. Do not use PROMPT Birthing Lubricant (Laerdal Catalogue No. 376-02950, Limbs & Things No. 50181) or SimMom Birthing Lubricant (Laerdal Catalogue No. 377-14450, Limbs & Things No. 10191). Non-approved lubricants can damage the system.

⚠ **Warning:** SimMom & PROMPT Birthing Lubricant is not for personal use.

– Rinse, clean, and dry manikin component modules.

– Fold the torso skin back and powder the inside of the torso skin to decrease friction. Do not spill powder into manikin chest cavity.

– Do not attempt to perform the following techniques on this manikin due to the inability to properly sanitize the airway:

  – Mouth-to-mouth/mouth-to-mask ventilation

  – Insertion of simulated vomit or fluids for suctioning

Environment

In cold conditions, wait until the manikin has reached room temperature before starting up the manikin.

To avoid overheating and reduce wear:

– When using in temperatures above 40°C (104°F), always allow the manikin to cool down between training sessions.

– When using in a bed, manikin should not be covered with heavy bedding that prevents heat transfer from the manikin.

General Manikin Handling

Take the following precautions to avoid personal injury or damage to the product:

– Introduce fluids into the manikin only as directed in this document. Failure to do so may result in damage to the manikin and its components.

– Lubricate the oral and nasal airways with the lubricant provided prior to inserting any instrument, tube, or airway device. Also, lubricate instruments and tubes prior to use.

– Lubricate cervix, birth canal, and baby before each delivery.

– Do not introduce humidified air into the system during ventilation.

– Do not use the manikin if the internal tubing and cabling is disconnected.

– Never use the SimMom manikin outdoors in wet conditions, as this may pose a shock hazard or damage the manikin.

⚠ **Warning:** Do not use automated external chest compression machines on the manikin.

⚠ **Caution Latex:** This product contains Natural Rubber latex, which may cause allergic reactions when in contact with humans.

Defibrillation Hazards

A conventional defibrillator may be used on SimMom. During defibrillation, the defibrillator and manikin may present a shock hazard. When using a defibrillator on the manikin, take the following safety precautions:

– Read and follow all safety and operating instructions provided with your defibrillator and associated equipment and within your defibrillator's original user manual.

– Follow defibrillation protocol by avoiding contact between the external paddles and any of the electrode sites while defibrillating.

– Failure to follow safety measures could result in injury or death.

– When performing defibrillation, use the defibrillator connectors or the zap plate mounted on the manikin's chest. Do not use the ECG connectors, which are designed exclusively for ECG monitoring. Defibrillation on the ECG connectors will damage the internal electronics of the manikin and may cause personal injury.

– Do not defibrillate the manikin when it is turned OFF or if it is not functioning normally.

– Do not perform defibrillation when manikin is resting on a wet surface.

– The manikin torso must always be kept dry. Sudden changes in temperature may result in condensation collecting on electronic components, which could pose a shock hazard. Allow the manikin to acclimate before defibrillating.

– Using a defibrillator in temperatures over 35° C (95° F) may cause manikin to overheat.

– Do not provide more than 2 × 360J defibrillator discharges per minute.. After 30 minutes, cease all shocking for at least 15 minutes before starting a new sequence.

– The manikin must not come into contact with electrically conductive surfaces or objects during defibrillation.

– Avoid use in all flammable environments. For example, high levels of pure oxygen should be avoided during defibrillation. Ensure good ventilation if concentrated oxygen is used near the manikin.

– To prevent torso skin electrode pitting, do not apply conductive gel or conductive defibrillation pads intended for patient use.

– Pressing down too hard on the defibrillation connectors during defibrillation may also cause arcing and pitting.

– Do not defibrillate the manikin if the torso skin is not in place.

Mechanical or Electrical Hazards

Do not use the SimMom manikin if:

– Limbs are not attached to the torso.

– Skins are torn or not properly fastened.

– Internal or external cables, tubes or connectors are damaged.

– There is fluid leakage in or on the manikin.

– There are unusual sounds indicating air leakage or mechanical damage.

– There are signs of electrical malfunction, such as an unresponsive manikin or unusual smell or smoke.

⚠ **Warning:** Avoid pinch hazards - Do not use the manikin without the external skins.

Storage and Transportation

– The SimMom manikin and accessories are heavy when packed in boxes or combined in optional carrying cases. Always ensure that SimMom is firmly secured during transportation and storage to prevent personal injury or damage to the product.

SimMom Overview

SimMom has been developed in partnership by Limbs & Things and Laerdal, combining the best that both companies have to offer in healthcare simulation products. By integrating the strengths of the PROMPT Birthing Simulator and the ALS Simulator, SimMom provides the user with both anatomical accuracy and authentic simulation experiences that together, facilitate valuable learning experiences for a wide range of midwifery and obstetric skills.

SimMom responds to clinical intervention, instructor control, and pre-programmed scenarios, and allows for the observation of both maternal and fetal vital signs. Instructors can articulate mother and baby in multiple positions in order to simulate various types of deliveries. Students can practice diagnosis and treatment of the mother and fetus.

SimMom can be used to teach skills such as airway management, CPR, heart and lung sound auscultation, and blood pressure auscultation. SimMom can also simulate the following delivery scenarios:

- Normal delivery
- Breech presentation
- Assisted deliveries
  - Forceps
  - Vacuum
- Shoulder dystocia
- Cord prolapse
- Eclampsia & pre-eclampsia
- Maternal collapse
- Postpartum Hemorrhage (PPH), including atonic/ boggy uterus and retained placenta/placental fragment
- Sepsis
- Uterine inversion
- Ruptured uterus

Items Included

- Manikin
- Modules
- Baby
- Compressor
- Laptop
- USB Webcam
- USB Hub
- VitalSim Control Unit
- Patient Monitor (in applicable versions only)

Accessories

- BP Cuff
- Eye Kit
- Hardware Kit
- IV Fluid Collection Bags
- Lubricant
- Crycothyroid Membrane Tape
- Pneumothorax Bladder Repair Kit
- Blood and Urine Reservoirs
- Thoracentesis Pads
- Skin Collars
- Directions For Use (DFU)
- DVD Video Guidelines
- Wig
- Blood Concentrate
- Cuttable Umbilical Cords
- Normal and C-Section Skins
- Cervix

Modules

USB Webcam

Laptop

Compressor

SimNewB   SimMan

Baby

Manikin

Patient Monitor

VitalSim Control Unit

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Spare Parts

Right Arm ECG
Lead

Sternum Defib Plate

Intramuscular Injection Site

IV Fluid Connection

BP Cuff Connection

Right Leg ECG
Lead

Blood Pressure Arm

IV Access

Left Arm ECG
Lead

Intramuscular Injection Site

IV Fluid Connection

Left Leg ECG Lead

Apex Defib Plate

IV Access

Intramuscular Injection Site

Intramuscular Injection Site

BP Tubing

External Air Connection

37 Pin Serial Cable
(Manikin to VitalSim Cable)

Features

Movement

– Seizure indicator

– Able to position at all fours:

  – Realistic rotation of the shoulder and hip joints

  – Legs bend at the knees

  – Arms bend at the elbow

– Manikin positions:

1. Supine
2. Semi-recumbent
3. All fours
4. Left lateral
5. Legs in stirrups
6. McRoberts

Airway Features

– Obstructed airway

– Tongue edema

– Right lung, left lung and bilateral lung blockage

– Head tilt/Chin lift

– Jaw thrust

– Suctioning techniques

– Bag-valve-mask ventilation

– Oropharyngeal and nasopharyngeal airway insertion

– Combitube, LMA and other airway device placement

– Endotracheal intubation (ET)

– Nasotracheal intubation

– Digital intubation

– Retrograde intubation

– Nasal and oral fiberoptic intubation

– Trans-tracheal jet ventilation

– Right mainstem intubation

– Surgical and needle cricothyrotomy

– Chest tube insertion

– Cricoid pressure

– Needle decompression

Pelvic Components

– Interchangeable uterus modules

  – PPH uterus with tonic and atonic states and with retained placenta and placental fragment

  – Uterine inversion

  – Amniotic bag for intrapartum fluids

– Bony Pelvis with landmarks

– Cervix that dilates from 4 cm to full

– Realistic vulva and anus for digital exams

– Realistic "at term" abdominal skin

– Pre-incised C-section skin

– Fluids (e.g. blood, stained amniotic fluid and urine)

– Urine catheterization/instillation

– Pelvic floor

– Birth canal

Breathing Features

– Simulated spontaneous breathing

– Variable respiratory rates (0-60 bpm)

– Bilateral and unilateral chest rise and fall

– Normal and abnormal lung sounds

  – 4 anterior auscultation sites

  – Bilateral midaxillary sites

– Tension pneumothorax

– Oxygen saturation waveform

Cardiac Features

– Extensive ECG library

– Normal and Abnormal Heart sounds synchronized with ECG

– ECG rhythm monitoring

– 12 lead ECG display

– Defibrillation and cardioversion

– Responds to external pacing with settable pacing threshold (20-200 mA)

Circulation Features

– BP measured manually by auscultation of Korotkoff sounds

– Bilateral carotid pulse, brachial and radial pulses (right side only) synchronized with ECG

– Pulse strength variable with BP

– Pulse palpation is detected & logged

Chest Compressions

– CPR compressions generate palpable pulses, blood pressure wave form, and ECG artifacts

– Detection and logging of a series of compressions.

Other Features

– Normal and abnormal bowel sounds and fetal heart sounds (not at the same time)

– Interchangeable pupils (normal, dialated, and constricted)

– Patient Voice

  – Pre-recorded sounds

  – Custom sounds

– Instructor can simulate patient's voice

Vascular Access

– Pre-ported IV access (bilateral)

– Subcutaneous and intramuscular injection sites

Birthing Baby

– Realistically modeled head with all head landmarks present (fontanelles and sutures)

– Head designed and tested so it can be used for forceps deliveries (rotational and normal) and vacuum delivery (kiwi and ventouse)

– Head can be easily manipulated by "puppeteer" and flexes naturally as it is pushed through the birth canal

– Mouth for suction and Smellie-Veit (if required)

– The birthing baby's body is designed to allow it to be easily pushed through the birth canal

– Bony prominences of the hips to support Lovsett's maneuvers

– Realistically positioned landmarks - scapulae and clavicles

– Arms and legs allow full articulation for all maneuvers required during deliveries - particularly breech and shoulder dystocia

– Umbilicus and placenta (normal and retained)

– Fetal heart rate: normal, bradycardia and tachycardia (via software)

Electronic Fetal Monitoring - EFM/Cardiotocography - CTG

– EFM graphic display: fetal heart rate waveform and uterine activity waveform.

– EFM is displayed on the patient monitor with mother's vital signs.

– Fetal monitoring is recorded and it is possible to scroll back to view on the patient monitor.

– The software allows the instructor to use the preset states as well as utilize the customized parameters.

VitalSim Control Unit

The VitalSim control unit serves as the interface between the PC and the manikin. VitalSim connects to the PC through the USB, powers and controls the manikin, and provides feedback from the manikin back to the PC.
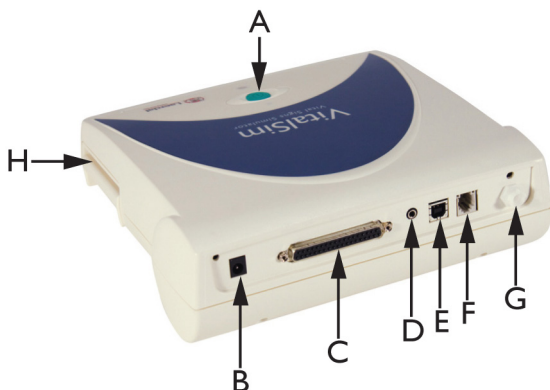
A. On/Off button and indicator: Press once to turn the unit on.

Press again to turn the unit off. The indicator is steady green if the base unit has contact with the manikin. If there is no contact with the manikin, the indicator will blink green. If the battery needs replacement, the indicator will blink, alternating between green and orange.

B. DC Power supply input: Used for stationary training and to limit battery consumption.

C. Manikin connector: Connects the base unit to the manikin.

D. Microphone input: External microphone attachment.

E. USB port: For connection to PC.

F. Remote connector: Not applicable to SimMom.

G. Blood pressure connector: Connects to the blood pressure tube exiting lower right side of manikin.

H. Battery pack: Holds 6 replaceable C-cell batteries.

Patient Monitor

The optional Patient Monitor has a configurable touch-display. It simulates a real patient monitor as found in hospitals and ambulances.

– The Patient Monitor Displays patient's clinical status, including a maximum of 5 waves and 14 parameters.

– Users can request radiology and lab reports from the instructor via the Patient Monitor software.

– Video capture from the Patient Monitor display and the web-camera can be stored for use in the Debrief Viewer.

– Electronic fetal monitoring on the Patient Monitor Interface displays the fetal heart rate and uterine activity parameters.

Software

The Graphical User Interface (GUI) controls scenario and manikin function via the Instructor PC, enabling the instructor to easily operate and adjust mother and fetus vital signs. The GUI is highly configurable and capable of running on-the-fly, customized, or preprogrammed scenarios.

The electronic fetal monitoring (EFM) display on the GUI shows the Fetal Heart Rate and Uterine Activity waveforms alongside the mother's vital signs. The software records at least ninety minutes of fetal monitoring, which can be viewed by scrolling back on the patient monitor. The instructor can use the preset states as well as utilize the customized parameters.

Web Downloads

Visit http://www.laerdal.com to download the latest Directions for Use and SimMom Software.

Setting Up Your Manikin

Before SimMom is ready to run simulations, the manikin, birthing baby, and computer system must be setup correctly. This section covers the following:

– Connecting Belly Skin Audio Cable

– Attaching Manikin Legs

– Gown Features

– Configuring System PC, Patient Monitor, and Webcam

Connecting Belly Skin Audio Cable

To connect the SimMom belly skin audio cable:

1. Unhook the belly skin from the three attachment sites on either side of the pelvis and fold the skin over towards the feet.

2. Remove the C-Section Belly skin shipped inside the pelvis and store with your other SimMom accessories.

3. Connect the black audio cable on the under side of the belly skin to the audio port located on the right side of the pelvis
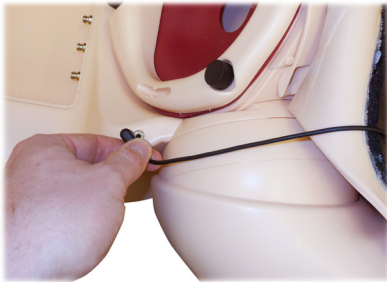

4. Reattach belly skin.

Attaching Manikin Legs

Manikin legs allow full articulation and bend at the knee. They can simulate maneuvers performed during various deliveries.

To attach the manikin leg:

1. Grip the thigh and gently push the hip clamp jaws onto the hip ball on the pelvis.

> **Note:** If the jaws must be opened further to fit on the hip ball, turn the adjustment screw using the 8mm Allen key wrench.
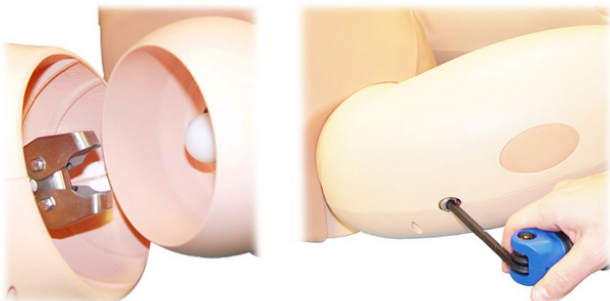

2. Tighten the adjustment screw using the 8mm Allen key wrench until the desired tension on the hip is reached. Do not over tighten the adjustment screw because this may damage the jaws

> **Note:** Legs can be removed by loosening the adjustment screw and pulling them free of the hip ball.

Gown Features

The SimMom gown has two flaps that provide access to the abdomen during birthing simulations. The gown also has holes through which the manikin's wires can pass.
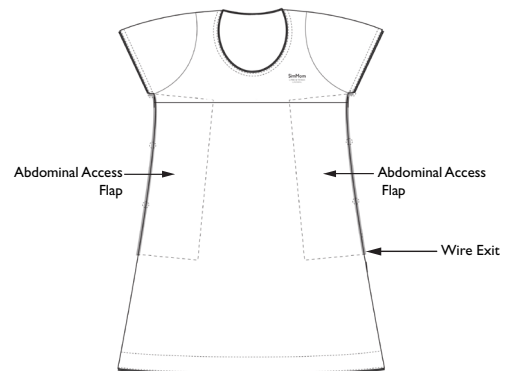
Configuring System

The **Instructor PC** controls the simulator. It includes software programs for creating and editing scenarios, as well as an application for debriefing simulation sessions with video capture from a web camera and the patient monitor.

The **Patient Monitor** can be configured to replicate most patient monitors. It also doubles as a display for other functions, such as 12-lead ECG, X-ray images, and lab results to view the patient's case history.

The **Web Camera** records video and sound of the simulation for use during the debriefing session.

Setup Summary

1. **Start the Instructor PC**
– Connect the mouse and power supply to the computer and power ON.

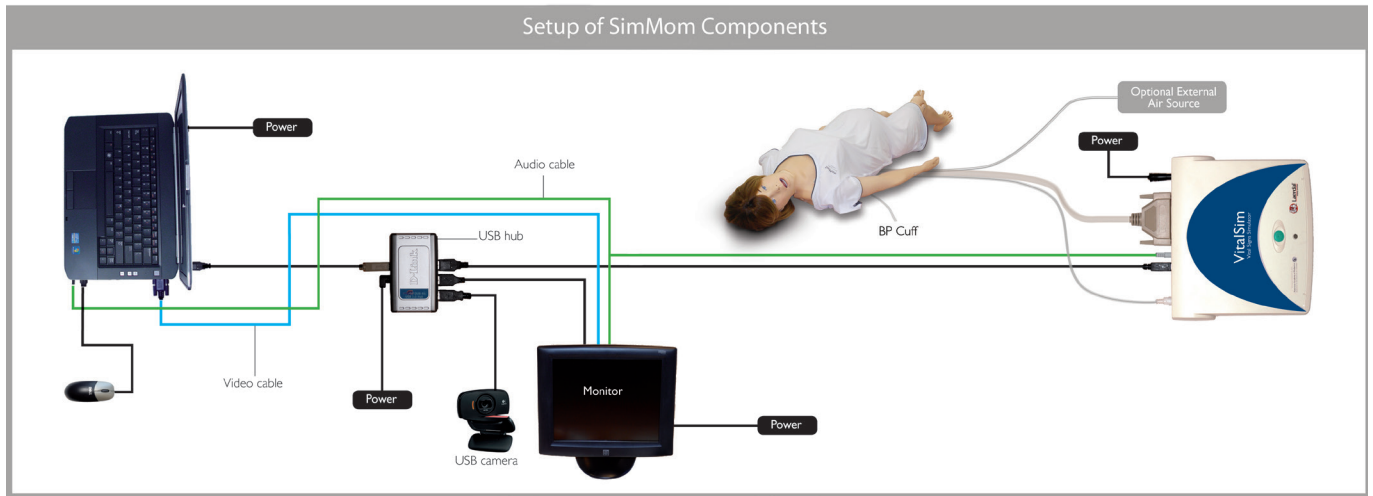– Make sure that the SimMom simulator icon is displayed on the Instructor PC desktop.

2. **Install the USB hub**
– Connect Power to the USB hub.

– Connect USB hub to Instructor PC.

3. **Connect the Patient Monitor Cables**
– Put aside the software CD that comes with the monitor. DO NOT INSTALL software CD.

– Route the cables through the Patient Monitor stand and connect

Setup of SimMom Components

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them to the corresponding outlets located at the bottom of the screen.

-- Video cable
-- USB cable
-- Audio cable (blue mini jack with single wire)
-- Power cable
-- Secure the cables using the strain reliefs.

– Connect power cable to a wall outlet and power ON the Patient Monitor.

4. Connect the Patient Monitor video cable and 3-way audio cable (black mini jack with double wire) to the Instructor PC.

⚠ IMPORTANT: Do **NOT** connect the USB cable to the PC or USB Hub yet.

5. Set Up the Instructor PC for Extended Desktop Display to Support the Patient Monitor.

– Right click on the instructor PC desktop

– In the drop down menu select <**Screen Resolution**>

– In the <**Multiple Displays**> option, select <**Extend these displays**>.

– Click <**Apply**> and then **<Keep these Settings>**.

– The Instructor PC (display 1) should have a resolution of 1600 x 900.

– The Patient Monitor (display 2) should have a resolution of 1280 x 1024.

– Click <**OK**>.

6. Connect the Patient Monitor to the USB Hub.

7. Calibrate the Touchscreen Patient Monitor.

– Double-click on the Elo logo in the system tray in the right corner of the screen.

– Click the <**Align**> button on the dialog box that appears.

– If target indicators first appear on the Instructor PC screen, press <**Esc**>, or wait until they appear on the Patient Monitor.

– When the target indicator appears on the Patient Monitor,

touch each target as it changes position and follow the arrow with your finger.

– When the ELO Touchscreen dialog box appears, touch the green "check box" button.

– Click <**OK**>.

8. Connect the USB Camera to the USB hub.

9. Connect the VitalSim Control Unit.

– Connect the USB cable from the VitalSim Control Unit to the USB hub.

– Connect the audio cable (white mini jack with single wire) to the VitalSim Control Unit.

– Connect the power cable to the Control Unit and power source.

10. Connect the Manikin to the VitalSim Control Unit.

– Connect the grey 37-Pin Serial Cable and clear tubing exiting the manikin's middle right side to the back of the VitalSim control unit.

– Place the Blood Pressure cuff on the right arm of the manikin.

– Attach the clear tubing exiting the upper right side of the torso to the clear tubing on the Blood Pressure cuff.

– Power on the VitalSim Control Unit.

11. Install the Compressor.

– Unpack the compressor with the power cable.

– Connect the power cable to the compressor and wall outlet.

– Unpack the compressor air tube and connect it between the manikin and the compressor.

– Power on the compressor.

– Operate the unit according the accompanying instructions.

The simulation system is now ready to use.

1. Program Menu Bar
2. Respiratory Control
3. Difficult Airway Control
4. Defibrillation and Pacing Controls
5. Debrief Log
6. Scenario Control

7. Trend and Handler Control
8. Trend Preview Window (hidden by default)
9. Event Windows
10. Electronic Fetal Monitoring
11. Instructor Monitor Control
12. Simulator Controls

Introduction to SimMom Software

The Instructor PC uses the Instructor Application software to manage simulation scenarios. The instructor can pause a scenario at any time and run the simulation in manual (on-the-fly) mode, customizing the patient parameters as needed. SimMom software includes the following features:

– User Interface

– Help Files

– Scenarios

– Electronic Fetal Monitoring

– Patient Monitor

– Debrief Viewer

– Scenario Customization

Instructor Software License

Instructor PC is shipped from Laerdal Medical with a pre-activated license installed.

Any changes or updates of the computer hardware (e.g. new hard drive or mother board) may render the license invalid. Please contact your local Laerdal support for assistance with re-activating the license.
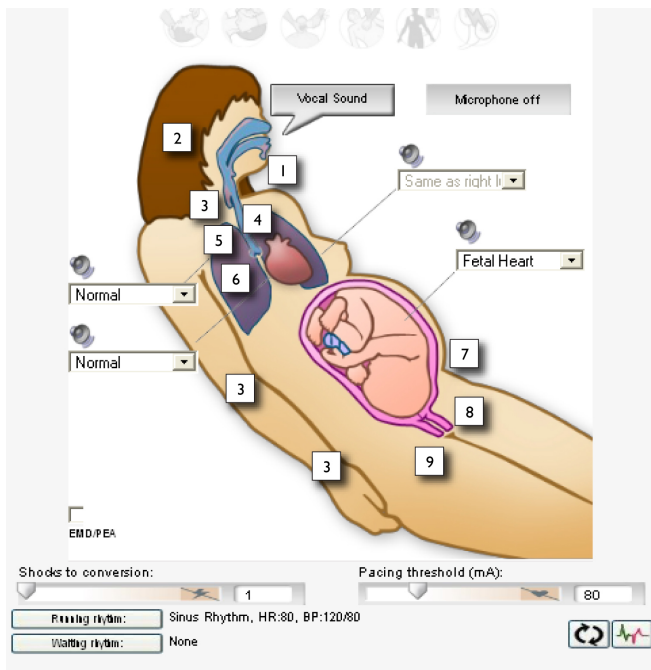
User Interface

The graphical user interface for SimMom is controlled by the Instructor PC. It is highly configurable and easy to operate. It controls the maternal and fetal vital signs, and can utilize custom or prepackaged scenarios.

Instructor PC Application Screen Overview

The Instructor PC application screen provides functional areas for viewing and controlling patient clinical features.

1. Program Menu Bar
2. Respiratory Control
3. Difficult Airway Control
4. Defibrillation and Pacing Controls
5. Debrief Log
6. Scenario Control

7. Trend and Handler Control
8. Trend Preview Window (hidden by default)
9. Event Windows
10. Electronic Fetal Montoring
11. Instructor Monitor Control
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1. Tongue Edema
2. Seizure Control
3. Central Pulses
4. Left Lung Resistance
5. Right Lung Resistance
6. Pneumothorax
7. Boggy Uterus
8. Urine Bladder
9. Uterus Bleeding

Description of Functions (refer to image on pg. 12)

1. Program Menu Bar

– **File** includes controls for starting a scenario, turning on and off monitor sound, importing vocal sounds and media files, adding media files, and exiting the software.

– **View** can select patient or instructor monitor setup.

– **Simulation** includes controls for starting, pausing, fast forwarding simulations, and going to debriefing.

– **Edit** includes controls for editing monitor setup, starting editors (scenario, handler, and trend), configuration (microphone and video recording), setting vital signs, adjusting Korotkoff controls, and starting SimMom dialog.

– **Calibration** calibrates the BP instrument.

– **Help** includes help files.

2. Respiratory Control

– Adjust the simulator's respiratory rate.

– Turn chest rise off and on.

3. Difficult Airway Controls

– Set ventilation and intubation.

– Preset controls for:

    – Normal.

    – Cannot intubate, can ventilate.

    – Cannot intubate, cannot ventilate.

4. Defibrillation and Pacing Control

– View and control shocks to conversion and pacing threshold.

– Select and exchange running and waiting rhythms.

– Click the **<Extrasystole>** button to insert an extra systole into the running rhythm.

5. Debrief Log (Session Log)

– Shows all activities performed during the simulation.

6. Scenario Control

– To start, pause, or halt scenarios. This section also contains the Debrief button, which will stop the session and open the debrief log in the Debrief viewer.

7. Trend and Handler Control

– Trends permit physiological changes over a period of time.

– **Trends** window displays running trends.

– Use the **<Start/Stop>** button to open the Trend and Handler Control dialogue box and make changes, select Trends or Handlers, and start or stop both Trends and Handlers.
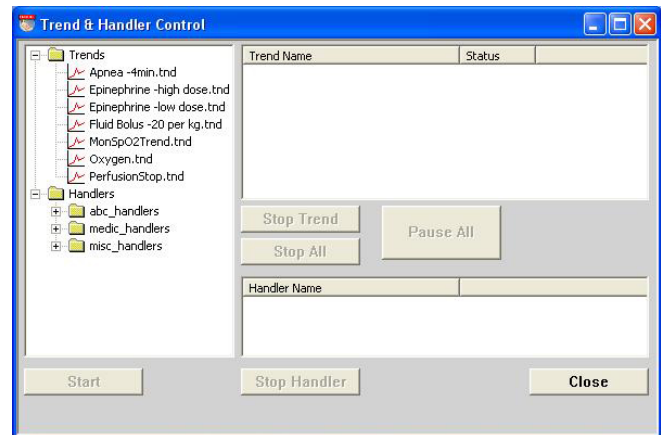

– Event handlers enable events to trigger simulator responses.

– **Handlers** window displays currently running handlers.

– Use the **<Hide Trends>** button to hide or show the trend preview window.

8. Trend Preview Window (hidden by default)

– Window displays the simulation control graph, which illustrates the trend in patient parameters of past, current, and predicted future trends throughout the simulation.

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– Trend Preview Window is hidden by default. To activate, click **<Show Trends>** under the **Handlers** dialog box. To enable at start up, go under <**Edit**> on the program menu bar and click <**configuration**>. On the **Configuration** menu screen, click <**Display parameter Trend Preview Window at startup**> and select <**enabled**> from the drop down menu.
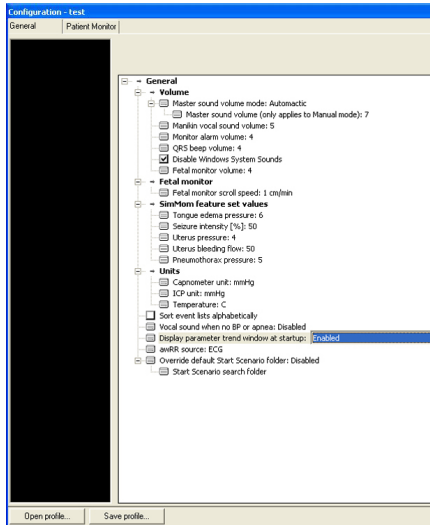
9. Event Windows (3)

– Contains checklists of events relevant for the simulation. An Event is an action (or behavior) exhibited by the user.

10. Electronic Fetal Monitoring

– View status of fetal heart rate and uterine activity.

– To view additional waveform activity, left click and hold the EFM display and drag to the right. When the fetal monitor scroll speed is set at 1 cm per minute, the monitor displays 60 minutes of activity. When the fetal monitor scroll speed is set at 3 cm per minute, the monitor displays 20 minutes of activity.

11. Instructor Monitor Control

– View status of mother's vital signs throughout the simulation.

– Use the <**Fetal Monitor**> button to connect or disconnect the EFM sensor to the Patient Monitor.

– Use the <**Toggle Monitor**> button to select which vital signs (patient, EFM, or both) are displayed on the Patient Monitor.

– Adjust patient monitor waveforms and parameters by either clicking the individual waveform or scrolling over the numeric parameter readings and using the mouse wheel.

12. Simulator Controls

– View and set lungs, heart, bowels, and fetal heart sounds.

– Set vocal sounds. (View sound volume by clicking on the speakers displayed next to the area you want to configure).

– Set seizure.

– Set lung resistance function (on/off).

– Set pneumothorax.

– Set tongue edema.

– Set boggy uterus and bleeding uterus.

– Set pulse strength.

– Pressurize urine bladder.

Editing Monitor Setup

To edit the monitor setup:

1. Click <**Edit**> in the Program Menu Bar.

2. Select <**Edit Monitor Setup...**> from the pull down menu.
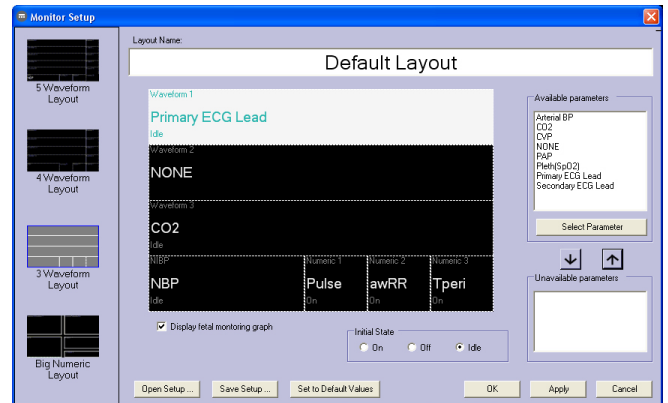
To change the waveform or numeric layout, click on one of the panels to the far left of the screen.

To change which waveforms and numeric layouts are displayed:

1. Click on one of the waveforms or numeric layouts on the large panel in the middle of the screen.

2. Scroll over to the **Available parameters** menu, and select the desired parameter.

3. Change the waveform or numeric layout by either clicking the <**Select Parameter**> button or double clicking on the desired parameter.

4. Click <**Apply**> to apply the changes to the Instructor Monitor Control on the user interface.

5. Click <**OK**> to exit the Monitor Setup screen.

To return to the default values on a waveform or numeric layout, click the <**Set to Default Values**> button.

To download a custom layout, click the <**Open Setup**> button.

To save a layout, click the <**Save Setup**> button.

Running a Scenario

– Launch the Instructor Application.

– Click <**Start Scenario**>. This will open a list of scenarios.

– Select and open.

– Click <**Play**> button to start.

Note: <**Pause**> button changes to <**Play**> button when the scenario is paused.

The <**Pause/Play**> button is located below the <**Start Scenario**>

Software

button. When a simulation is running, click this button to pause the session.

Adjust Patient Parameters During Simulation

The Patient Monitor shows the patient's current status. To manually adjust the patient parameters, click the individual graphs or numeric parameters. Pop-up menus allow the instructor to change the relevant parameters. Hold the cursor over a numeric parameter for 1 second, the selected parameter's background will turn to grey and the mouse pointer will change appearance, indicating that the scroll wheel can be used to increase or decrease the value.

Stop Simulation Session

When the simulation session is complete, click the **Stop** button < ■ > below the <**Start Scenario**> button.

Debrief Log

The Debrief Log records the patient responses and learner events that occur during simulation. Events can also be added manually by the instructor. This information is then made available in debrief files at the end of the simulation session.

To add a comment to the Debrief Log on user performance, click the <**Add Comment**> button.

Save Files and Laerdal Debrief Viewer

Save the Debrief Log to archive and/or review later. Click <**Debrief**> to start the Debrief Viewer. For more information, see The Laerdal Debrief Viewer section of this manual.

Changing SimMom Settings During Simulation

By accessing the **SimMom Dialog Menu**, you can adjust the Seizure, Boggy uterus, and Uterus bleeding settings during the simulation. Any changes made in this window will not effect the default settings of the manikin.

1. In the Instructor Application, click <**Edit**> in the Program Menu Bar.

2. Select <**Start SimMom Dialog**> in the drop down menu.

3. Increase or decrease to desired values.

4. Click <**Apply>.**
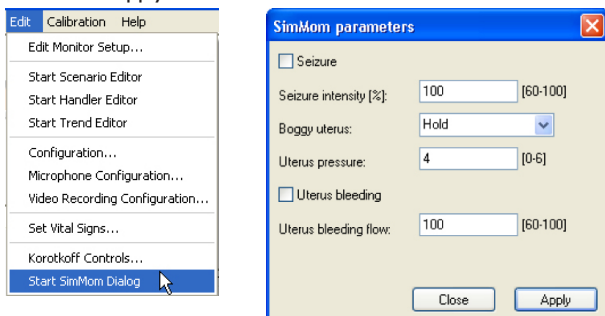
Changing Default Setting

Default settings for simulations can be changed by accessing the

Configuration Menu. To access the **Configuration Menu** from Instructor Application screen:

1. Select the <**Edit**> menu in the Instructor Application.

2. Select <**Configuration**> from the drop-down menu.

> **Note:** Once the new default settings are saved, the new parameters will become the start up default for future simulations.
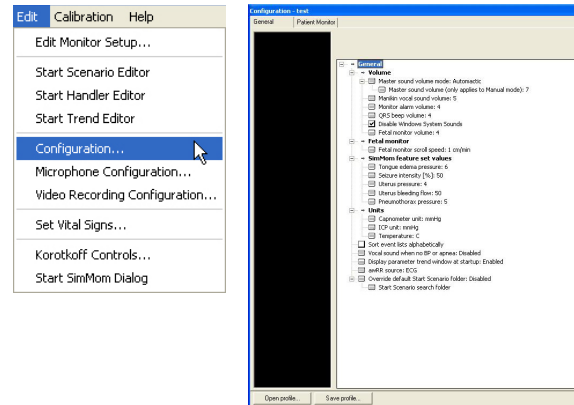
The following default settings are listed under the **SimMom feature set values** heading on the **Configuration** menu.

- Tongue edema pressure (0-6)
- Seizure intensity (75-100)
- Uterus pressure (0-6)
- Uterus bleeding flow (60-100)
- Pneumothorax pressure (0-6)

Fetal Monitor Scroll Speed

From the Configuration menu:

1. Select the <**General**> tab in on the **Configuration** screen.

2. Select the <**Fetal monitor scroll speed**> option under the **Fetal monitor** subheading.

3. Adjust the speed in the drop down menu.
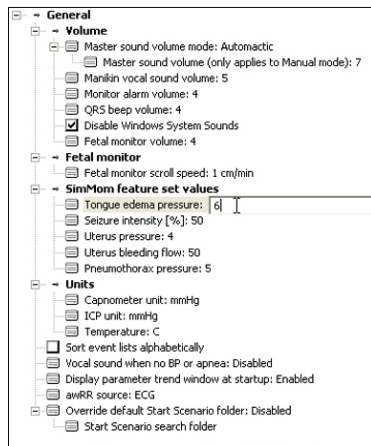
15
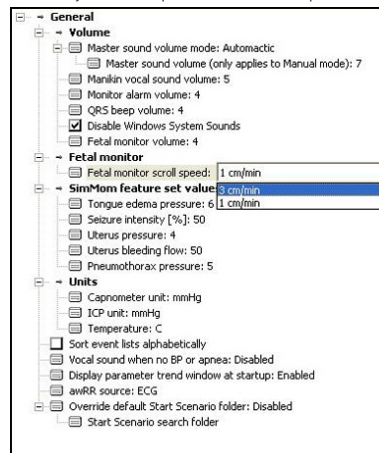
Tongue Edema

From the Configuration menu:

1. Select the <**General**> tab on **Configuration** screen.

2. Click the <**Tongue edema pressure**> option under the **SimMom feature set values** subheading.

3. Enter the desired pressure rate into the dialog box.

Seizure

From the Configuration menu:

1. Select the <**General**> tab on **Configuration** screen.

2. Click the <**Seizure intensity**> option under the **SimMom feature set values** subheading.

3. Enter the desired intensity into the dialog box.

Help Files

Software Help-files can be accessed as follows:

1. Click the Windows <**Start**> button

2. Select <**Programs**>.

3. Select <**SimMom Instructor Applications**>.

4. Select the <**SimMom Help File**>.

Fetal Monitoring

The electronic fetal monitor (EFM) on the user interface displays the Fetal Heart Rate and Uterine Activity waveforms. The EFM has the option to scroll at 1 cm or 3 cm per minute. At 1 cm per minute, the EFM shows 60 minutes of fetal monitoring without having to scroll. At 3 cm per minutes, it shows 20 minutes without having to scroll. It records at least 90 minutes of fetal monitoring that can be viewed by scrolling back.

To scroll back, left click and hold on the EFM display and then move the mouse to the right.
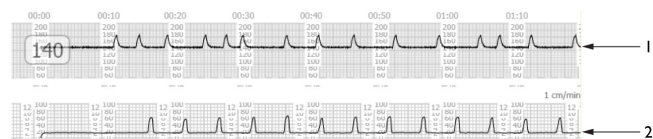
1. Fetal Heart Activity Waveform
2. Uterine Activity Waveform

Adjust Fetal Heart and Uterine Activity Parameters During Simulation

To adjust fetal heart parameters and uterine activity parameters, click the EFM display to open the **Fetal simulation setup** window.

Under the **Select preset** tab, the user can perform the following functions:

– Increase or decrease the fetal heart rate baseline by sliding the toggle left or right.

– Select preset parameters for baseline variability, fetal heart pattern, and uterine activity.


To load a preset parameter into the simulation:

1. Click on a preset parameter in one of the menus (**Baseline variability**, **Fetal heart pattern**, or **Uterine activity**).

Note: The **preview screen** displays the effects of the parameter changes on the simulation before they are actually loaded into the simulation.

2. Click the <**Apply**> button to load the parameter into the simulation.

Under the **Custom** tab, the user can customize the simulation by manually adjusting certain parameters using the sliding toggle.
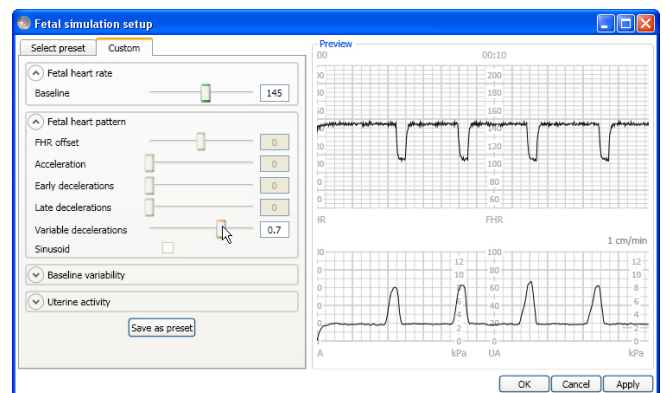
Baseline fetal heart rate parameter controls the rate of the fetal heart.

Fetal heart pattern parameters include the following:

– **FHR** (fetal heart rate) **offset** sets FHR relative to baseline.

– **Acceleration** slider sets amplitude of periodic accelerations.

- **Early decelerations** slider sets amplitude of decelerations occurring simultaneously with each contraction.

- **Late decelerations** slider sets amplitude of decelerations occurring after each contraction.

- **Variable decelerations** slider sets amplitude of decelerations proceeding and following each contraction.

- **Sinusoid** box sets fetal heart rate waveform resembling sinusoidal wave.

  📝 **Note:** The fetal heart pattern parameters are mutually exclusive. When one is set to a certain value, the others automatically remain at 0.

Baseline variability parameters include LTV (long term variability) gain, LTV frequency, and STV (short term variability) gain. STV gain measures the beat-to-beat change in the fetal heart rate. LTV gain measures changes in the fetal heart rate over a longer period of time. LTV frequency is the frequency of long term variability measured in hertz.

Uterine activity parameters include baseline, contraction interval, contraction duration, and height.

Once the desired parameters have been set, click <**Apply**> to load them into the simulation.

Creating and Saving Preset Parameters for Fetal Heart and Uterine Activity

To create preset parameters for fetal heart and uterine activity:

1. In the **Fetal Simulation Setup** window open the **Edit fetal monitor preset** window by clicking either the <**New**> button under the **Select preset** tab or the <**Save as preset**> button under the Custom tab.

2. Choose a name for the preset, and enter it into the **Pattern name** dialogue box.

3. Select one of the four pattern types from the Pattern type pull down menu.

   📝 **Note:** The pattern types correspond to the menus under the **Select preset** tab.
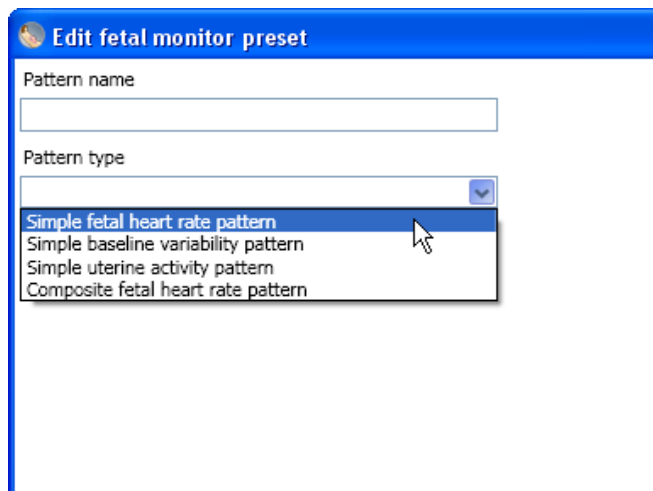
4. Set preset parameters by sliding toggles and/or entering numbers into dialogue boxes.

📝 **Note:** For greater detail on creating a composite fetal heart rate pattern, proceed to the 'Creating A Composite Fetal Heart Rate Pattern' section.

📝 **Note:** When parameters are changed in a section marked 'Only for reference not saved in preset,' the changes will appear in the preview window but will not be saved in the preset.

5. Save preset by clicking the <**OK**> button.

The saved preset should now appear in the **Select preset** tab underneath the menu corresponding to its pattern type.

To edit a saved preset, click on it in the **Select preset** tab, and press the <**Edit**> button.

To erase a saved preset, click on it in the **Select preset** tab, and press the <**Remove**> button.

Creating A Composite Fetal Heart Rate Pattern

A composite fetal heart rate pattern consists of multiple sub patterns, each of which has its own parameters. By varying the duration of the sub pattern, users can infuse greater degrees of randomness and variability into the simulation.

The user can create a composite fetal heart rate pattern, or select one from the list of presets. Preset composite fetal heart rate patterns include **episodic accelerations**, **prolonged decelerations**, **variable decelerations,** and **occasional accelerations**.

To create a composite fetal heart rate pattern:

1. In the **Fetal Simulation Setup** window open the **Edit fetal monitor preset** window, and select the composite **Fetal heart rate pattern** from the Pattern type pull down menu.

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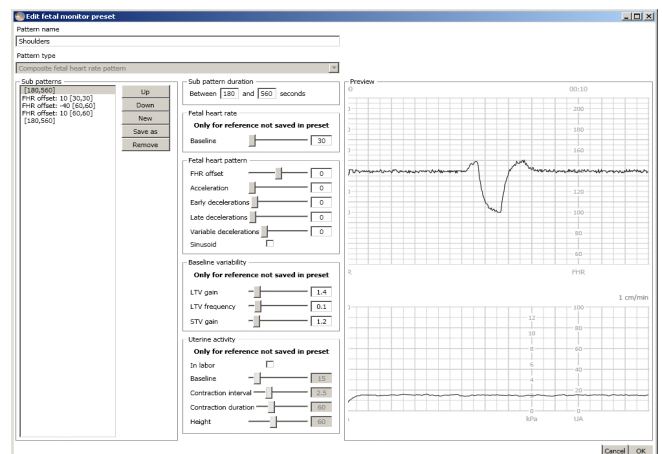
2. Create sub patterns.

– Input a sub pattern duration by clicking in the dialogue boxes underneath the **Sub pattern** duration heading and typing in a number.

📝 **Note:** If the same number is inputted into both dialogue boxes, the sub pattern will always last for the same amount of time. If different numbers are inputted into the dialogue boxes, the pattern will last for a random duration that is never less than the smallest number or more than the greatest number. For example, if the display reads "Between 60 and 60 seconds," the sub pattern will always last one minute. However, if the display reads "Between 60 and 180 seconds," the sub pattern will last a random duration between 1 and 3 minutes. Varying the numbers is a way to introduce a greater degree of randomness into the simulation.

– Set **Fetal heart rate pattern** parameters for the sub pattern by sliding toggles and/or typing numbers into appropriate dialogue boxes.

– Click the <**New**> button to start on a new sub pattern.

– Repeat step 2 for each required sub pattern.

📝 **Note:** To move sub patterns around in the simulation, click on it under the Sub pattern menu and press the <**Up**> or <**Down**> button. To delete a sub pattern from the simulation, press <**Remove**>. To make a copy of a sub pattern, press <**Save as**>.

3. Click <**OK**> to save the composite fetal heart rate pattern.

The saved composite preset should appear in the **Select present** tab under the fetal heart pattern menu.

Patient Monitor

The optional Patient Monitor has a Touchscreen display and is used to simulate a real patient telemetry monitor .
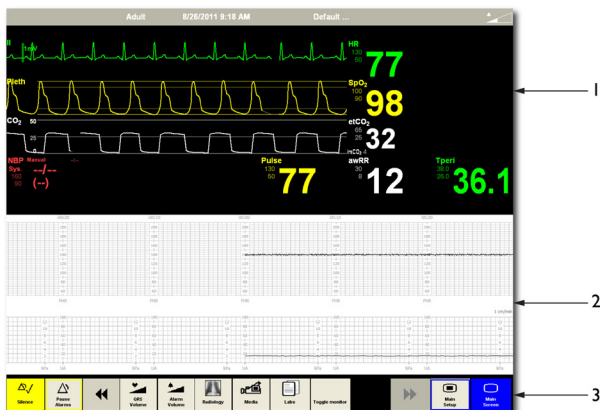
1. Patient Vital Signs
2. Fetal Heart Monitoring
3. Patient Monitor Interface

Video capture from the patient monitor display and the web camera can be stored for use in the Debrief Viewer.

The Patient Monitor must remain connected throughout the simulation in order to record video of the patient monitor for debrief files.

Patient Monitor Interface

1. Top menu

 Press <**5wave**> in the top menu to view and change monitor display settings.

 Press to open Alarm Volume.

2. Parameters Readout Area

The user may also edit scaling, alarm limits, etc. using this interface. Clicking the parameter of interest will present a menu with available options. Some fields will only be available while appropriate sensors are connected to the Manikin.
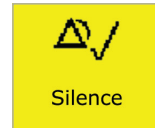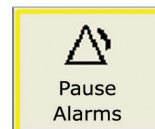
3. Bottom menus

 There are two bottom menus. Press the left or right arrow key to toggle back and forth between Bottom Menu 1 and Bottom Menu 2.
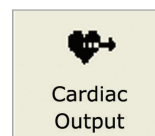
Bottom Menu 1

Press the left double-arrow key to display Bottom Menu 1.

 Selecting the <**Silence Alarm**> button turns active alarm sounds OFF.
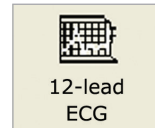
 Selecting the <**Pause Alarms**> button turns all sound alarms off for 3 minutes.

 Cardiac Output generates a new reading of Cardiac Output. The C.O. details will be shown in the C.O. part of the Patient Monitor PC.

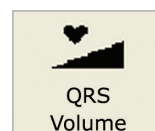 Select the <**Graph Trends**> button to open and review.

 Selecting the 12-lead ECG button generates a 12-lead ECG strip. Select <**Print**> to request this ECG strip be printed. The request will display on the Instructor Application.
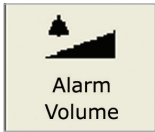
Bottom Menu 2

 Press the right double-arrow key to display Bottom Menu 2.

 Select the <**QRS Volume**> button to open and adjust volume (0-10).
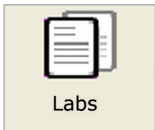
Select the <**Alarm Volume**> button to open and adjust volume (0-10).

Alarm Volume

Select the <**Radiology**> button to open X-ray images which have been included in the current scenario.

Radiology

Select the <**Media**> button to open display. Select the <Close> button to close the Media display.

Media

Select the Labs button to open. Select the <**Close**> button to close the Labs display.

Labs

Select the <**Main Setup**> button to open. Options in the <**Main Setup**> menu are identical to the similar options displayed on the Menu line.

Main Setup

Select the <**Main Screen**> button to return to the <**Main Screen**>, and cancels all submenus. Submenus can also be closed by selecting the "X" box of the submenu.

Main Screen

Select the <**Toggle Monitor**> button to cycle through the patient monitor and fetal monitor, patient monitor only, and fetal monitor only options.

Toggle monitor

Fetal Monitoring Interface

The Electronic Fetal Monitor (EFM) on the Patient Monitor displays the Fetal Heart Rate and Uterine Activity waveforms. To see activity on the Patient Monitor once the probe attached, simply touch the screen.

The EFM has the option to scroll at 1 cm or 3 cm per minute. At 1 cm per minute, the EFM shows 60 minutes of fetal monitoring without having to scroll. At 3 cm per minutes, it shows 20 minutes without having to scroll. It records at least 90 minutes of fetal monitoring that can be viewed by scrolling back. To scroll back or forward and view additional activity, touch and drag the EFM interface.

1. Fetal Heart Rate Waveform
2. Uterine Activity Waveform

To change the volume for fetal tone, click or touch anywhere in the EFM display; a speaker should appear. Click or touch the speaker icon to access the volume control and then adjust to desired level.
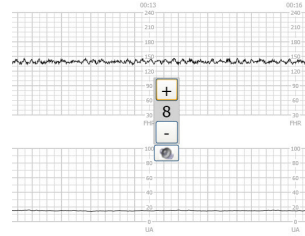
To close volume control, click or touch away from icon

Importing Vocal Sounds

During a session, the SimMom software can play audio files for users. Users can import audio files into the simulation from a list of prerecorded sounds, or record their own sounds and then import them.

Record Vocal Sounds

Vocal files can be recorded using a shortcut available in the SimMom software program group. To record vocal files and make them available for the simulation sessions:

1. Launch sound recorder from SimMom Instructor Application program group.

   – Click <**Start**>. Select <**All Programs**>. Select <**SimMom Instructor Application**> from the pop-up menu.

   – Click <**Record Vocal Sound**> on the pop-up menu.

2. Record sound using the **Sound Recorder** window.

3. Save the sound to make it available for import into the simulator sessions.

Note: When recording sounds for simulations sessions, be sure to use the **Record Vocal Sound** shortcut available in the SimMom Application program group.

Import Vocal Sounds

To import vocal sounds and make them available for the simulation sessions:

1. In the Instructor Application, click <**File**>.

2. Click <**Import Vocal Sounds...**> in the drop-down menu. The Instructor may import any of the existing sound files or browse to select a personal sound file.

3. To play the imported sound during the simulation, click on <**Vocal Sound**> in **Instructor Application** window.

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Importing and Adding Media Files

During a session, the SimMom software makes media files available to users. Media files include Radiology (digital images), Media (videos), and Lab reports.

Import Media Files

To import media files and make them available for the simulation sessions:

1. In the Instructor Application, click <**File**>.

2. Click <**Import Media Files...**> in the drop-down menu. The Instructor may import any of the existing media files or browse to select a personal media file.

Add Media Files

To add media files:

1. In the Instructor application, click <**File**>.

2. Click <**Add Media Files...**> in the drop-down menu.

3. Browse to select a file.

The Instructor can import and add as many media files as required.

Instant Display:

Media files show immediately when transferred.

| Radiology | Media | Labs |
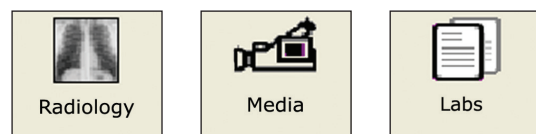
Ordering Radiology, Media or Labs

The user can order Radiology, Media, or Labs by clicking on any of the relevant menus in the Patient Monitor Application.

1. Ensure that the main menu is displayed.

2. Click on the appropriate Radiology, Media, or Labs button.

3. Click <**Order New**> in the dialog box.

4. The system will then notify the Instructor of the order via the Instructor Application.

The user may also click on any of the relevant menus to check if the Instructor has made any media files available for viewing.

Laerdal Debrief Viewer

The Debrief Viewer is a debriefing tool that allows you to open and review a saved simulation session. The debriefing file consists of the following information logged during a simulation:

– **Session Log:** Data and events are recorded and time stamped throughout the simulation session. Instructor comments are included.

– **Patient Monitor:** Patient Monitor display can be recorded as a video file.

– **Web camera:** Video signals from a web camera connected either to the Instructor's computer or the Patient Monitor computer.

– **Microphone inputs:** Voice and sound recording from the web camera's built-in microphone is recorded.

– **Review comments:** Comments can be edited or added to the <**Session Log**> during review in the <**Debrief Viewer**>.

Note: The sources are all recorded to the same time line and are always played back simultaneously.

Accessing the Debrief Viewer

The Laerdal Debrief Viewer can be accessed in two ways:

1 - From the Instructor Application:

– Click the Stop button < ■ >.

 The Stop button is located under the Time display.

– Click the <**Debrief**> button in the <**Start Scenario**> dialog box.

– The Debrief files from the session are then transferred and made available in the <**Laerdal Debrief Viewer**>.

Note: It is important to save the debrief files for later review.

2 - From Windows Start menu:

– Click the Windows <**Start**> button.

– Select <**All Programs**>.

– Select the <**Laerdal Debrief Viewer**> program folder.

– Select <**Laerdal Debrief Viewer**>.

The system displays the Debriefing window for the session.

Customizing Scenarios

SimMom scenarios can be created and edited using a set of editors:

– Scenario Editor

– Trend Editor

– Event Handler Editor

The Patient Monitor layout can be customized via the Scenario Editor. Select <**Edit Monitor layout…**> from the <**Edit**> menu.

Common learner events can be customized via the Scenario and Event Handlers Editors.

1. Select the <**Edit**> menu (located at the top of the Instructor Application screen).

2. From the drop-down menu, select <**Start Scenario Editor**>.

3. The New Scenario (SimMom) window opens. Select <**Edit**> from the menus shown at the top of the window.

4. From the drop-down menu, select <**Edit Event Menus**>.

SimMom editors can be accessed through the Instructor Application's <**Edit**> menu, or directly through the Windows <**Start**> menu:

1. Click the Windows <**Start**> button.

2. Select <**Programs**>.

3. Select <**SimMom Instructor Applications**>.
   The following list appears:
     Scenario Editor

SimMom Help file
SimMom Instructor Application
SimMom Program Update
Trend Editor

4. Select an editor.

Scenario Editor

The Scenario Editor allows you to define relationships between learner events and patient response by drawing lines in a simple graphical editor.

Trends

Trends are sets of physiological parameters pre-programmed to increase/decrease over time.

Handlers

Handlers enable events to trigger simulator responses.

Using Handler Editor to Link Actions

To link a sound to certain events, like a contraction, follow these steps:

1. Select the <Edit> menu located at the top of the Instructor Application screen.

2. From the drop-down menu, select <Start Handler Editor>.

3. Click the <Parameter Limit> option under the Events menu located on the lower left side of the window. Click the pink <Events> box and the Parameter Limit dialog box appears.
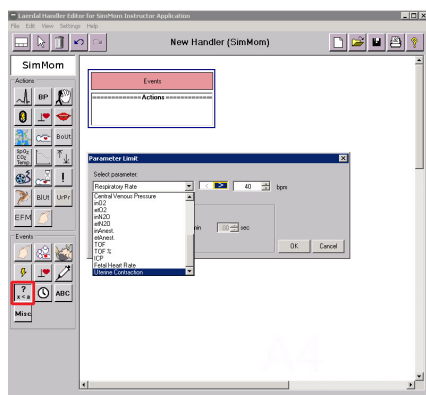
4. From the Select Parameter drop down list, select the event of your choice. For this example we chose <Uterine Contraction>.

5. Select the parameters for this event by clicking < or > and then setting a limit.

6. Click an Action from the Actions menu on the left side of the window. For this example we chose <Vocal Sounds>. Now click in the Actions area below your selected Event.

7. Chose a sound from the provided list or select browse to use a custom sound. Press <OK>.

8. Save the handler and close the Handler Editor.

9. To start the Handler click <Start/Stop> in the Trends and Handlers Control area. Select the handler from the left side of the window and press <Start>. Close the window.

10. Your simulation is now running the newly created handler.
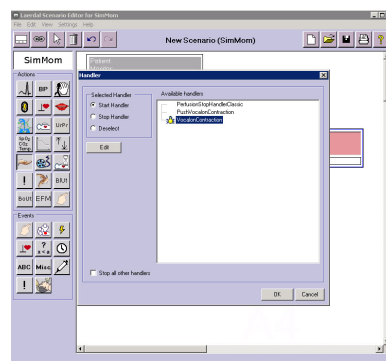
Note: This handler can also be added to a scenario in the Scenario Editor. Simply click the <Handler> icon in the Actions menu and then click the frame you wish to add it to.

Laerdal Advanced Video System (AVS)

The Laerdal AVS (optional) can be installed to allow high quality video capture from up to 4 video cameras during a simulation session and be viewed in the Laerdal Debrief Viewer.

Note: The Laerdal AVS is not included in the SimMom package but can be purchased from your local Laerdal Sales Company or representative.

Software Reinstallation

To reinstall SimMom software:

Note: Ensure that touchscreen USB is not connected.

1. Uninstall current SimMom software.

2. Insert SimMom Advanced Software CD into disk drive.

3. Follow on screen instructions.

4. Press <Continue Anyway> when you receive a dialog box informing you the software has not passed Windows logo testing. This dialog box will appear three times during installation.

5. Reboot the system.

6. Double click the <SimMom Instruction Application> desktop icon.

7. Click <Activate> in the License Manager window.

8. Enter License Key.

Note: If you do not know your license key, contact a Laerdal customer service representative for support.

9. Click <Automatic activation through Internet>.

10. Close the License Manager window.

11. Restart software and create user name and password.

Software is now ready for use.

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Introduction to Simulations

SimMom is capable of performing a variety of simulations based on the positioning of the manikin and the modules attached to it. This section includes the following:

– Airway Management

– Setting Up ECG Snaps/Defibrillation Connectors

– Connecting Blood Pressure Cuff

– Preparing IV Simulations and Cleaning IV Arm

– Preparing Baby for Delivery and Attaching Amniotic Bag

– Birthing Positions

– Deliveries

– Modules

– Catheter Installation

– Filling Blood and Urine Reservoirs

– Cleaning Blood and Urine Reservoir

– Performing Hybrid Simulations

– Using the Bed Strap

Airway Management

Note: It is recommended that a 7.5 endotracheal tube, #4 LMA, Large Adult or Trainer Combitube, and a KING LT – #4 be used during simulation.

A liberal amount of airway lubricant or liquid soap should be applied inside the pharynx, nostrils, and all intubation areas prior to performing intubation procedures.

Setting Up ECG Snaps/Defibrillation Connectors

For rhythm monitoring; the manikin is installed with 4 ECG Stud connectors.
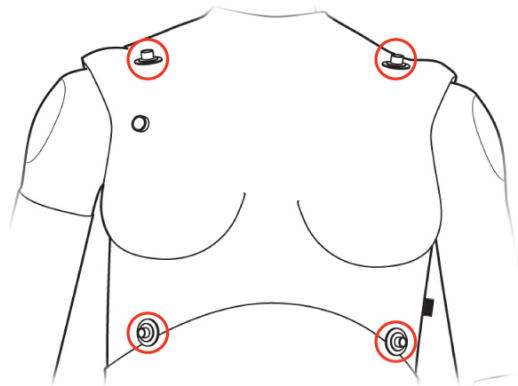
Note: Do not begin training until the manikin is connected to the VitalSim Control Unit via the 37 pin connector cable exiting the right side of the manikin's body.

Installing Defibrillator Adapter Plates

The manikin torso is fitted with two stud connectors for use with a conventional defibrillator (defibrillator not included).

Defibrillation Studs
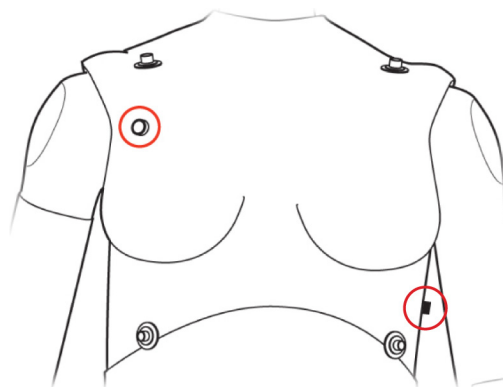
To prepare the manikin for defibrillation using paddles:

1. Unscrew and remove defibrillation studs.

2. Screw adapter plates into post sockets located on apex and sternum of manikin.

Note: Place paddles firmly against zap plates to read rhythm on a monitor.

3. For hands free defibrillation, attach adhesive pads to adapter plates. For manual defibrillation, place defibrillator paddles firmly against adapter plates.

Caution: The manikin must not be in contact with electrically conductive surfaces or objects during defibrillation.

Warnings:

– Read and follow all safety and operation instructions provided with your defibrillator and associated equipment.

– The trainer can be shocked with actual voltage and current during defibrillation. Observe all precautions and safety measures during defibrillation and pacing phases of training. Failure to follow safety measures could result in injury or death to operators, students, and/or onlookers.

– Only perform defibrillation on the defibrillator connectors.

– Do not press too hard over the defibrillator adapters as this may cause arcing and pitting.

– Do not defibrillate manikin without the torso skin in place.

– Do not provide more than 2 × 360 J defibrillator discharges per minute. After 30 minutes, cease all shocking for at least 15 minutes before starting a new sequence.

Connecting Blood Pressure Cuff

SimMom is delivered with a customized blood pressure cuff. It attaches to the blood pressure arm (right arm), which, when connected to VitalSim, can be used to auscultate and palpate blood pressure.

To connect the blood pressure cuff:

1. Place blood pressure cuff on blood pressure arm.

2. Attach clear tubing on cuff to the matching clear pneumatic tubing exiting the torso underneath the blood pressure arm.

3. Ensure that both the 37 pin connector cable and the clear pneumatic tubing exiting the lower right side of the manikin are connected to the VitalSim control Unit.

**Note:** The speaker for the Manikin's blood pressure is located in the right antecubital fossa.

Preparing for IV Simulations

Both manikin arms provide radial IV access through female luer fittings, and support training for IV drug administration.

Connect IV outlet tubes exiting backside of the arm to IV fluid collection bags. For realism, place collection bags discretely out of sight from scenario participants.
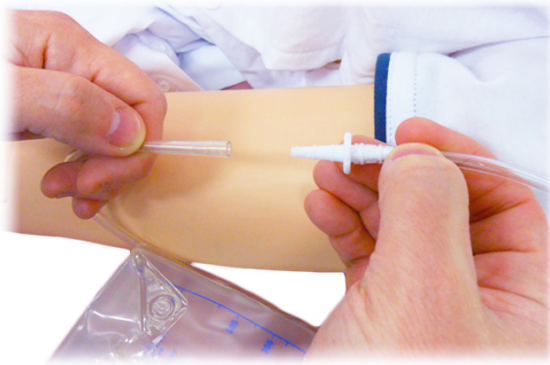
Connect the male luer connector of the IV bag (not included) to the female luer connector on the manikin's forearm.
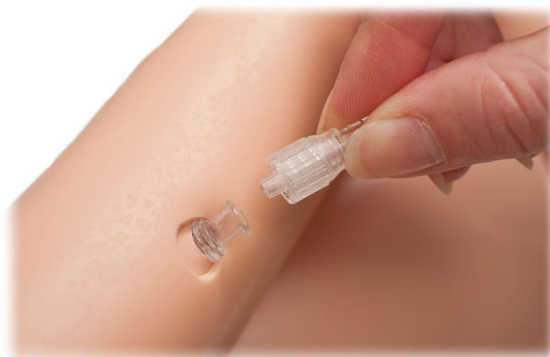
When performing IV simulation, use only distilled or de-ionized water to prevent clogging of the system.

Cleaning IV Arms

Clean the IV arms after each session or day of use by flushing them with 60% isopropanol or 70% ethanol.

Intramuscular Injection (IM) Site Use and Care

There are four sites for intramuscular injections. They are located on the left and right deltoid and thigh. The IM pads are foam filled and can be injected with fluids. Using a 22 gauge needle increases the longevity of the "skins".

Immediately after use, the IM pads must be removed from the manikin and allowed to air dry. The IM pads can be squeezed like a sponge to remove fluids. The IM deltoid pads have a foam interior that must be removed for drying. The foam is removed through a slit in the back of the pad. Talcum powder may be used to ease the reinsertion of the foam into the skin.

Birthing Positions

By manipulating the manikin's limbs and rotating its shoulder and hip joints, it can simulate the following birthing positions:

1. Supine
2. Semi-recumbent
3. All fours
4. Left lateral
5. Legs in stirrups
6. McRoberts

Preparing Baby for Delivery

SimMom is delivered with a birthing baby that can be placed in multiple positions in order to simulate normal, difficult, instrumental and placenta deliveries.

Connecting Umbilical Cord

If cord cutting is required, attach one of the cuttable umbilical cords to the connector, and push second connector into free end of tube.

Then push the other end of second connector into the umbilical hole on baby's abdomen.
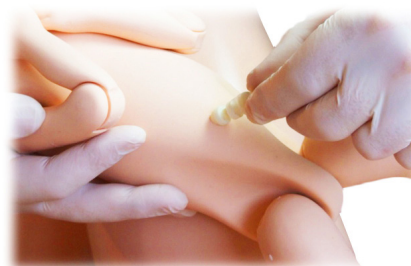
If cord cutting not required, simply push the umbilical cord connector directly into the umbilical hole on baby's abdomen.

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Lubrication

The baby, umbilical cord, placenta, birth canal, cervix, inside of vulva, and amniotic bag should be thoroughly lubricated prior to use. A poorly lubricated cord may pull away from the baby during delivery.

⚠️ **Caution:** Use only SimMom & PROMPT Birthing Lubricant (Laerdal Catalogue Number 377-18850). Do not use PROMPT Birthing Lubricant (Laerdal Catalogue No. 376-02950, Limbs & Things No. 50181) or SimMom Birthing Lubricant (Laerdal Catalogue No. 377-14450, Limbs & Things No. 10191). Do not use any other lubricant. Non-approved lubricants can damage the system.

⚠️ **Caution:** A poorly lubricated baby or placenta may damage the birth canal or the cervix as it is pushed through.

⚠️ **Caution:** SimMom and PROMPT Birthing Lubricant is not for personal use.

⚠️ **Important:** It is vitally important that after each training session all lubrication is cleaned from all manikin and baby surfaces with a warm damp cloth.

Apply at least 2-3 squirts of lubrication to the following areas using hands to distribute evenly:

1. Inside the vagina and around the edge of the perineum.

2. The surface of the cervix.

3. To the baby's head, shoulders, body and limbs. Ensure the baby is well covered.

Delivery Techniques

When simulating deliveries, one person must serve as the puppeteer. The puppeteer stands to one side of the mother's abdomen and pushes the baby through the birthing canal.

📝 **Note:** Gloves should be worn during the procedure. Jewelry items such as rings should be removed to protect the soft tissue parts of the model.

📝 **Note:** The belly skin should be attached by one peg on each side of the pelvis during the procedure.

There are two basic techniques for delivering the baby:

1. **One-Handed Delivery**

– Place baby in fetal position, aligning its limbs for insertion through birth canal.

– Grasp the baby by the back of the trunk. Engage the baby's head in the required position in the pelvic inlet. Push firmly.


– The head should automatically flex on the neck and descend the birth canal, dilating the cervix.

– As the head passes through the birth canal, it should rotate naturally. Rotation can be enhanced by rotating the baby's trunk.

– If the limbs were properly aligned beforehand, they should follow their own path and emerge realistically through the birth canal.

– This technique allows the puppeteer to perform other functions, such as midwife, birthing partner, etc.

2. **Two-Handed Delivery**

– With one hand, grasp the baby by the back of the trunk. This hand performs most of the pushing.

– Place the palm of the second hand along the chest of the baby. Use the tips of two fingers to manipulate the baby's chin or mouth and to rotate the baby's head when required. The second hand can also hold the umbilical cord and arms in position.
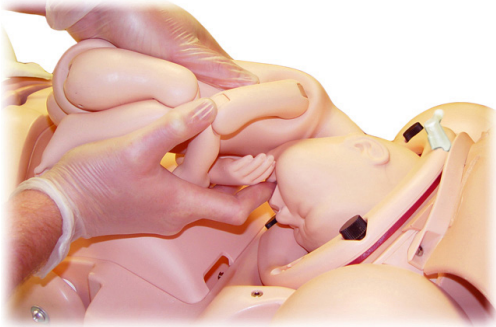
– As the head descends further, the puppeteer can adjust the second hand grip to push up under the chin and better extend the baby's head.

– This techniques allows the puppeteer to better control the head.

> **Note:** The trainer should practice and become familiar with the delivery process prior to any training situation.

Deliveries

SimMom is capable of simulating normal, breech, instrumental, and shoulder dystocia deliveries.

Normal Delivery

For normal delivery simulation, see "one-handed" or "two-handed" delivery" in the Delivery Techniques section.

Breech Delivery

A breech delivery can be performed using one or two-handed delivery technique. The second hand manipulates the baby's limbs and umbilical cord. To perform a breech delivery:

1. Apply extra lubrication in the lowest part of the birth canal so the baby's bottom can slip up over the J-shape of this part of the canal.

2. Change grip on the baby's trunk so the delivery can be controlled by holding the head.

3. Flex the baby's neck so the head passes more easily through the birth canal.

4. The baby can now be delivered using Moriceau-Smellie-Viet maneuver.

> **Note:** It is easier to perform a breech delivery if the cervix is not installed.

Forceps Delivery

To perform a delivery with forceps instrumentation:

1. Reduce lubrication on the baby's head and in the birth canal to prevent the forceps from slipping off the scalp.

2. Flex the head so the forceps can be positioned correctly.

3. Coordinate the trainees so that they only pull on the forceps when the puppeteer is simulating the mother's expulsive effort. Otherwise, the forceps may slip off the head.

4. During the rotational part of forceps delivery, coordinate the actions of the puppeteer and trainee so that the rotation of the baby's body follows the rotation of the forceps. Otherwise, the forceps may slip off the scalp.

Suction Delivery

To perform a suction delivery using Kiwi/Ventouse instrumentation:

1. Reduce lubrication on the baby's head to prevent the suction cups from slipping off the scalp.

2. A facilitator may be needed to coordinate the trainees as they pull and the puppeteers as they push.

> **Note:** Step 2 is less critical for suction delivery than for forceps delivery.

All Fours Delivery

All four delivery can be performed using one or two-handed delivery technique, though the latter is recommended. To perform a delivery on all fours:

> **Note:** All fours delivery requires more force and involves a different technique than other delivery types. It should be practiced several times before being used in a scenario.

1. Push diagonally upwards, into the pelvic floor following the J-shape of the birth canal.

2. Guide baby horizontally through birth canal opening.

– If using two-handed technique, apply continuous upward pressure with the second hand in order to keep the head flexed and to prevent baby's body from sagging.

> **Note:** For more stability, the puppeteer should consider resting his or her elbows on the bed or on a pillow positioned on the bed.

Shoulder Dystocia Delivery

A shoulder dystocia delivery is usually performed using two-handed technique. Control of the baby's arms is important because the posterior arm must be placed in the proper position. To perform a shoulder dystocia delivery:

1. Wedge anterior shoulder against the pubis while descending the baby down the birth canal;

2. Coordinate the rotational maneuvers of the puppeteer and the student so their movements match each other.
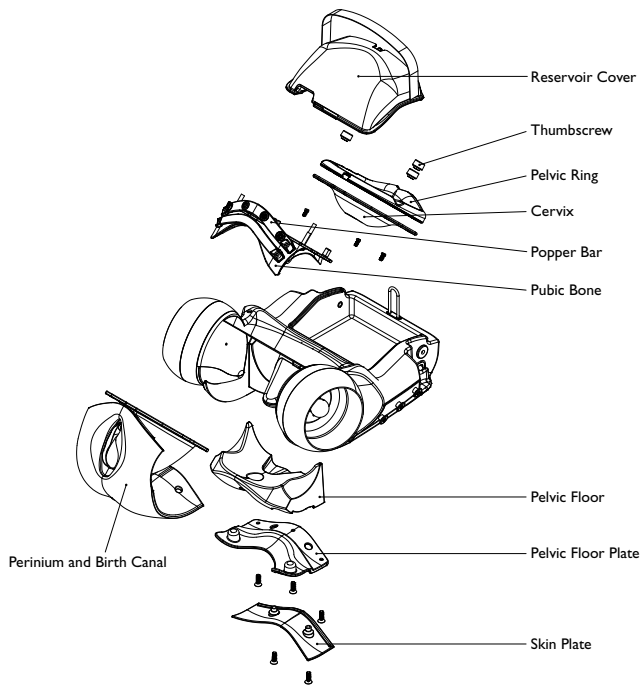
> **Note:** Depending on the level of supra-pubic pressure applied by the trainee, the puppeteer may experience discomfort. The puppeteer may find it more comfortable to hold the baby in a more anterior position so that the hand is between the baby and the anterior abdomen wall.

> **Note:** It is easier to perform a shoulder dystocia delivery if the cervix is not installed.

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Pelvic Components

- Reservoir Cover
- Thumbscrew
- Pelvic Ring
- Cervix
- Popper Bar
- Pubic Bone
- Pelvic Floor
- Pelvic Floor Plate
- Skin Plate
- Perinium and Birth Canal

Modular Components

SimMom is equipped with the following modular components:

1. Cervix Module
2. Amniotic Bag
3. Postpartum Hemorrhage, including Boggy Uterus and Retained Placenta
4. Inverted Uterus

- Cervix
- Inverted Uterus
- Amniotic Bag
- Post-Partum Hemorrhage Uterus
- Support Foam
- Placental Fragment
- Retained Placenta
- Boggy Uterus
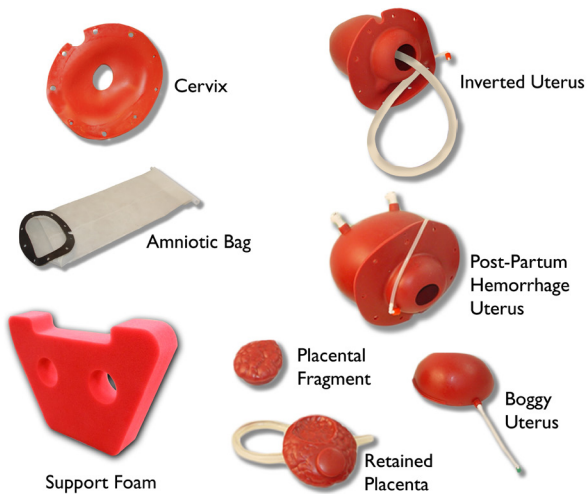
Cervix Installation

1. Fold back or remove abdominal skin (see Maintenance section page 37, "Abdominal Skin Replacement").

   ⚠ **Caution:** Folding the skin downward without support underneath it may cause the skin to tear.

2. Unscrew the three black thumbscrews around pelvic ring clamp. Remove pelvic ring clamp from clamping face.

   🗎 **Note:** When removing pelvic ring clamp, lift so that it remains parallel with the pelvis until it is clear of the screws.
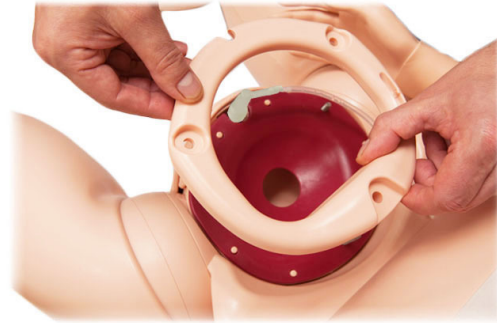
3. Remove current cervix module if necessary and set aside.

4. Place new cervix module in position at pelvic inlet with flange lying on top of birth canal flange.

5. Carefully align holes on cervix module with locating pins on clamping face. Ensure that urinary connector is aligned with similar notch on cervix module.
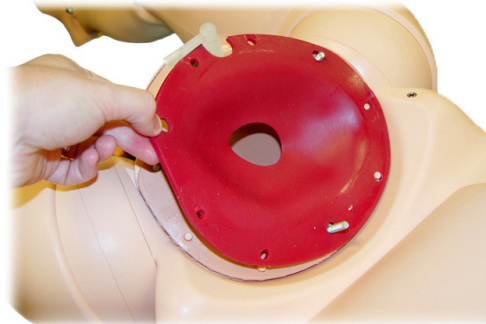
6. Replace pelvic ring clamp. Ensure it is properly aligned with locating pins and urinary connector.

7. Position and tighten black thumbscrews until firm.

   🗎 **Note:** Do not over tighten thumbscrews.
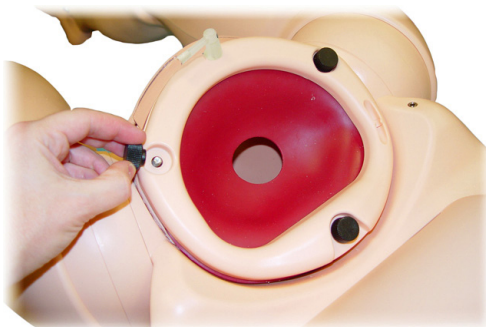
Amniotic Bag Installation

The amniotic bag is required during delivery simulations in which blood and/or amniotic fluid will be used.

📝 **Note:** Prior to beginning simulation, apply liberal amounts of lubrication to the birth canal, cervix, baby, bag, and placenta (if required). This greatly eases delivery of the baby.

To connect the amniotic bag:

1. Fold back or remove abdominal skin (see Maintenance section page 37, "Abdominal Skin Replacement").

2. Remove pelvic ring clamp, leaving cervix in position.

⚠ **Caution:** Removing the cervix can cause leaks.

3. Place plastic wrap/cling film over cervix (if required, not included) to simulate amniotic membranes.

⚠ **Caution:** For best results, plastic wrap/cling film thickness should be 20-30 microns. Thickness above 30 microns may damage the manikin.

4. Thread main part of bag through pelvic ring clamp.

5. Position bag flange on top of cervix flange on pelvic clamping face.

6. Ensure holes align with pins, and urinary connector notches are aligned.

7. Position pelvic ring clamp over flange.

8. Recheck position of pins and notches, and that blood feed tube is not caught under ring.

9. Fit and tighten three black thumbscrews.

10. Connect blood feed tube (red Luer) to blood pump outlet (red bulkhead connector).

📝 **Note:** The same pump and connectors can be used to deliver simulated amniotic fluid rather than blood, if this is required.

11. Apply lubrication to inside of bag by hand.

12. Apply lubrication to the baby's head shoulders, body, and limbs as described on page 24.

13. Introduce baby through top of the bag ensuring the head is fully engaged into the cervix. Pour 100 ml of lubrication into the bag and add 200 ml of water for a total 300 ml. Introduce placenta (if required).

⚠ **Warning:** Do not fill the bag over 500 ml.

14. Fit sealing clip to top end of bag. Roll up end of bag and tuck it inside abdomen.

15. Replace abdominal skin.

16. When delivering the baby the puppeteer will grasp the baby with both hands and push and squeeze the baby through the bag.
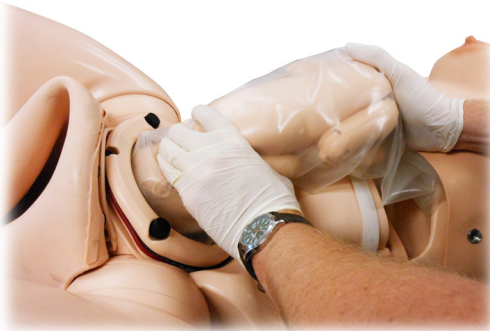
Uterus and Postpartum Hemorrhage Installation

The Uterus and PPH module includes a retained placenta module and boggy uterus module. To install the uterus:

1. Fold back or remove abdominal skin (see Maintenance section page 37, "Abdominal Skin Replacement"). Remove pelvic ring clamp and cervix.

⚠ **Caution:** Folding the skin downward without support underneath it may cause the skin to tear.

2. Install the indwelling catheterization bag as described on page 31 steps 5-8.

3. Push pelvic ring clamp over cervix and flange of PPH uterus.

4. Locate flange on pelvic clamping face. Align holes on flange with pins on clamping face. Align notch for urinary connectors with similar notch on pubis.
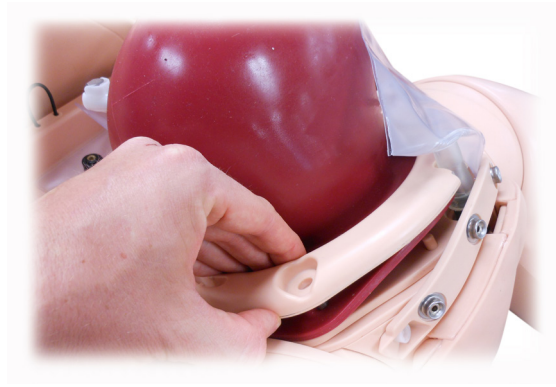
5. Push pelvic ring clamp into position over locating pins

6. Ensure flange holes and pins are still correctly aligned.

7. Position and tighten black thumbscrews until firm.

8. Connect red Luer connector on blood feed tube to red blood outlet on the pelvic bulkhead.

   📝 **Note:** Connection only requires a ¾ turn to lock. Do not over tighten.

9. Fit indwelling catheterization bladder and fold back behind bag. Replace abdominal skin.

Retained Placenta Installation

Round Prominence

Placental Fragment
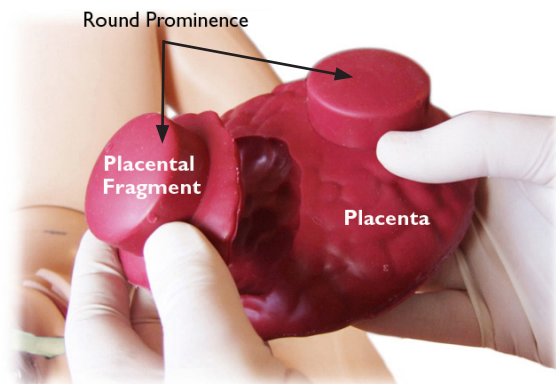
Placenta

📝 **Note:** Gloves are recommended for this procedure.

1. Remove the abdominal skin and ensure the PPH uterus is installed. Lubricate the birth canal and inside of PPH uterus.

2. Lubricate placental fragment, and insert it into the uterus, ensuring the pointed part of the fragment points towards the manikin's head.
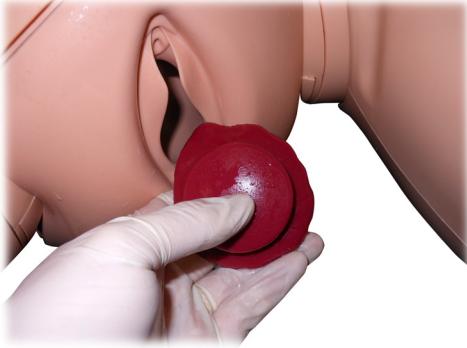

3. Align the fragment's round prominence with suction hole on posterior wall of uterus (on the manikin's right).

4. Lubricate the placenta, and introduce it into the uterus. It helps to fold it in half in order to fit through the cervix.
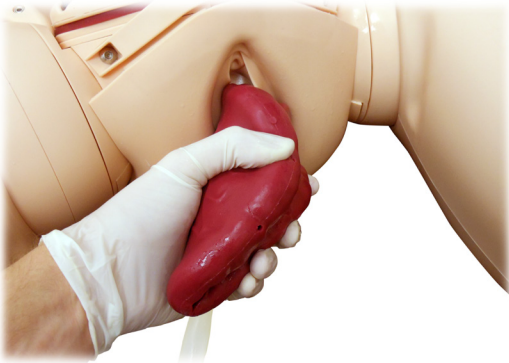
5. Orient the placenta so that the round prominence sits snugly into the corresponding cavity in the uterus (on the manikin's left). Ensure the fragment remains aligned with the placenta.

6. Fit the connector on vacuum pump hose to the quick fit connector on one side of the back of the uterus.

7. Pump until dial reads -0.8-0.9 bar/-25 mmHg (approximately 8-10 strokes of pump).
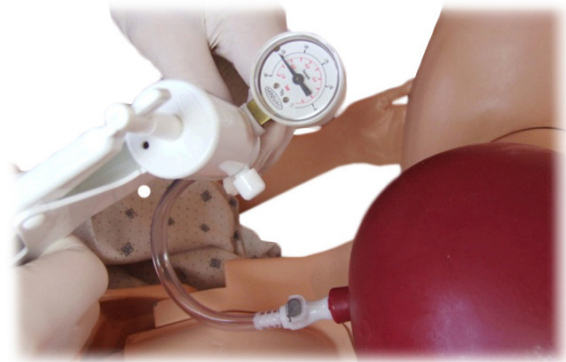
8. Disconnect.

9. Repeat for second connector to secure placenta into back of uterus.

10. Replace abdominal skin.

Boggy Uterus Bag Installation

1. Place the boggy uterus bag in position on PPH uterus. The concave surface of bag aligns with the convex surface of uterus.
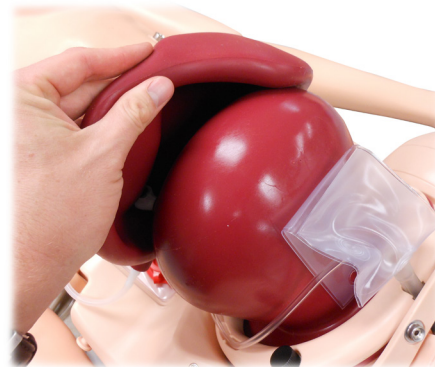
2. Place support foam under the uterus and feed the air supply tube (green luer connector) through the right cutout of the foam. The support foam prevents the uterus from flopping back when palpating through the abdomen.
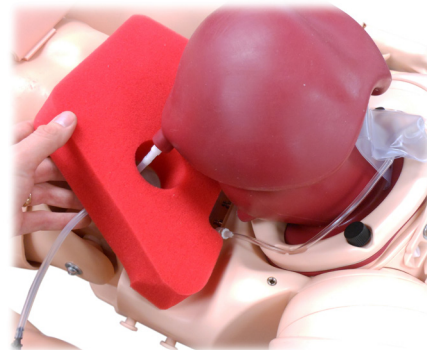
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3. Remove the reservoir cover and attach the air supply tube from the boggy uterus (green Luer connector) to green air outlet on the pelvic bulkhead (3/4 turn).

⚠ **Caution:** Do not activate boggy uterus until abdominal skin is fastened in position. The bag will over inflate if it is activated with the skin off.


4. Replace the reservoir cover and ensure the tubing is routed through the slot of the reservoir cover. Replace abdominal skin.

Uterine Inversion Installation

1. Fold back or remove abdominal skin (see Maintenance section page 37, "Abdominal Skin Replacement").

⚠ **Caution:** Folding the skin downward without support underneath it may cause the skin to tear.

2. Remove pelvic ring clamp and cervix (see Maintenance section page 39, Cervix Replacement).

3. Lubricate the inside of the uterus.

4. Position the uterus on the pelvic clamping face. The umbilical cord should pass through the birth canal.
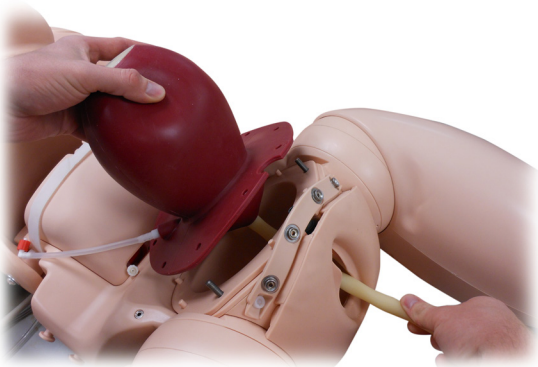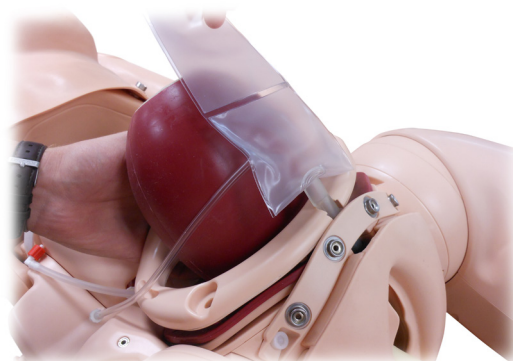

5. Ensure holes on uterus flange locate with pins on clamping face, and that notch for urinary connector locates with corresponding notch on pubis.

6. Fit indwelling catheterization bladder.
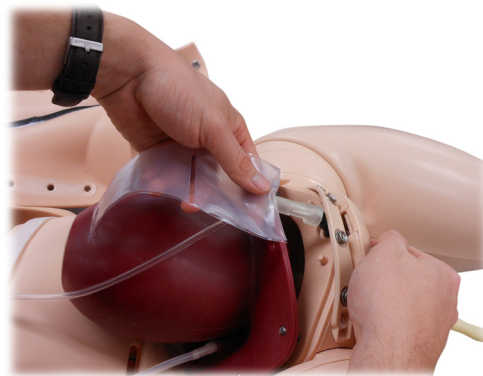
7. Push pubic ring clamp over uterus and align with locating pins on clamping face.

8. Ensure that all holes and notches are aligned, and that the blood feed tube passes through the pelvic ring cleanly and without kinks.

9. Fit and tighten the three thumbscrews.

10. Connect the blood feed tube (red Luer connector) to the blood pump outlet (red) on the pelvic bulkhead.

11. Position support foam behind uterus.

12. Replace skin.

13. A few minutes prior to the scenario, pull back abdominal skin and lubricate the outside of the uterus.

14. Replace skin and lubricate the birth canal and inside of the uterus.

📝 **Note:** Ensure that both the inside and outside of uterus are lubricated. The degree of lubrication will dictate the ease with which the uterus can be pulled out and pushed back in.

Catheter Installation

SimMom includes two types of urinary connectors. The first type is for scenarios involving intermittent catheterization. This is referred to as the intermittent catheter tube. The second is a bag-type connector for scenarios involving an indwelling balloon catheter. This is referred to as the indwelling catheterization bladder. Except for the extra attachment flap on the bag, both connectors are removed and attached in the same way:

Intermittent Catheter Tube   Indwelling Balloon Catheter

1. Disconnect the white Luer connector from the urine reservoir outlet. Ensure reservoir is empty or the tube is clamped.

2. Pull the tube free of locating groove on pelvic ring clamp.

3. Remove the pelvic ring clamp.

4. Pull the urinary connector from spigot on grey urinary valve, using a sideways "rocking" action. Avoid pulling directly because the urinary valve can come away from the urethral tube.

📝 **Note:** If the urinary valve detaches from the urethral tube, simply push it back on.

5. Grip the grey urinary value through the birth canal skin, and push a replacement urinary connector onto valve spigot. Ensure that the connector tube is pointing to the manikin's right side.

6. Push the connector tube into the groove toward the pelvic ring.

7. Connect the white Luer to the urine reservoir outlet tube.

8. For cord prolapse scenarios, use the indwelling catheterization bladder. Push hole on the flap of the bladder over the retaining lug on the inside of the abdominal skin.

   – For PPH scenarios, fold flap back and tuck behind indwelling catheterization bladder.

9. Replace pelvic ring clamp.

To remove and replace the urinary valve:

1. Remove pelvic ring clamp.

2. Remove urinary connector.

3. Pull grey urinary valve from urethral tube on birth canal.

4. Push outlet spigot (wider) of replacement valve into urethral tube. Grip tube through birth canal skin to provide support.

5. Push urinary connector onto inlet spigot (narrower).

6. Replace pelvic ring clamp.

Filling Blood and Urine Reservoirs

Reservoirs can be filled while disconnected from SimMom or while in position. The urine reservoir contains a maximum of 400 mL. The blood reservoir contains a maximum of 800 mL. Both the urine and blood reservoirs are filled in the same way.

1. Remove red filler cap.

2. If filling outside the model, ensure the slide clamp is in the closed position.

3. Stabilize the reservoir by firmly gripping the filling port.

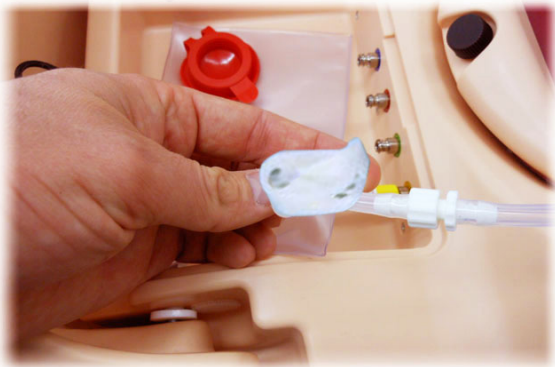4. Open up the bag by pushing a finger in through the filler hole and separating the two walls.

5. Pour in fluids using a plastic jug or funnel (not included).

6. Replace filler cap.

7. Reconnect all reservoir connectors.
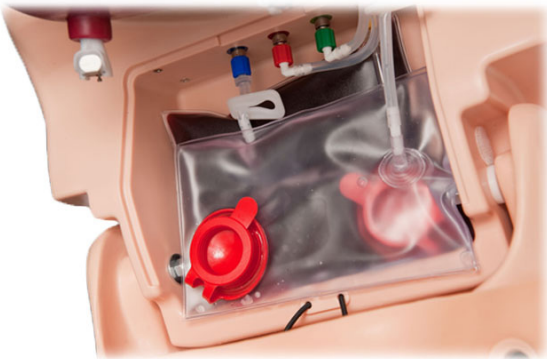
8. Ensure slide clamps are in open position.

Cleaning Blood and Urine Reservoirs

📝 **Note:** Blood and urine reservoirs should be drained and cleaned after each simulation.

Blood and urine reservoirs are both located in the reservoir bay. To clean reservoirs:

1. Remove reservoir lid.

2. Clamp blood and urine reservoir outlets with sliding clamp.

3. To disconnect the blood outlet, undo blue Luer connector from blue bulkhead connector. To disconnect the urine outlet connector, undo both white and yellow luer connector

4. Remove blood and urine reservoirs.

5. Drain and rinse out bags with water.

6. Flush pump with tap water.

7. Let air dry.

8. Replace reservoirs.

Performing Hybrid Simulations

SimMom can be used for hybrid simulations, which involve disconnecting the manikin's pelvis from its torso.

To perform hybrid simulations, consult the Pelvis Replacement section on page 41 in the Maintenance Section.

Using the Bed Strap

SimMom packaging includes a bed strap that can be used to secure the manikin to the table during simulations. To use the bed strap:

1. Remove bed strap, screws, and washers from packaging.

2. Turn manikin so that backside is facing up.

3. Place strap over manikin's back. Align holes on strap with corresponding screw holes located in the small of the back.

4. Place washers on screws. Using an Allen wrench and screws, secure the bed strap in place.
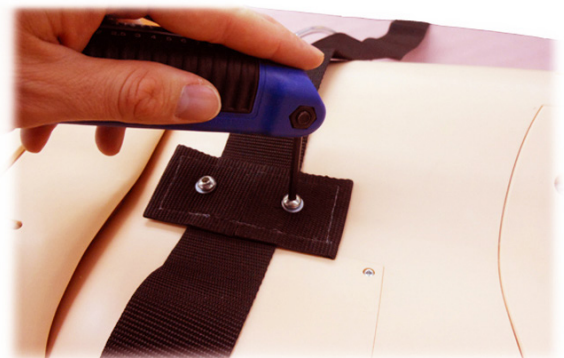
5. Turn manikin so that the front is facing up.

6. Connect strap ends underneath the bed.

Maintenance

The following procedures will help lengthen the operational life of the SimMom manikin.

–   Pupil Replacement

–   Eyelash Replacement

–   Wig Care and Upkeep

–   Neck Collar/Cricothyroid Replacement

–   Arm Replacement

–   Pneumothorax Bladder Replacement

–   Thoracentesis Module Replacement

–   Abdominal Skin Replacement

–   Perineum/Birth Canal Skin Replacement

–   Cervix Replacement

–   Pelvic Floor Replacement

–   Urine Reservoir Replacement

–   Blood Reservoir Replacement

–   Pelvis Replacement

–   Replacing Baby Limbs

–   VitalSim Battery Replacement

Pupil Replacement

SimMom is delivered with normal pupils installed in the eyes. A separate kit included with SimMom contains plastic pupil inserts (constricted and dilated).

To change the pupils:

1.   Using the suction cup tool provided in the kit or with the edge of your fingernail, carefully remove the pupil from the eye.

2.   Replace the pupil with the desired insert, using the suction cup tool or by gently pressing in place.

Eyelash Replacement

To replace manikin eyelashes:

1.   Remove pupils. (See "Pupil Replacement" page 33.)

> **Note:** If you fail to remove the pupils, you may accidently drip glue on them.   This causes them to become cloudy.

2.   Using a toothpick, gently place the eyelash across the edge of the manikin's eyelid, starting at the corner nearest the nose.

> **Note:** Only place the toothpick between the lashes, along the white rim of the eyelash. Do not depress the lashes.

3.   Drip a small amount of super glue onto a sheet of paper. Dip the tip of the toothpick into the glue.
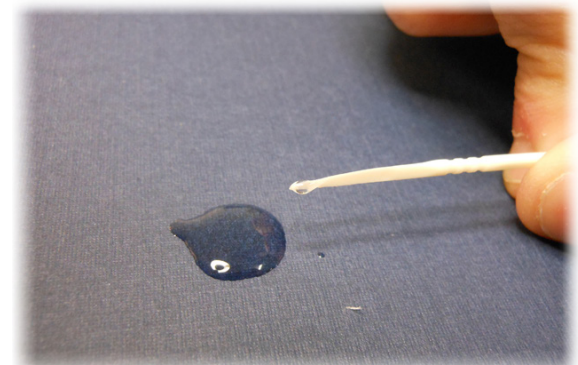
4.   Using the toothpick, apply super glue sparingly along the top of the eyelash where it meets the eyelid.

Wig Care and Upkeep

When brushing the wig, use combs and brushes that are specially designed for wigs. If using a regular comb or brush, ensure that it has a rubber tip at the end of each bristle or tooth. To ease brushing and removal of tangles, use a wig spray as lubricant.

> **Note:** Avoid using combs and brushes without rubber tips. These can damage and split the wig fibers. Avoid using hair care products such as hair spray. These may damage the fibers.

To wash the wig:

> **Note:** Avoid excessive washing. It shortens the lifespan of the wig.

1.   Remove tangles by gently brushing or separating the strands with your fingers.

2. Fill a sink with two quarts of cool water. Avoid using hot water as it may damage the wig.

3. Pour two cups of synthetic wig shampoo into the sink. Submerse wig into water.

📃 **Note:** Use only synthetic wig shampoo.

4. Once the wig is completely soaked, move it around in the water for a minute. Let it soak for an additional minute. Remove wig from water.

📃 **Note:** For best results, let the wig soak for five minutes before washing.

5. Rinse wig with cold water. Once all suds have been rinsed away, let the wig dry on a bath towel overnight.

📃 **Note:** Do not ring out or twist the wig. This may damage the fibers. Do not comb or brush the wig while it is still wet. This may break the fibers.
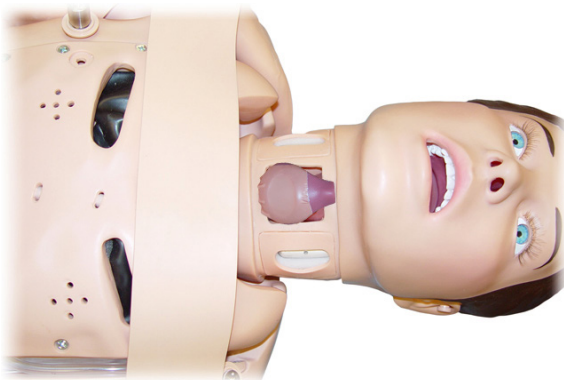
Neck Collar/Cricothyroid Replacement

To attach cricothyroid membrane:

1. Remove Neck Skin Collar by undoing Velcro® strips on the back of neck.
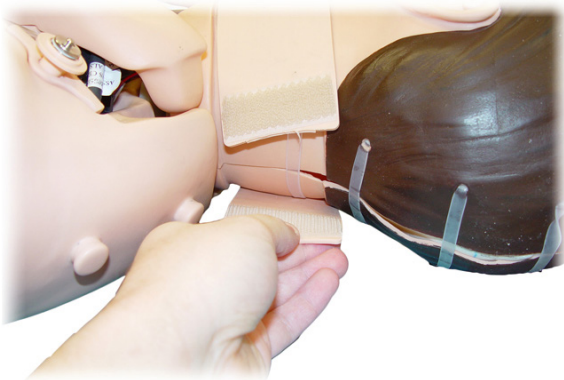
2. Cut a two inch strip of Cricothyroid Membrane Tape.

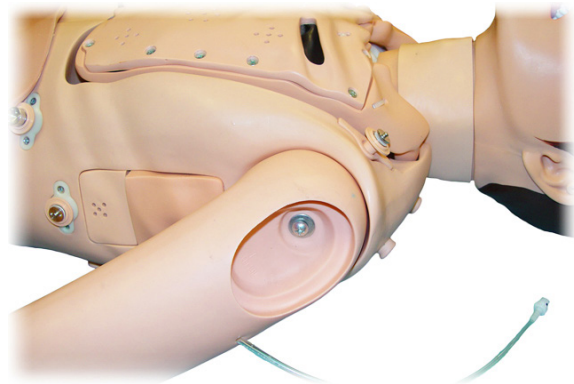3. Adhere tape to edges of cricoid opening. Ensure that tape covers and seals the opening.

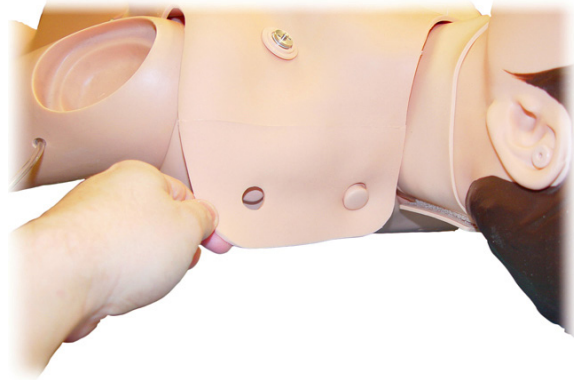4. Place a Neck Skin Collar into molded track around neck area of manikin.

Arm Replacement

To remove left manikin arm:

1. Remove deltoid injection pad from upper arm.

2. Detach chest skin from tabs at shoulders and back.

3. Remove skin to reveal internal upper chest area.

4. Lift hard chest plate to reveal inside sockets for arm connections.

5. Unscrew wing nut and remove spring and washers.

6. Remove arm and threaded bolt.

7. Insert threaded bolt through new arm and torso. The bolt should now be visible in chest cavity.

8. From inside of chest area, thread a washer, a spring, and another washer on bolt.

9. Screw the wing nut on the bolt and tighten until desired articulation is achieved.

10. Replace hard chest plate.

11. Reattach chest skin back onto shoulder area, ensuring ECG posts align.

12. Replace deltoid injection pad on upper arm.

To remove Right BP arm:

1. Remove deltoid injection pad from upper arm.

2. Detach chest skin from tabs at shoulders and back.

3. Remove skin to reveal internal upper chest area.

4. Lift chest plate to reveal inside sockets for arm connections.

5. Follow the cables exiting the shoulder to the black connector and disconnect.
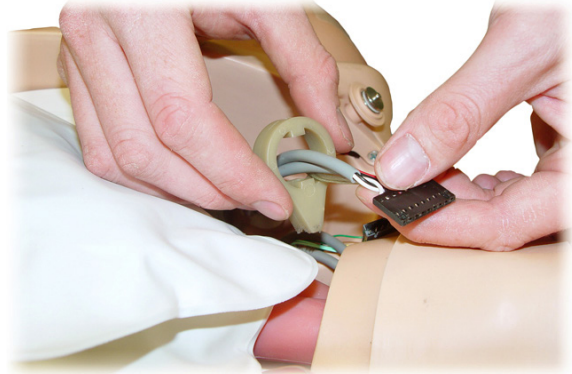

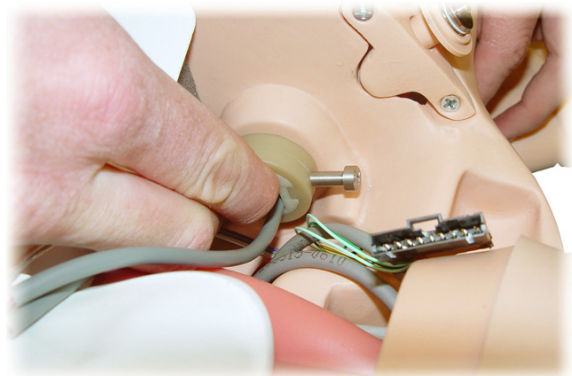6. Use a Phillips head screw driver to unscrew and remove the retaining screw.

7. Slide the stopper off of the pivot arm.
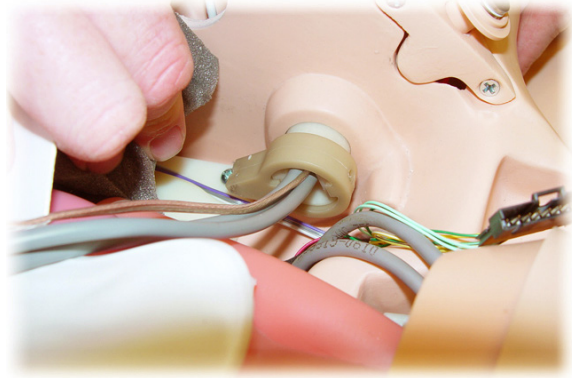
8. Remove arm.

9. Insert new arm.

10. Thread cables through the stopper.

11. Secure the stopper to pivot arm with the retaining screw using a Phillips head screwdriver.

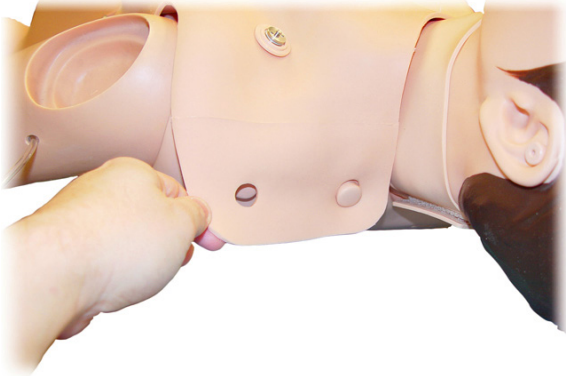12. Reconnect black connector.

13. Replace chest plate.

14. Reattach chest skin onto shoulder area, ensuring ECG posts align.

Pneumothorax Bladder Replacement

To remove the pneumothorax bladder from bilateral mid-clavicular sites:

1. Detach the chest skin from torso by lifting the tabs at the shoulder and back. Remove chest skin.
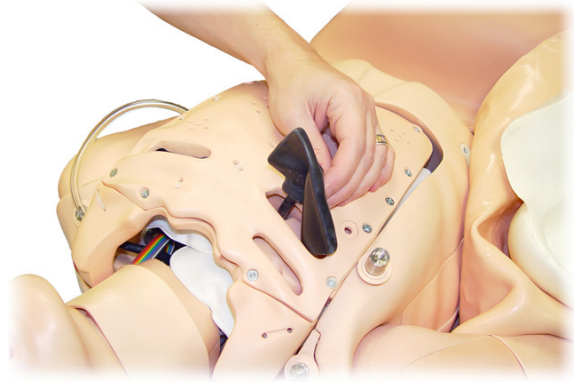

2. Remove chest plate from torso.

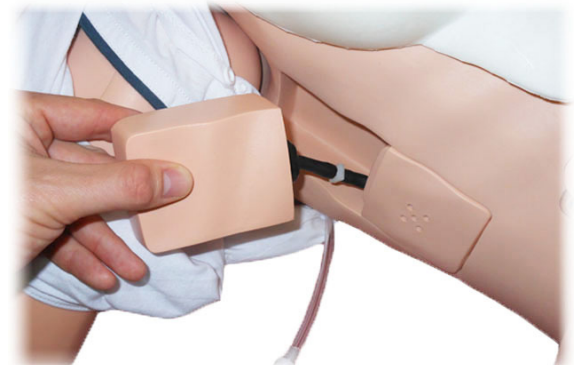3. Disconnect bladder hose from Y connector, located on the underside of chest plate.

4. Pinch and remove bladder through opening between second and third intercostal spaces. These are located on the top side of the chest plate.

5. Trim the tubing on the new bladder to match original tubing length.

6. Insert new pneumothorax bladder into the top side of chest plate, through the second and third intercostal space openings. The bladder tubing exits through the back side of the chest plate. Ensure the narrow edge of the bladder is closest to the sternum.

7. Reconnect hose to Y hose connector.

8. Return chest plate to proper position on torso.

9. Replace chest skin over torso. Secure skin at shoulders and back.

10. Conceal puncture marks on the exterior of chest skin with wax in the Bladder Replacement Kit.

To remove the pneumothorax bladder from midaxillary site (RIGHT):

1. Remove chest skin from tabs at shoulder and back.

2. Remove pneumo bladder insert from right side of torso.

3. Disconnect bladder hose from inline hose connector. Ensure hose does not fall through hole and into torso.

4. Remove bladder from pneumo pad and discard.

5. Trim new bladder tubing to match original tubing length. Connect new bladder hose to inline hose connector.

6. Fold and insert new pneumo bladder in pneumo box.

7. Replace chest skin over torso. Secure skin at shoulder and back tabs.

8. Conceal puncture marks on the exterior of chest skin with wax in the Bladder Replacement Kit.

Thoracentesis Module Replacement

To replace thoracentesis module on the manikin:

1. Remove chest skin from tabs at shoulders and back.

2. Remove the thoracentesis module from the midaxillary site of the manikin (left).

3. Insert a new thoracentesis module.

4. Replace the chest skin over the torso. Secure the skin at the shoulders and both sides.

Abdominal Skin Replacement

SimMom is delivered with two abdominal skins: normal and C-section deliveries.

To replace abdominal skin:

> **Note:** Skin may have a slight oily feel which is normal and a part of the manufacturing process.

> ⚠ **Caution:** Folding the skin downward without support underneath it may cause the skin to tear.

> ⚠ **Caution:** Do not cut skin.

1. Detach skin from pegs on the side of the pelvis.

2. Underneath the skin, disconnect the audio jack from the pelvis.

3. Carefully unbutton the skin starting at one of the lower corners on the pubis.


4. Remove the skin.

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5. Fit the replacement skin onto the pelvis and plug in the audio jack.

6. Secure the replacement skin on both sides and the pubis.

📝 **Note:** If the manikin is being used as a task trainer to demonstrate the position and movements of the baby, you should remove the skin completely rather than folding it forward. This offers a better view of the perineum.
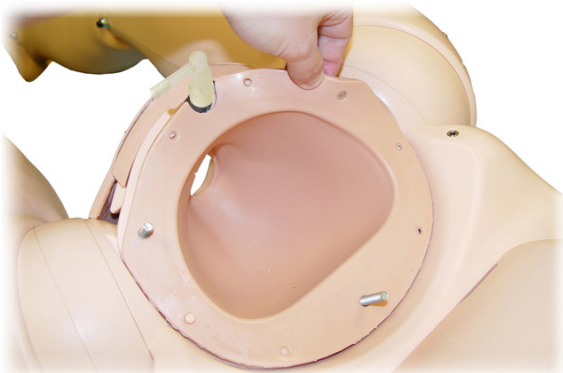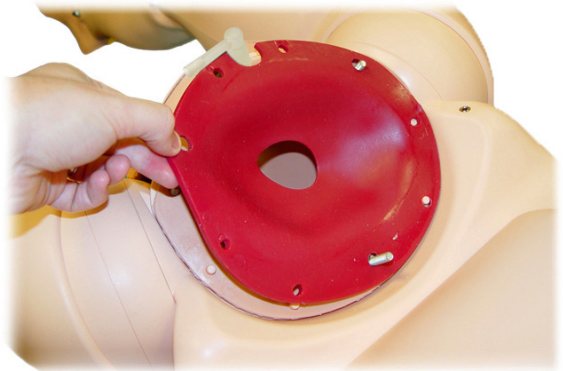
Perineum/Birth Canal Skin Replacement

To replace the perineum/birth canal skin:

1. Remove abdominal skin as described on page 37 steps 1-4.

2. Remove pelvic clamp by unscrewing the three black thumbscrews.
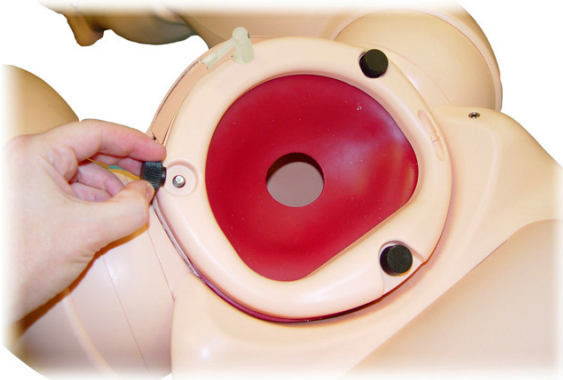
3. Remove cervix by disengaging the holes on the flange from locating pins on pelvic clamping face.

4. Remove urinary connector (translucent or black) and urinary

valve (grey) and push the birth canal down into the pelvis.

5. Remove retaining screws on lower pubic clamping plate, behind upper part of perineal skin, using 4mm Allen key.

6. Remove lower pubic clamping plate from birth canal skin.

7. Turn manikin over to allow access to posterior screws.

8. Remove retaining screws on posterior birth canal fixing plate.
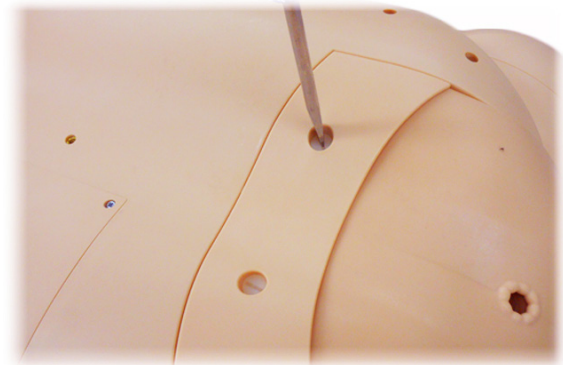
9. Remove fixing plate.
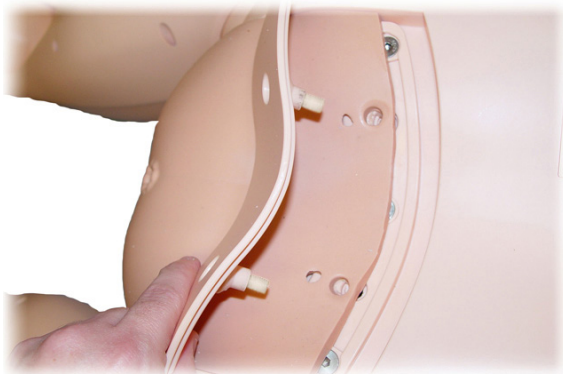
10. Gently remove birth canal from pelvis.

11. Keeping the manikin in the same position, push main body of replacement birth canal up into the pelvis.

12. Push the anus into the corresponding hole in the pelvic floor.

13. Lay the posterior perineal part of the birth canal into the recess in the back of the pelvis.

14. Fit the posterior birth canal fixing plate, and secure with the two retaining screws.

15. Turn the manikin upright.

16. Locate the lower pubic clamp under the flap on the birth canal skin.

17. Push the pubic clamp into position on the pubis.

18. Insert and tighten the two retaining screws.

19. Pull birth canal up out of pelvis.

20. Locate holes in birth canal flange on corresponding pins on pelvic clamping face.

21. Replace urinary valve, urinary connector, and pelvic ring clamp.

Cervix Replacement

To replace the cervix:

1. Remove the three black thumbscrews on the pelvic ring clamp.

2. Remove the pelvic ring clamp.

Note: When removing pelvic ring clamp, lift so that it remains parallel with the pelvis until it is clear of the screws.
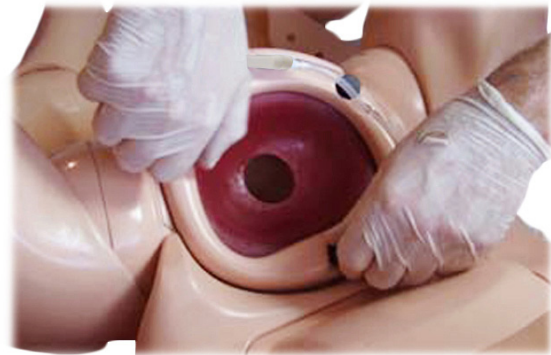
3. Remove the cervix.

4. Set replacement cervix in position at pelvic inlet, with flange lying on top of birth canal flange.

5. Ensure that notch for urinary connectors aligns with similar notches on pubic bone and birth canal flange.

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6. Ensure that holes in birth canal and cervix flanges are positioned correctly on the locating pins on the pelvic clamping face.

7. Replace pelvic ring clamp and secure in place by tightening thumbscrews.

Pelvic Floor Replacement

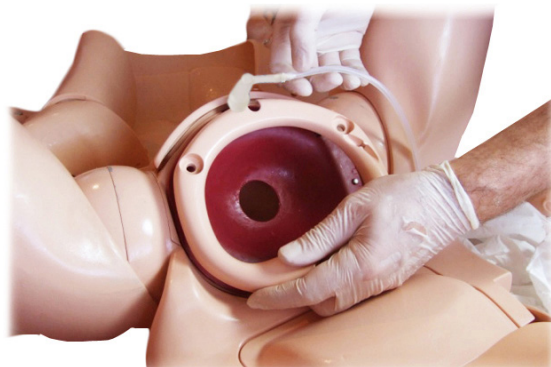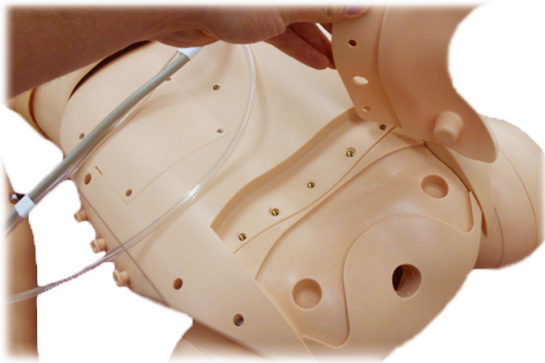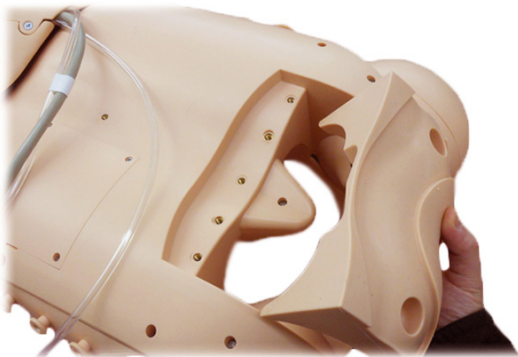To replace the pelvic floor:

1. Remove perineum/birth canal, pelvic ring and cervix. (See Maintenance section page 38, "Perineum/Birth Canal Skin Replacement" steps 1-11.)

2. Using a Phillips head screwdriver, remove the three screws located underneath posterior birth canal fixing plate.

3. Lift and remove pelvic floor fixing plate.

4. Pull existing pelvic floor free from manikin.

5. Place new pelvic floor in position.

6. Replace pelvic floor fixing plate, perineum birth canal, cervix, and pelvic ring.

⚠ **Caution:** Do not overtighten screws. This may damage the manikin.

Urine Reservoir Replacement

The urine reservoir is located in the reservoir bay above the blood reservoir. The color-coded connectors for fluid and compressed air are located on the pelvic bulkhead at the bottom of the bay.

Blue denotes blood and amniotic fluid carried from blood reservoir to pump.

Red denotes fluid from pump to the module being used (PPH, uterine inversion, or amniotic bag).

Green denotes compressed air to and from boggy uterus bag.

Yellow denotes compressed air to pressurize urine reservoir.

To replace the urine reservoir:

1. Unhook reservoir cover retaining loop, detach Velcro® strap, and remove lid.

2. Clamp urine reservoir outlet with sliding clamp.

3. Detach urine outlet from urine connector tube by unlocking white Luer connector.

4. Undo yellow Luer connector to urine pressurization outlet.

5. Remove urine reservoir.

6. Lay new reservoir in position in reservoir bay, with red filler cap on the manikin's left, facing upwards.

7. Connect yellow Luer on urine reservoir inlet tube to yellow urine pressurization outlet on bulkhead. (3/4 turn, do not overtighten).

8. Connect white Luer on urine reservoir outlet tube to white Luer on urine connector tube.

9. Ensure slide clamp is open.

10. Replace reservoir cover and reconnect retaining loop and Velcro® strap.

Blood Reservoir Replacement

The blood reservoir is located in the reservoir bay, beneath the urine reservoir.

To replace blood reservoir:

1. Remove reservoir cover and urine reservoir.

2. Clamp blood outlet with clamp.

3. Undo blue Luer connector from the blue bulkhead fitting.

4. Remove blood reservoir.

5. Lay new reservoir in position in reservoir bay, with red filler cap to the manikin's right, facing upwards.

6. Connect blue Luer connector to blue (blood pump inlet) bulkhead fitting.

7. Ensure slide clamp is open.

8. Replace urine reservoir.

9. Replace reservoir lid.

Pelvis Replacement

To detach and replace the pelvis:

1. Turn the manikin over so that the backside is facing up.

2. Using a Phillips head screw driver, unscrew the access panel and remove.
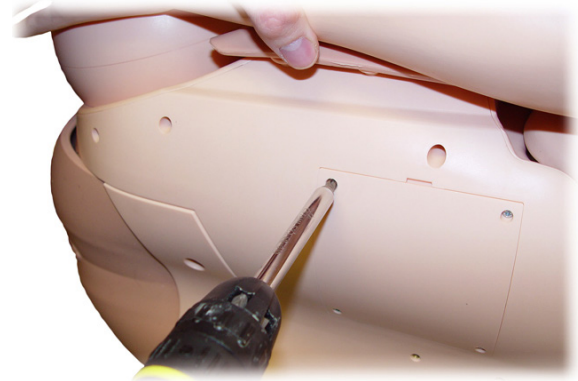
3. Locate the black electrical connector and two clear tubes, and disconnect them.

   – Disconnect the clear tubes by twisting the fittings.
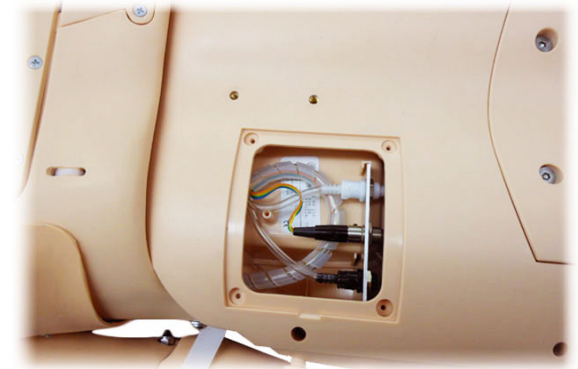
   – Disconnect the electrical connector by depressing the black button on the side of the connector.

4. Turn the manikin back over.

5. Remove abdominal skin.

6. Using a 7/16 wrench and a Phillips head screw driver, remove the bolts on both sides of manikin.
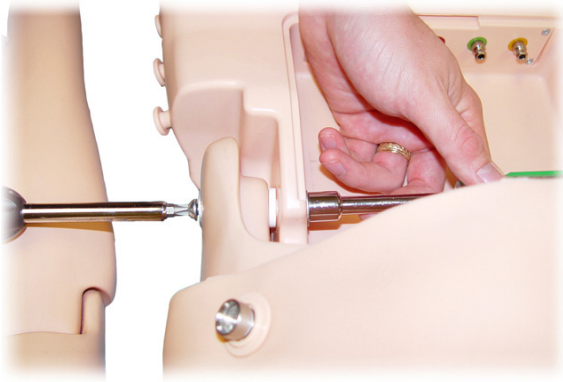
7. Separate pelvis from torso.

   📝 **Note:** To prevent the bolts, washers, and nuts from getting lost, reattach them to the torso section.

8. Carefully guide wiring out of pelvis.
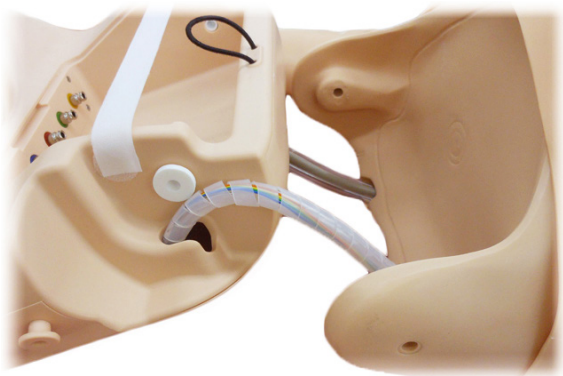
9. Replace access panel.

10. Reconnect torso to pelvis by reversing steps. Loop tubing in a counterclockwise motion before reconnecting.
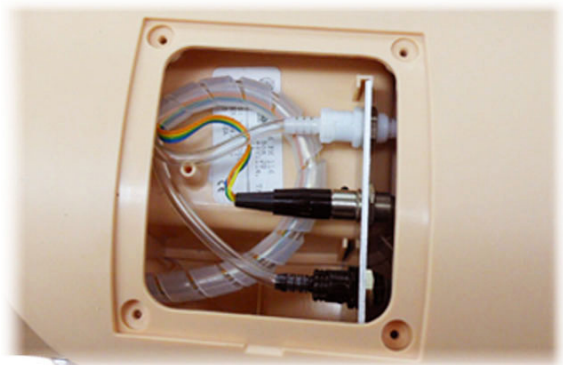
Replacing Baby Limbs

To replace baby limbs, use a screwdriver to unscrew the limb where it connects to the torso.

VitalSim Battery Replacement

The VitalSim unit holds 6 replaceable C-cell batteries. To replace the batteries:

1. Pull out the battery pack located on the bottom of the unit.

2. Remove the panel on top of the battery pack. Remove and replace batteries.

Overall Dimensions

SimMom:
Length / Width (manikin only): 69 in × 19 in (175.3 cm × 48.3 cm)
Width at Shoulders (manikin only): 19 in (48.3 cm)
Width at Hips (manikin only): 19 in (48.3 cm)
Weight (manikin only): 61.5 lbs (28 kg)

Shipping Dimensions:

Box 1 (Torso): 45m in × 26 in × 16 in, 73 lb (114.3 cm × 66 cm × 40.6 cm, 33.1 kg)
Box 2 (Legs & Accessories): 45 in × 26 in × 15 in, 49 lb (114.3 cm × 66 cm × 38.1cm, 22.2 kg)

Baby:
Length/ Width: 19 in × 6 in (48.3 cm × 15.2 cm)
Weight: 4.5 lbs (2.04 kg)

Manikin Power

External power: Input voltage 9VDC, 1.5A
VitalSim battery: 6 C-cell batteries

Only use approved *SimMom* external power supply.

Air Pressure

External air connection: Max 16 psi

Temperature Limits

Operating temperatures: +4 °C to 40 °C (39 °F to 104 °F)
Storage temperatures: -15 °C to 50 °C (5 °F to 122 °F)

Environment - Manikin only

Relative humidity: 20% -90% (non-condensing)
DO NOT use outdoors in wet conditions.
Not tested with salt spray.

Materials Used in Manikin

Clothes: Cotton, Nylon
Skins and airways: PVC
External hard plastics: PVC, PC-ABS
Inner plastics: Silicone, PVC, ABS, POM, Nylon Polyurethane, Latex (pneumothorax bladders)
Metal components: Aluminum, Brass, Steel

⚠ *Caution Latex: This product contains Natural Rubber latex, which may cause allergic reactions when in contact with humans.*

Minimum Computer Requirements

- Core 2 Duo or better

- 1 GB RAM (2 GB recommended)

- 1GB hard disk space,

- 1024x768, 1280x800, 1280x1024 or better

- 16bit color resolution or better

- 100% DPI required

- Optical drive required for installation

Minimum Software Requirements

- Windows XP or Windows 7

- DotNet 3.5.1

Cleaning Fluids

To clean the manikin use only a mild solution of liquid soap and water

IV Fluids

Only use distilled or deionized water to simulate IV and IO fluids.

Reservoir Capacities

Urine Reservoir: 400 mL
Blood Reservoir: 800 mL

Wig Size

Use a large wig.

Airway Adjustment Sizes

7.5 endotracheal tube
#4 LMA
Large Adult or Trainer Combitube,
KING LT – #4

Urine Catheter Sizes

12 French

Blood Pressure

Pressure range: 0-300 mmHg
Accuracy: +/-4 mmHg
Calibration: Pressure sensor must be calibrated to sphygmomanometer.
Available pulses: Carotid, brachial, and radial
Only two pulses can be palpatated at once.
Palpated BP: Radial pulse turns off at systolic BP.
Brachial pulse turns off at 20 mmHg, to prevent noise generation in auscultation area.

Adjust pulses to BP using the chart below:

Systolic BP	Carotid Pulse	Radial/Brachial Pulse
>= 88	Normal	Normal
< 88	Normal	Weak
< 80	Normal	Absent
< 70	Weak	Absent
< 60	Absent	Absent

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Spare Parts and Accessories

Catalogue Numbers

Substitute XX with your local language version number. Contact your local Laerdal Customer Service Representative for more information.

SimMom Manikin

377-05050	SimMom Manikin Only (Light)
377-18350	SimMom Head Skin
377-17750	Eyelashes
381102	Strap Set, Head skin
381107	Teeth, Upper
200-03150	Airway/ Tongue Assembly
381105	Neck skin Set (6)
381402	Deltoid Injection Pad
377-15350	IM Injection Pads (Thigh)
377-18150	Right BP Arm
377-18250	Left Arm Assembly
375-51001	Nursing Anne IV Arm
380410	Post Set, ECG/Defib
377-18450	SimMom Chest Skin
200-03750	Chest foam
377-18550	SimMom Chest Rise Bladder
380405	Bladder Assembly, Mid Clavicular
200-01850	Bladder Assembly, MidAxillary
383110	Thoracentesis Pads
205-03750	Lung Assembly
377-19150	Gravid Abdomen Normal (Snaps)
377-19250	Gravid Abdomen C-section (Snaps)
377-15550	Perineum Birth Canal
377-15650	Pelvic Floor
377-15750	Skin Pegs for Side of Pelvis (6)
377-13250	Pelvis Assembly
377-14750	Pelvic Ring Clamp
377-14850	Thumbscrew
377-19350	Upper Pubic Clamp (Skin Attachment Bar)
377-19450	Lower Pubic Clamp (Perineum Bar)
377-18950	Pubic Bone
377-15050	Reservoir Cover
377-15150	Velcro® Strips for Reservoir Cover
377-15850	Catheterization Valve
377-15450	Access Panel
377-13350	Left Thigh Assembly
377-13450	Right Thigh Assembly

Birthing Baby

377-13750	Baby
377-16050	Baby Right Arm
377-16150	Baby Left Arm
377-16250	Baby Right Leg
377-16350	Baby Left Leg

Modules

377-13950	Cuttable Umbilical Cords (5)
377-15250	Cervix
377-13850	Placenta
377-14050	PPH Module Kit
377-14150	Uterine Inversion Module
377-14250	Amniotic Bag Module
377-16550	Large Uterus PPH Module
377-16650	Large Uterus Support PPH Module
377-16750	Boggy Uterus Bag PPH Module
377-16850	Small Placenta with Retained Fragments
377-16950	Hand Pump
377-17050	2-Part Nylon Sealing Clamp
377-17150	Indwelling Catheterization Bag (2)
377-17250	Indwelling Intermittent Catheterization Tube
377-17350	Blood Reservoir Bag (2)
377-17450	Urine Reservoir Bag (2)

Software and Hardware

377-11950	SimMom Advanced SW CD & License Key
377-11951	SimMom Advanced License Key (1)
200-40001	VitalSim Control Unit (US)
200-40033	VitalSim Control Unit (EUR)
200-01450	Cable/Tube Assembly VitalSim to Manikin
200-10550	AC Adapter Control Unit
200-11350	Control Unit Battery Case
245-950XX	Patient Monitor
225-091XX	Peripheral Kit Standard No Patient Monitor
225-090XX	Peripheral Kit Advanced With Patient Monitor
245-980XX	USB Hub
200-10250	USB Cable
200-10150	Control Unit Carry Case
245-960XX	Webcam

Compressors and Pneumatic Accessories

210-01150	SimMan Compressor 115V
210-01050	SimMan Compressor 230V
220-09901	SimNewB Compressor 115 V
220-09933	SimNewB Compressor 230 V
381220	Regulator Unit
381010	9 ft (3 m) Air Hose
220-01550	25 ft (8 m) Air Hose

Accessories

377-17650	Wig
200-03050	Pupil Inserts Kit (Blue)
200-03050B	Pupil Inserts Kit (Brown)
200-00150	Pneumo Repair Kit
377-14350	Fluid Bags Set
270-00250	IV Bag Transfer Set
200-00550	Blood Pressure Cuff
212-17950	Torso Transportation Soft Case
212-18050	Legs Transportation Soft Case
210-05250	Peripherals Hard Case
377-17850	Hospital Gown
377-14650	Bed Strap
377-17550	Hardware Set
377-17950	Directions for Use (DFU)
377-18050	Quick Setup Guide

Consumables

250-21050	Airway Lubricant 45 ml
200-00250	Cricoid Tape (Flesh)
377-14550	Venous Blood Starter Kit Pk 2.5 Lt
377-18850	Birthing Lubricant 250 ml

Please contact your local Laerdal Customer Service Representative for more information on spare parts and accessories.

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Limbs & Things
Skills training products for healthcare professionals

Laerdal®
helping save lives