

Vimedix™ Cardiac

Vimedix™ Abdo

Vimedix™ Ob/Gyn

# User Guide v1.16







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# SPECIFICATIONS

## Male Mannequin

### Size

Approximately 31 in x 17 in (78 cm x 43 cm)

### Weight

#### **Bob 1.1, 1.2**

72 lbs (32.7 kg)

#### **Bob 1.3**

31.5 lbs (14.3 kg)

## Computer

### Size

17.5 x 8.0 x 20.7 in (44.4 x 20.3 x 52.5 cm)

### Ambient Temperature Range

5°C-40°C (41°F-104°F)

### Electrical

Operate at 110/240V 50/60 Hz

## Display

### Size

22.8 in x 13.8 in x 2.5 in (57.912 cm x 35.052 cm x 6.35 cm)

### Ambient Temperature Range

5°C-40°C (41°F-104°F)

# CAUTIONS/WARNINGS

Please read and understand these cautions and warnings before you begin using the Vimedix system.

- Do not drop or hit probes against hard surfaces. The probes do not contain crystals but should be handled with care.
- Do not attempt to open or repair the Vimedix Ultrasonography Simulator or any of its components. Doing so can cause damage to the equipment and may void the warranty.
- Do not use equipment in a manner that is not specified by the manufacturer. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not use ultrasound gel on Vimedix probes. Using gel may damage the equipment.
- Keep the simulator at least 40 inches (1 meter) away from large metal objects or surfaces to prevent image distortion or simulator performance. Objects that may cause interferences include:
  - Metal table components
  - Electric motors
  - Strong speakers
  - High amplification appliances
  - Electric wires
  - Large metal components such as metal filing cabinets
  - Halogen lights
- When replacing damaged power cords, use only suitable power cord replacements.
- Keep the computer approximately 2 feet (60 cm) away from mannequin to prevent image distortion.
- Ensure that no objects are left in the protective bag or on the mannequin, as this could damage the surface of the mannequin.
- Avoid any hydrocarbon solvents, as they will react and dissolve the surface of the mannequin.
- Do not immerse the mannequin in liquid or use abundant liquid to wash the mannequin. This could impair its normal function.
- Do not insert any USB devices other than a **USB storage device** (memory stick, flash drive). Other USB devices such as phone or mp3 chargers may create a simulator error.
- All equipment inquiries should be directed to the product manufacturer:
  - CAE Healthcare
  - 6300 Edgelake Drive
  - Sarasota, FL 34240

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# INTRODUCTION

The Vimedix™ Ultrasonography Simulator User Guide provides information about setting up the simulator, navigating the user interface, troubleshooting, performing care and maintenance and installing updates.

Using real-time dynamic imaging and a custom designed mannequin, the Vimedix Ultrasonography Simulator provides healthcare professionals with an unparalleled training environment for scanning the thoracic, abdominal and pelvic cavities with basic to complex cases. Learners can perform a realistic ultrasonography assessment of cardiac, abdominal and pelvic structures, practice hand-eye coordination and probe handling and improve pathology and case recognition skills.

**IMPORTANT:** The Vimedix Ultrasonography Simulator is a training tool. The simulator is not intended to diagnose the condition of a live human being or identify a life-threatening situation. The Vimedix Ultrasonography Simulator is one of a series of didactic tools that can be used to improve ultrasonography training. This simulator is not intended to replace any courses or hands-on sessions with live subjects, but should be implemented as part of a blended learning solution.

## Pathologies

Users can access pathologies in Vimedix to assist them in the process of recognizing and analyzing abnormalities.

## Contained in this User Guide

This User Guide has been designed for quick access to information on how to use and maintain the Vimedix Simulator. Please be sure to read and follow the **Cautions and Warnings** on the pages preceding the **Table of Contents**. This is for the safety of users as well as for the protection of the simulator.

The **Equipment Overview** outlines the items that come standard and items that pertain only to specific modules with the purchase of a Vimedix unit.

Before using the system, follow the step-by-step instructions included in the **Setup** section.

The **Using the Multipurpose (Cardiac/Abdo) Simulator** section provides information about using the features and functions found in the software for the Bob mannequin and the available modules for this model.

The **Using the Ob/Gyn Simulator** section provides information about using the features and functions found in the software for the Catherine mannequin and the available modules for this model.

The **Using Augmented Reality (AR)** section provides information about using the Augmented Reality HaloLens to view images in a 3D holographic format.

The **Care and Maintenance** section contains warranty details and cleanup and care instructions that must be followed to ensure optimal functioning of the Vimedix Simulator.

The **Frequently Asked Questions** section addresses some of the more common troubleshooting concerns.

The **Keyboard Shortcuts and Mouse Controls** section outlines the different keyboard shortcuts for the Vimedix software and how to manipulate the mouse controls.

The **Metrics Parameters** section reviews the content found in the Metrics Summary of the software after a target cut plane is completed.

The **User Guide** can also be accessed online at [www.caehealthcare.com/eng/support/user-guides](http://www.caehealthcare.com/eng/support/user-guides).

# EQUIPMENT OVERVIEW

Users can choose from different basic platforms for the Vimedix Ultrasonography Simulator:

- Vimedix Cardiac
  - Transthoracic Echocardiography (TTE)
  - Transesophageal Echocardiography (TEE)
- Vimedix Abdo
  - Regular Abdominal
  - FAST Abdominal

After a basic platform is purchased, additional modules can be purchased as a system upgrade.

## Standard Equipment

Vimedix comes standard with the necessary equipment and inventory to use the ultrasonography simulator.

Standard Equipment
Male Mannequin (for the Cardiac TTE/TEE, Abdominal Regular/FAST base units, and Augmented Reality (AR))
Female Mannequin (for the Ob/Gyn base unit)
Computer
Computer Power Supply Cord
Keyboard and Mouse
Display Monitor
DVI Connector Cable
Monitor Power Supply Cord
Ethernet Cable

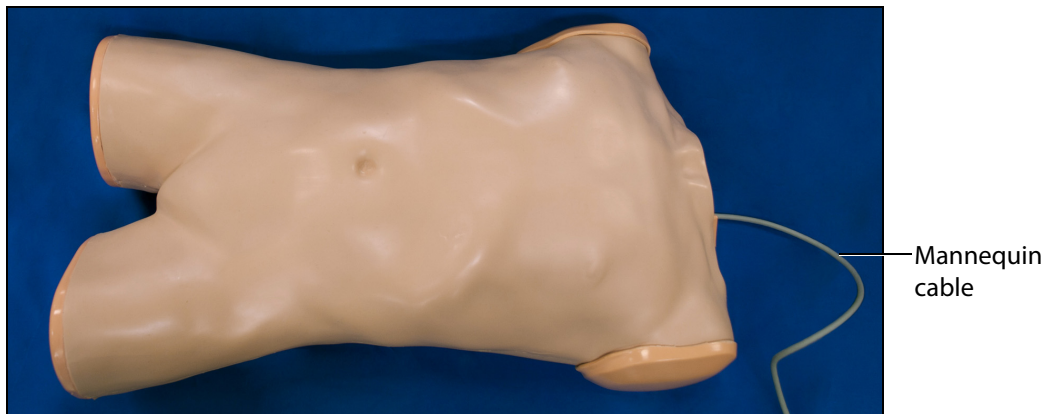
**NOTE:** Check the inventory against your packing invoice to verify that all components have been received.

## The Mannequins

For the Cardiac TTE or TEE platforms, CAE Healthcare provides a life-size male torso and a cable that connects to the computer to register probe activity and communicate with the Vimedix simulator. The mannequin has realistic tactile features including a depressible abdomen, palpable ribs and sternum and depressible interspaces.

### Bob 1.1

The Bob 1.1 is the original male mannequin model.



*The Bob 1.1 Male Mannequin*

### Bob 1.2

The second generation male mannequin model is Bob 1.2.



*The Bob 1.2 Male Mannequin*

## Bob 1.3

The latest generation male mannequin model is Bob 1.3, featuring a one-piece head and torso. It also includes support stands allowing the mannequin to be placed in a 45-degree tilted position.



*The Bob 1.3 Male Mannequin*

## Female Mannequin

For the Vimedix Ob/Gyn ultrasound simulator, CAE Healthcare provides a full-size female torso and cable that connects to the computer to register probe activity and communicate with the Vimedix simulator. The female mannequin features including some depressibility in the abdomen for performing pelvic ultrasounds.



*Female Mannequin and Power Cable*

## Computer

Along with the mannequin and probe, the computer is one of the essential components of the Vimedix. The operating system is solely programmed to run the Vimedix software and receive updates.



*The Vimedix Computer*

## Computer Power Supply Cord

The computer power supply cord is used to connect the computer to a surge-protected power source.

## Keyboard and Mouse

The keyboard can be used to enter custom Target Cut Planes (TCP) names, enter information in the Reports windows and access different simulator functions using shortcut keys.

The mouse allows users to navigate the software, access different functions, perform assessment tasks (e.g., measurements, Doppler, etc.) and control the virtual probe and Augmented Reality display.

**IMPORTANT:** The wireless USB adapter must be used with the wireless keyboard and mouse. See *Setup* for more information.



*The Wireless Keyboard and Mouse*

## Display Monitor

The display monitor shows the interface and the user's probe activity.

## DVI Connector Cable

The DVI connector cable connects the display monitor to the computer.

## Monitor Power Supply Cord

The monitor power supply cord connects the computer to a surge-protected power source.

## Ethernet Cable

The Ethernet cable connects the computer to the Internet.

## Additional Equipment

The Vimedix modules are purchased in packages which contain required additional equipment to effectively complete the training and pathologies.

Additional Equipment
Phased Array Transthoracic Echocardiography (TTE) Probe
Transesophageal Echocardiography (TEE) Probe
Curvilinear Probe
Endovaginal Probe
Mannequin Head (with TEE module only) for Bob 1.1 and 1.2
Mouthpiece (with TEE module only)
Additional Case and Pathology Packages
Display Cart
Mannequin Carrying Case
Computer Carrying Case
Wireless Router (with AR module)
HaloLense (with AR module)

## Phased Array Probe

The Phased Array probe is provided for users who choose the TTE module. The Phased Array probe simulates the functionality of a real probe, incorporating a pressure sensor that can be turned on or off, depending on the training need.

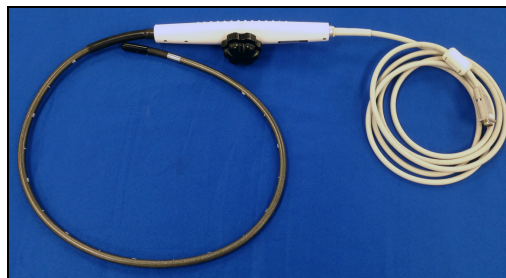
- When the sensor is turned on, the probe must be in contact with the surface of the mannequin to produce an ultrasound image on the display.
- When the sensor is turned off, the probe produces an image on the display without being in contact with the surface of the mannequin.



*The Phased Array Probe*

## Transesophageal Echocardiography (TEE) Probe

The TEE probe is provided for users who choose the TEE module.



*The TEE Probe*

**IMPORTANT:** Do not use lubrication or other liquids with the TEE Probe.



## Curvilinear Probe

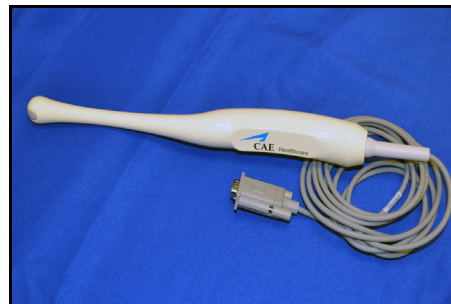
The curvilinear probe is available for users who purchase the abdominal module upgrade or the Vimedix Ob/Gyn ultrasound simulator.



*The Curvilinear Probe*

## Endovaginal Probe

The endovaginal probe is available for users who purchase the 8-week module for the Vimedix Ob/Gyn ultrasound simulator.



*The Endovaginal Probe*

## Mannequin Head

The mannequin head is provided for users who choose the TEE module. (Bob 1.3 has a one-piece head and torso)



*The Mannequin Head*

## Mouthpiece

The mouth piece is provided for users who choose the TEE module. Designed to be used with the mannequin head, the component simulates a mouthpiece used during transesophageal echocardiography.



*The Mouthpiece*

**NOTE:** When inserting the mouthpiece into the Bob 1.3 mannequin, be sure to carefully push down the lower lip, allowing full insertion of the mouthpiece.



*The Mouthpiece Insertion - Bob 1.3*

## Additional Case and Pathology Packages

Additional case and pathology packages are available for the Vimedix simulator.

## Display Cart

CAE Healthcare highly recommends that users purchase the moving display cart designed for the Vimedix simulator. The cart dimensions are 40.5 x 25.5 x 32.25 inches, and the cart requires assembly prior to use.

## Mannequin Carrying Case

The Vimedix mannequin carrying case allows users to securely store and transport the simulator.

## Computer Carrying Case

The Vimedix computer carrying case allows users to securely store and transport the simulator's computer components.

## Display Cart Carrying Case

The Vimedix display cart carrying case provides a secure way for users to store and transport the display cart.



# SETUP

Setting Up the Vimedix Simulator	
1	Place the Mannequin in the Work Area
2	Attach the Head (TEE Users Only)
3	Place the Computer in the Work Area
4	Connect the Mannequin to the Computer
5	Connect the Computer to a Power Supply
6	Connect the Monitor to a Power Supply
7	Connect the Monitor to the Computer
8	Connect the Mouse and Keyboard
9	Connect the Ethernet Cable
10	Connect the Probe to the Computer
11	Power on the Computer and Monitor

## BEFORE BEGINNING SETUP

Proper operation of the Vimedix simulator requires correct configuration. Before setting up the system, keep in mind these basic guidelines:

- Read and understand the Cautions and Warnings in the beginning of this Guide.
- Follow and complete the sequence of Setup steps carefully.
- Do not power on any components until instructed in the text.
- Do not install any Windows updates or anti-virus software when connecting to the network.
- When unpacking the simulator for the first time, use box cutters carefully to protect both the packaging and the product.
- Use two people when lifting the Bob mannequin.
- Only connect power cords/power strip to a reliable grounded power supply source.
- Ensure the power source is easily accessible for a quick disconnection in case of emergency.

**NOTE:** Keep all original shipping materials, including boxes. Warranty and repair items must be returned and shipped in their original packaging.

## Step 1: Place the Mannequin in the Work Area

Locate a work area for the Vimedix. A permanent location is recommended so the equipment does not need to be transported. Place the mannequin flat on its back on a flat surface.

For the male mannequin, use a surface that can support 72 pounds (32.7 kg) such as a display cart; or 32 pounds (14.5 kg) for the Bob 1.3 mannequin.

**NOTE:** If you are installing the head of a Bob 1.2 male mannequin, place the mannequin on its stomach.



*The Bob 1.1 Male Mannequin*



*The Bob 1.2 Male Mannequin*



*The Bob 1.3 Male Mannequin*

When using the Bob 1.3 mannequin in the elevated position (for transthoracic echocardiogram), the stands can be attached to tilt the mannequin towards the left lateral decubitus position.

To attach the stands:

1. Insert the larger stand into the holes in the upper back (arrow toward head), and the smaller stand into the holes in the lower back (arrow toward feet).
2. Ensure the stands with non-slip bottom are flat on surface.

**NOTE:** Be careful not to lean on or move the mannequin and stands while in use.



***The Bob 1.3 Male Mannequin - Elevated With Stands***

The female mannequin can be placed on a surface that supports 30 pounds (13.6 kg).



***The Female Mannequin on Flat Surface***

## Step 2: Attach the Head (for TEE Users with Bob 1.1 or Bob 1.2)

If your Vimedix simulator includes the TEE module, the mannequin head must be attached to the mannequin prior to using the TEE probe. Proper alignment of the head ensures smooth insertion of the TEE probe.

**NOTE:** Head attachment is not applicable for Bob 1.3 or Female mannequin.

## Bob 1.1

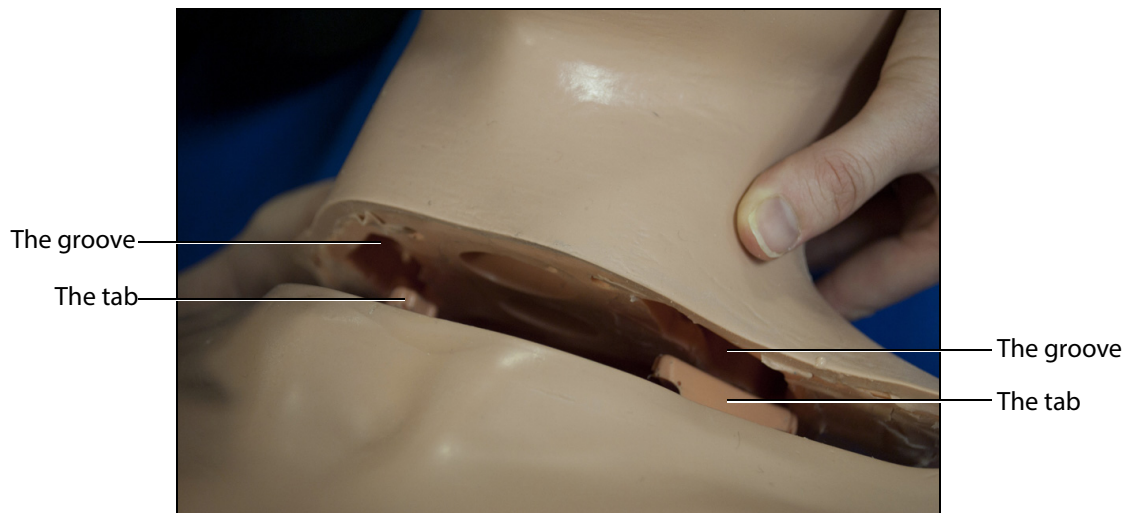
To attach the Bob 1.1 mannequin head to the torso:

- a. Locate the mannequin head.
- b. Position the head just below the height of the mannequin's chest.



***The Head Positioning***

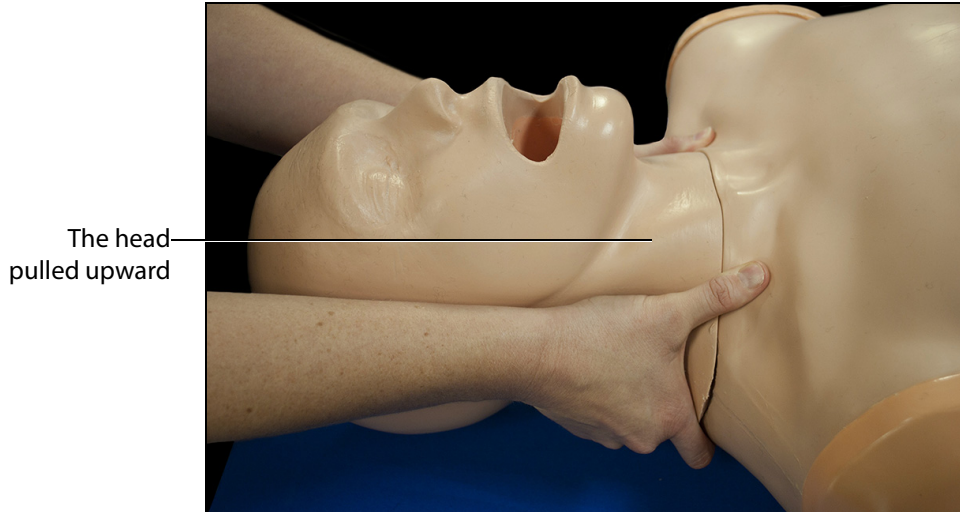
- c. Align the tabs on the mannequin's body with the grooves at the base of the head.



***The Groove and Tab Alignment***



- d. Once the parts are aligned, pull the mannequin's head in a direct upward motion until the neck is in line with the front of the mannequin.



*The Upward Alignment*

## Bob 1.2

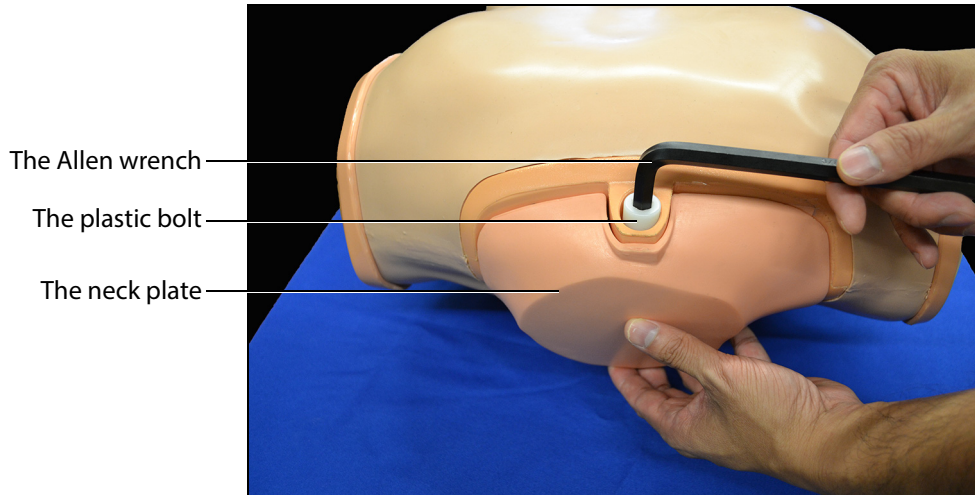
**NOTE:** Ensure the mannequin torso is placed on its stomach. If the mannequin is not on its stomach already, CAE Healthcare recommends using two people to turn the mannequin onto its stomach.



*The Bob 1.2 Mannequin Two Person Rotation*

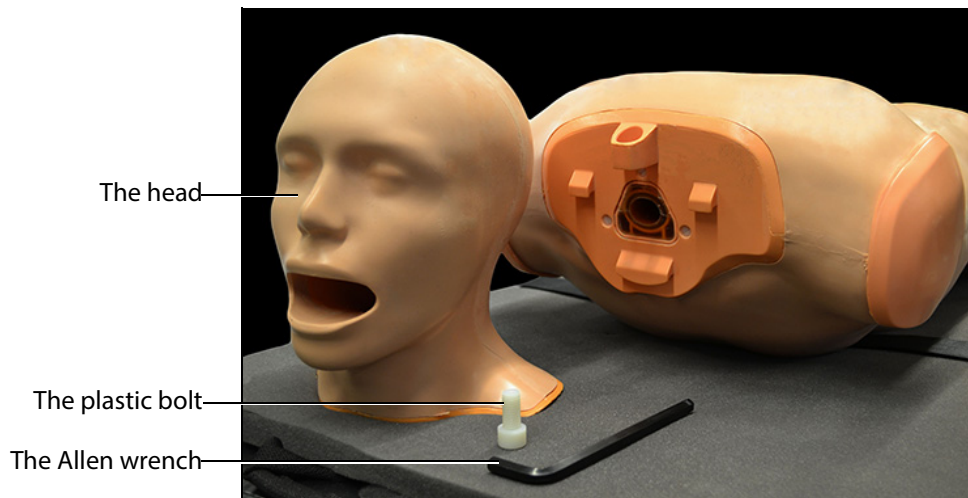
To attach the Bob 1.2 mannequin head to the torso:

- a. Using the 3/8 Allen wrench provided in your shipment, remove the neck plate by turning the plastic bolt counterclockwise.



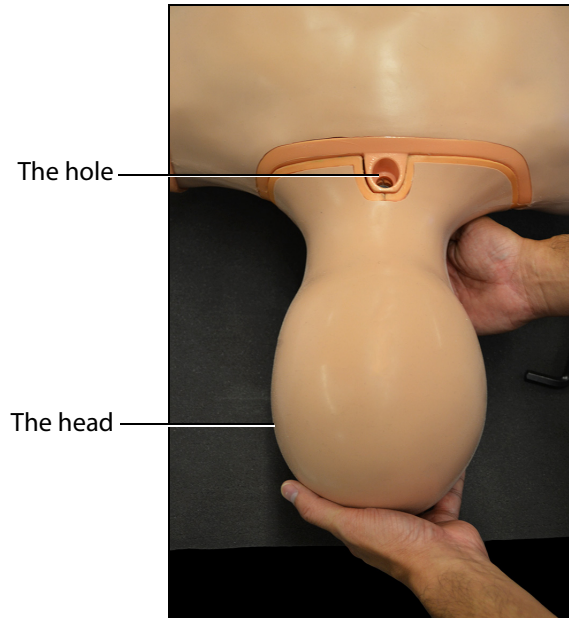
**The Bob 1.2 Equipment**

- b. Locate the mannequin head



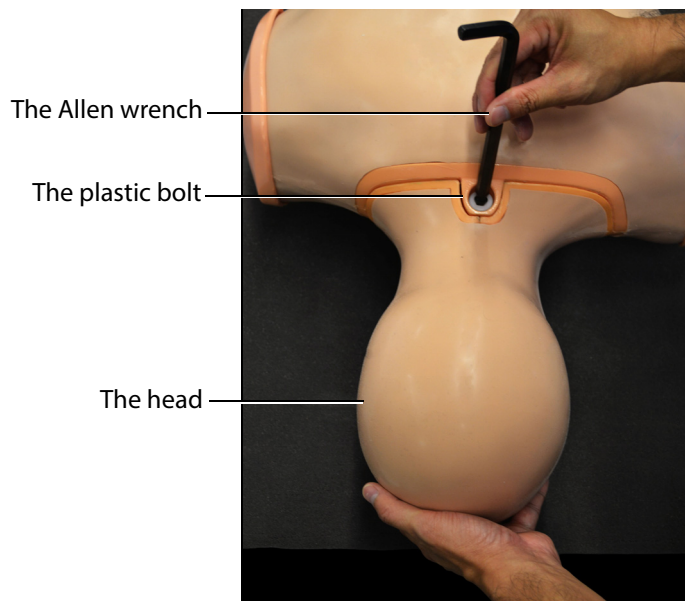
**The Bob 1.2 Equipment**

- c. With the face positioned downward, align the head with the hole at the top of the torso.



***The Head Alignment***

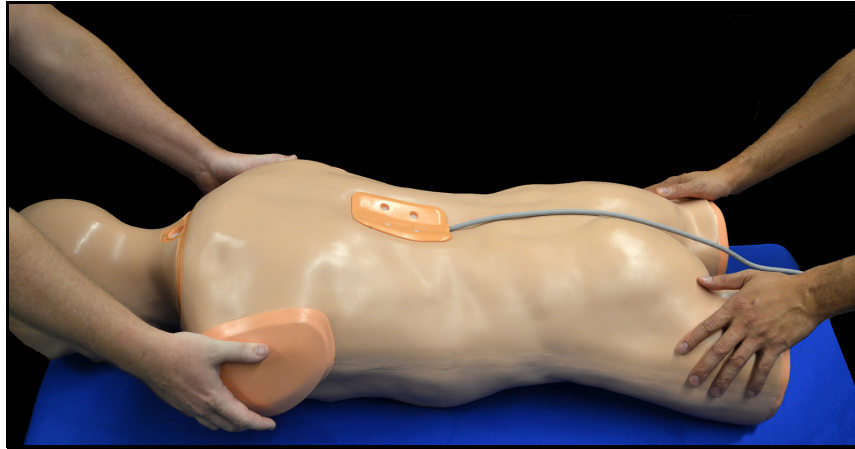
- d. Use one hand to support the head and use the other to place the plastic bolt in the hole.
- e. Tighten the bolt using the 3/8 Allen wrench until it is secure.



***The Mannequin Head Installation***

- f. Turn the mannequin over by placing one hand on the shoulder and one hand between the legs and carefully rotating the torso onto its back.

**NOTE:** To avoid injury, CAE Healthcare recommends using two people to perform this Setup step.



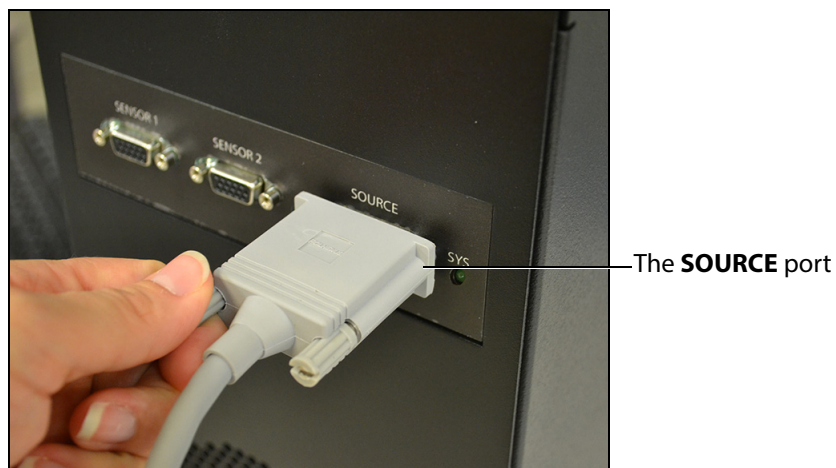
*The Bob 1.2 Mannequin Two Person Rotation*

## Step 3: Place the Computer in the Work Area

Remove the computer from storage. Place the computer on a flat, level surface at least 2 feet (60 cm) away from the mannequin to prevent image distortion.

## Step 4: Connect the Mannequin to the Computer

Connect the mannequin cable to the **SOURCE** port on the front panel of the computer.



*The Front Panel of the Computer*

## Step 5: Connect the Computer to a Power Supply

Connect the female end of the computer power cord to the computer and the male end to a surge-protected power outlet.

## Step 6: Connect the Monitor to a Power Supply

Connect the female end of the monitor power cord to the monitor and the male end to a surge-protected power outlet.

## Step 7: Connect the Monitor to the Computer

To connect the monitor to the computer:

- a. Connect one end of the DVI connector cable to the back panel of the computer.



*The Back of the Computer*

- b. Connect the other end of the DVI connector cable to the back of the monitor.



*The Back of the Monitor*



## Step 8: Connect the Mouse and Keyboard

- a. Plug the wireless USB adapter into any of the USB ports on the computer.



The USB adapter

**The VIMEDIX Computer USB Ports**

- b. Ensure the mouse and keyboard switches are ON and the shipping tab has been removed from the battery compartments.

The wireless keyboard and mouse will connect automatically.



**The Wireless Keyboard and Mouse**

**NOTE:** Manufacturer's instructions are also included with the keyboard.

**NOTE:** Wireless keyboard and mouse effective for software version 1.14. Previous versions include a wired keyboard and mouse. Use any USB port to connect the wired keyboard and mouse to computer.

## Step 9: Connect the Ethernet Cable

To connect the Ethernet cable to the Vimedix computer:

- a. Connect one end of the Ethernet cable to the back panel of the computer.



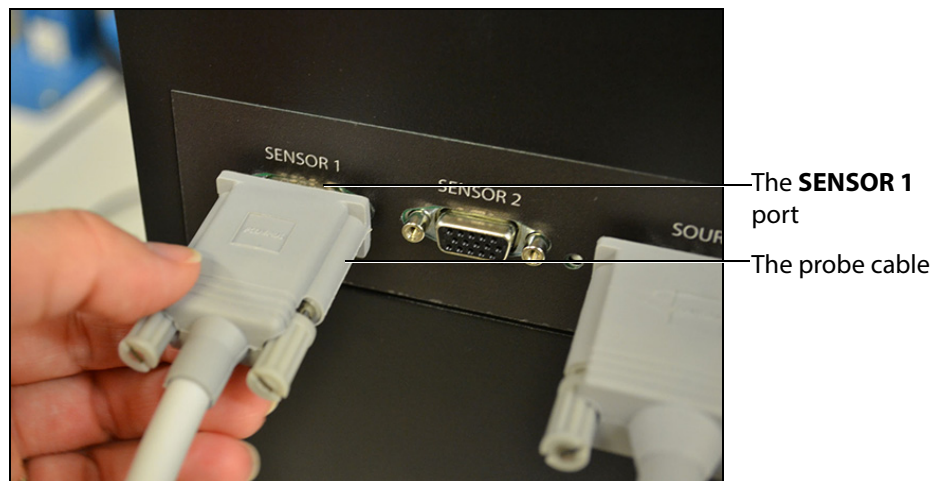
*The VIMEDIX Computer Back Panel*

- b. Connect the other end of the Ethernet cable to the appropriate Ethernet source port.

## Step 10: Connect the Probe to the Computer

To connect the probe:

- a. Connect the probe cable to the **SENSOR 1** port on the front panel of the computer.

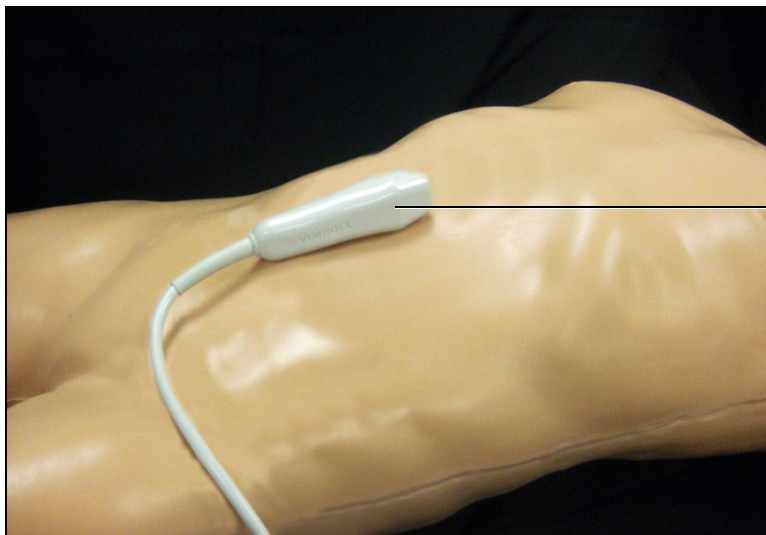


*The Front Panel of the Computer*

**WARNING:** DO NOT connect the probe to **SENSOR 2** port. The probe must be connected to the **SENSOR 1** port.

- b. Place the probe on the mannequin's abdomen for calibration.

On the male mannequin, place the probe over the belly button on the abdomen.



The probe on the mannequin's abdomen

*The Male Mannequin's Abdomen*

On the female mannequin, place the probe just below the belly button on the abdomen.

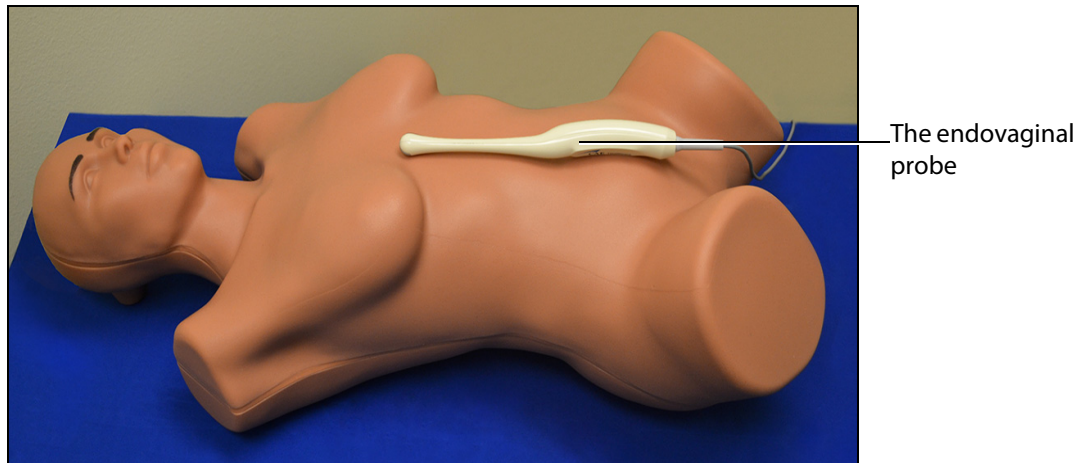


The curvilinear probe

*The Female Mannequin's Abdomen*



When using the endovaginal probe, place the probe on the mannequin's torso with the tip of the probe pointing towards the head of the mannequin.

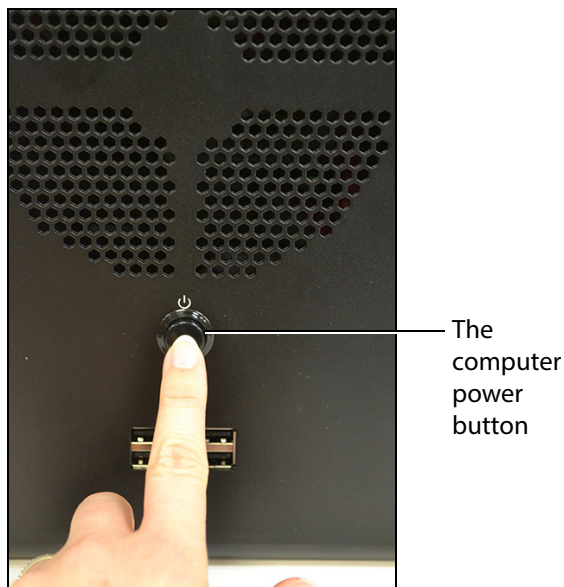


*The Female Mannequin's Abdomen*

## Step 11: Power on the Computer and Monitor

To power on the Vimedix computer:

- a. Press the power button on the front panel of the computer.



*The VIMEDIX Computer Front Panel*

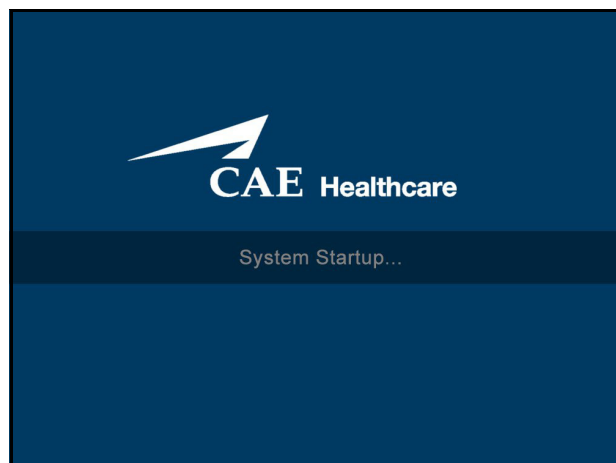
- b. Press the power button on the front of the monitor.



# STARTING THE SIMULATOR

Display Configuration Options	
1	Choose a Display Configuration
2	Perform Auto Update (if available)
3	Calibrate the Probe
4	Accept License Agreement

Once the Vimedix is turned on, the System Startup screen appears.

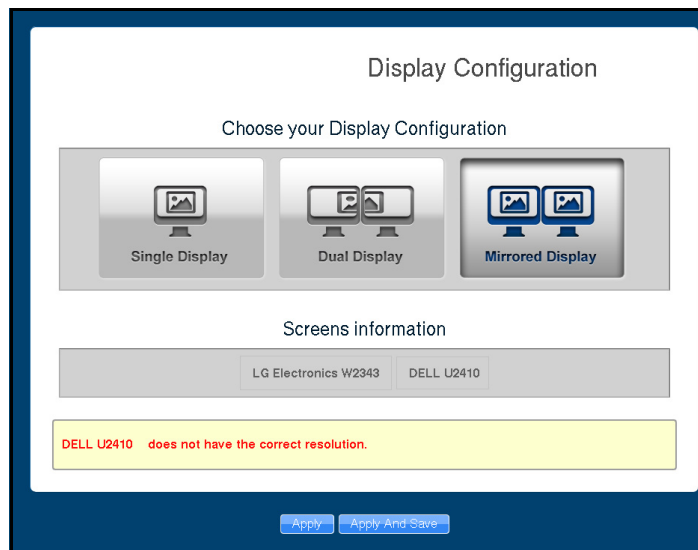


***The System Startup Screen***

The system begins loading and a progress bar appears. It may take several minutes for the system to load. Every 23 times the simulator is powered on, the system proceeds with a diagnostic process that may take several extra minutes

## Step 1: Choose a Display Configuration

In some training situations, it can be useful to have two monitors connected to the simulator. When the system detects the second monitor, the display configuration screen appears.



**The Display Configuration Screen**

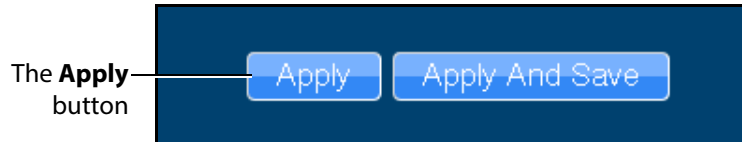
To choose a display configuration:

- a. Select one of the three options to configure the dual monitor display: Single Display, Dual Display or Mirrored Display.

Display Configuration Options	
Single Display	Uses only one monitor.
Dual Display	Uses two monitors and spans the interface across both monitors.
Mirrored Display	Uses two monitors with the interface duplicated on each monitor.

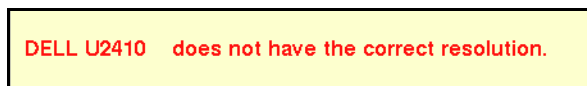
- b. Click on the desired configuration.

- c. Click the **Apply** button to apply the configuration.



**The Apply Buttons**

A warning message appears if one of the monitors does not meet the 1920x1080p resolution requirement.

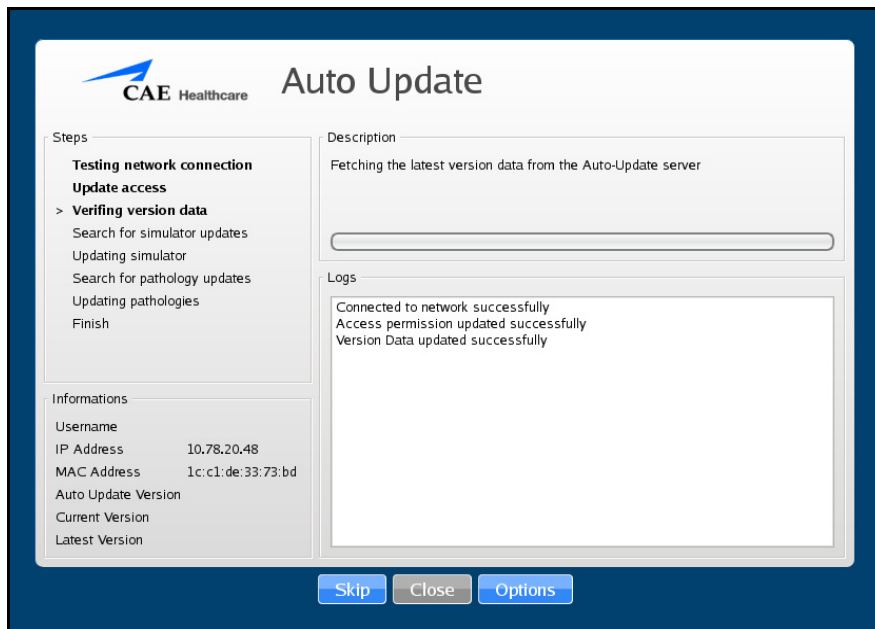


**The Resolution Warning Message**

The warning message is intended for notification purposes only. An incorrect resolution will not affect the user's ability to access the simulator.

## Step 2: Perform Auto Update

To receive auto updates for the simulator, the simulator must be connected to the Internet using an Ethernet cable. The Auto Update screen indicates that the simulator connected to the network successfully.



**The Auto Update Screen**

A progress bar appears, indicating the update status. Updates may take several hours to install, depending on the update size and Internet connection speed. Once an update is complete, the simulator will automatically restart.

**WARNING:** If the support and maintenance agreement for the simulator has expired, the auto updates are not available. It is important to maintain an active agreement with CAE Healthcare to ensure that the simulator receives the most recent updates as they become available. Contact your CAE Healthcare representative for more information.

### Step 3: Calibrate the Probe

After the system loads and the display is configured, the Probe Calibration screen appears.



**The Probe Calibration Screen**

To calibrate the probe:

- a. Ensure the probe is properly positioned on the mannequin's abdomen.  
The top of the probe should be pointing towards the upper torso of the mannequin.  
For the male mannequin, place the probe over the belly button on the abdomen. For the female mannequin, place the probe just below the belly button.
- b. Press any key on the keyboard to calibrate the probe.

### Step 4: Accept License Agreement

After the probe is calibrated, the License Agreement screen appears.

Click the **Accept** button to accept the license agreement. The VIMEDIX interface appears.

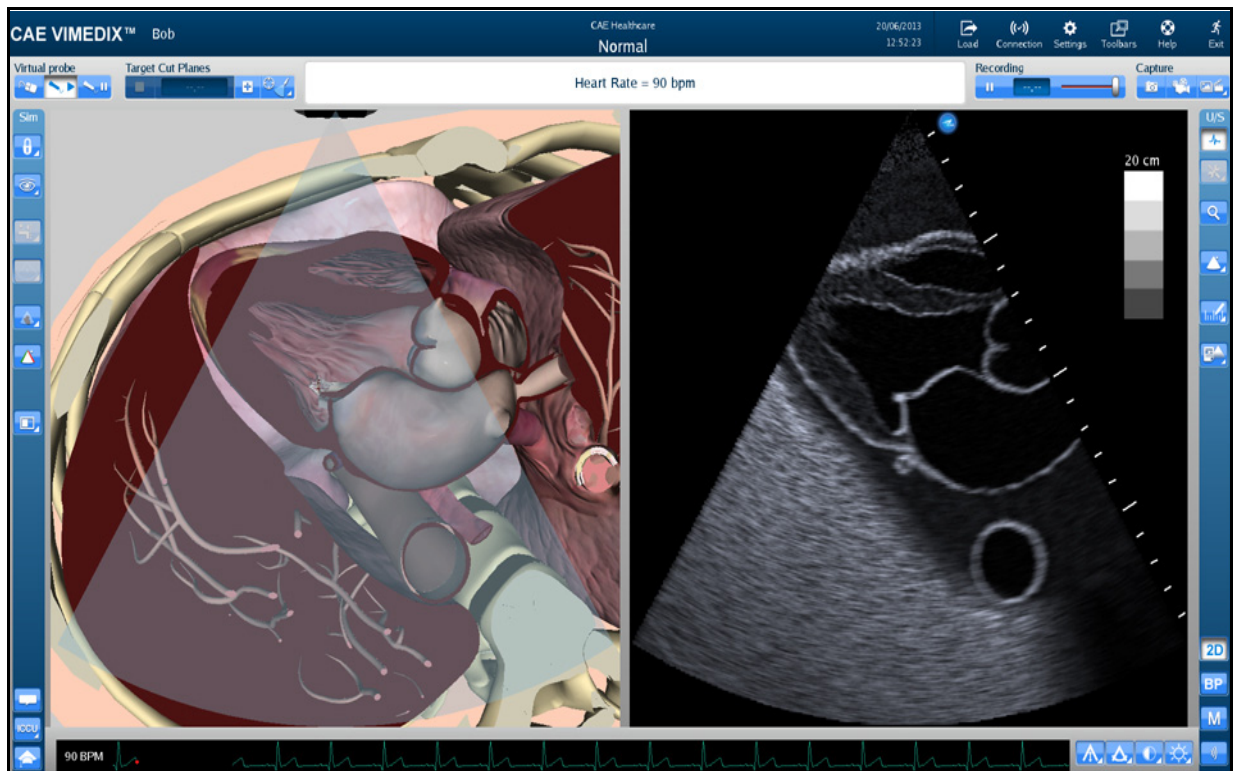
**IMPORTANT:** The user must accept the license agreement to use the software.

# USING THE MULTIPURPOSE (CARDIAC/ABDO) SIMULATOR

The Vimedix simulator is designed to give learners an exploratory training environment to practice using an ultrasonography machine. The male mannequin is provided for the modules: Transthoracic echocardiography (TTE), Transesophageal echocardiography (TEE), Abdominal ultrasonography, and Pleural ultrasonography.

## Interface Overview

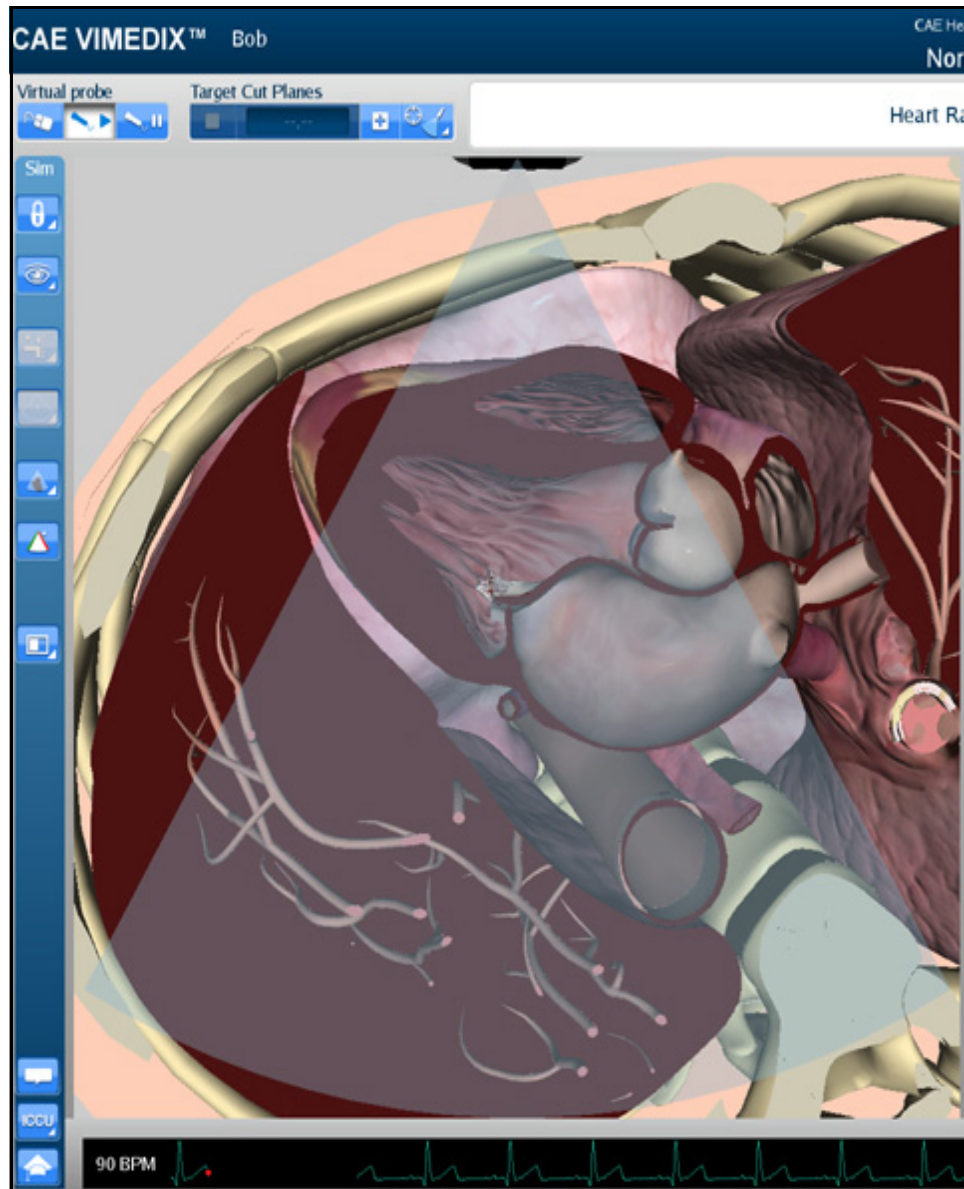
The Vimedix simulator interface consists of the Augmented Reality (AR) display, the Ultrasound display and multiple features that allow the user to perform various functions and adjust settings for educational purposes.



*The Vimedix Simulator Interface*

## Augmented Reality Display

The left side of the Split View interface displays an interactive, animated 3D anatomical depiction of the organs and artifacts located in the scanned area. The AR display shows a representation of the ultrasound beam placement to help the learner generate an accurate ultrasound image. Structures and artifacts can be “removed” from view for learning purposes using the Structures Visibility feature.



*The AR Display*



## Simulation Panel

The buttons under the **Simulation** panel on the left side of the interface allow the user to customize the training experience.



*The Simulation Panel*

The expanded panel view is available and it can be accessed by deselecting the **Use Popup Toolbar** checkbox in the Settings window.
















*The Simulation Panel - Expanded View*

For more information on expanding the panel view, see *Modifying Simulator Settings*.

### Simulation Panel Buttons

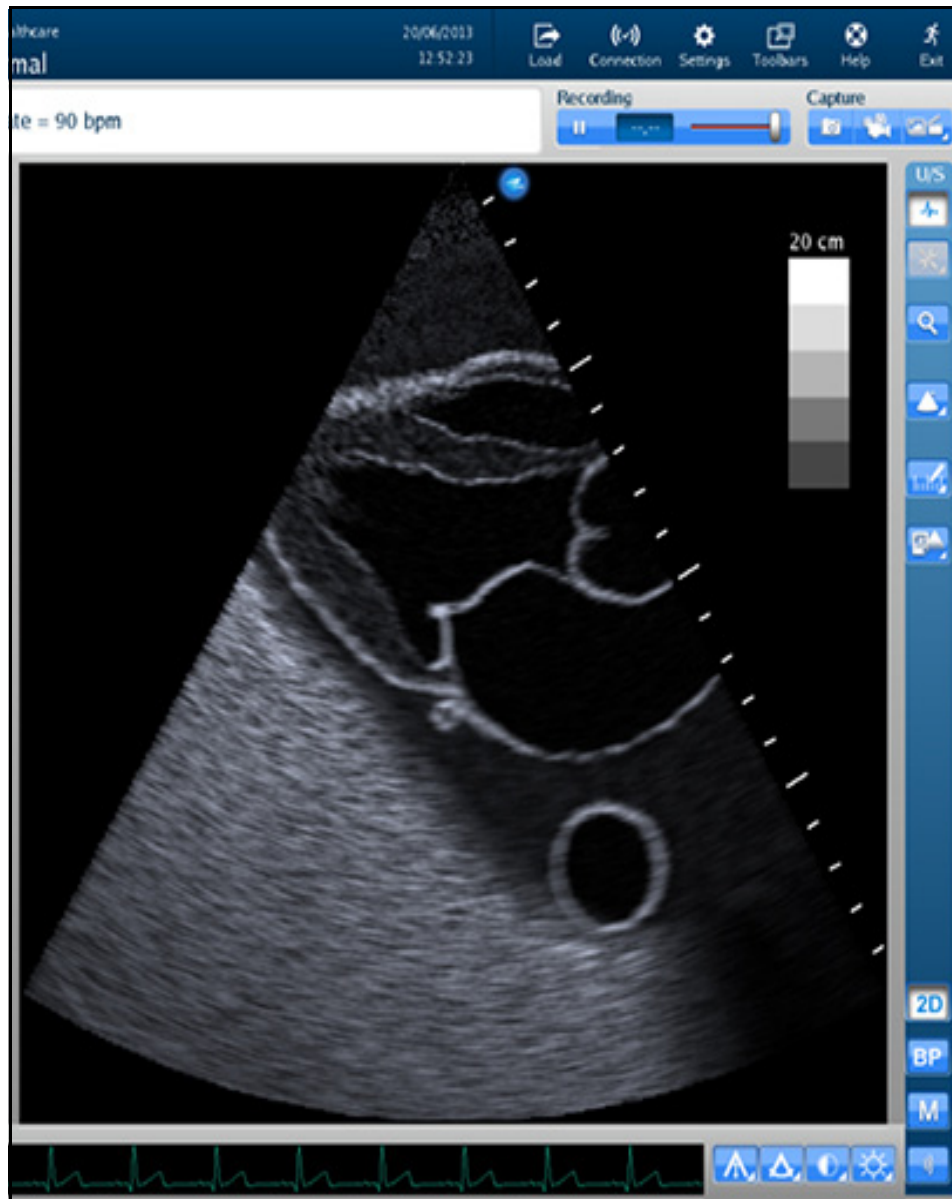
The **Simulation** panel buttons are categorized and separated into sections by the relevance of their functions.

Simulation Panel Buttons	
	Located in the Settings section, the <b>Lock</b> button is used to activate the view lock feature.
	Located in the Settings section, the <b>Unlock</b> button is used to deactivate the view lock feature.
	Located in the Settings section, the <b>Structures Visibility</b> button is used to choose which organs are shown on the AR and Ultrasound displays.
	Located in the Cut Plane section, the <b>Normal</b> button enables the normal cut plane view. By default, the cross section view is set to normal upon simulator startup.
	Located in the Cut Plane section, the <b>Inverted</b> button enables the inverted cut plane view.
	Located in the Cut Plane section, the <b>Both Sides</b> button disables the cross section view in the AR display.
	Located in the Biplane section, the <b>Biplane View</b> button allows users to select an Augmented Reality view based on either the primary or secondary ultrasound beam when in Biplane imaging mode.
	Located in the Beam section, the <b>Transparent</b> button enables the transparent beam on the AR display. By default, the beam is set to transparent upon simulator startup.
	Located in the Beam section, the <b>Edge</b> button enables the transparent beam with a red border on the AR display.

Simulation Panel Buttons	
	Located in the Beam section, the <b>Ultrasound</b> button enables the ultrasound mode of the beam on the AR display.
	Located in the Beam Guide section, the <b>Beam Guide</b> button enables a green line and a red line on the left and right side of the beam to indicate the orientation
	Located in the Layout section, the <b>Split View</b> button activates the split view of the AR and Ultrasound displays. By default, the interface is in Split View upon simulator startup.
	Located in the Layout section, the <b>Small</b> button activates a view with a smaller AR display and a larger Ultrasound display.
	Located in the Layout section, the <b>Large</b> button activates a view with a larger AR display and a smaller Ultrasound display.
	Located in the Layout section, the <b>Only Augmented Reality</b> button activates a view with only the AR display.
	Located in the Layout section, the <b>Hide Augmented Reality</b> button activates a view with only the Ultrasound display.
	Located in the Tutorial section, the <b>Tutorial</b> button activates the Tutorial mode. In Tutorial mode, users can scroll over different anatomical structures using the mouse in the Augmented Reality display and the name of the structure appears.
	Located in the Tutorial section, the <b>Instructional Content</b> button opens the menu where users can select a ranges of self-directed learning tasks covering several disciplines and skill areas. Tasks include obtaining standard views (without and without the aid of references), optimizing image settings, and performing measures.

## Ultrasound Display

The right side of the Split View interface shows the ultrasound image and contains different features to achieve the desired view.



*The Ultrasound Display*

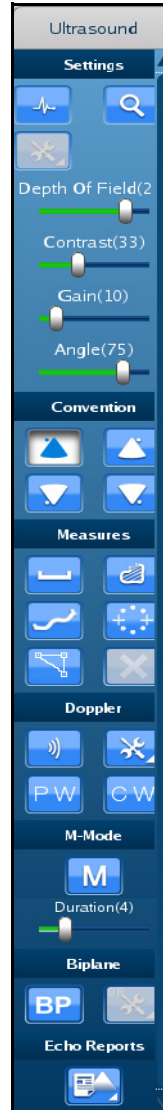
## Ultrasound Panel

The buttons under the **Ultrasound** panel on the right side of the interface are used to modify and interact with the Ultrasound display.



*The Ultrasound Panel*

The expanded panel view is available and it can be accessed by deselecting the **Use Popup Toolbar** checkbox in the Settings window.












*The Ultrasound Panel - Expanded View*









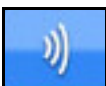

For more information on expanding the panel view, see *Modifying Simulator Settings*.




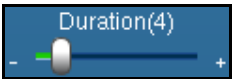



## Ultrasound Panel Buttons

The buttons are categorized and separated into sections by the relevance of their functions.

Ultrasound Panel Buttons	
	Located in the Settings section, the <b>ECG</b> button is used to enable or disable the ECG tracing feature on the bottom of the screen.
	Located in the Settings section, the <b>Zoom</b> button allows the user to zoom in on a specific area of the Ultrasound image.
	Located in the Settings section, the <b>Depth of Field</b> slider controls the depth of the ultrasound beam. The Depth of Field can also be modified by scrolling the mouse wheel. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Settings section, the <b>Contrast</b> slider controls the contrast of the Ultrasound display. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Settings section, the <b>Gain</b> slider controls the gain on the Ultrasound display. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Settings section, the <b>Angle</b> slider controls the angle of the ultrasound beam. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Convention section, the <b>Cardiology and Anesthesiology Convention</b> button activates the cardiology and anesthesiology convention.
	Located in the Convention section, the <b>Radiology Convention</b> button activates the radiology convention.
	Located in the Convention section, the <b>Mayo Clinic Cardiac Convention</b> button activates the Mayo Clinic cardiac convention.



Ultrasound Panel Buttons	
	Located in the Convention section, the <b>Cardiac Pediatric Convention</b> button activates the cardiac pediatric convention.
	Located in the Measures section, the <b>Measurements</b> button activates the drop-down menu for the measurement options.
	Located in the Measures section, the <b>Electronic Caliper</b> button enables the electronic caliper tool to measure lengths of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Area Measurement</b> button enables the area measurement tool to measure area of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Contour Measurement</b> button enables the contour measurement tool to measure the contours of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Circumference Measurement</b> button enables the circumference measurement tool to measure circumference of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Edit Measurements</b> button allows users to adjust points on a measurement.
	Located in the Measures section, the <b>Delete Last Measurements</b> button deletes the last measurements in the Ultrasound display.
	Located in the Doppler section, the <b>Doppler</b> button activates the Color Doppler feature in the Ultrasound display.
	Located in the Doppler section, the <b>Doppler Settings</b> button opens the Doppler settings window where users can customize the Doppler settings.

Ultrasound Panel Buttons	
	<p>Located in the Doppler section, the <b>Pulsed Wave</b> button activates the Pulsed Wave Doppler feature in the Ultrasound display.</p>
	<p>Located in the Doppler section, the <b>Continuous Wave</b> button activates the Continuous Wave Doppler feature in the Ultrasound display.</p>
	<p>Located in the M-Mode section, the <b>M-Mode</b> button activates the M-Mode feature in the Ultrasound display.</p>
	<p>Located in the M-Mode section, the <b>M-Mode Duration</b> slider controls the sweep speed of the M-mode display.</p>
	<p>Located in the Biplane section, the <b>Biplane Mode</b> button activates the Biplane view in the Ultrasound display.</p>
	<p>Located in the Biplane section, the <b>Biplane Settings</b> button allows users to adjust characteristics of the Biplane view in the Ultrasound display.</p>
	<p>Located in the Echo Reports section, the <b>Reports</b> button allows users to create, complete and review cardiac reports for training.</p>

## Settings Panel Buttons







The Settings panel contains buttons which are relevant to the Ultrasound display.




*The Settings Panel*

When different modes are activated (Doppler, M-Mode, Biplane), the Settings panel contains additional settings buttons for the activated modes.




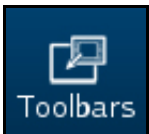

**NOTE:** The Settings buttons are located in the Ultrasound panel when the **Use Popup Toolbar** checkbox is deselected.


Settings Panel Buttons	
	Located in the Settings panel, the <b>Gain Settings</b> button activates the adjustment slider and allows users to modify the gain in the Ultrasound display.
	Located in the Settings panel, the <b>Contrast Settings</b> button activates the adjustment slider and allows users to modify the contrast in the Ultrasound display.
	Located in the Settings panel, the <b>Angle Settings</b> button activates the adjustment slider and allows users to modify the angle of the beam in the Ultrasound display.
	Located in the Settings panel, the <b>Depth of Field Settings</b> button activates the adjustment slider and allows users to modify the depth of field in the Ultrasound display.
	Located in the Settings panel, the <b>Biplane Settings</b> button allows users to access the Biplane Settings window to adjust settings.
	Located in the Settings panel, the <b>M-Mode Settings</b> button allows users to access the M-Mode Settings window to adjust settings.

Settings Panel Buttons	
	<p>Located in the Settings panel, the <b>Doppler Settings</b> button allows users to access the Doppler Settings window to adjust settings.</p>

## Control Panel

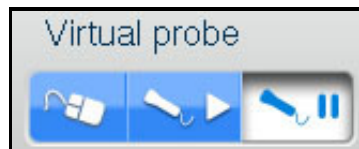
The **Control** panel is located in the upper-right corner of the interface. By clicking on the icons, users can load pathologies, modify connections and settings, access help tools and exit the program.

Control Panel Icons	
	<p>The <b>Load</b> icon is used to access the listing of available pathologies.</p>
	<p>The <b>Connection</b> icon allows the user to edit the network settings.</p>
	<p>The <b>Settings</b> icon allows the user to edit the simulator settings.</p>
	<p>The <b>Toolbars</b> icon allows the user to hide the Simulator and Ultrasound panels.</p>
	<p>The <b>Help</b> icon provides access to the Help menu and information about simulator functions, settings and basic troubleshooting.</p>

	<p>The <b>Exit</b> icon is used to shut down the simulator.</p>
---	---

## Selecting a Virtual Probe Option

The **Virtual Probe** panel contains three options: the **Mouse** button, the **Probe** button and the **Probe Pause** button.



*The Virtual Probe Options*

## Using the Mouse Controls

Click the **Mouse** button to control the various views of the simulator with the computer mouse.



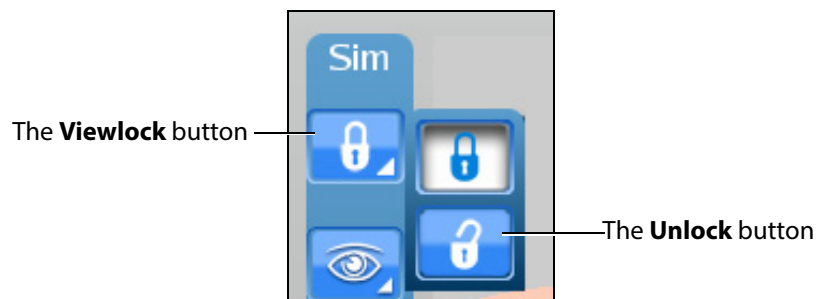
*The Mouse Button*

To move the body using the mouse without moving the ultrasound beam:

1. Click and hold the left button on the mouse
2. Drag the mouse.

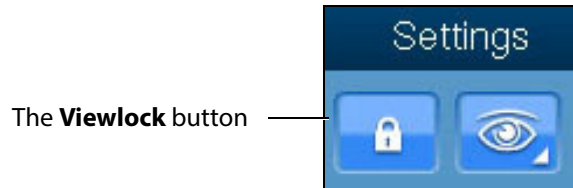
To move the probe using the mouse:

1. Unlock the view lock by clicking the **Viewlock** button and selecting the **Unlock** button.



*The Viewlock buttons*

**NOTE:** When using the expanded toolbar view, click the Viewlock button one time to deactivate/unlock the viewlock.

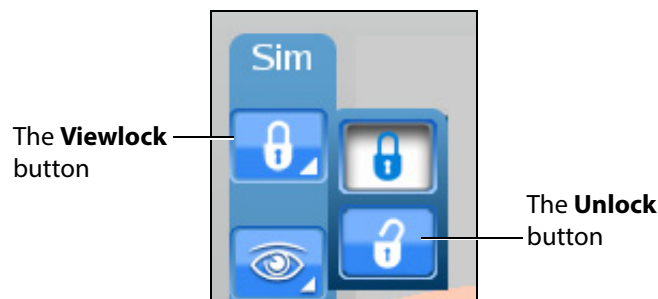


**The Settings Section**

2. Once the view lock is disabled, place the cursor in the AR display.
3. Click and hold the right button on the mouse.
4. Drag the mouse.

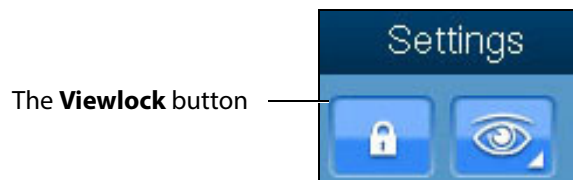
To move the body and the probe:

1. Unlock the view lock by clicking the **Viewlock** button and selecting the **Unlock** button.



**The Viewlock buttons**

**NOTE:** When using the expanded toolbar view, click the Viewlock button one time to deactivate/unlock the viewlock.



**The Settings Section**

2. Once the view lock is disabled, place the cursor in the AR display.
3. Click and hold the left button on the mouse.
4. Drag the mouse.

To zoom in and out using the mouse:

1. Click and hold the wheel on the mouse.
2. Drag the mouse.

To adjust the depth of field using the mouse, roll the wheel on the mouse.

## Using the Probe

When the **Probe** button is selected, the probe connected in the port **SENSOR 1** on the front panel of the computer is activated and the probe can be used to scan the mannequin.



*The Probe Button*

## Using the Transthoracic Probe

**NOTE:** The transthoracic (TTE) probe is only provided for users who have purchased the transthoracic cardiac module. Contact your CAE Healthcare sales representative to purchase this module.

The TTE probe is intended for exclusive cardiac use, but can also be used for FAST/Abdominal ultrasound examination.

To use the TTE probe, place the tip of the probe on the mannequin's skin to obtain a view.

## Using the Transesophageal Probe

**NOTE:** The transesophageal (TEE) probe is only provided for users who have purchased the transesophageal cardiac module. Contact your CAE Healthcare sales representative to purchase this module.

Prior to using the transesophageal probe, spray the mouth opening with the CAE Healthcare-approved silicone spray (provided in new shipments with transesophageal purchase or by request for existing customers purchasing the TEE module at a later time).

The transesophageal probe can only be inserted into Bob mannequins with a head attached. If the mannequin does not have a head, contact CAE Healthcare Customer Service to request a TEE head installation kit.

To use the transesophageal probe, slowly insert the probe tip into the mannequin's mouth and into the throat. Use the wheels on the probe to manipulate the probe tip inside the esophagus and view the heart.

### Using the Curvilinear Probe

**NOTE:** The curvilinear probe is only provided for users who have purchased the FAST, Abdominal or Ob/Gyn 20-week modules. Contact your CAE Healthcare sales representative to purchase one of these modules.

To use the curvilinear probe, place the tip of the probe on the mannequin's skin to obtain a view.

### Using the Probe Pause Feature

The **Probe Pause** button freezes the AR and Ultrasound displays on the last scanned cycle and loops the cycle on the displays. The probe pause feature is useful for analyzing cut planes.



*The Probe Pause Button*

## Loading Pathologies

Pathologies are cases to help learners recognize abnormalities in ultrasound images.

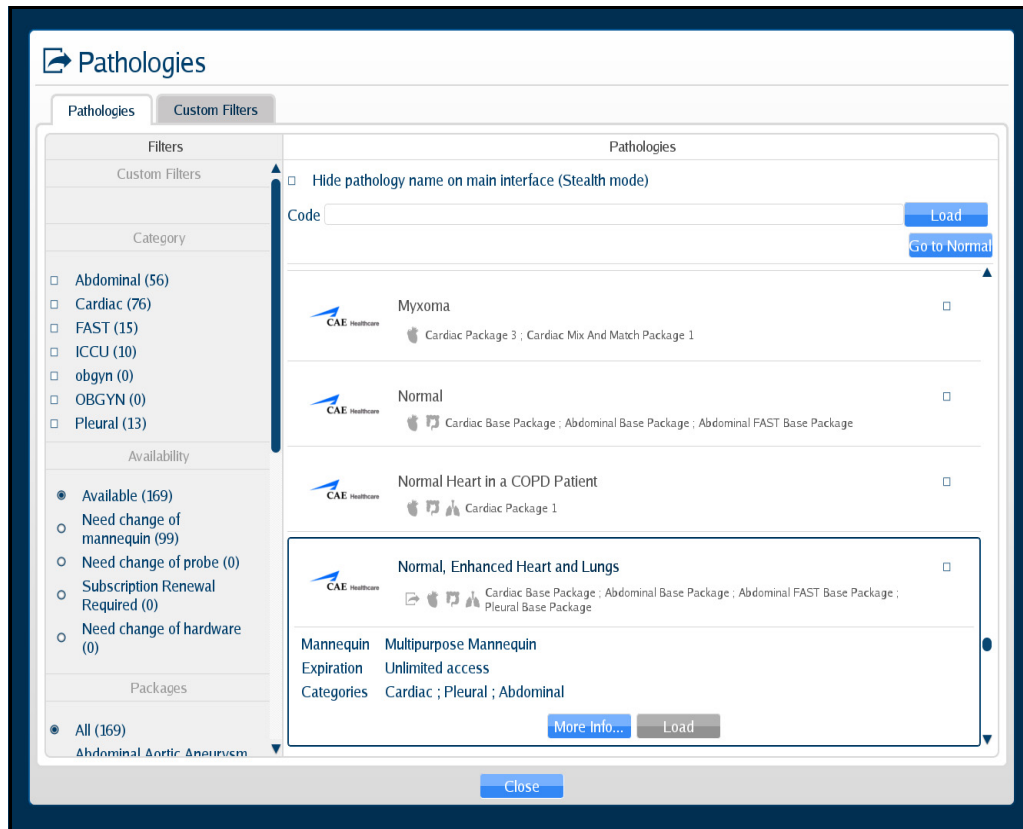
Click the **Load** icon to access pathologies.



*The Load Icon*



The Pathologies window appears.



**The Pathologies Window**

Users can find and load pathologies using the features in the Pathologies window. Clicking the **Go to Normal** button highlights the normal case in the pathology selection window.

## Loading a Pathology in Standard Mode

Users can load pathologies in standard mode and organize the selections using criteria in the **Filters** panel. The filters feature allows users to organize pathologies by Category or Availability criteria.

Users have the option to narrow the pathologies displayed in the **Pathologies** panel based on the type of module (FAST and ICCU), area of focus (Abdominal, Cardiac and Pleural), availability (Available or Expired) or the type of mannequin (Need change of mannequin).

If no filter criteria is selected in the **Filters** panel, all available pathologies will appear by default.

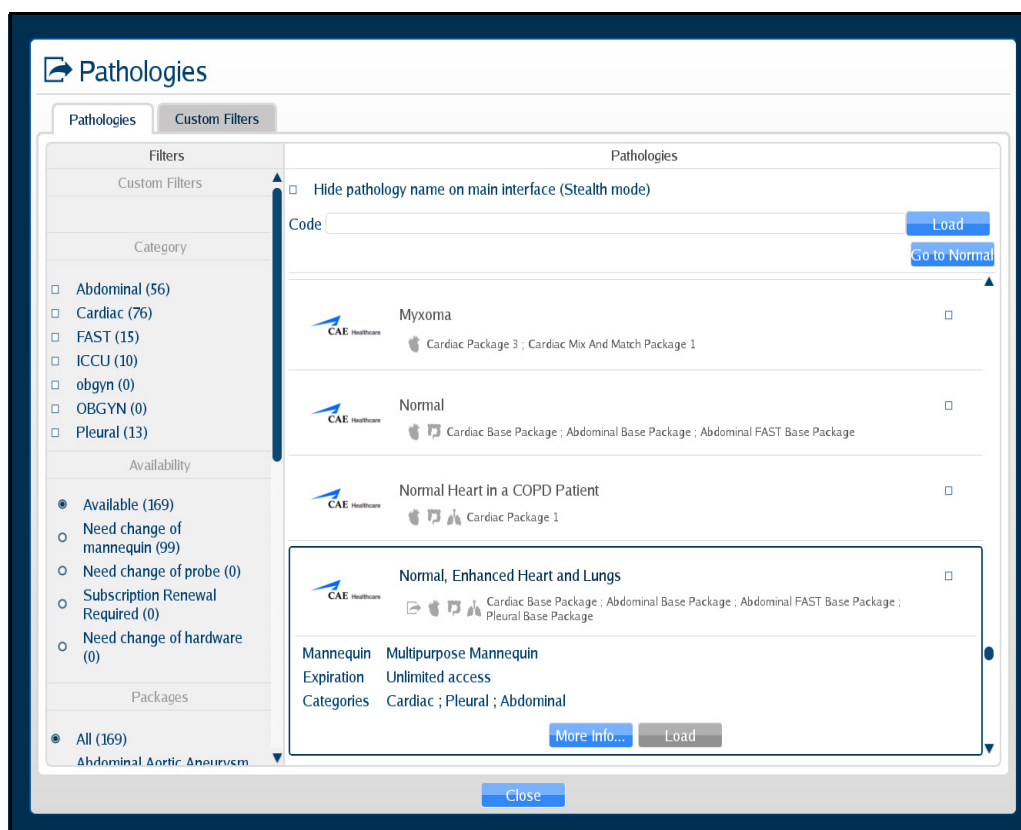
To load a pathology:

1. Click the **Load** icon.



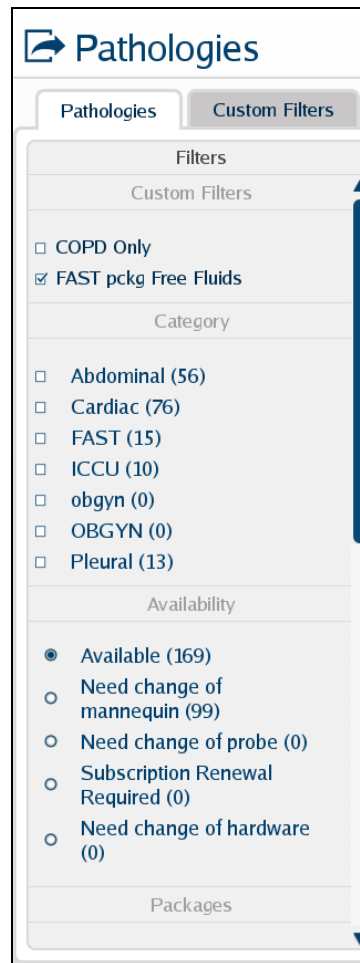
**The Load Icon**

The Pathologies window appears.



**The Pathologies Window**

2. Select the search criteria from the **Filters** panel.



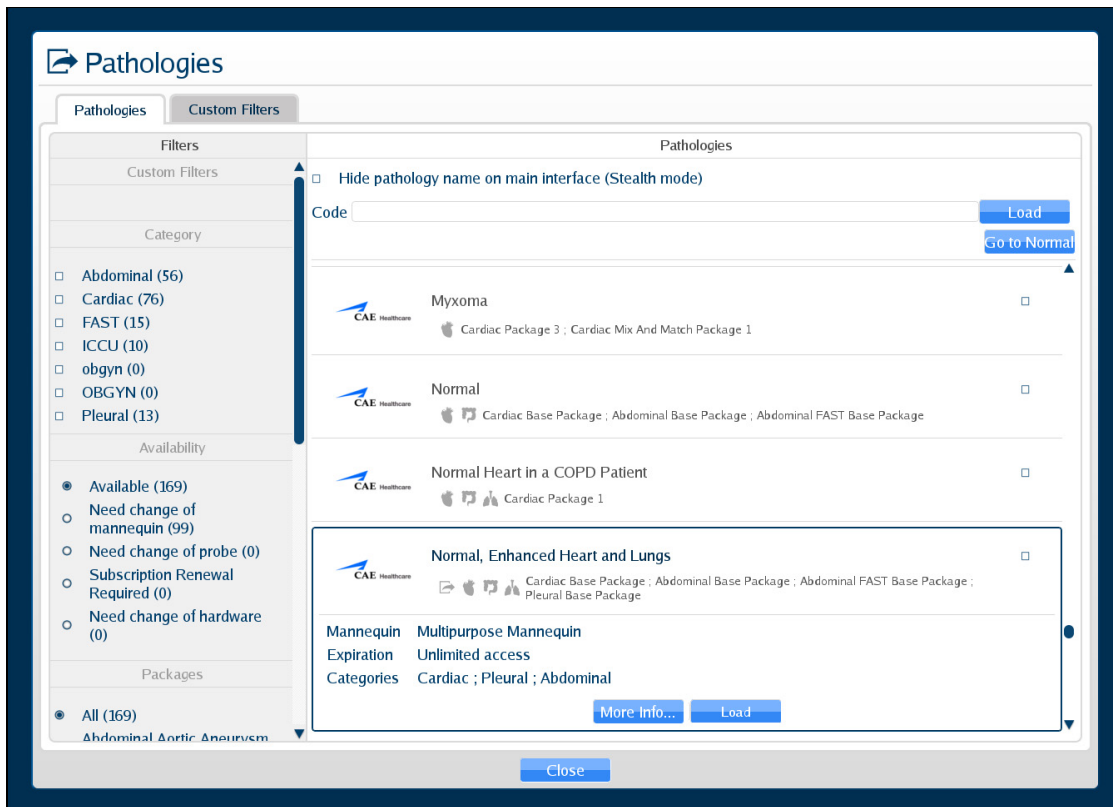
***The Filters Panel***

**NOTE:** Information for creating **Custom Filters** follows this section.

The pathologies update automatically in the **Pathologies** panel. If no criteria is selected, all available pathologies display in the **Pathologies** panel.

3. Select the desired pathology.

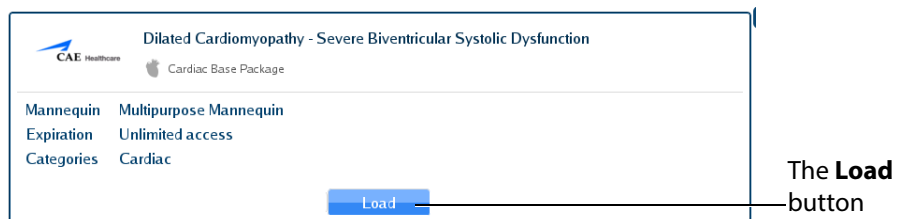
The pathology selection expands.



**The Pathologies Window**

4. Click the **Load** button.

**NOTE:** Certain cases offer a **Load...** option to turn Modalities ON or OFF. Refer to the *Selecting Modalities* section for more information.



**The Selected Pathology**

The Loading Pathology window appears.



**The Loading Pathology Window**

**NOTE:** When loading a Montreal Heart Institute pathology, the Pathologies Loading window contains a brief synopsis of the patient's history and a **Continue** button. Users must click the **Continue** button after reviewing the synopsis to access the loaded pathology.

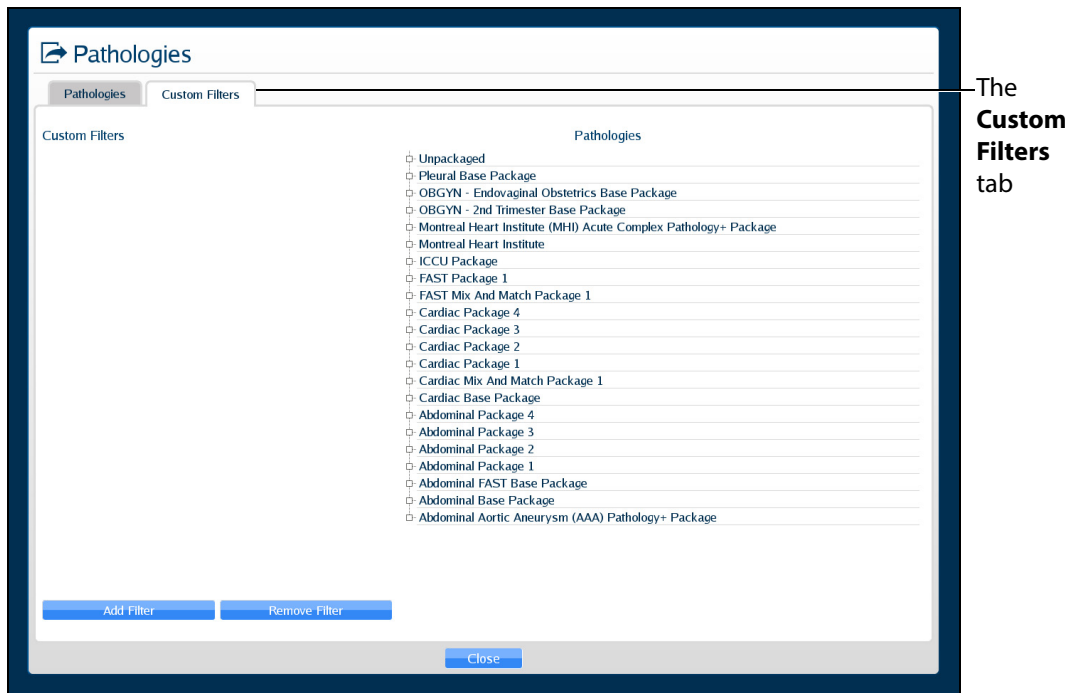


**The Loading Pathologies Window**

When the main interface screen appears, the pathology is loaded.

To create a Custom Filter:

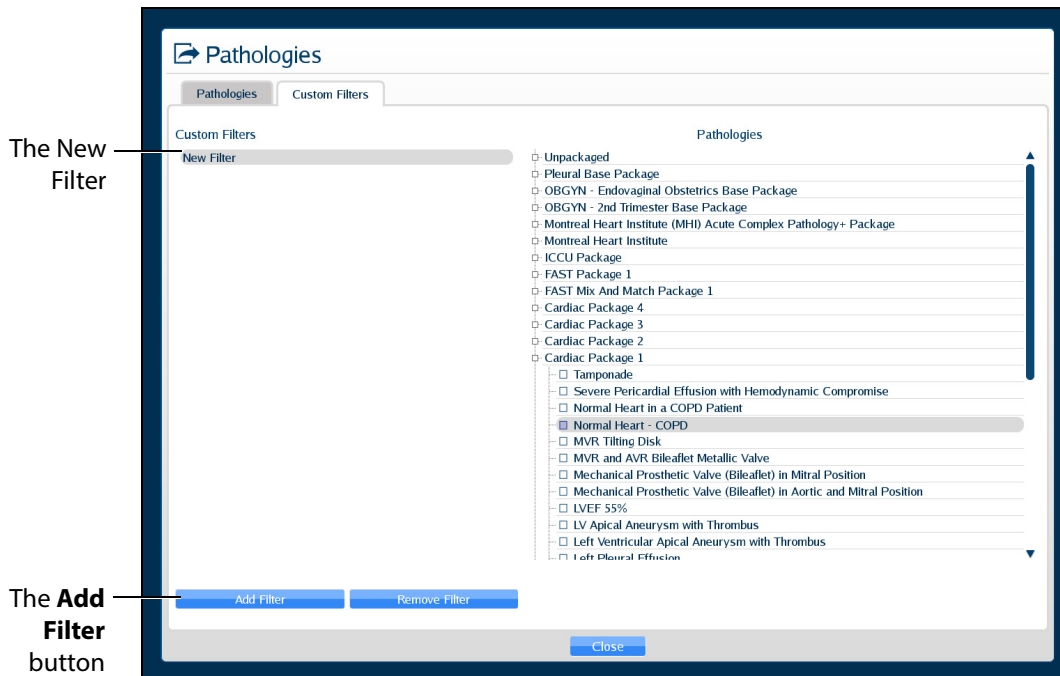
1. Click the **Custom Filters** tab.



*The Custom Filters Window*

2. Click **Add Filter**.

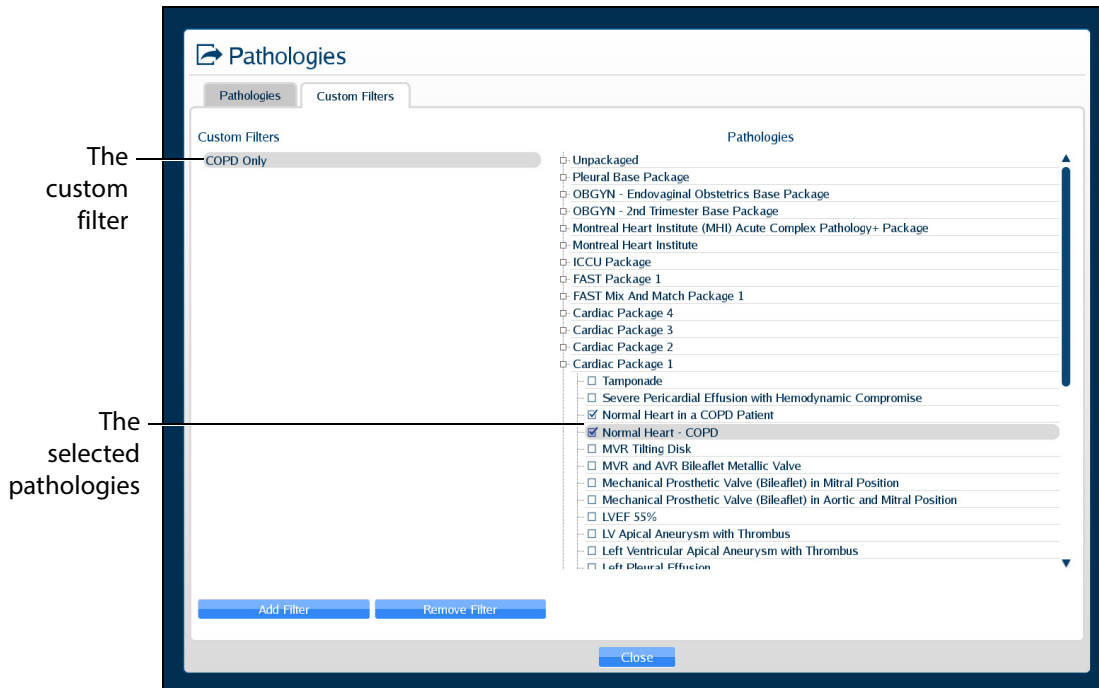
The New Filter is displayed.



**The Custom Filters Window**

3. Double-click the New Filter to rename it. A new filter must be renamed before adding additional filters. Then, press Enter or click outside of the filter name to apply the name change.

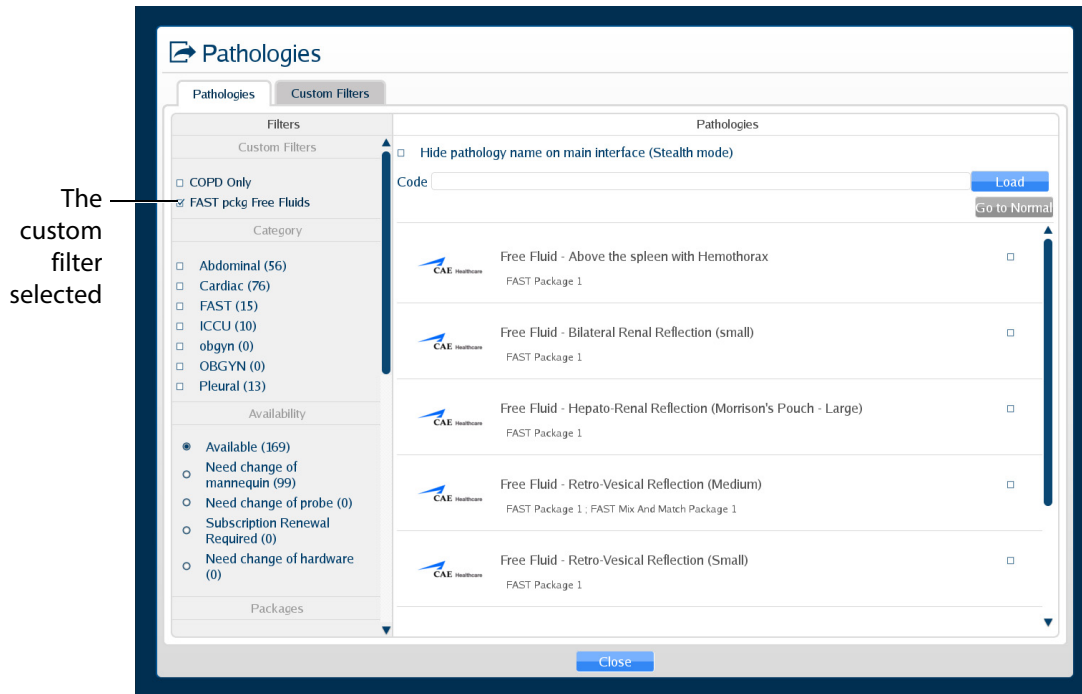
- 4. Ensure the new filter is highlighted, then select (checkbox) the desired pathologies. The selected pathologies are automatically applied to the filter.



**The Custom Filters Window**



- When finished, click the **Pathologies** tab, then select (checkbox) the desired custom filter.



**The Pathologies Window**

**NOTE:** To refresh a custom filter, from the **Pathologies** tab, uncheck then re-check the desired custom filter.

To edit a Custom Filter:

- Click the **Custom Filters** tab.
- Ensure the desired filter is highlighted, then check or uncheck the desired pathologies.
- When finished, click the **Pathologies** tab, then select (checkbox) the desired custom filter.

**NOTE:** To remove a custom filter, ensure the custom filter name is highlighted, then click **Remove Filter**.

## Loading a Pathology in Stealth Mode

The Vimedix simulator offers a Stealth mode that allows instructors to hide the name of a loaded pathology. When a pathology is loaded in Stealth mode, the pathology name is replaced with **Stealth Mode Activated** at the top of the Vimedix simulator interface.

Pathologies can be loaded in Stealth mode from the Pathologies window using a pathology code or the **Hide pathology name on the main interface (Stealth mode)** checkbox.

To load a pathology in Stealth mode using a pathology code:

1. Click the **Load** icon



**The Load Icon**

The Pathologies window appears.

2. Use the Pathology Codes document to find the code for the desired pathology.
3. Enter the code into the **Code** text box.



**The Pathologies Window**

4. Click **Load**.

The pathology is loaded.

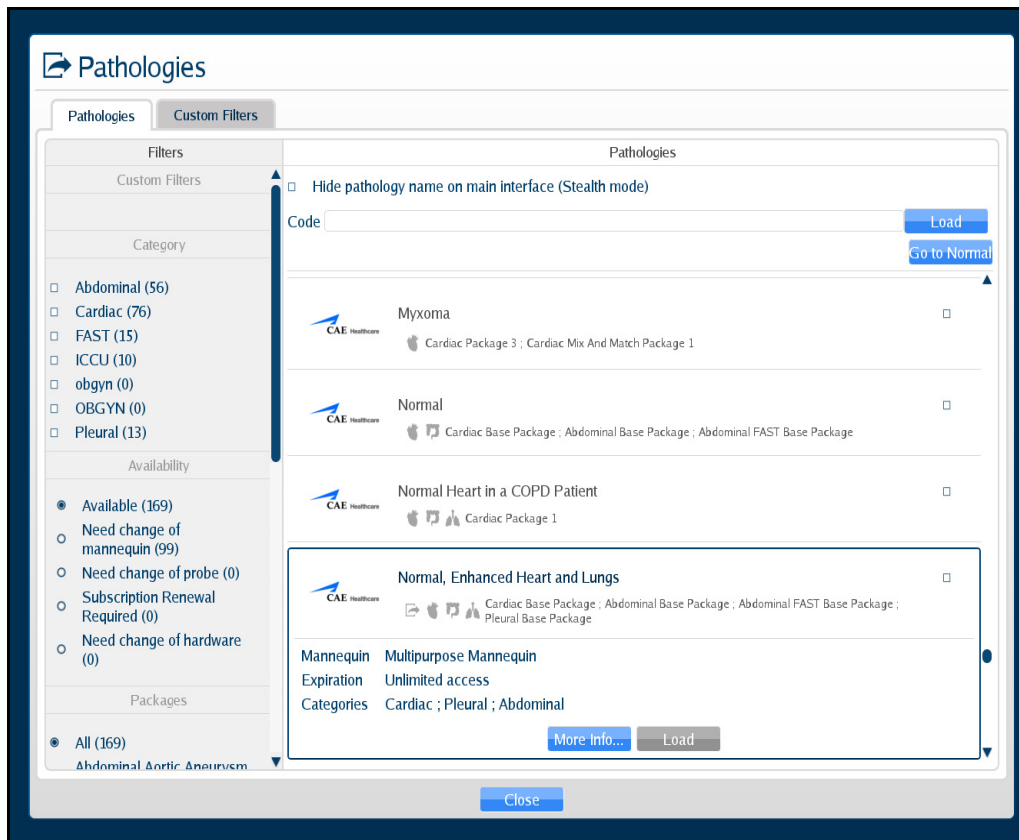
**NOTE:** If the code is incorrect, a message appears saying the pass code is not valid.



**The Pass Code Error Message**

To load a pathology in Stealth mode without a code using the checkbox feature:

1. Select the desired pathology from the **Pathologies** panel.



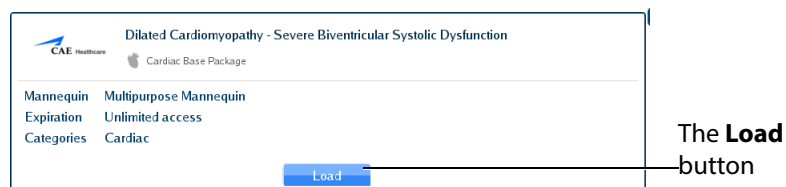
**The Pathologies Window**

2. Select the **Hide pathology name on the main interface (Stealth mode)** checkbox.



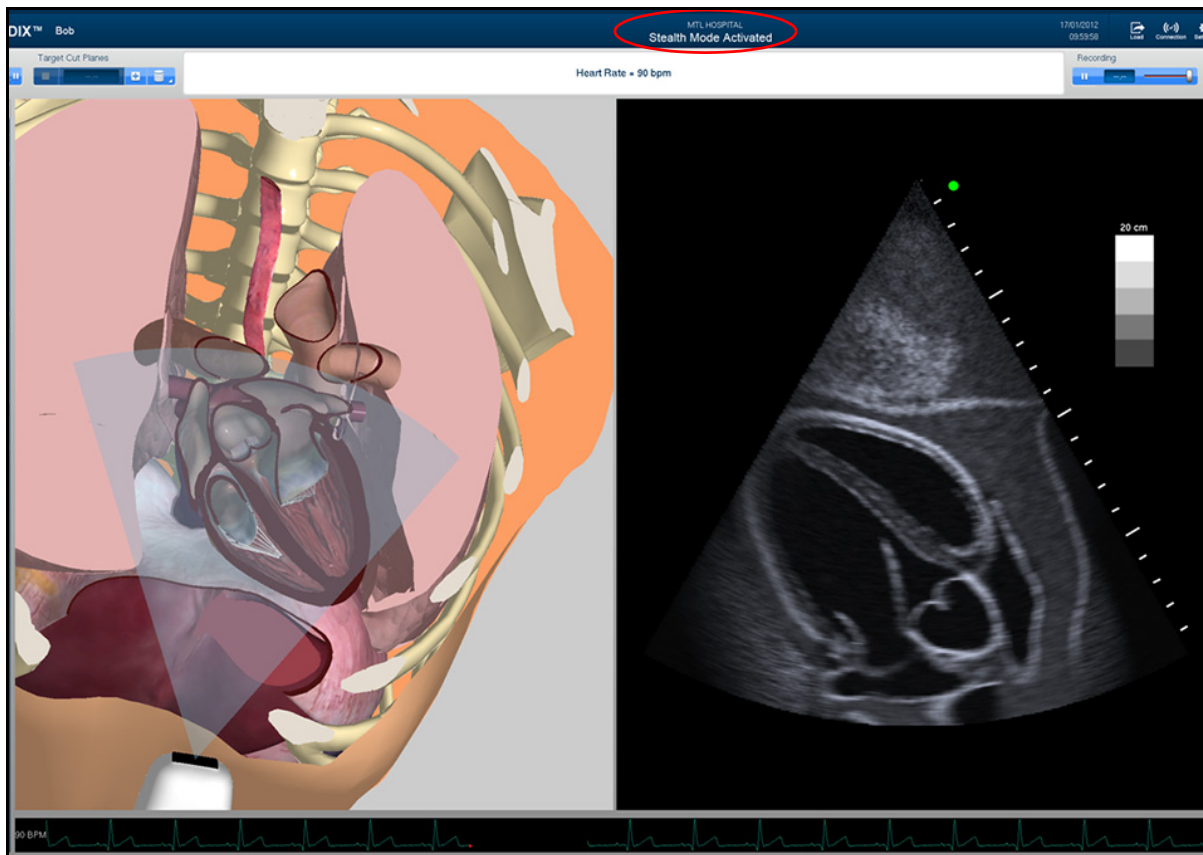
**The Pathologies Window**

3. Click **Load** in the selected pathology



**The Selected Pathology**

The pathology is loaded in Stealth mode.



*The Loaded Pathology with Stealth Mode Activated*

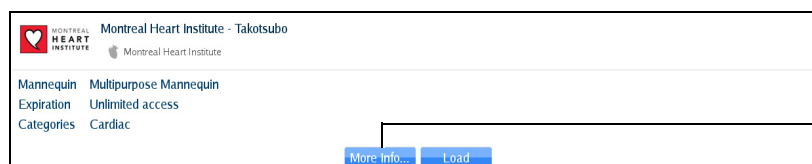
## Accessing Additional Pathology Information

**NOTE:** This feature is only applicable to Montreal Heart Institute pathologies.

The Montreal Heart Institute pathologies have supporting content, such as case presentations and medical references.

To access additional pathology information:

1. From the Pathologies window, select a Montreal Heart Institute pathology.

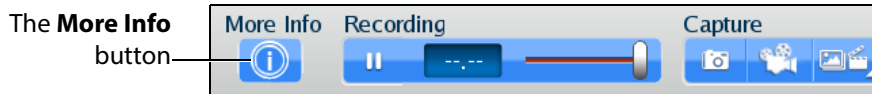


The **More Info** button

*The Pathologies Window*

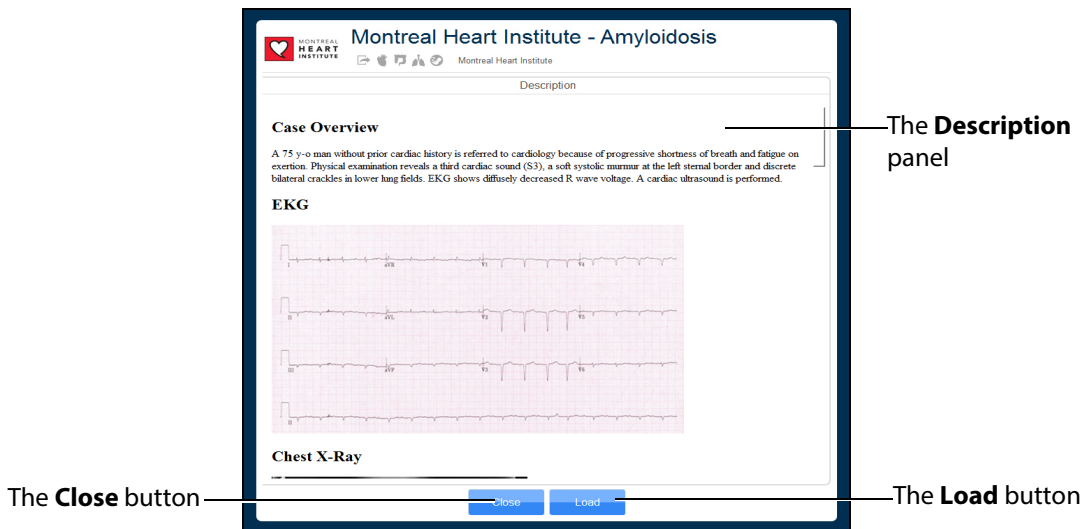
- Click the **More Info** button to access supporting content prior to loading the pathology.

OR After loading the pathology, click the **More Info** button near the top of the loaded pathology screen.



**The More Info Button on a Loaded Pathology**

The More Information window appears.



**The More Information Window**

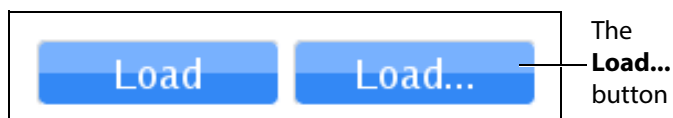
The **Description** panel contains an overview description of the pathology and other relevant information, such as clinical reports and case images.

- From the More Information window, click the **Load** button to load the pathology.  
If the pathology is already loaded, the **Load** button is disabled.
- Click the **Close** button at the bottom of the Information window to close the Information window, .

## Selecting Modalities

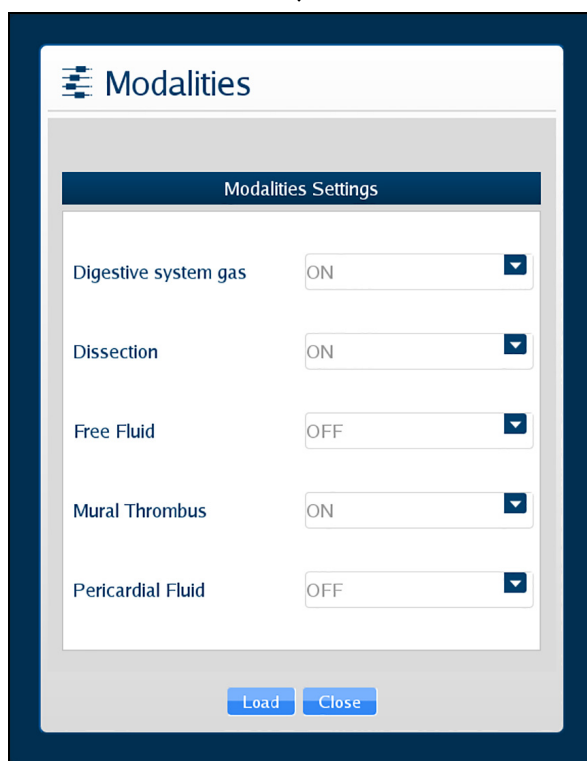
Certain cases (like the AAA Pathology<sup>+</sup> Package cases) offer the option to turn Modalities ON or OFF.

Select the **Load...** button when loading a case to turn modalities ON or OFF.



**The Load Modalities Option**

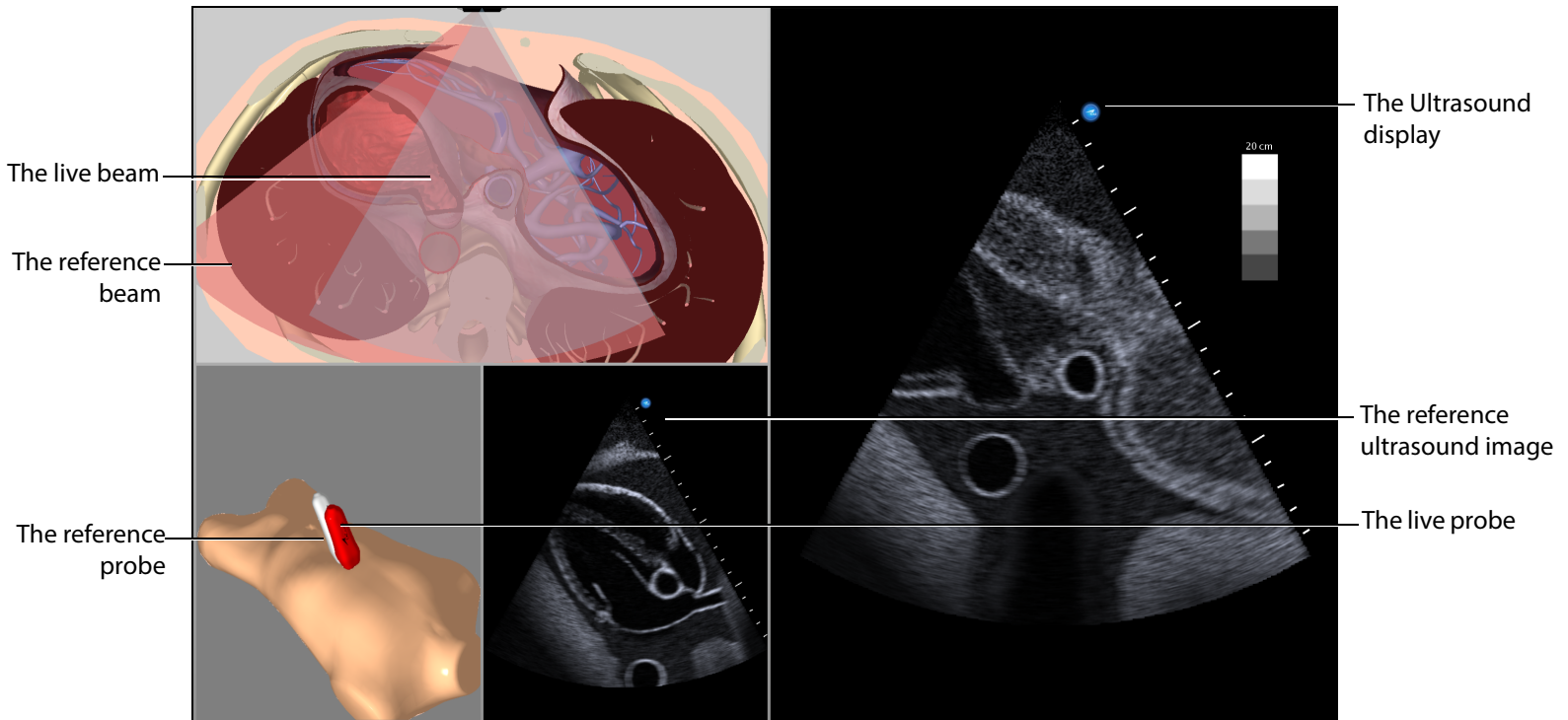
After loading the case (during imaging), click the modalities icon to access the **Modality Settings** window and turn modalities ON or OFF.



**The Modalities Icon and Settings Window**

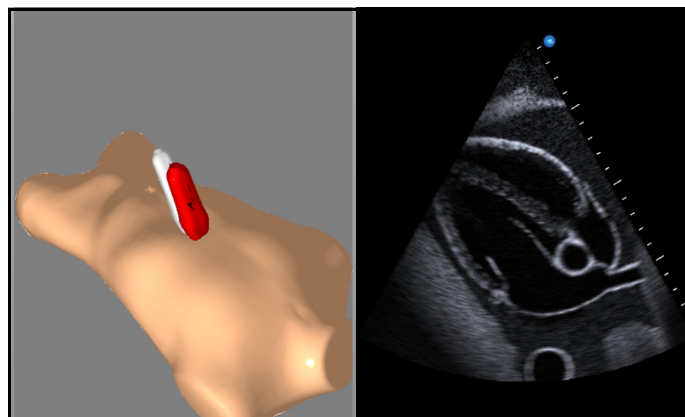
## Using Target Cut Planes

Target cut planes (TCP) are reference views that learners can use to mimic correct probe positioning. Instructors can select a pre-existing TCP or create a new TCP on any case.



***The Target Cut Plane Screen Features***

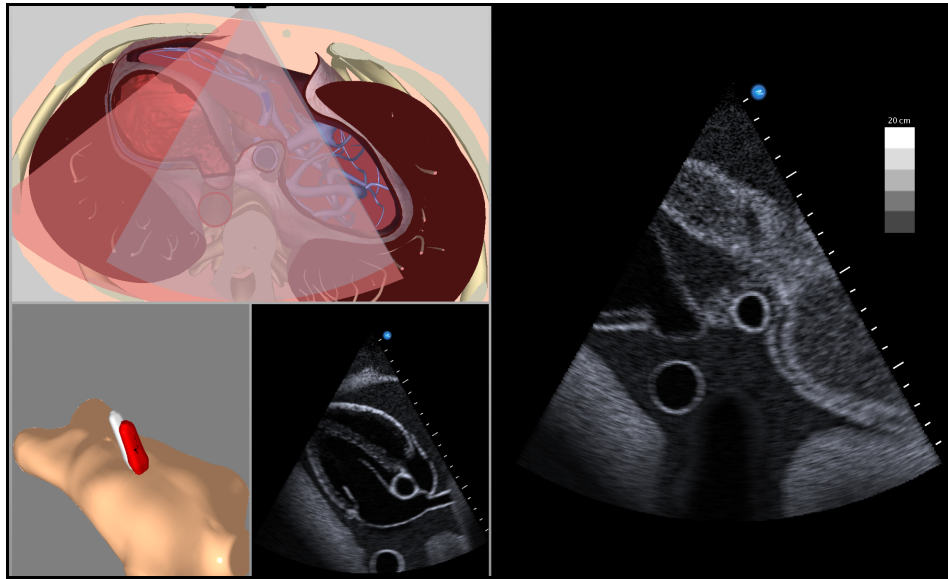
When a TCP is loaded, two additional displays appear: the mannequin placement display and the reference ultrasound image display.



***The Mannequin Placement and Reference Ultrasound Image Displays***

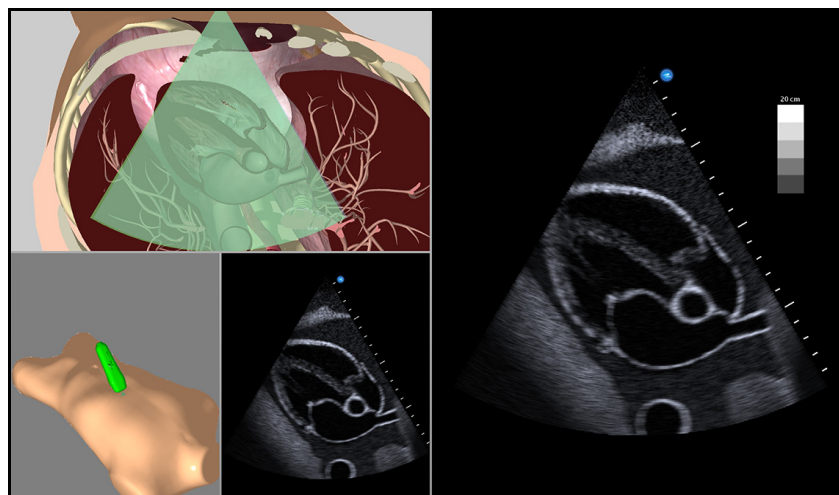


In the AR Display, the red reference ultrasound beam identifies the cut plane the learner must achieve. The ultrasound beam on the AR display and the live ultrasound image display the cut plane of the live probe. The live ultrasound beam on the AR display and the live probe change color based on their proximity to the target. When they are far from the target, they appear red. As the beam moves closer to the target, the beam and probe change from red to reddish-brown to greenish-brown to solid green.



***The Target Cut Plane Screen***

Once the user achieves the target cut plane, the ultrasound beams align and turn green.



***An Achieved Target Cut Plane***

The Vimedix simulator includes a metrics feature that allows users to load TCPs and assess their competency by recording the coordinates of their probe positioning and various parameters during the TCP. This data is compiled in an exportable spreadsheet.






For more information on the metrics parameters, see *Metrics Parameters*.

### Target Cut Planes Panel Buttons

Target cut planes are learning tools designed to allow learners to practice techniques in the absence of an instructor. The **Target Cut Planes** panel has three buttons: **Stop Metrics** button, **New** button and the **TCP Menu** button. By clicking the **New** button, the user creates the target cut plane from the current probe position. By clicking the **TCP Menu** button, the user can load a TCP and record metrics.

Target cut plane metrics are used to record a learner’s actions during a target cut plane exercise.

Target Cut Planes Panel Buttons	
	<p>The <b>New</b> button saves the current position of the probe to create a Personal target cut plane.</p>
	<p>The <b>TCP Menu</b> button opens the Target cut plane window where users can access Base or Personal TCPs.</p>
	<p>The <b>Stop Metrics</b> button allows users to stop recording metrics after starting a metrics session from the Target cut plane window.</p>

### Creating a Target Cut Plane

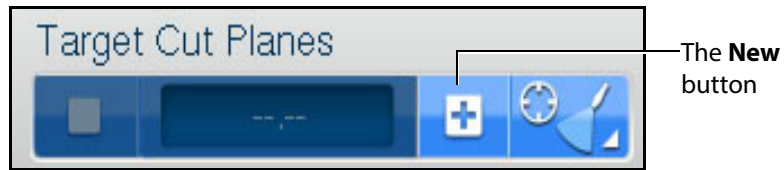
Users can create personal TCPs that are saved with the loaded pathology under the **Personal** tab in the Target cut planes window.

**NOTE:** A user-created or Personal TCP is only valid for the pathology that was loaded during its creation.

To create a Personal TCP:

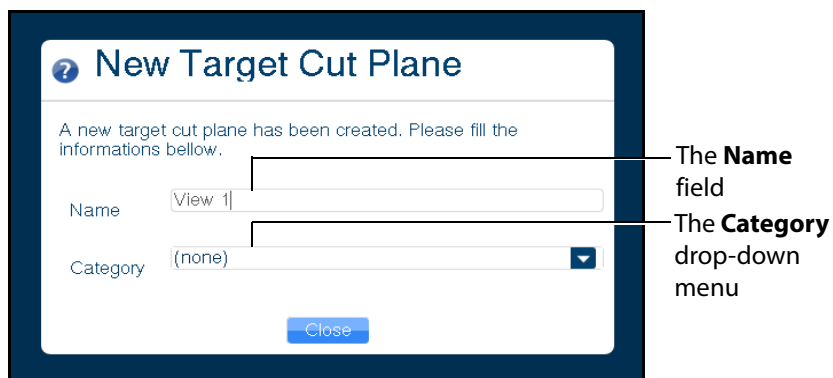
1. Select a pathology, if desired.
2. Position the probe on the mannequin to obtain the desired view in the Ultrasound and AR displays.

3. From the **Target Cut Planes** panel, click the **New** button.



**The Target Cut Planes Panel**

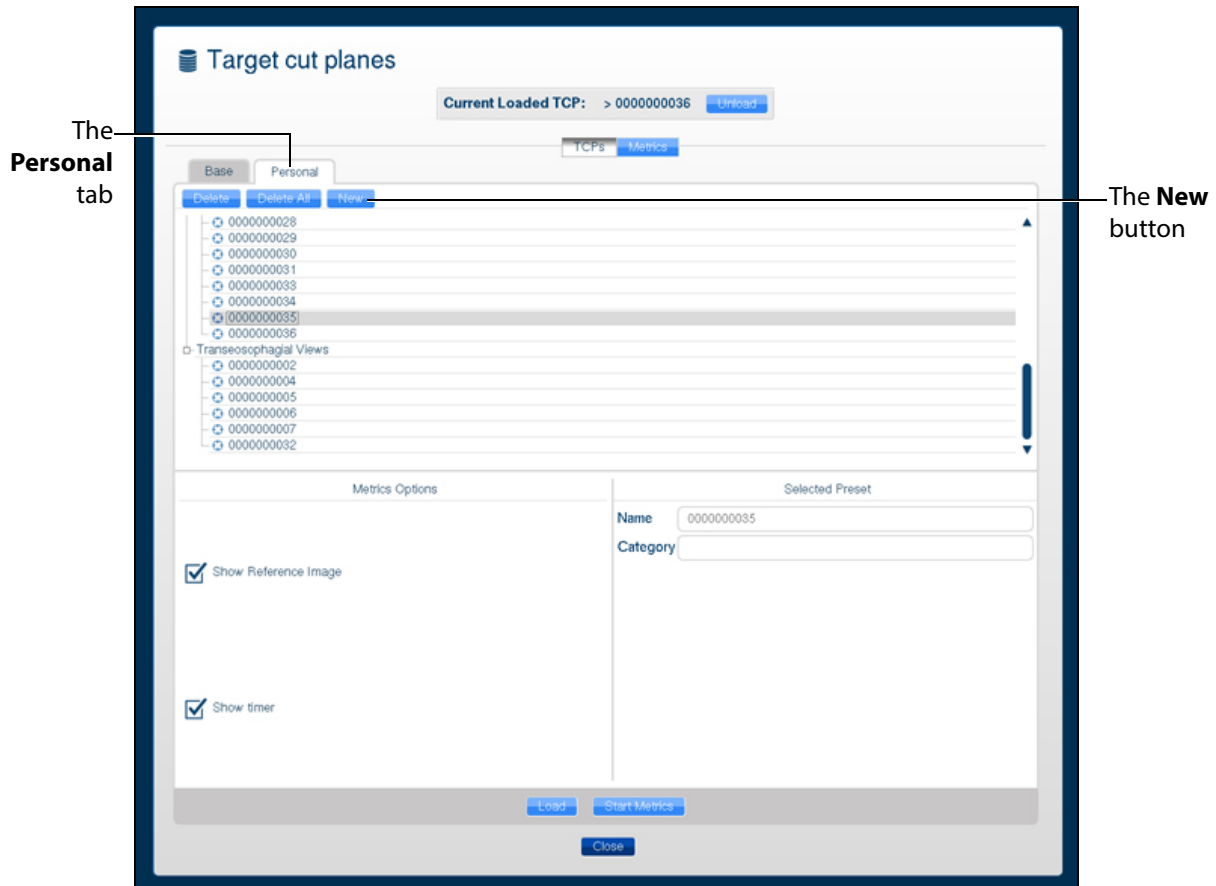
The New Target Cut Plane window appears. By default, the name is a 10-digit auto-generated number and the TCP category is none.



**The New Target Cut Plane Window**

4. Enter the desired name of the new target cut plane in the **Name** field and select a category from the **Category** drop-down menu, if desired.
5. Click the **Close** button to save the entry.

**NOTE:** Users can also create a personal TCP from the Target cut planes window by clicking on the **Personal** tab and clicking the **New** button located above the list of available personal TCPs.



**The Target Cut Planes Window**

The TCP is created and available in the **Personal** tab in the Target cut planes window.

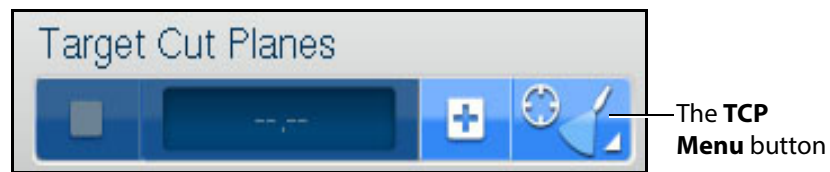
## Loading a Target Cut Plane

Users load existing TCPs to practice achieving specific probe positions and ultrasound views.

**NOTE:** The Vimedix simulator comes with pre-existing TCPs for the Normal pathology using the TTE probe only.

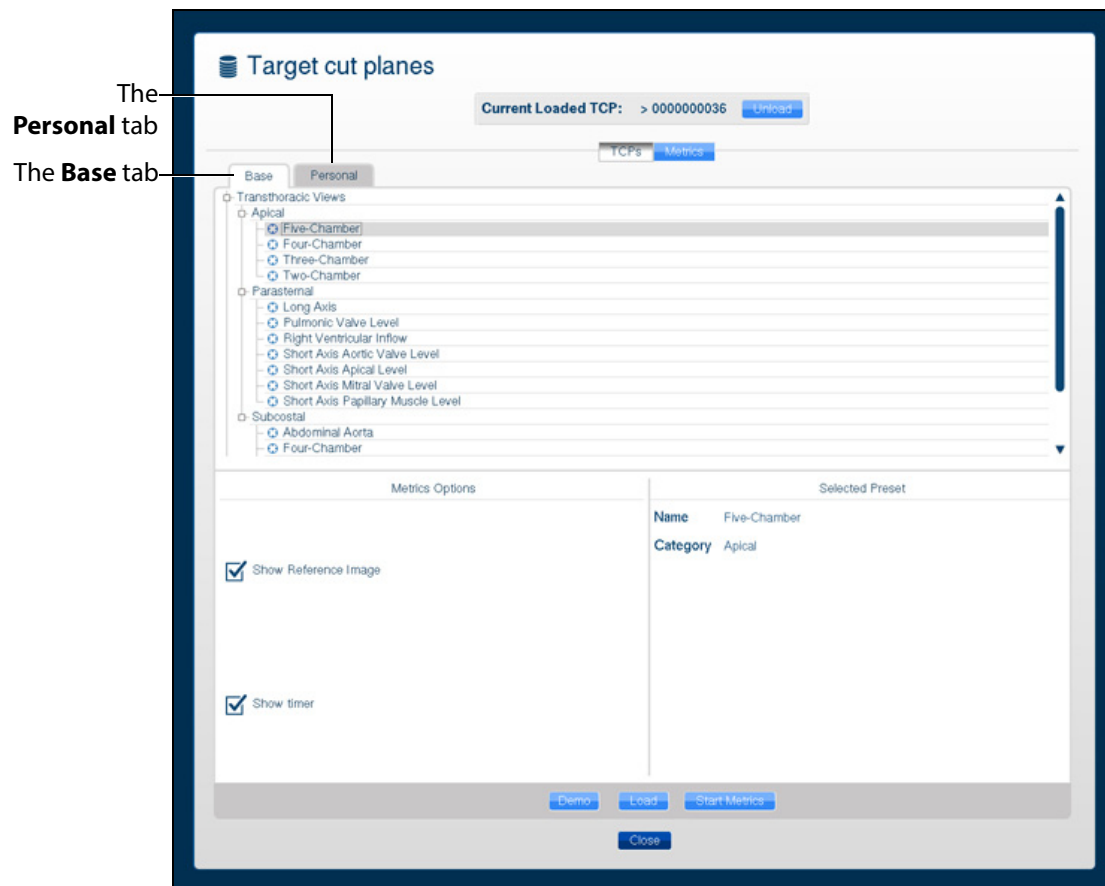
To load a TCP:

1. Click the **TCP menu** button.



**The Target Cut Planes Panel**

The Target cut planes window appears.

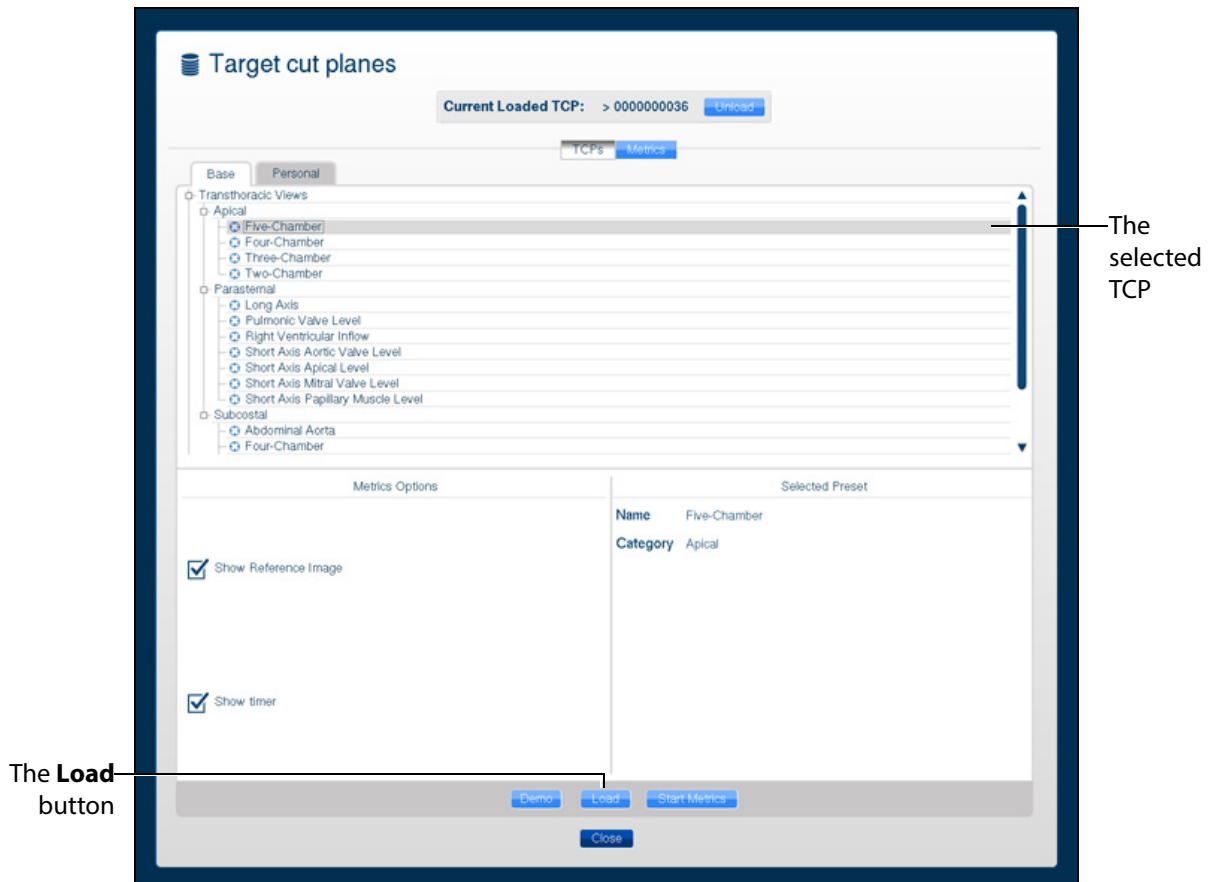


**The Target Cut Planes Window**

- In the Target cut planes window, select the **Base** or **Personal** tab, depending on the type of target cut plane to be loaded.

The available TCPs are listed.

- Select the TCP to load from the list.



**The Target Cut Planes Window**

- Click the **Load** button to launch the TCP.

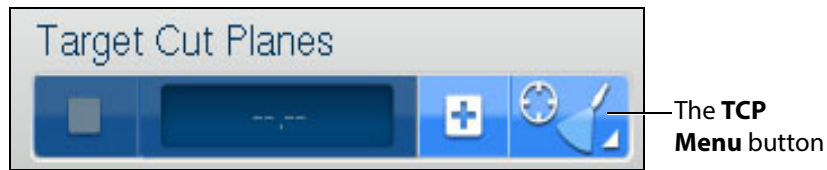
The TCP is loaded.

## Loading Multiple Target Cut Planes

Users can load multiple TCPs to practice achieving specific probe positions and ultrasound views in succession in the same manner a trained sonographer performs an ultrasound exam.

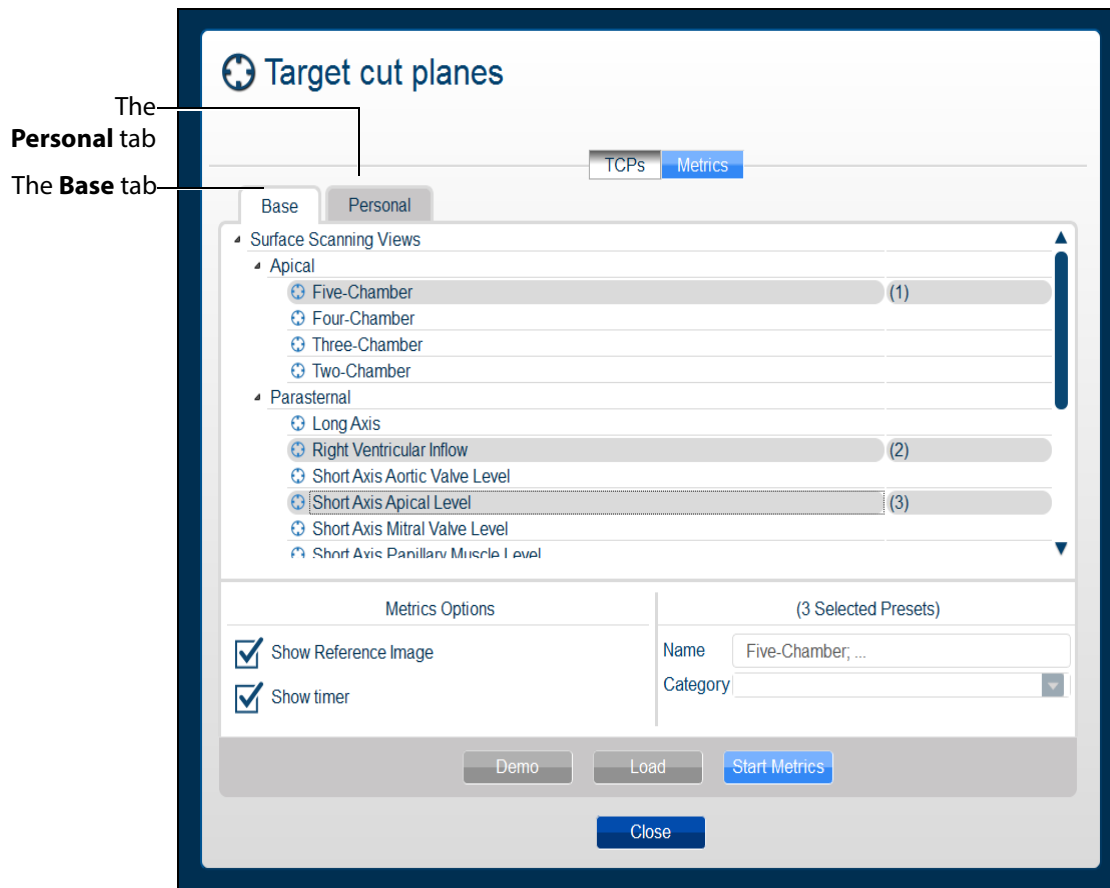
To load multiple TCPs:

1. Click the **TCP menu** button.



**The Target Cut Planes Panel**

The Target cut planes window appears.



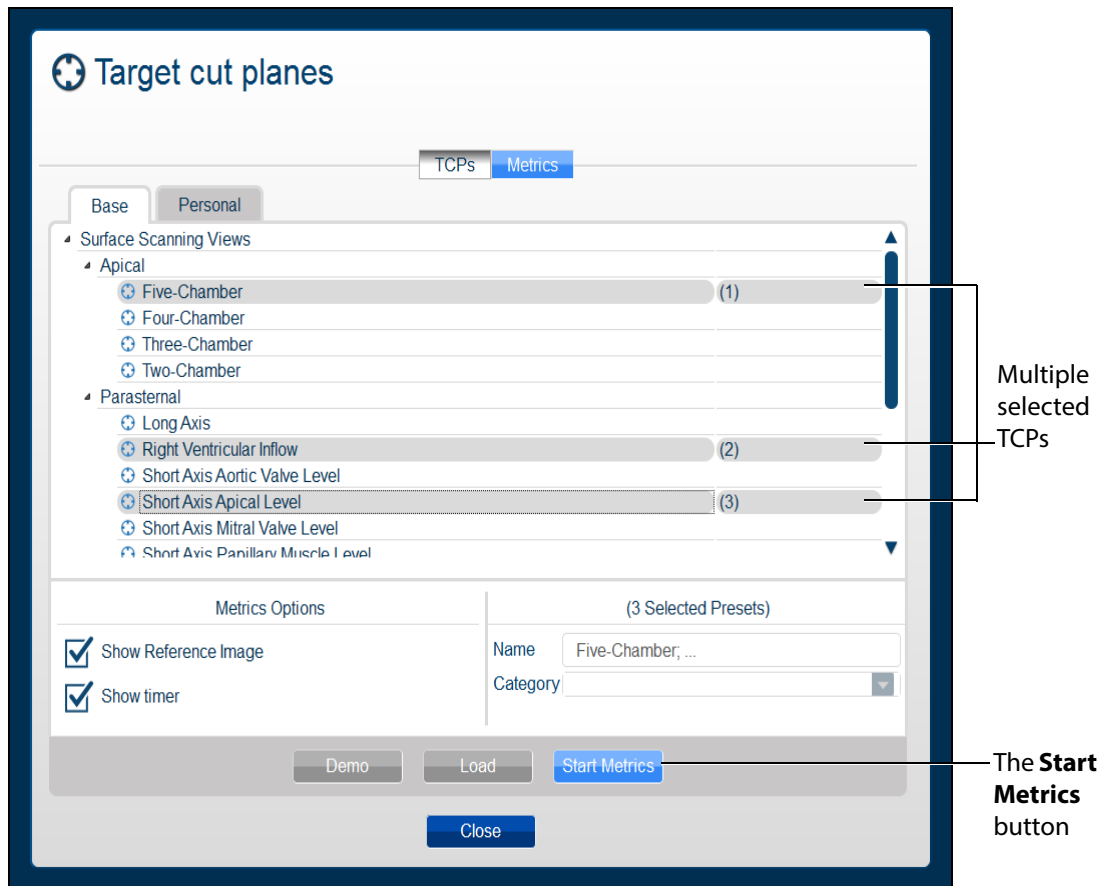
**The Target Cut Planes Window**

2. In the Target cut planes window, select the **Base** or **Personal** tab, depending on the type of target cut plane to be loaded.

The available TCPs are listed.

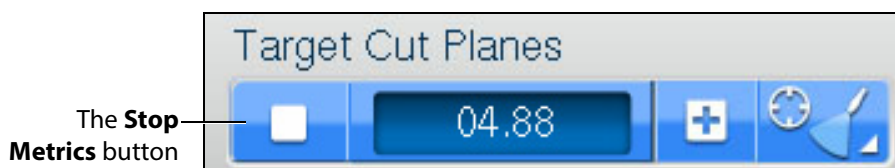
3. Select the TCPs to load from the list by holding down the CTRL key on the keyboard and selecting multiple TCPs.

**NOTE:** Users can select a combination of TCPs from both the **Base** and **Personal** tabs using the CTRL key and navigating between tabs.



**The Target Cut Planes Window**

4. Click the **Start Metrics** button to launch the first TCP.  
The first TCP loads and the Metrics begin recording activity.
5. Click the **Stop Metrics** button in the Target Cut Planes panel or press the **Enter** key on the keyboard to move on to the next TCP.



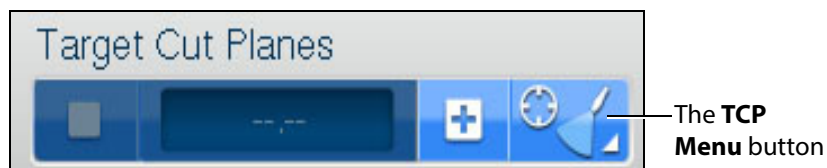
**The Target Cut Planes Panel**

For more information on stopping metrics, see *Stopping Metrics*.

## Unloading a Target Cut Plane

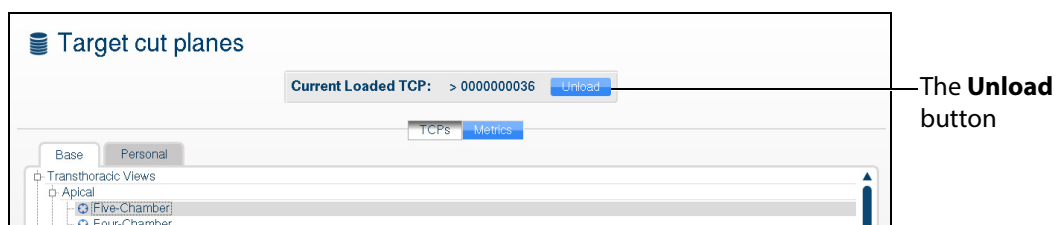
To unload a current TCP and return to the standard view:

1. Click the **TCP menu** button in the **Target Cut Planes** panel.



**The Target Cut Planes Panel**

The Target cut plane windows appears.



**The Target Cut Planes Window**

2. In the Target cut planes window, click the **Unload** button.

The TCP is unloaded.

## Using Metrics

TCP Metrics is a feature used to assess the performance of a learner trying to match a reference cut plane. When a user clicks the **Start Metrics** button, the TCP display appears and a timer is activated. The timer is a measurement tool to record the length of time learners take to achieve a TCP. The Metrics feature also records the coordinates and other parameters from the learner's probe use during the TCP.

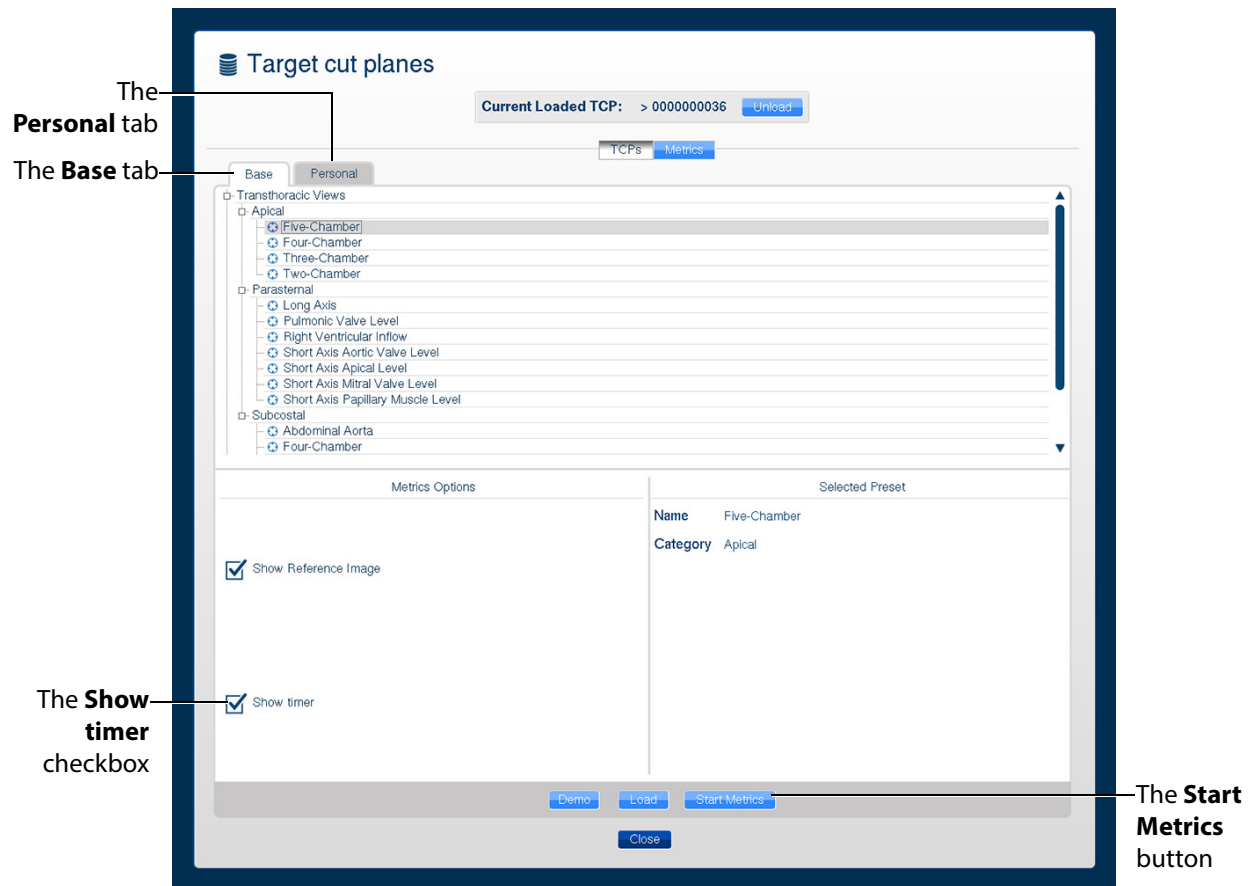
For more information on the metrics parameters, see *Metrics Parameters*.



## Starting Metrics

To record the metrics of a TCP:

1. Click the **TCP menu** button located in the **Target Cut Planes** panel.  
The Target cut planes window appears.



**The Target Cut Planes Window**

2. Select the desired TCP from the **Base** or **Personal** tabs.
3. From the **Metrics Options** panel, users can select the **Show timer** checkbox.

When selected, the timer in the **Target Cut Planes** panel will start running after the user clicks the **Start Metrics** button.

4. Click the **Start Metrics** button to load the TCP and begin the timer for the user to achieve the TCP.

The metrics timer begins.

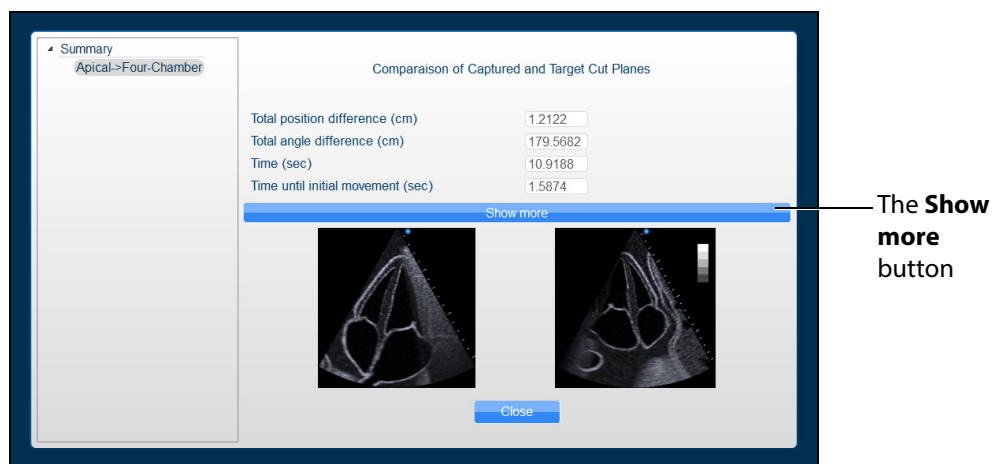
## Stopping Metrics

To stop the timer during a TCP metrics session, click the **Stop Metrics** button located in the **Target Cut Planes** panel or press the **Enter** key on the keyboard.



**The Target Cut Planes Panel**

The Metrics Summary window appears.



**The Metrics Summary Window**

This window displays the completed target cut planes, a summary of the basics metrics and a comparison of the capture and target cut planes. Users can choose to see additional parameters by clicking the **Show more** button in the Metrics Summary window.

An expanded list of metrics appears.

Summary  
Apical->Four-Chamber

Comparison of Captured and Target Cut Planes

Total position difference (cm)	1.2122
Total angle difference (cm)	179.5682
Time (sec)	10.9188
Time until initial movement (sec)	1.5874
Total distance travelled (cm)	42.1478
Total angular movement (degree)	129.1827
Number of acceleration from Rest	18
Lateral(x) Position difference (cm)	-0.5456
Longitudinal(y) position difference (cm)	-0.2454
Anteroposterior(z) position difference (cm)	-1.0542
Roll difference (degree)	176.8761
Pitch difference (degree)	89.8862
Yaw difference (degree)	52.2739
Beam depth of field difference (cm)	4.0000
Beam angle difference(degree)	0.0000

Show less

Close

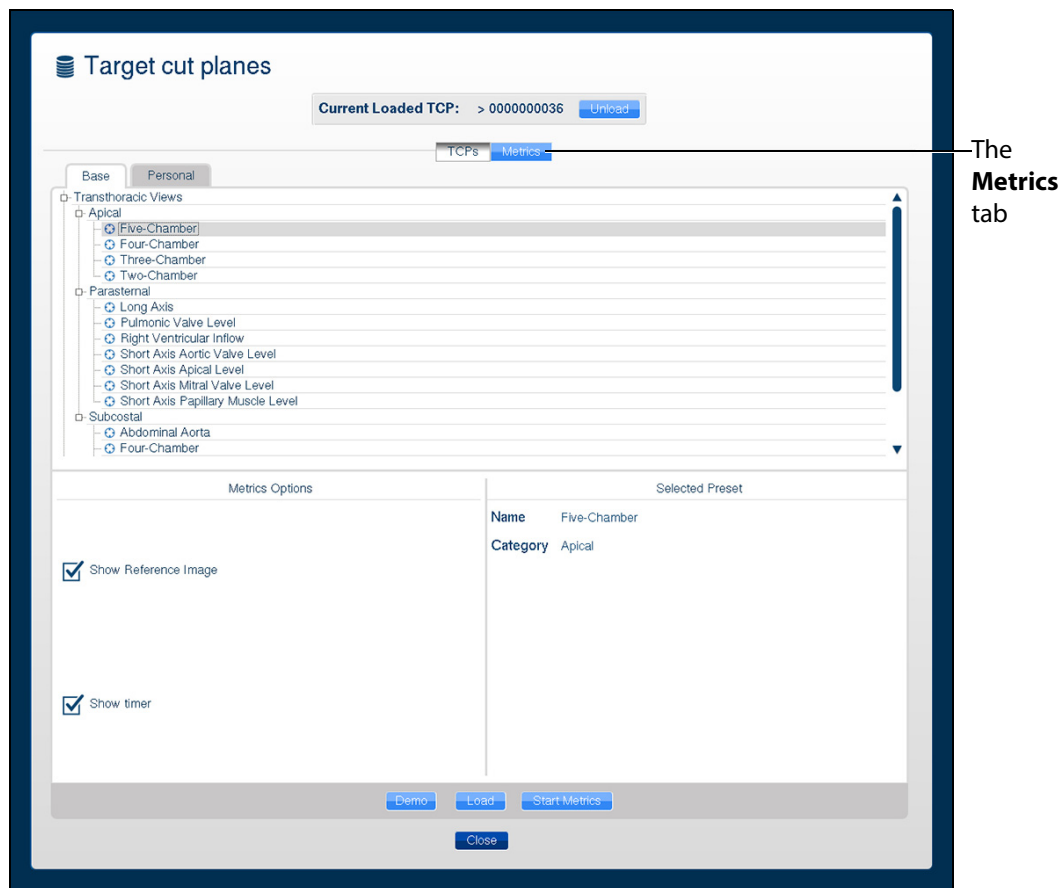
**The Metrics Summary Window**

## Reviewing Metrics

Users can review the last probe position and the images that were last displayed during a metrics session by using the metrics review feature.

To review the metrics:

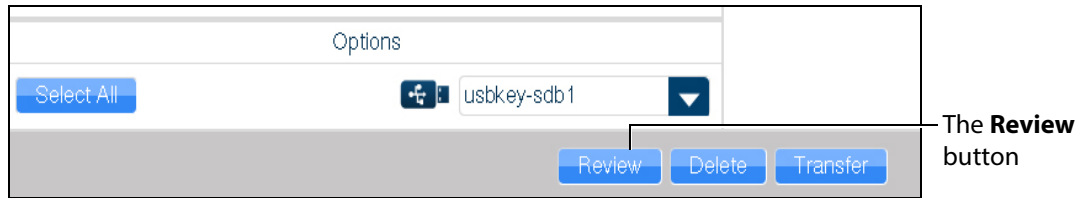
1. Click the **TCP and Metrics menu** button located in the **Target Cut Planes** panel. The Target cut planes window appears.



**The Target Cut Planes Window**

2. Click on the **Metrics** tab.  
The Metrics list displays.
3. Select the desired metrics from the list to review.

- Click the **Review** button.



**The Metrics Tab**

The interface shows the last image recorded during the metrics session in the reference ultrasound image display.

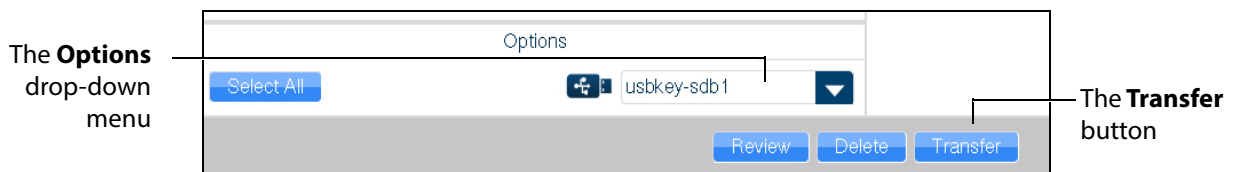
The AR and Ultrasound displays show the view from the current probe position. The mannequin placement display shows last probe's position and orientation during the metrics sessions in comparison to current probe's position and orientation.

## Exporting Metrics

All the captured metrics can be exported using a USB storage device.

To transfer the metrics to a USB storage device:

- Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Metrics** tab.
- From the Available metrics list, select the metrics session to be exported or click the **Select All** button to select all metrics sessions.
- Click the **Transfer** button.

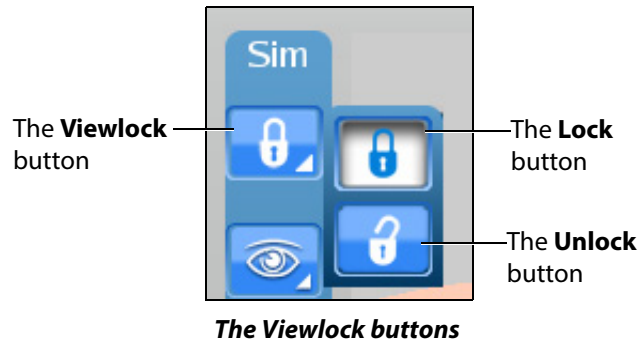


**The Metrics Tab**

**IMPORTANT:** Once metrics are transferred to a USB storage device, the sessions are **deleted** from the Vimedix simulator and **cannot** be recovered.

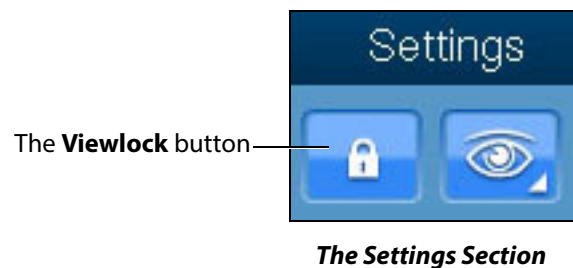
## Using the View Lock Feature

Click the **Viewlock** button, located in the Simulation panel to lock or unlock the view. The view lock is activated by default.



**NOTE:** When using the expanded toolbar view, click the **Viewlock** button one time to deactivate/unlock the viewlock.

Settings section of the **Simulation** panel to activate or deactivate the view lock feature.



When the view lock is activated, the AR and Ultrasound displays are always synchronized.

When view lock is deactivated, the AR display can be manipulated by using the mouse. In this case, the Ultrasound and AR displays provide different perspectives of the structures.

## Modifying the Structures Visibility

Users can hide structures from view during a training by modifying the checkboxes in the Structures Visibility window.

To modify structures visibility:

1. Click on the **Structures Visibility** button located in the **Simulation** panel.



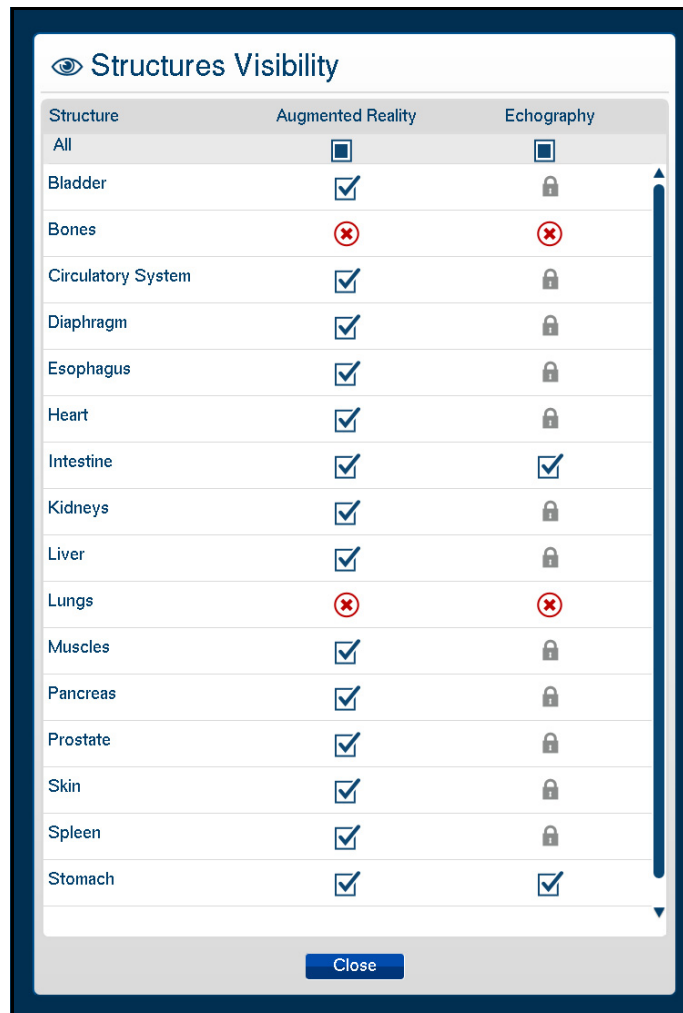
*The Structures Visibility Button*

**NOTE:** When using the expanded toolbar view, click the Structures Visibility button located in the Settings section of the Simulation panel.



*The Settings Section*

The Structures Visibility window appears.



**The Structures Visibility Window**

2. Uncheck the boxes in the left column to remove structures from the AR display.
3. Uncheck the boxes in the right column to remove artifacts from the Ultrasound display.

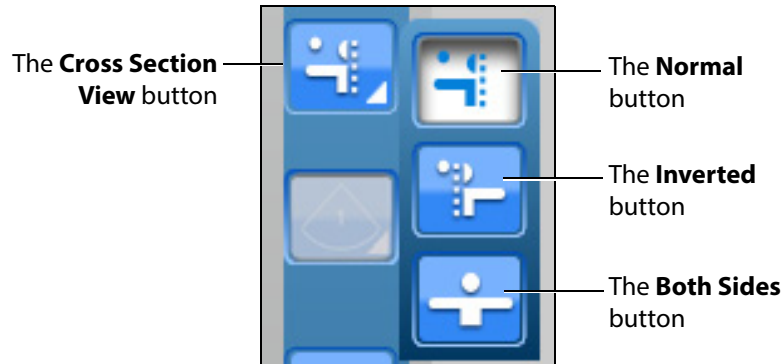
**NOTE:** Some structures cannot be removed from the Ultrasound display. These structures are denoted by a lock symbol.

4. Click the **Close** button to apply the changes and exit the Structures Visibility window.



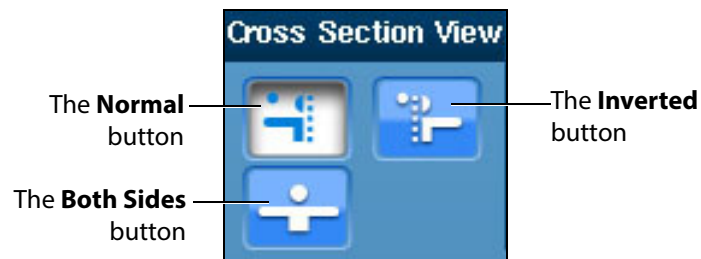
## Selecting a Cross Section View

Using the **Cross Section View** button, users can select the desired cross section view from the available options.



*The Cross Section View Options*

**NOTE:** When using the expanded toolbar view, click the desired cross section button located in the Cross Section View section of the Simulation panel.



*The Cross Section View Section*

The **Normal** button enables the Normal cut plane view. By default, the cross section view is set to Normal upon simulator startup.



*The Normal Cross Section Button*

The **Inverted** button enables the Inverted cross section view.



*The Inverted Cross Section Button*

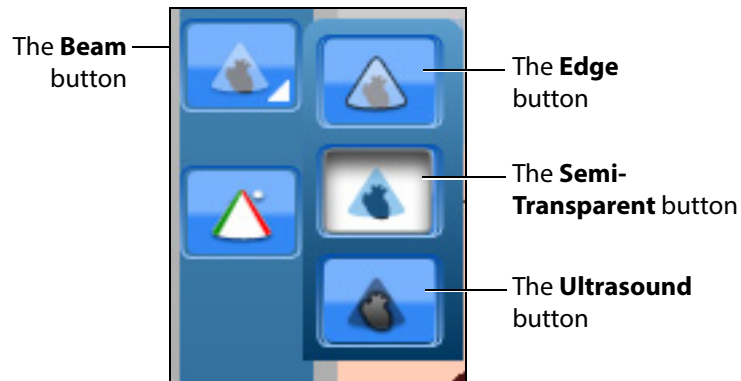
The **Both Sides** button disables the cross section view in the AR display.



*The Both Sides Cross Button*

## Selecting the Beam Type

Using the **Beam** button, users can choose from three available beam options. The selected beam determines how the ultrasound beam appears on the AR display. Click on the desired beam button to select the beam type.



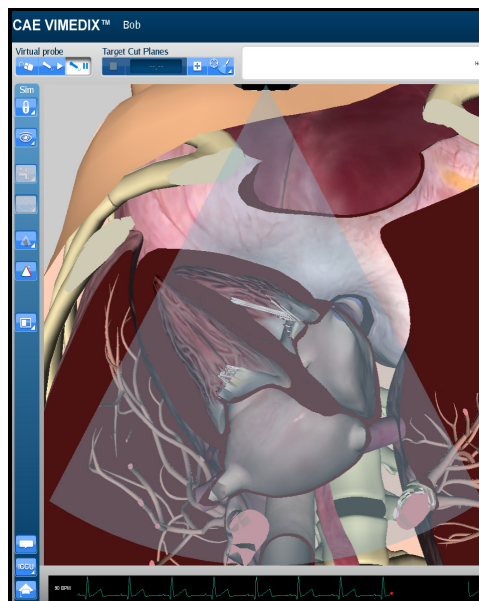
*The Beam Type Options*

**NOTE:** When using the expanded toolbar view, click on the appropriate beam button in the **Beam** section, located in the **Simulation** panel.



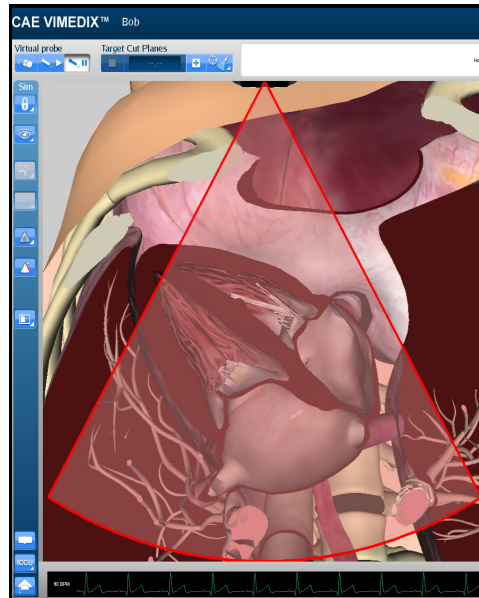
*The Beam Section*

The default AR beam is **Semi-Transparent**.



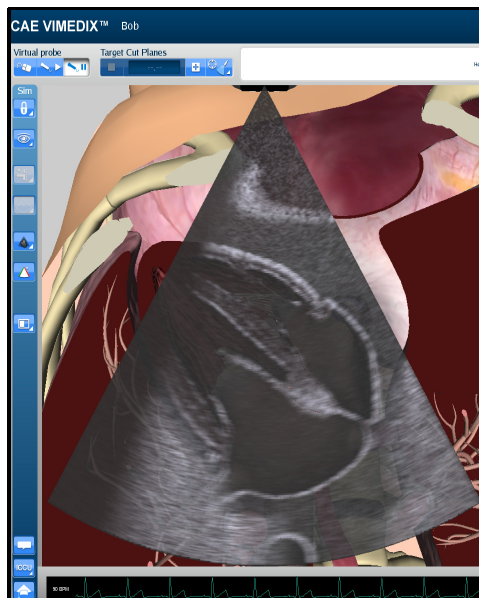
*A Semi-Transparent AR Beam*

The Edge AR beam is similar to the Semi-Transparent AR beam, but includes a red line around the edge of the ultrasound beam.



*An Edge AR Beam*

The **Ultrasound** AR beam displays the structures within the ultrasound beam using an ultrasound view.

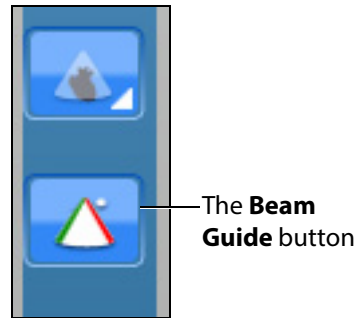


*An Ultrasound AR Beam*

## Using the Beam Guide

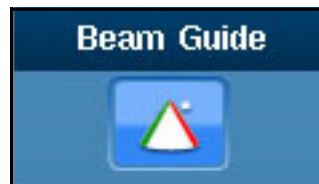
The beam guide allows users to identify the orientation of the beam using red and green lateral borders.

To activate the cut plane guide, click the **Beam Guide** button located in the **Simulation** panel



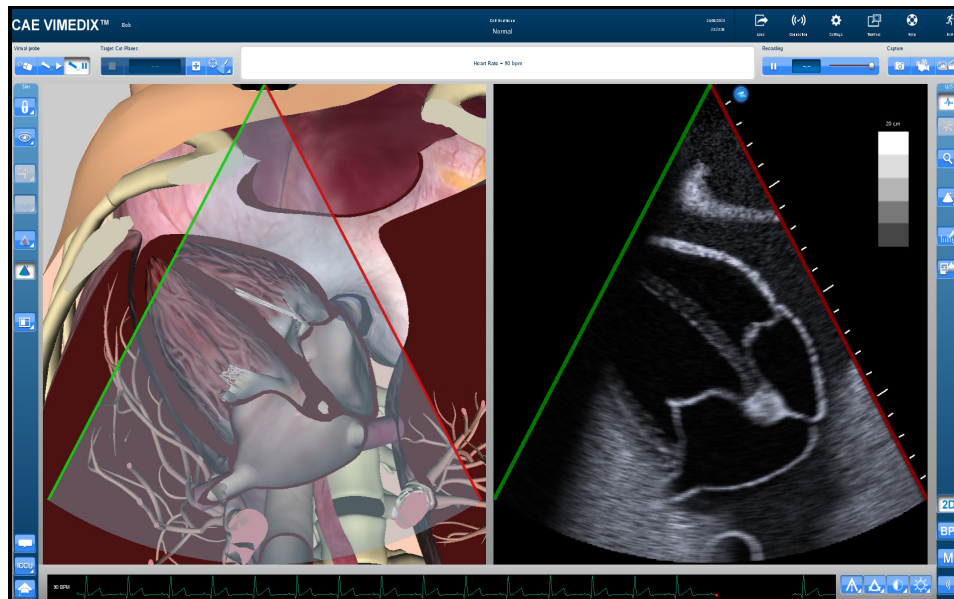
*The Beam Guide Button*

**NOTE:** When using the expanded toolbar view, click on the appropriate beam button in the **Beam Guide** section, located in the **Simulation** panel.



*The Beam Guide Section*

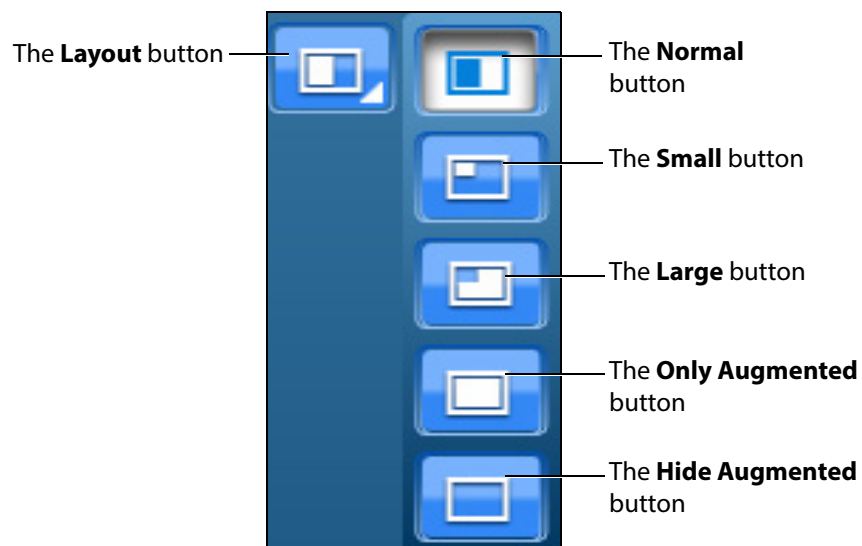
The green and red borders appear to show the user the orientation of the beam.



*The Activated Beam Guide*

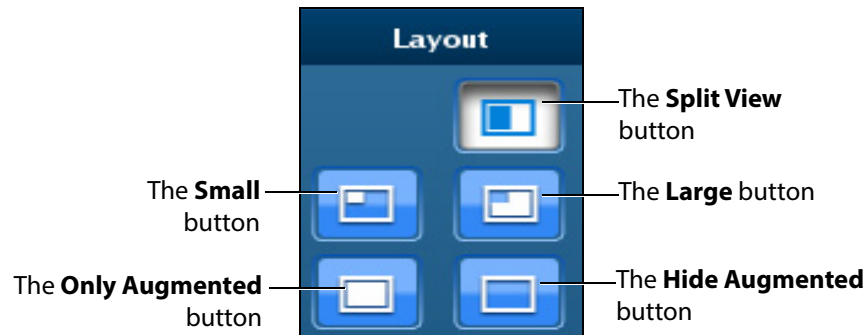
## Changing the Display Layout

Using the **Layout** button, users can select the desired display layout from the available options.



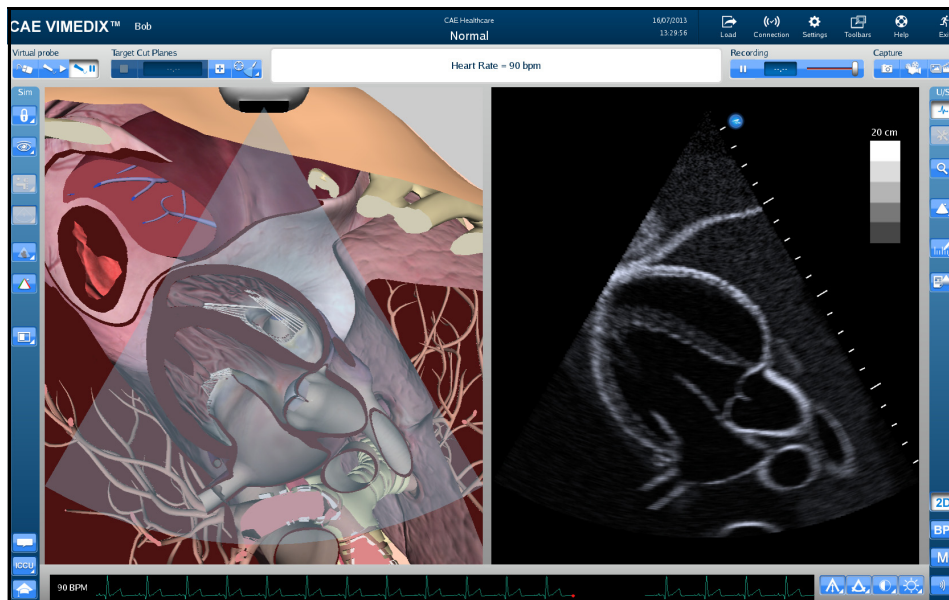
*The Layout Options*

**NOTE:** When using the expanded toolbar view, click the desired layout button located in the Layout section of the Simulation panel.



**The Layout Section**

The Split View button adjusts the interface to show the both AR and Ultrasound displays evenly.

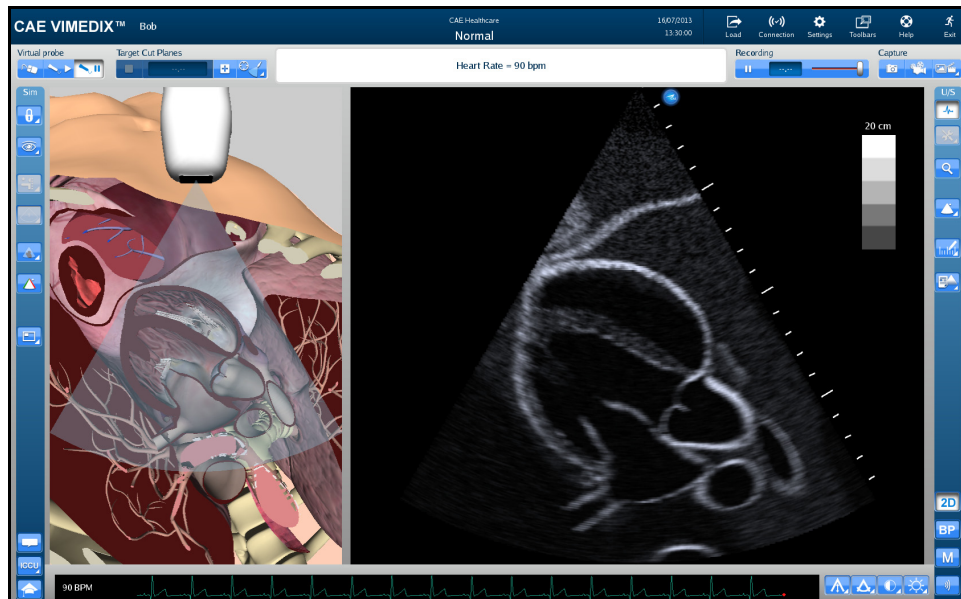


**The Split View Display Mode**

By default, the interface is in Split View upon simulator startup. The default view on startup can be changed in the simulator settings.

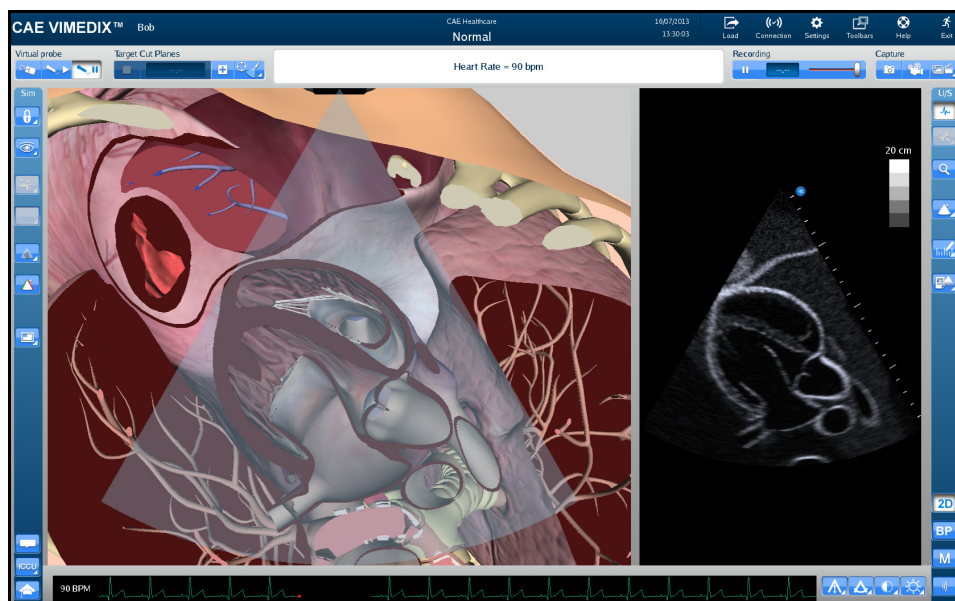


The **Small** button adjusts the interface to a smaller AR display and a larger Ultrasound display.



*The Small Display Mode*

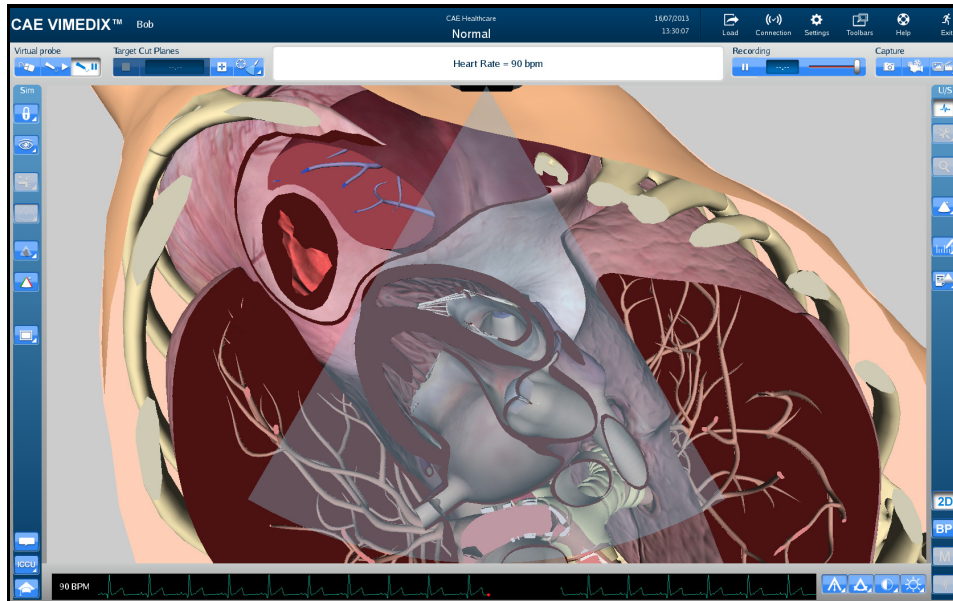
The **Large** button displays a larger AR display and a smaller Ultrasound display.



*The Large Display Mode*

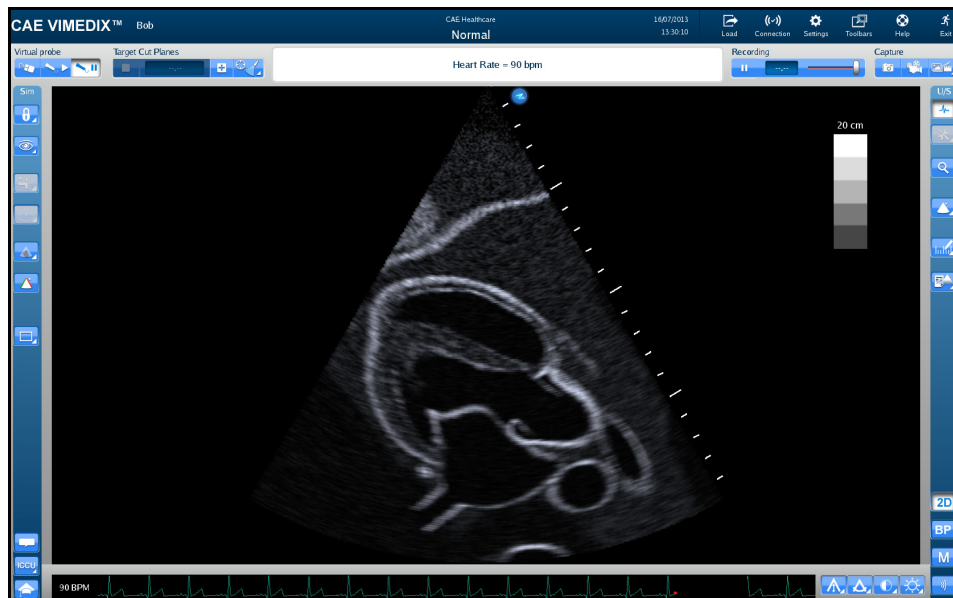


The **Only augmented** button expands the AR display and removes the Ultrasound display.



*The Only Augmented Display Mode*

The **Hide augmented** button expands the Ultrasound display and removes the AR display.



*The Hide Augmented Display Mode*

## Using the Tutorial Feature

The tutorial feature helps users identify anatomical structures on the AR display.

To use the tutorial feature:

1. Obtain a view of the AR display using the probe.  
**NOTE:** To freeze the view while using the tutorial mode, click the **Probe pause** button located in the **Virtual Probe** panel or press the spacebar on the keyboard.
2. Click the **Tutorial** button on the left side of the screen at the bottom of the **Simulation** panel.



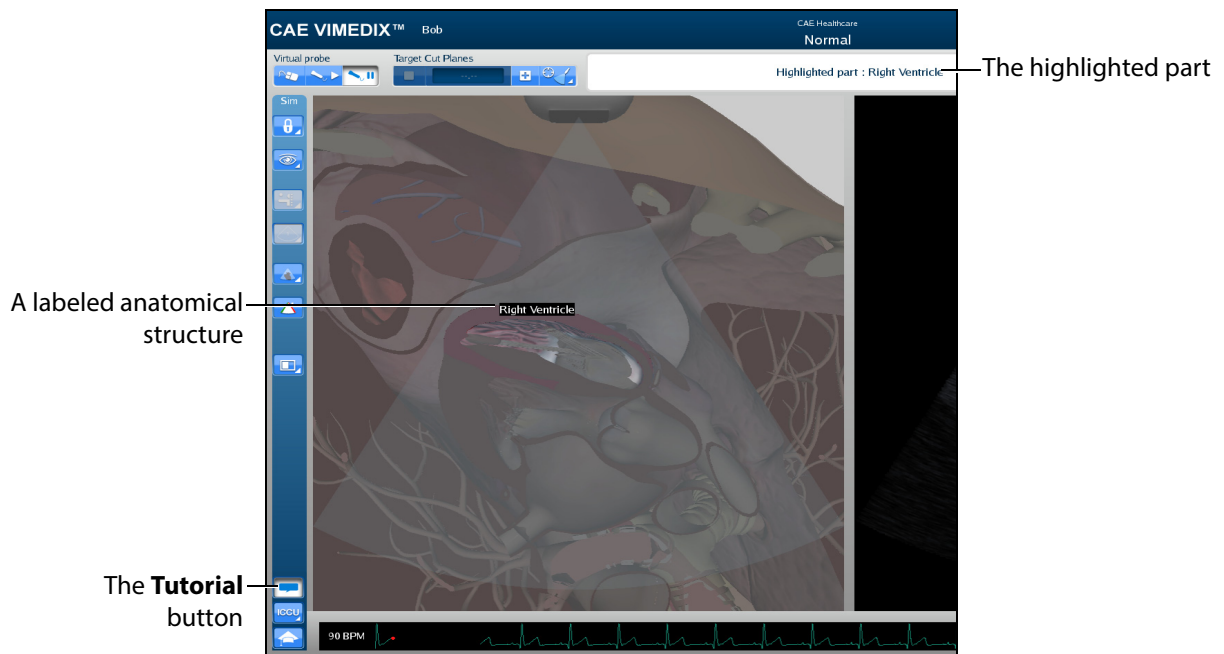
**NOTE:** When using the expanded toolbar, the **Tutorial** button is located in the Tutorial section of the **Simulation** panel.



**The Tutorial Section**

3. Hover over the anatomical structures on the AR display using the mouse.

As the mouse scrolls over each structure, the name of the structure appears near the top of the screen.



**The AR Display**

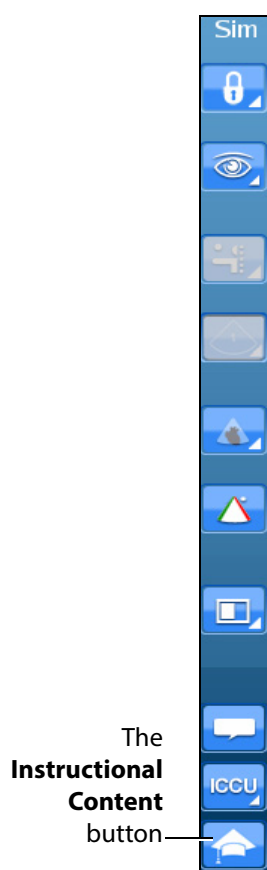
4. To exit the tutorial mode, click the **Tutorial** button again.

## Using the Instructional Content Feature

The Instructional Content feature allows users to engage in self-directed learning on the simulator through a range of tasks covering several disciplines and skill areas. Tasks include probe manipulation, obtaining standard views, optimizing image settings, and performing measures. Task results are provided when all tasks are completed.

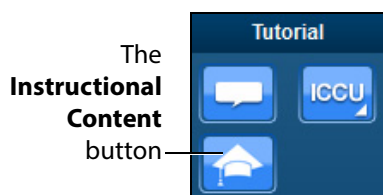
To use the instructional content feature:

1. Click the **Instructional Content** button



*The Simulation Panel*

**NOTE:** When using the expanded toolbar, the **Instructional Content** button is located in the Tutorial section of the **Simulation** panel.



*The Tutorial Section*

The Instructional Content menu window opens.



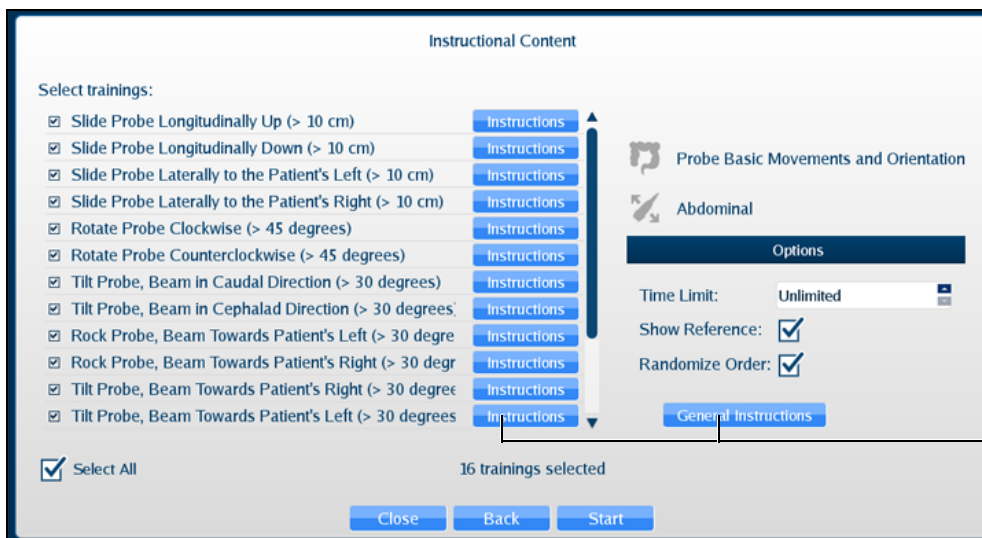
**The Instructional Content Menu Window**

2. Under the Domain column, select the desired applicable discipline.
3. Under the Type column, select the desired type.

**TIP:** Additional information about the selected exercise Type is shown under the Trainings column.

4. Click Next.

The Task menu window appears.



**The Instructional Content Task Menu Window**

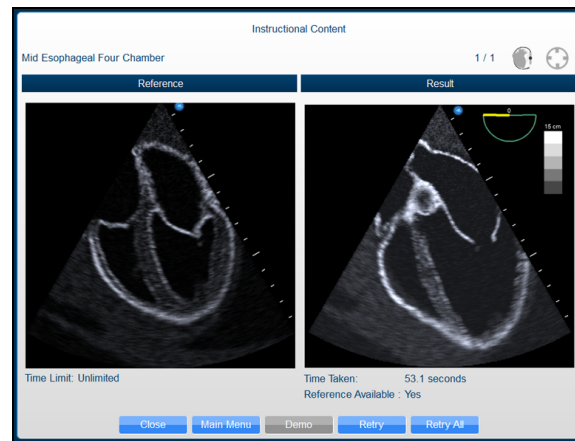
By default, all tasks are checked. Check or uncheck desired tasks.

Click **Instructions** for additional task descriptions.

Adjust additional parameters under **Options** as desired.

- When ready, click **Start**.
- Follow the on-screen instructions to complete the task. Instructions are also located near the top of the screen where the heart rate is usually located.

When all tasks are completed, the Results window appears. (Clicking the Instructional Content button or pressing the Enter key will also end the tasks and display the results.)



### The Results Window Samples

Depending on the type of task, the Results window allows you to view a Demo, How-To instructions, Retry, return to Main Menu, or Close and exit tasks.

## Adjusting the Heart Rate

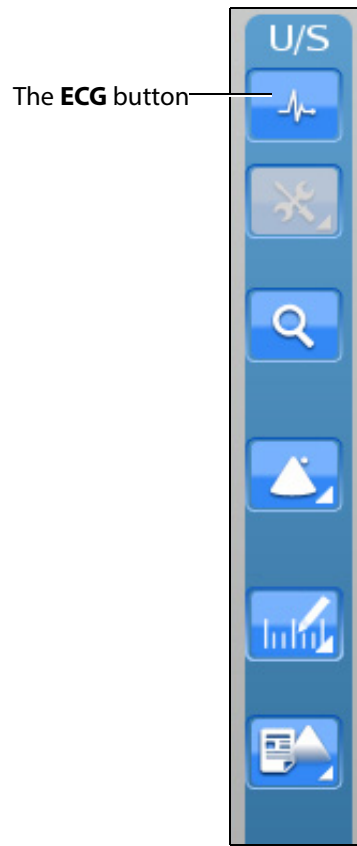
Users can adjust the Heart Rate in different cases to the appropriate rate for a training session. The default Heart Rate during Normal Heart is set to 90 beats per minute (bpm). The default for a tamponade case is 120 bpm.

To adjust the Heart Rate:

- Click the **Page Up** key on the keyboard to increase the Heart Rate by increments of 5 beats per minute
- Click the **Page Down** key on the keyboard to decrease the Heart Rate by increments of 5 beats per minute

## Using the ECG Tracing

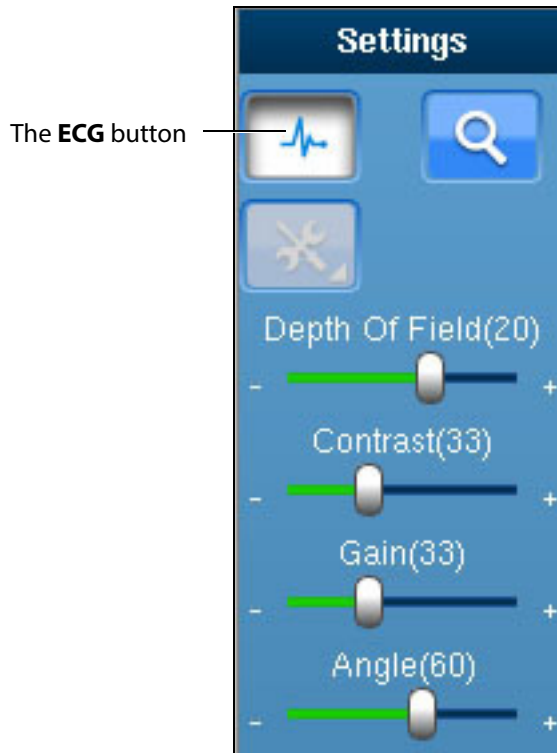
The **ECG** button is used to enable or disable the ECG tracing on the bottom of the screen. ECG tracing is enabled by default upon startup.



***The Ultrasound Panel***

The featured ECG is a normal ECG and it will be disabled in some non-applicable cases.

**NOTE:** When the expanded toolbar is activated, the ECG button appears in the Settings section of the Ultrasound panel.



**The ECG Button**

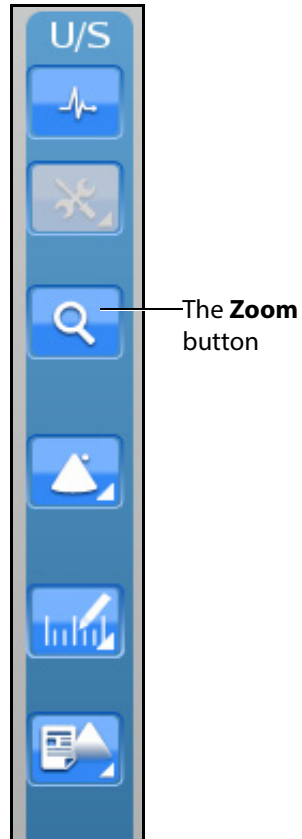


## Using the Zoom Feature

The Zoom button allows the user to zoom in on a specific area of the Ultrasound image.

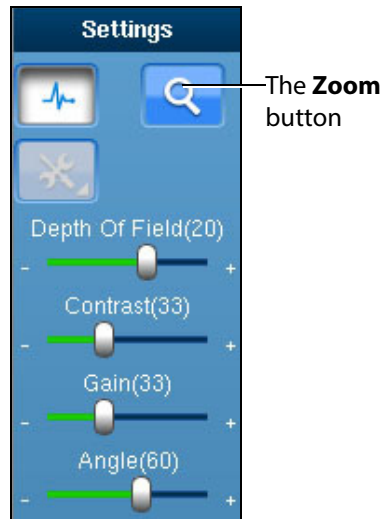
To zoom in on an Ultrasound image:

1. Click the **Zoom** button located in the **Ultrasound** panel.



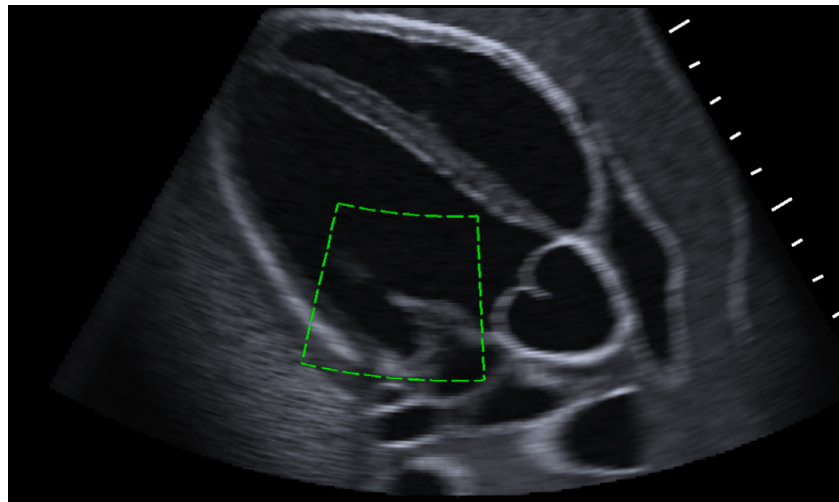
***The Zoom Button***

**NOTE:** When using the expanded toolbar, the **Zoom** button is located in the Settings section of the Ultrasound panel.



***The Settings Section***

2. Center the mouse in the desired zoom area on the Ultrasound display.
3. Click and hold the left mouse button.
4. Drag the mouse to span the desired area with the green frame.



***The Selected Zoom Area***

5. Once the area is identified using the green frame, release the mouse button.
6. Click the left mouse button once in the Ultrasound display.

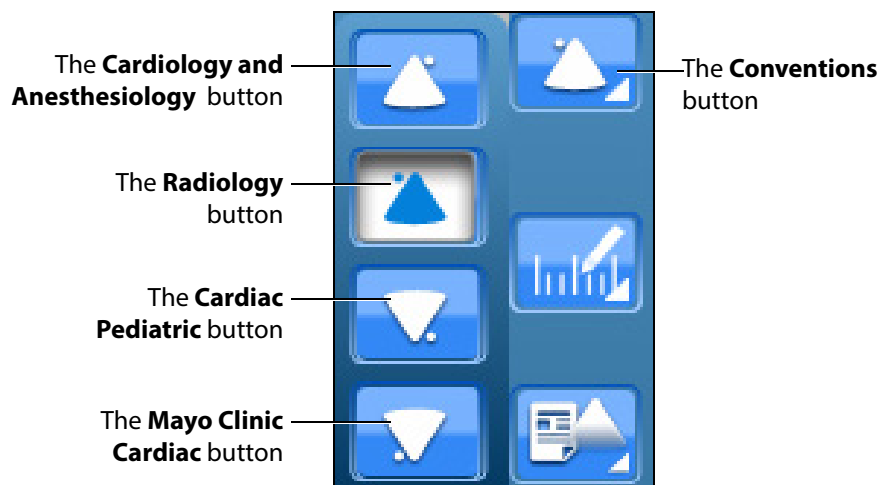
The zoom area is enlarged in the Ultrasound display and a red outline denotes the zoomed area in the AR Display.



*A Zoomed Area*

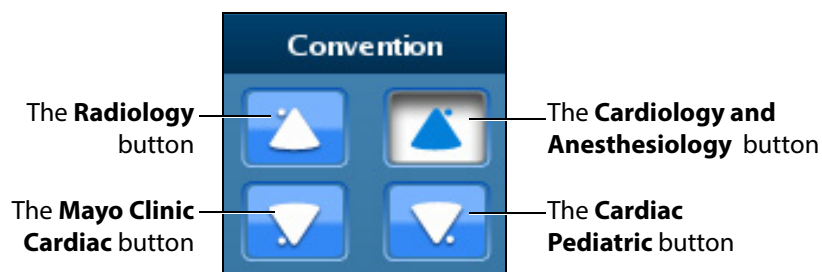
## Selecting a Convention

The Vimedix simulator contains four different conventions options: Cardiology and Anesthesiology convention, Radiology convention, Cardiac Pediatric convention and Mayo Clinic Cardiac convention.



**The Convention Options**

**NOTE:** When using the expanded toolbar view, click the desired convention button located in the Convention section of the Ultrasound panel.



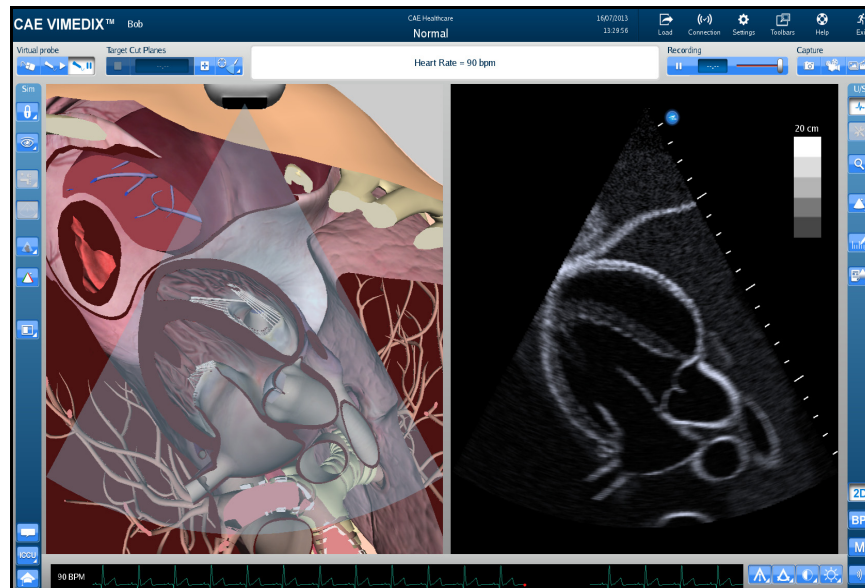
**The Convention Section**

For the cardiac modules, the cardiology and anesthesiology convention is selected by default. For the Vimedix Ob/Gyn ultrasound simulator, the radiology convention is selected by default.

## Cardiology and Anesthesiology Convention

Click the **Cardiology and Anesthesiology Convention** button with the circle in the upper-right corner to select the cardiology and anesthesiology convention.

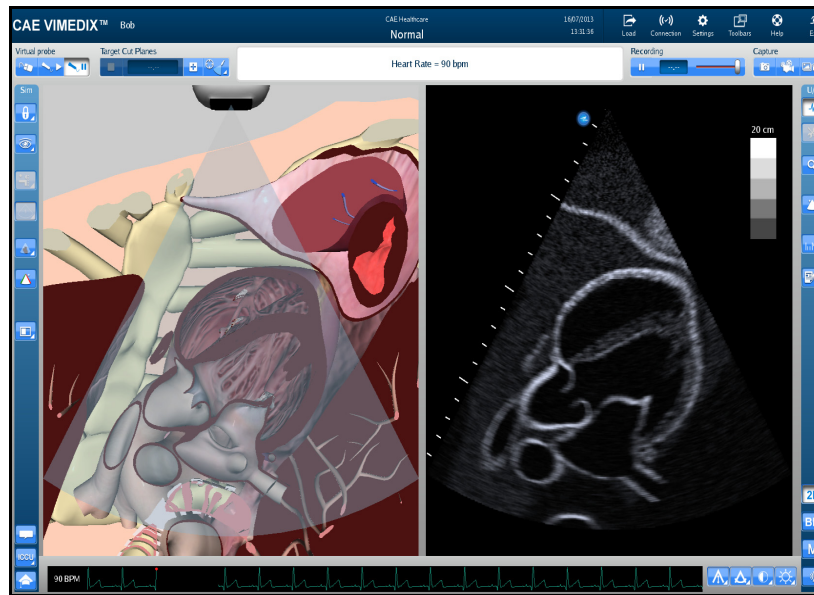
This convention is selected by default when the phased array or TEE probes are connected to the simulator.



*The Cardiology and Anesthesiology Convention*

## Radiology Convention

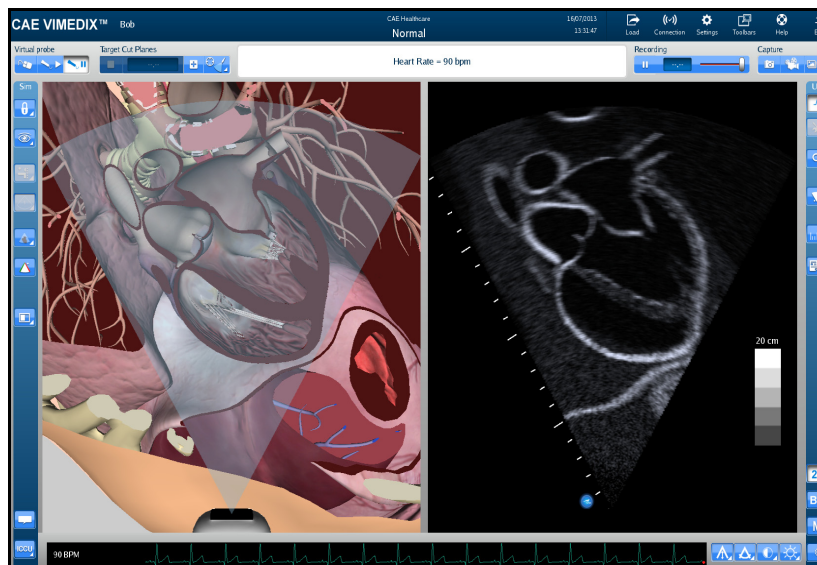
Click the **Radiology Convention** button with the circle in the upper-left corner to select the radiology convention. This convention is selected by default when the curvilinear probe is connected to the simulator.



*The Radiology Convention*

## Mayo Clinic Cardiac Convention

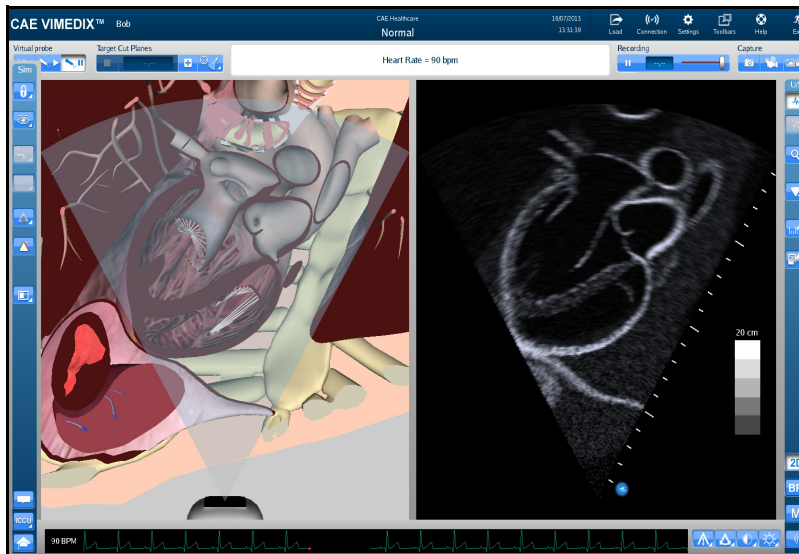
Click the **Mayo Clinic Cardiac** button with the circle in the lower-left corner to select the Mayo Clinic cardiac convention.



*The Mayo Clinic Cardiac Convention*

## Cardiac Pediatric Convention

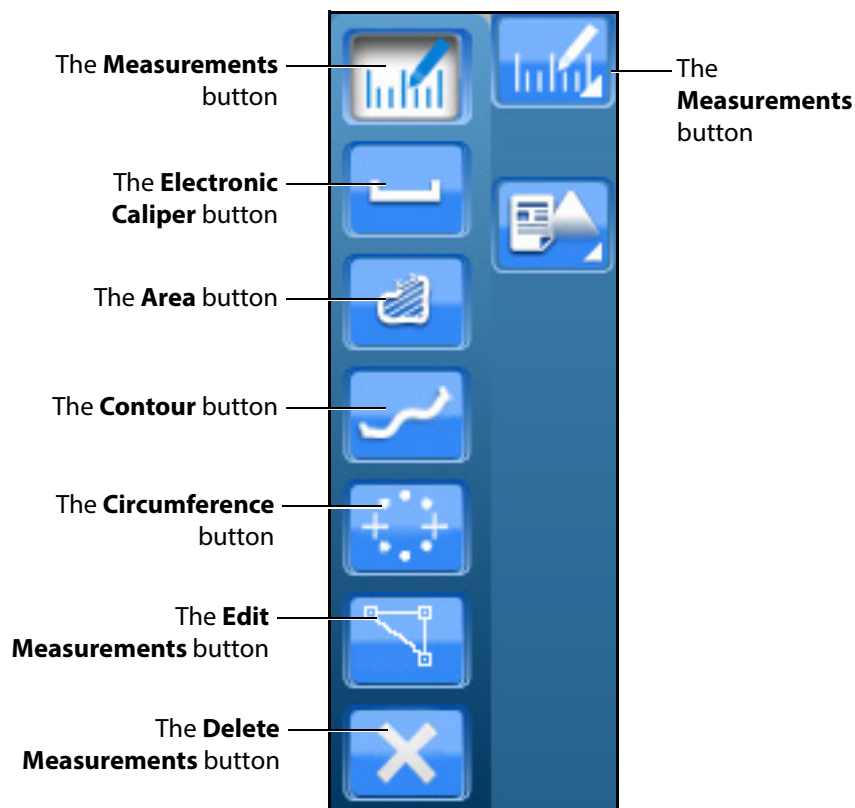
Click the **Cardiac Pediatric Convention** button with the circle in the lower-right corner to select the cardiac pediatric convention.



*The Cardiac Pediatric Convention*

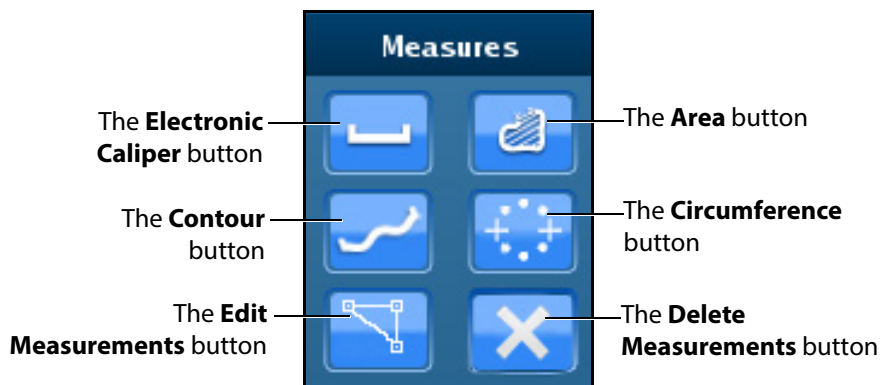
## Using the Measurement Features

Users can access and utilize several measurement tools to record the length, area, circumference and shape of the simulated anatomical structures.



**The Measurements Options**

**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.

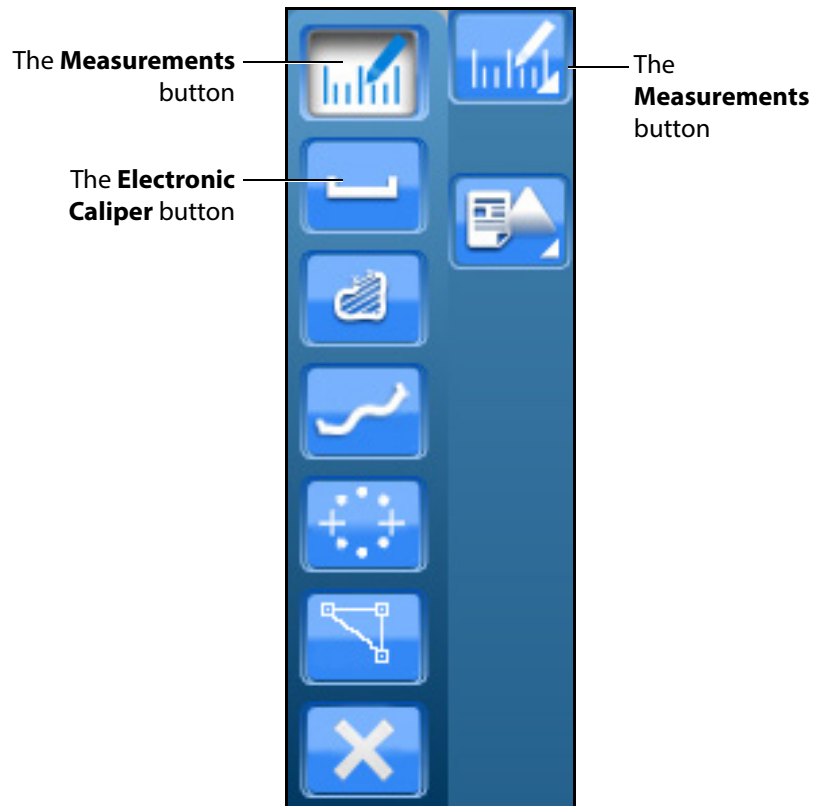


**The Measures Section**



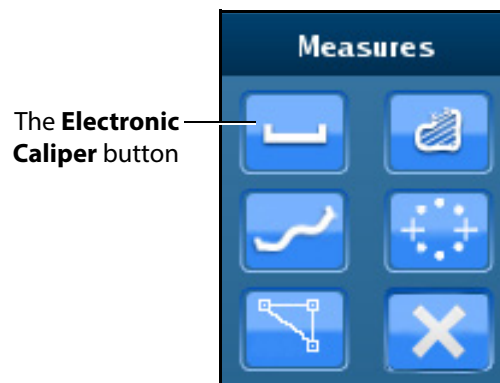
## Using the Electronic Caliper

The electronic caliper is used to measure length or distance on the Ultrasound display. To access the button, click the **Measurements** button and select the **Electronic Caliper** button from the drop-down options.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the **Electronic Caliper** button located in the Measures section of the Ultrasound panel.

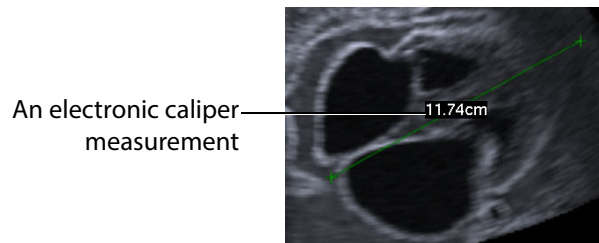


*The Measures Section*

To use the electronic caliper:

1. Select the caliper by clicking the **Electronic Caliper** button.
2. On the Ultrasound display, left-click the mouse at one extremity of the structure to be measured.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Left-click the mouse again at the opposite extremity of the structure to be measured.

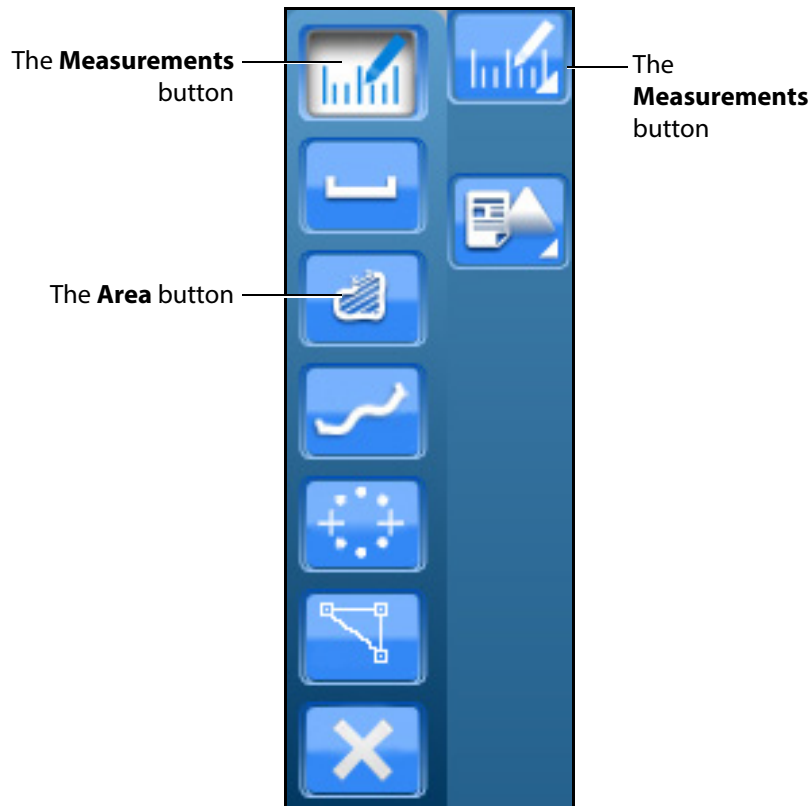
Another + marker appears on the Ultrasound display in the place where the mouse is clicked and the measurement appears between the two markers.



***The Ultrasound Display***

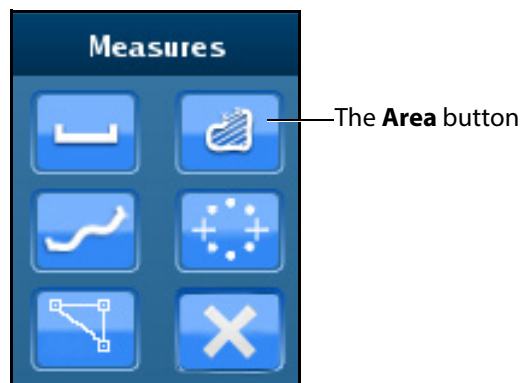
## Using the Area Measurement Tool

The area measurement tool is used to measure the surface of a traced area on the Ultrasound display. To access the button, click the **Measurements** button and select the **Area** button from the drop-down options.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the **Area** button located in the Measures section of the Ultrasound panel.

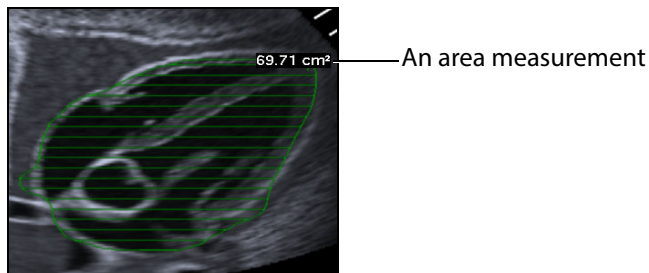


*The Measures Section*

To use the area measurement tool:

1. Select the tool by clicking the **Area Measurement** button.
2. On the Ultrasound display, left-click the mouse at any point on the periphery of the area to be measured.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Using the mouse, trace the periphery of the area to be measured, returning to the starting point where the + marker appears.
4. After tracing all the way back to the starting point, left-click the mouse.

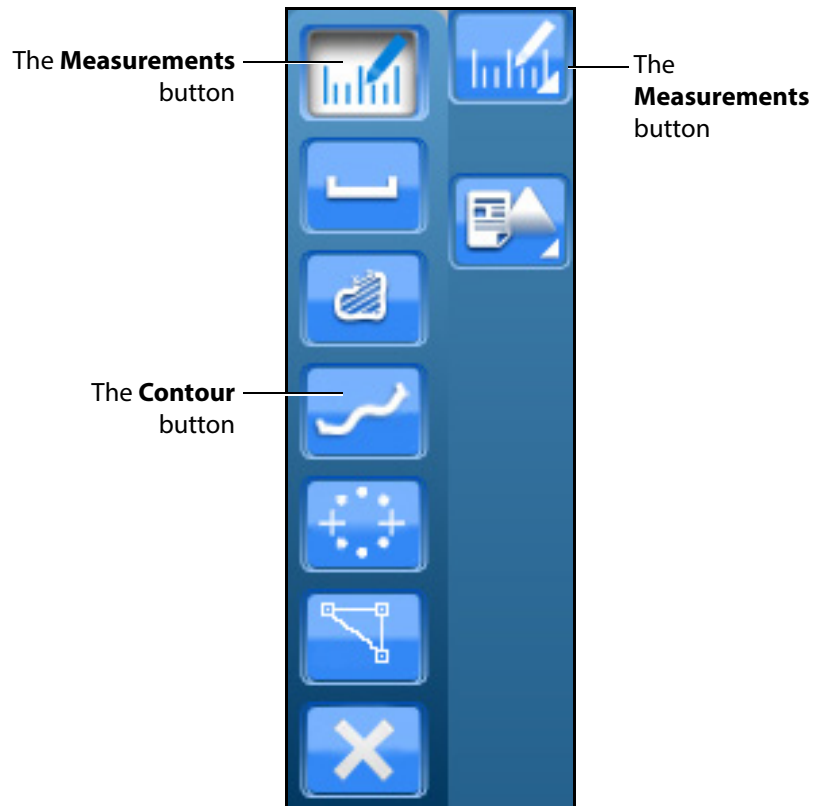
The traced area is selected and the measurement is displayed in  $\text{cm}^2$ .



*The Ultrasound Display*

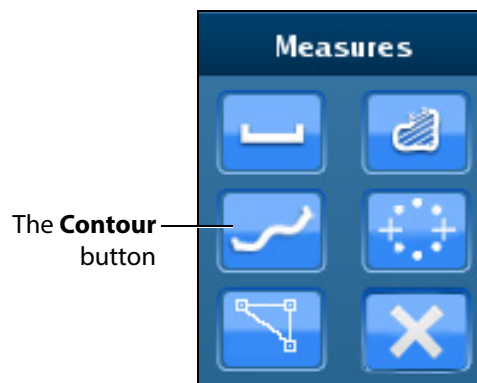
## Using the Contour Measurement Tool

The contour measurement tool is used to measure the length of an anatomical structure's contours. To access the button, click the **Measurements** button and select the **Contour** button from the drop-down options.



*The Measurements Options*

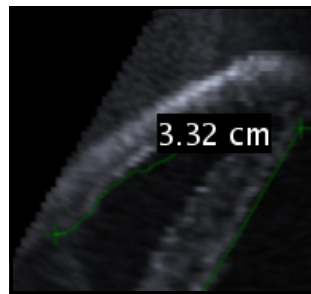
**NOTE:** When using the expanded toolbar view, click the **Contour** button located in the Measures section of the Ultrasound panel.



*The Measures Section*

To use the contour measurement tool:

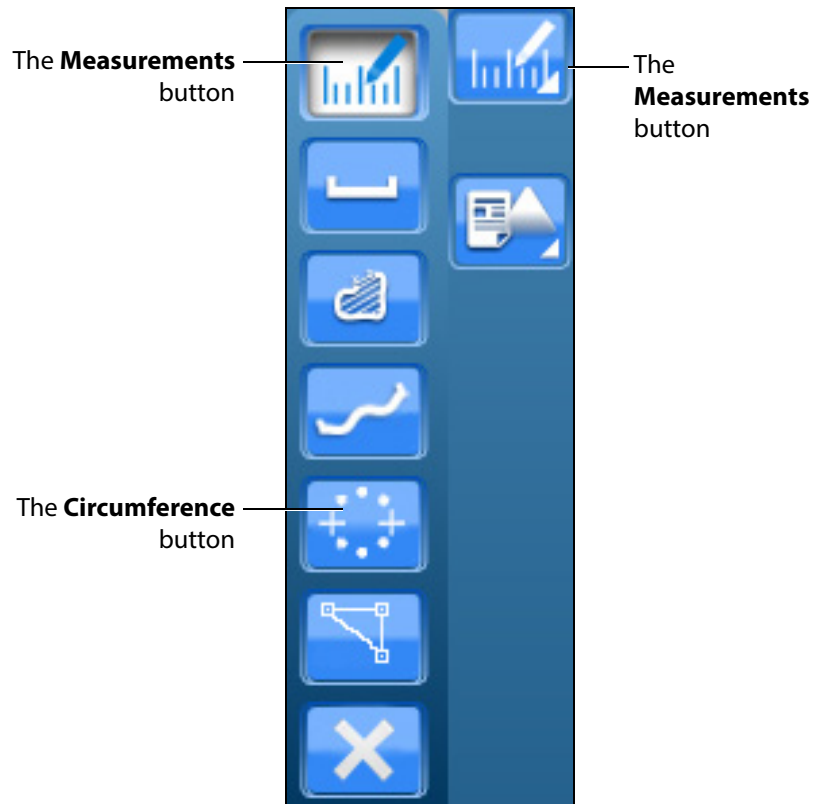
1. From the **Measures** section of the **Ultrasound** panel, click on the **Contour** button.
2. On the Ultrasound display, left-click the mouse at any point to begin measuring.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Using the mouse, trace the contour to be measured.
4. After tracing the contour, left-click the mouse.  
The measurement is displayed in centimeters.



*The Ultrasound Display*

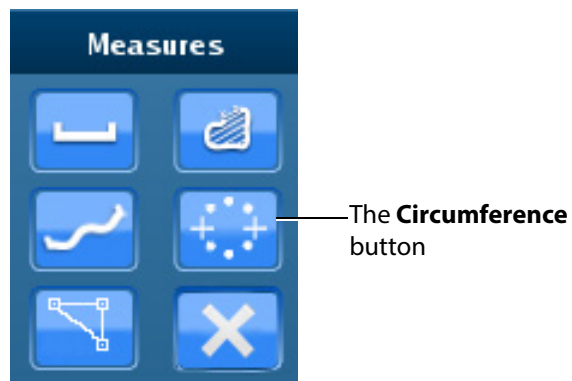
## Using the Circumference Measurement Tool

The circumference measurement tool is used to measure the length of an anatomical structure's circumference. To access the button, click the **Measurements** button and select the **Circumference** button from the drop-down options.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the **Circumference** button located in the Measures section of the Ultrasound panel.



*The Measures Section*

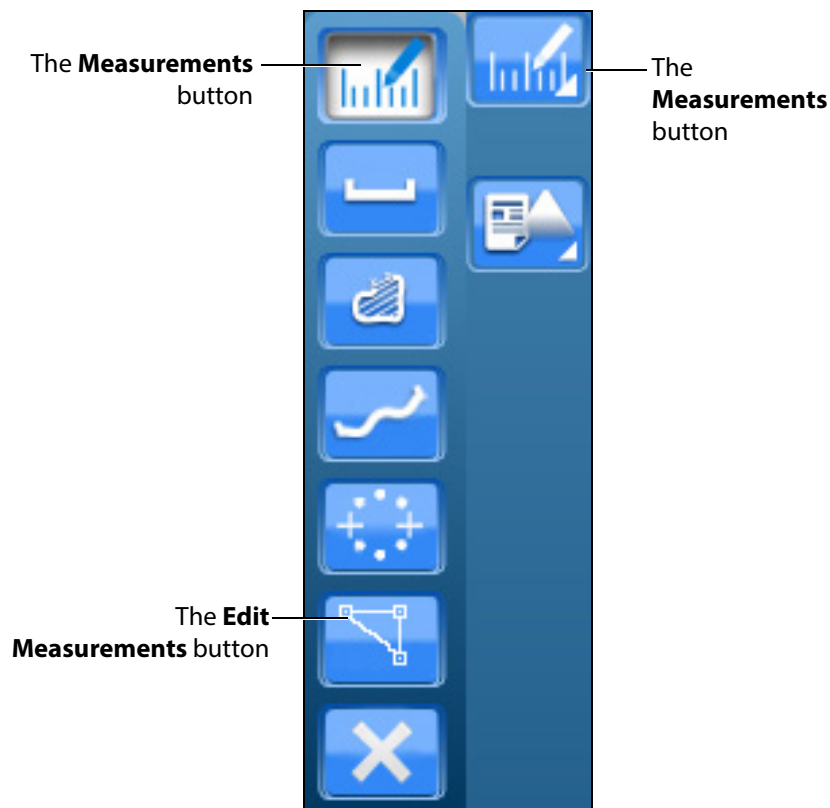
To use the circumference measurement tool:

1. From the **Measures** section of the **Ultrasound** panel, click on the **Circumference** button.
2. On the Ultrasound display, left-click the mouse at any point to begin measuring.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Left-click the mouse to mark the beginning point of the diameter.
4. Move the mouse to expand the circumference to the desired area and left-click the mouse to hold the circumference measurement.

The measurement is displayed in centimeters.

## Editing a Measurement

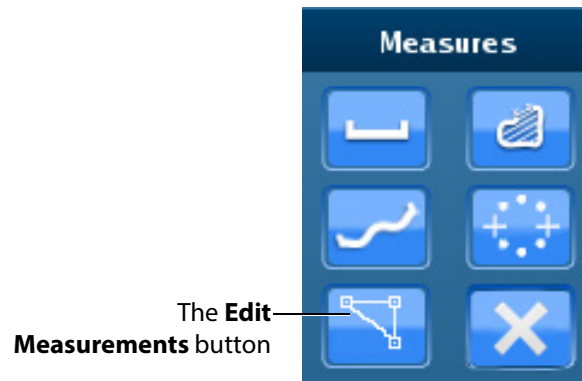
Users are able to edit measurements which are taken incorrectly or need to be adjusted for accuracy. This feature is only available for the electronic caliper and circumference measurement tools.



*The Measurements Options*



**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.



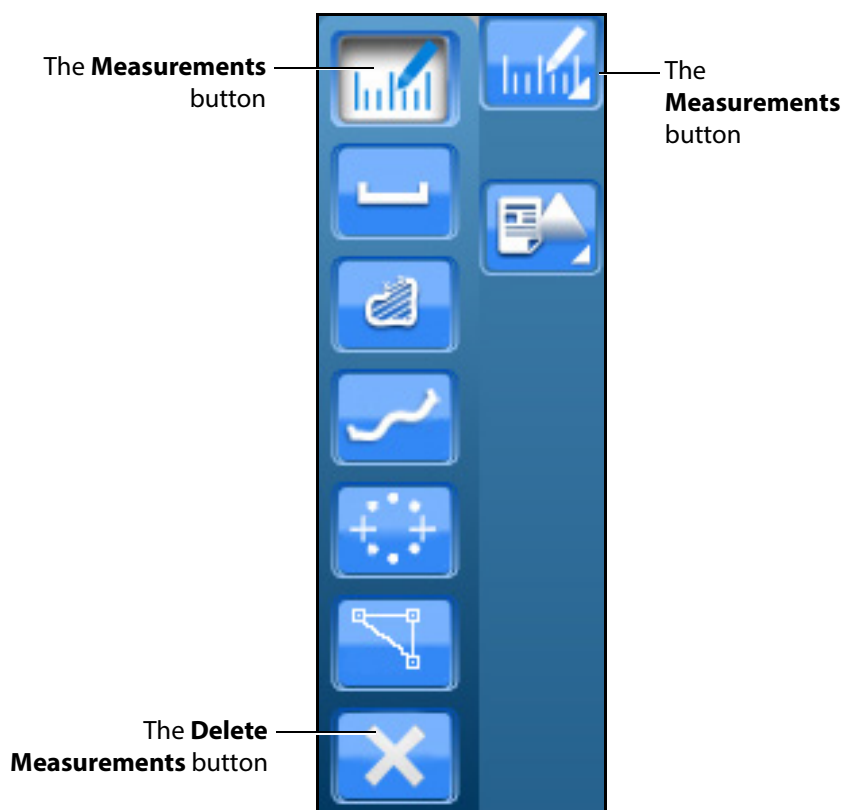
*The Measures Section*

To edit a measurement on the Ultrasound display:

1. Click the **Edit Measurements** button.  
The measurement points become squares, indicating that users can move the points as desired.
2. Upon finishing the measurement point adjustment, click the **Measurements** button or the selected measurement tool button to save the adjustment.

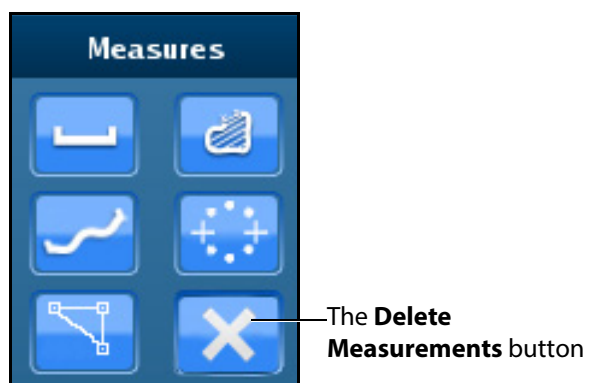
## Deleting a Measurement

Users are able to delete measurements which are taken incorrectly or no longer relevant to the pathology.



**The Measurements Options**

**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.



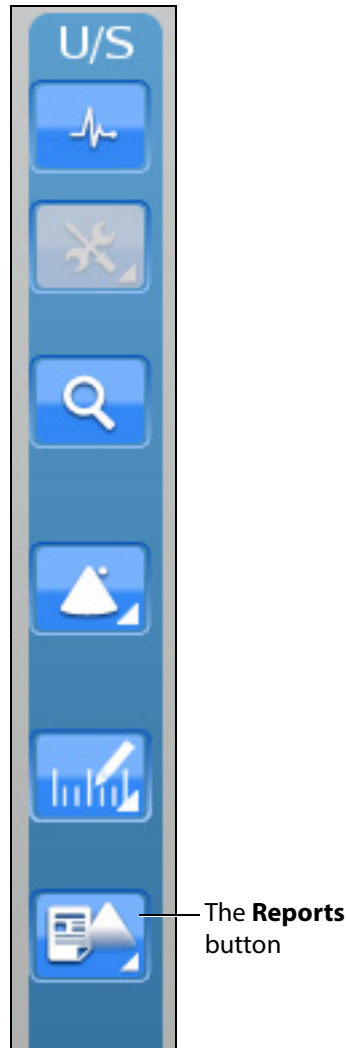
**The Measures Section**

To delete the last measurement on the Ultrasound display, press the **Backspace** key on the keyboard or click the **Delete Measurements** button.

To delete all measurements, double-click the **Delete Measurements** button.

## Using Reports

The Reports feature can be used to create cardiac reports.



**The Ultrasound Panel**

**NOTE:** When using the expanded toolbar view, click the **Reports** button located in the Echo Reports section of the Ultrasound panel.

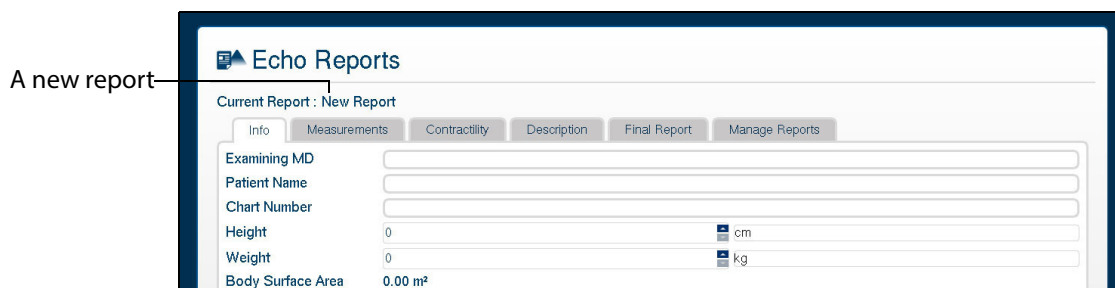


**The Reports Button**

## Creating a Report

To create a report, click the **Reports** button.

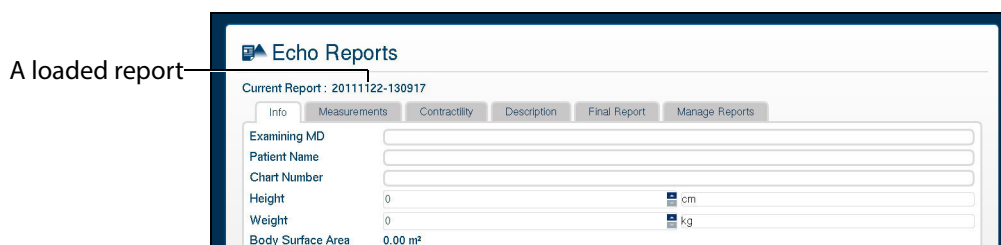
The Echo Reports window appears.



**The Echo Reports Window**

If a report has not already been saved or loaded during the current session, the upper left of the Echo Reports window indicates a new report.

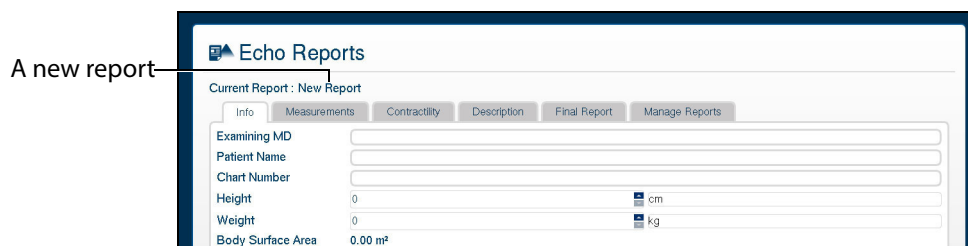
**NOTE:** If a report has already been saved or loaded during the current session, the report name appears in the upper left of the Echo Reports window.



**The Echo Reports Window**

## Entering Report Information

Report information can be entered from the Echo Reports window.



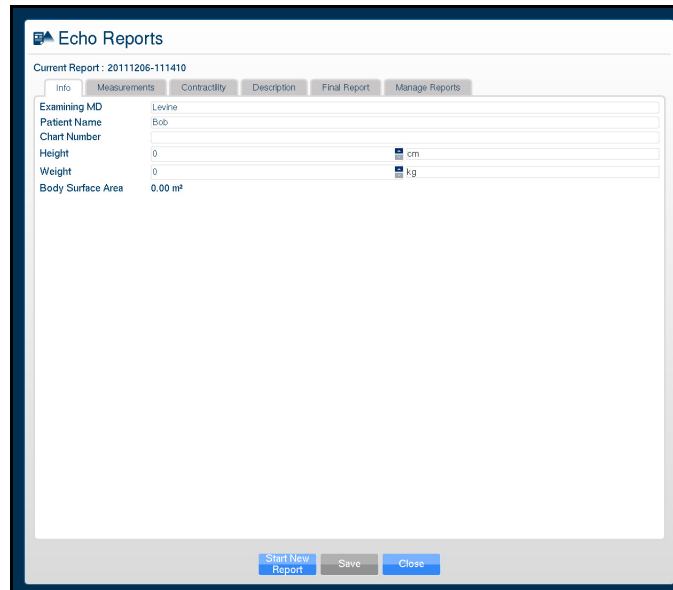
**The Echo Reports Window**

The window is pre-loaded with a new report or an existing report, depending on whether a report has already been created during the current session.

The Echo Reports window has five tabs for entering and viewing report information: the **Info** tab, the **Measurements** tab, the **Contractility** tab, the **Description** tab, the **Final Report** tab and the **Manage Reports** tab.

## The Info Tab

The **Info** tab is used to enter basic information including the examining doctor's name and patient's name, chart number, height and weight.



The screenshot displays the 'Echo Reports' application window. At the top, it shows 'Current Report: 20111206-111410'. Below this is a navigation bar with tabs: 'Info', 'Measurements', 'Contractility', 'Description', 'Final Report', and 'Manage Reports'. The 'Info' tab is selected. The main area contains a form with the following fields:

Examining MD	Levne
Patient Name	Bob
Chart Number	
Height	0 cm
Weight	0 kg
Body Surface Area	0.00 m <sup>2</sup>

At the bottom of the window, there are three buttons: 'Start New Report', 'Save', and 'Close'.

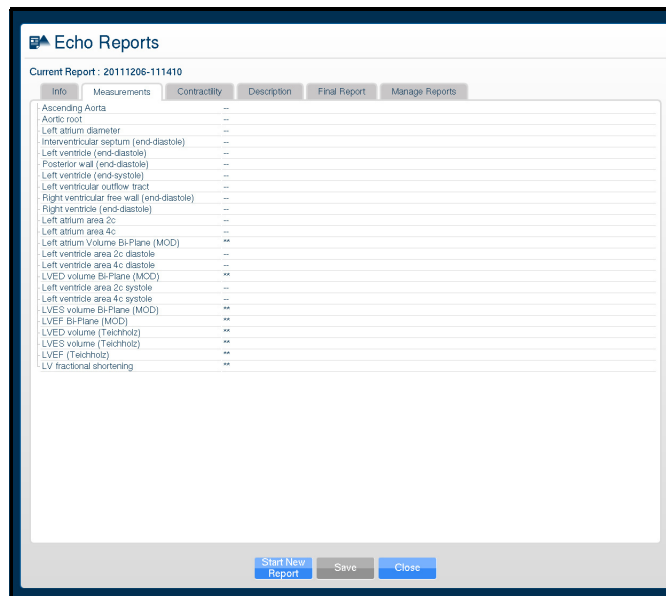
***The Info Tab***

## The Measurements Tab

The **Measurements** tab is used for physiological measurements.

To enter a measurement:

1. In the Echo Reports window on the **Measurements** tab, double-click on the item to be measured or modified.

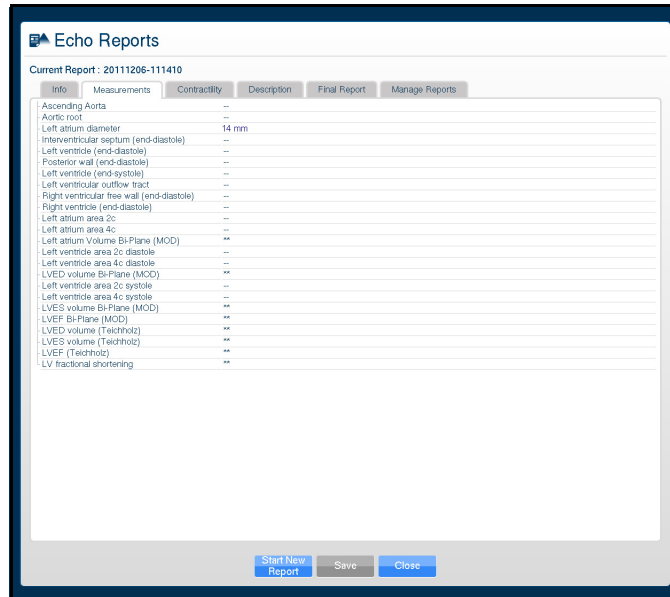


**The Measurements Tab**

The Echo Reports window closes.

2. Using the measurement tools, obtain the selected measurement from the Ultrasound display.

The **Echo Reports** window appears showing the measurement.

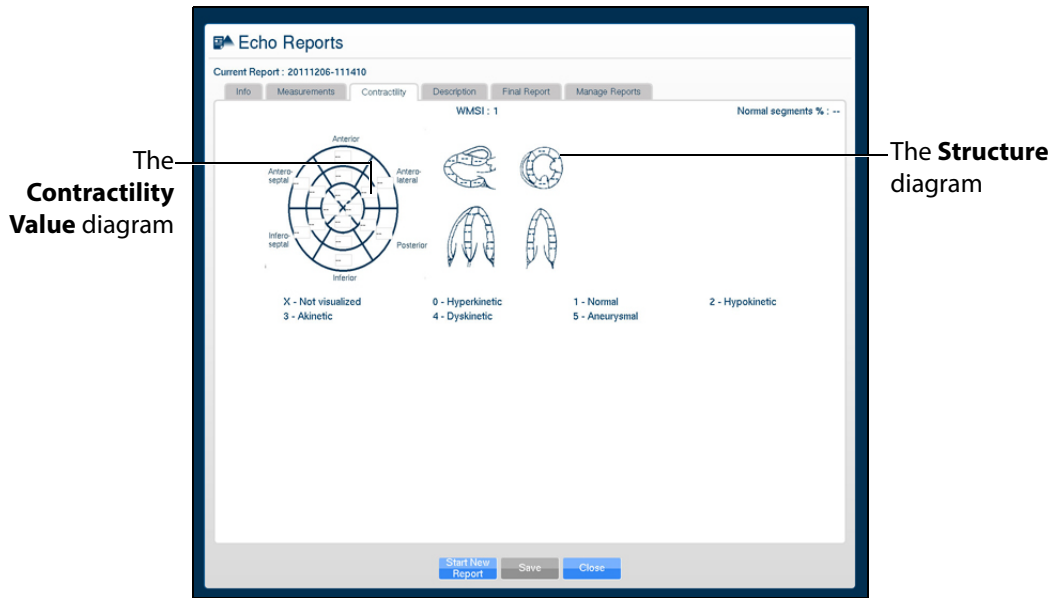


**The Measurements Tab**

**NOTE:** Lines with a double asterisk (\*\*) indicate that the measurement is a result of a calculation and no measurements need to be obtained by the user for this item.

### The Contractility Tab

The **Contractility** tab can be used to enter heart contractility information. Click on one of the boxes in the diagram to the left to enter information about heart contractility. The entered information appears in the structure diagrams to the right.

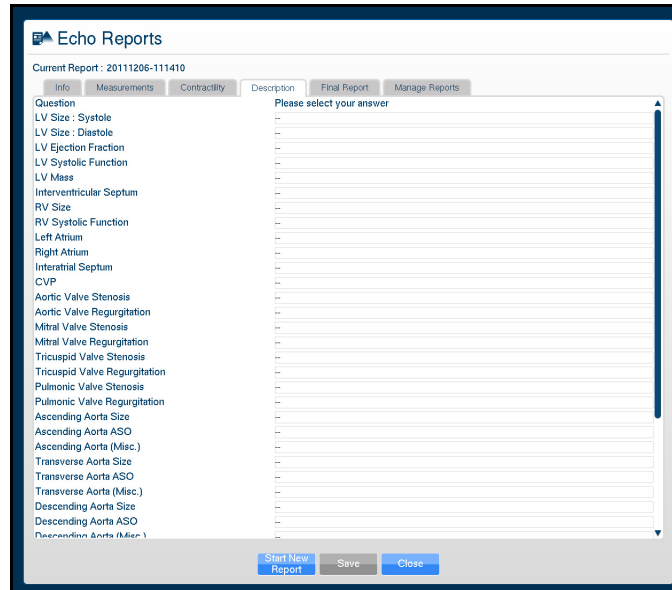


The Contractility Tab



## The Description Tab

The **Description** tab is used to enter physiological information such as structure size and function and the presence of fluid or masses. Descriptions for each physiological feature can be chosen from corresponding drop-down menus. There is also a text field located at the bottom of the tab for entering additional comments.



*The Description Tab*

## The Final Report Tab

The **Final Report** tab displays the report information entered on the **Info**, **Measurements**, **Contractility** and **Description** tabs as it will be exported.

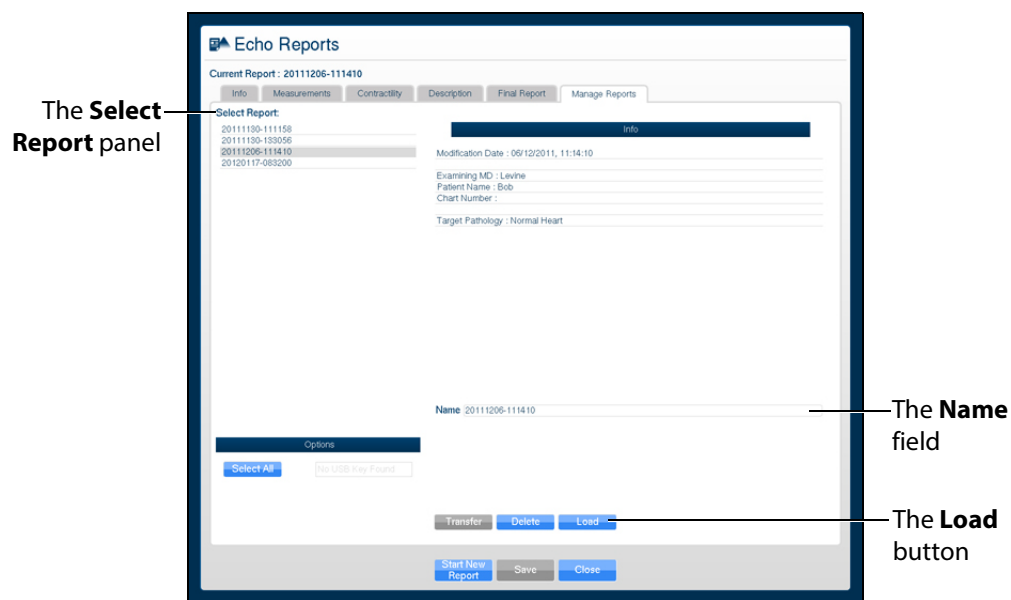
Once the desired report information has been entered, click the **Save** button at the bottom of the **Final Report** tab to save the report.

## Viewing an Echo Report

Reports can be loaded from the **Manage Reports** tab in the Echo Reports window.

To load a report:

1. Click the **Reports** button.  
The Echo Reports window appears.
2. From the Echo Reports window, select the **Manage Reports** tab.  
The Manage Reports tab appears.



**The Manage Reports Tab**

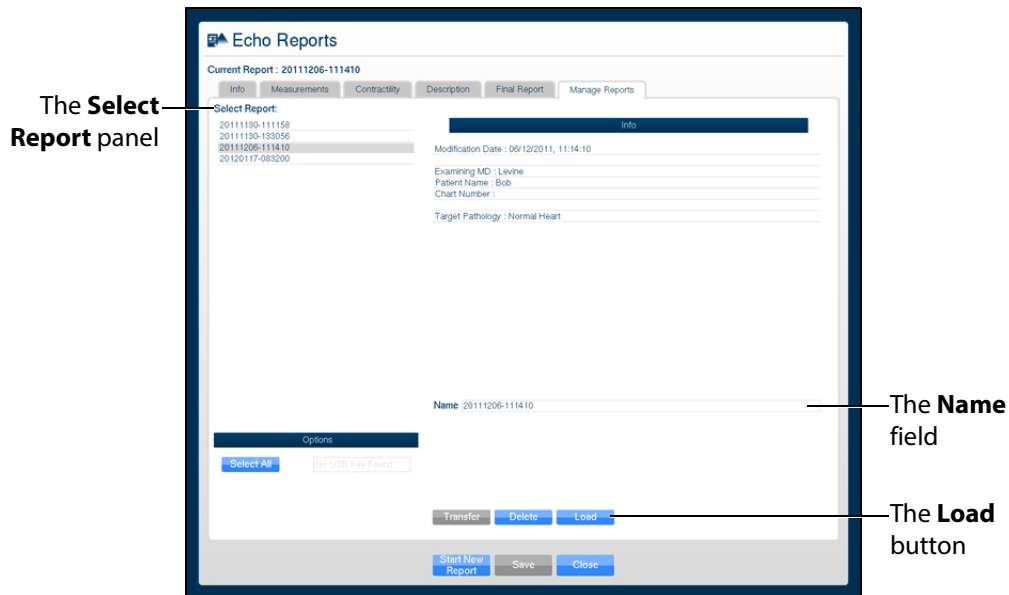
3. Select a report from the **Select Report** panel.  
The report name appears in the Name field.
4. Click **Load**.  
The report is loaded.
5. View the report information by clicking the desired tabs.

## Modifying a Report

To modify a report:

1. From the Echo Reports window, select the **Manage Reports** tab.

The Manage Reports tab appears.



**The Manage Reports Tab**

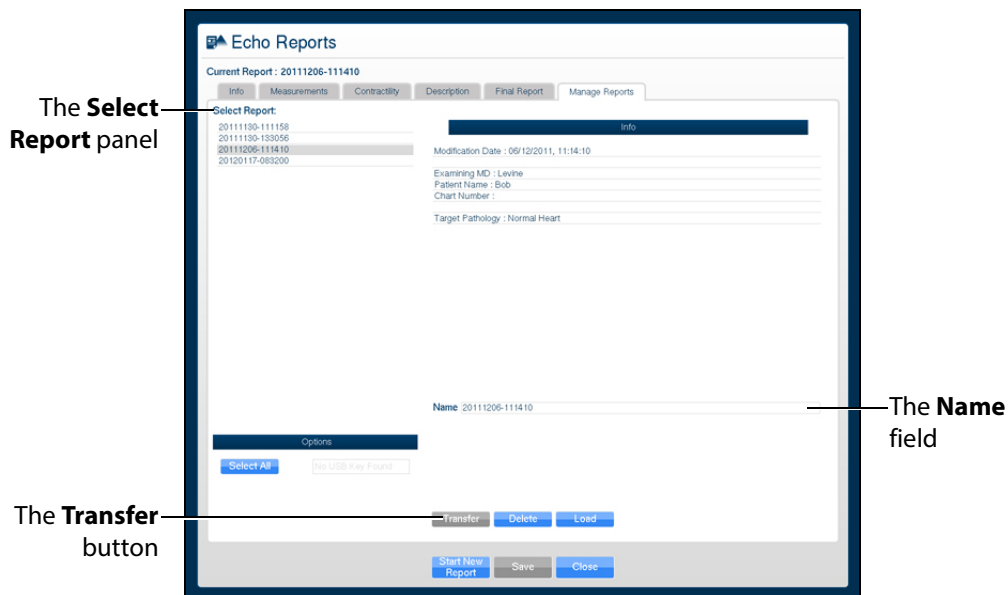
2. Select the desired report from the **Select Report** panel to modify.
3. Click **Load**.
4. Modify the report information by clicking the **Info**, **Measurements**, **Contractility**, **Description** and **Final Report** tabs and making the desired modifications.
5. Click **Save** at the bottom of the Echo Reports window.  
The modifications are saved.

## Transferring Reports

To transfer a report:

1. From the Echo Reports window, select the **Manage Reports** tab.

The **Manage Reports** tab appears.



**The Manage Reports Tab**

2. Select a report from the **Select Report** panel.
3. Select a single report by left-clicking it with the mouse. Select additional reports by holding down the **Control** key on the keyboard and left-clicking the reports with the mouse.

All reports can be selected by clicking the **Select All** key.

The report name appears in the **Name** field.

4. When multiple reports are selected, the **Info** panel says a multiple selection has been made and indicates the number of reports selected.
5. Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Manage Reports** tab.
6. Click **Transfer**.

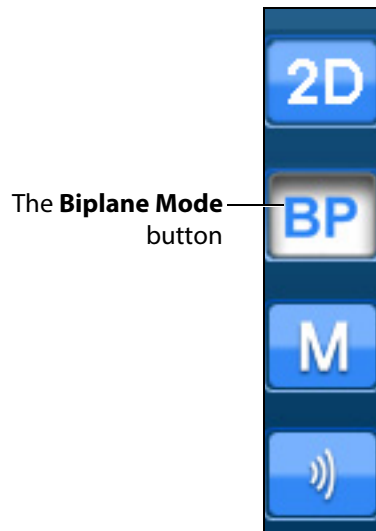
The Transfer Status bar appears. When the Transfer Status bar reads 100%, the transfer is complete.

## Using the Biplane Mode

The Vimedix simulator is set to display images in standard 2D by default. Activating the Biplane Mode allows users to obtain two cross sections from one probe position. By default, the secondary beam is

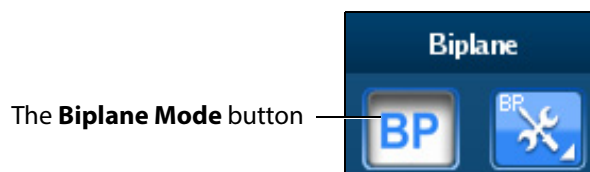
perpendicular; however, the position relative to the primary beam can be adjusted using the sweep, tilt and rotation settings in the Biplane Mode settings.

To activate the Biplane Mode, click the **Biplane Mode** button located in the Ultrasound panel.



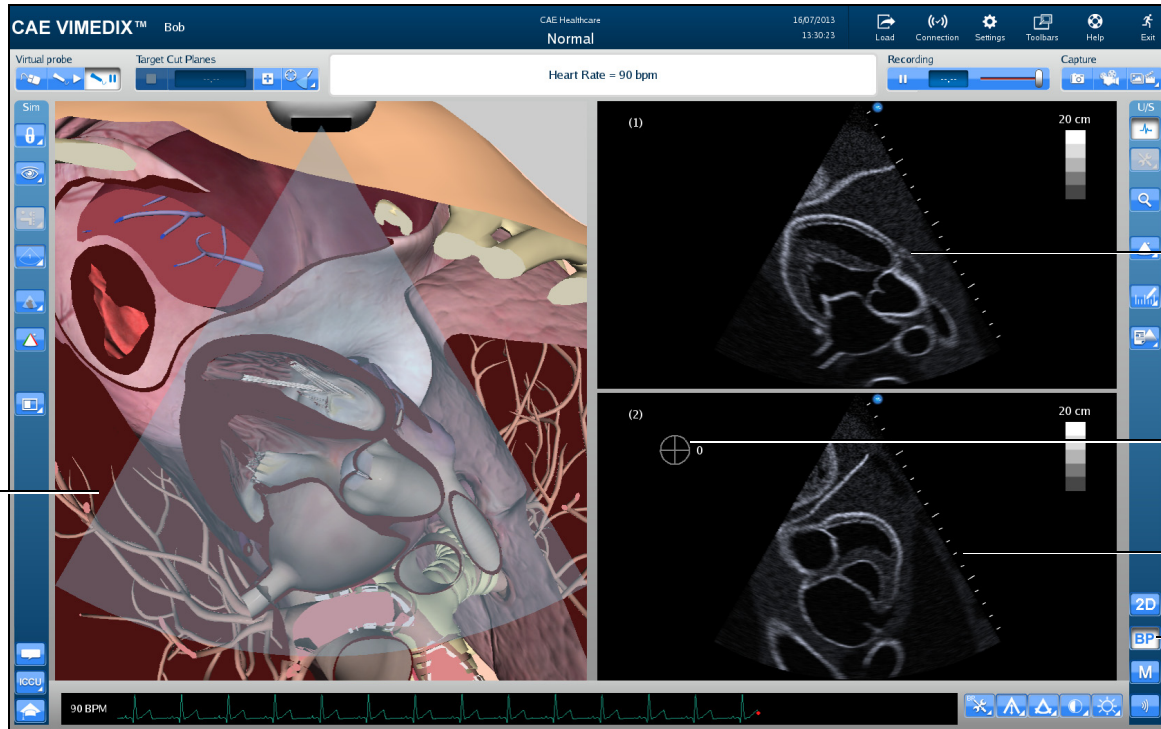
*The Ultrasound Panel - Mode Buttons*

**NOTE:** When using the expanded toolbar view, click the **Biplane Mode** button located in the Biplane section of the Ultrasound panel.



*The Biplane Section*

The interface changes to a biplane view.



The Augmented Reality display

The **Primary View** panel

The Angular Displacement diagram

The **Secondary View** panel

The **Biplane Mode** button

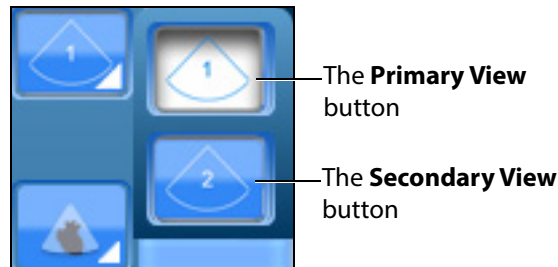
**A Biplane View**

Located in the Simulation panel, the **Biplane View** button allows users to switch the live probe view from View 1 to View 2 on the Augmented Reality display.



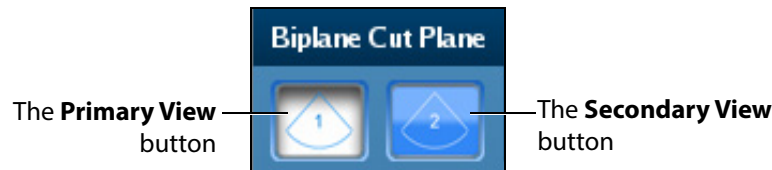
**The Biplane View Button**

Click the **Biplane View** button to access the drop-down menu and toggle between Primary View and Secondary View in the Augmented Reality display.



*The Biplane View Options*

**NOTE:** When using the expanded toolbar view, click the **Primary View** button or the **Secondary View** button located in the Biplane Cut Plane section of the Simulation panel.



*The Biplane Cut Plane Section*

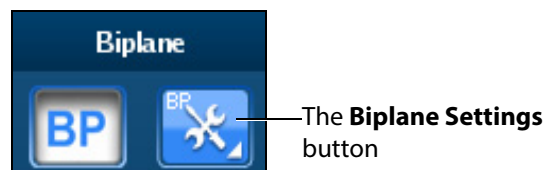
## Adjusting the Biplane Settings

When the Biplane Mode is activated, the **Biplane Settings** button appears in the Settings panel located near the bottom of the screen.



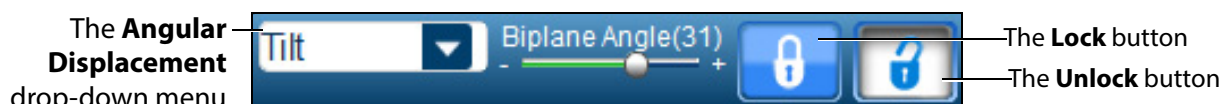
*The Settings Panel*

**NOTE:** When using the expanded toolbar view, click the **Biplane Settings** button located in the Biplane section of the Ultrasound panel.



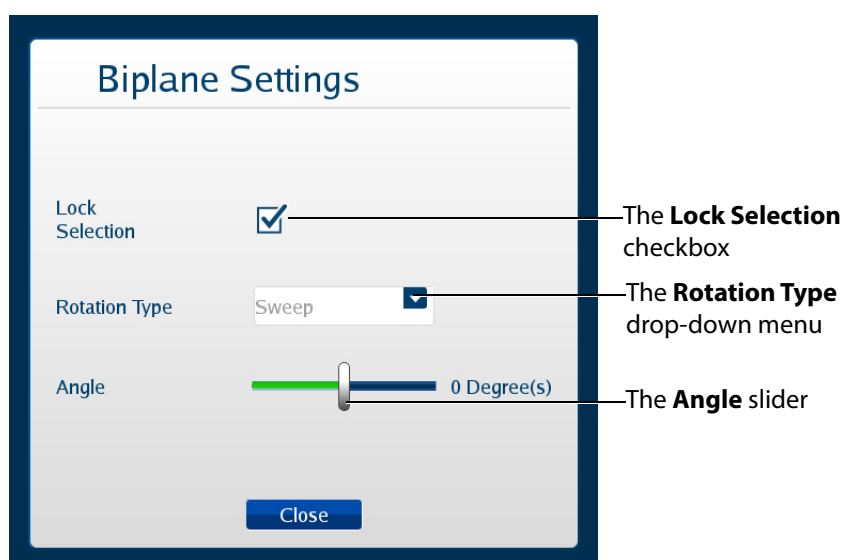
*The Biplane Section*

The Biplane Settings pop-up window appears.



**The Biplane Settings Window**

**NOTE:** When using the expanded toolbar view, the Biplane Settings pop-up window appears differently but the settings are the same.



**The Biplane Settings Window**

The **Lock Selection** option allows users to lock or unlock the primary and secondary views. When unlocked, the zoom feature can be used independently on each view. When the lock feature is activated, the zoom on the views will be equivalent.

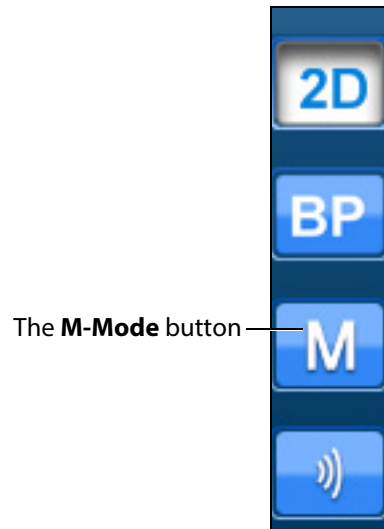
The **Rotation Type** allows users to choose from three options how to rotate the second beam.

The **Angle** slider adjusts the angle of the secondary beam in the axis specified by the Rotation Type.

## Using M-Mode



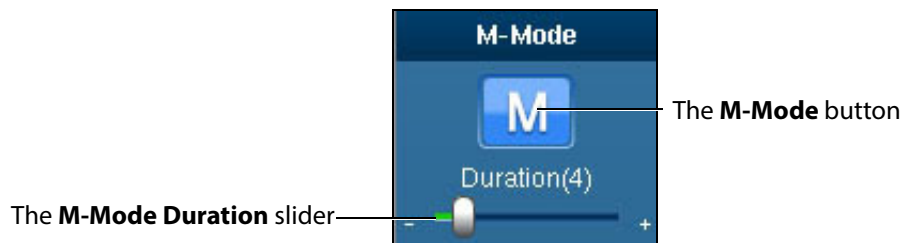
The M-mode is used to measure and evaluate the fine movements of the cardiac structures.



**The Ultrasound Panel - Mode Buttons**

To use M-Mode:

1. Activate M-mode by clicking the **M-mode** button.

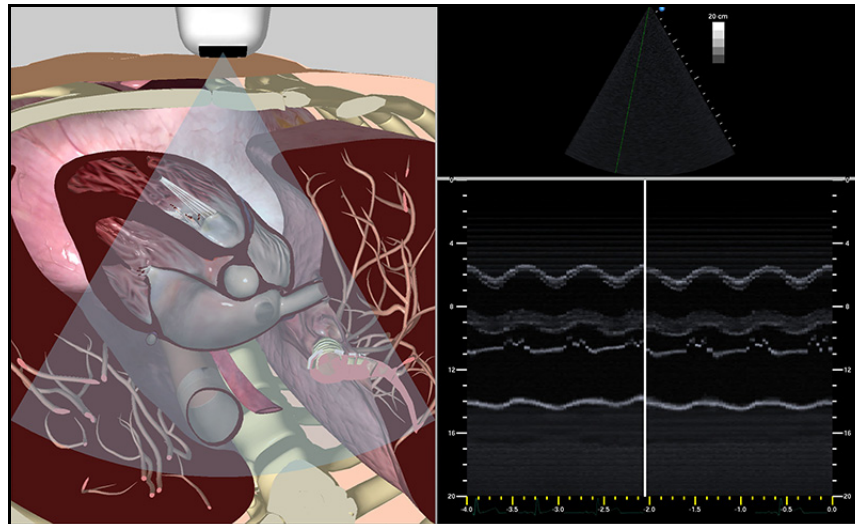


**The M-Mode Button**

Once M-mode is activated, a green line appears when the mouse is moved over the Ultrasound display. The line begins at the location of the ultrasound probe and moves left or right based on mouse position.

2. Obtain M-mode tracing by left-clicking on the Ultrasound display in the desired location.

The M-mode tracing appears.



**M-mode Tracing**

The M-mode display can be frozen by clicking the **Pause** button or pressing the space bar on the keyboard. Dimensions can be assessed within the M-mode tracing using the electronic caliper.

## Adjusting the M-Mode Settings

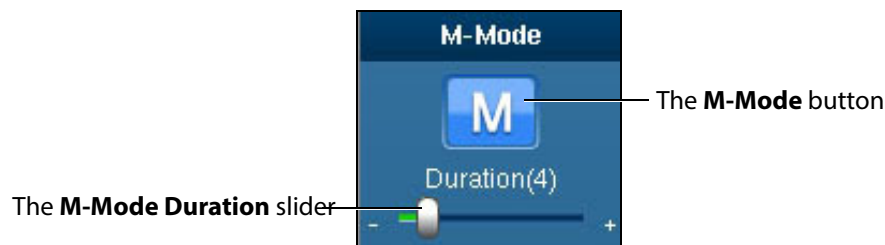
When the M-Mode is activated, the **M-Mode Settings** button appears in the Settings panel located near the bottom of the screen.



**The Settings Panel**

Click the **M-Mode Settings** button to access the duration slider.

**NOTE:** When using the expanded toolbar view, click the **M-Mode Duration slider** button located in the M-Mode section of the Ultrasound panel.



**The M-Mode Button**

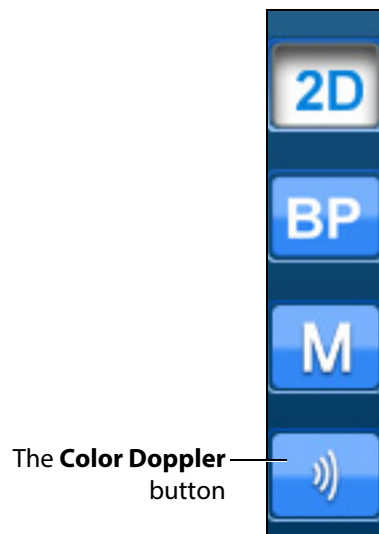
Use the **Duration** slider to modify the sweep speed of the M-mode display.

## Using Color Doppler

Color Doppler can be used to view the direction and velocity of blood flow on the Ultrasound display.

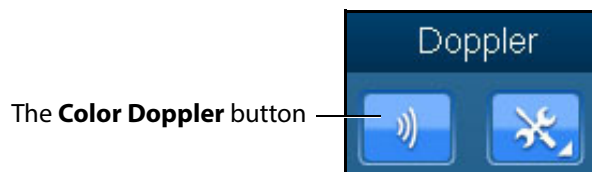
**NOTE:** The color Doppler mode is only available on certain pathologies. The icon will appear greyed out during pathologies without the Doppler mode.

To access the color doppler mode, click the **Color Doppler** button located near the bottom of the Ultrasound panel.



*The Ultrasound Panel - Mode Buttons*

**NOTE:** When using the expanded toolbar view, click the **Color Doppler** button located in the Doppler section of the Ultrasound panel.

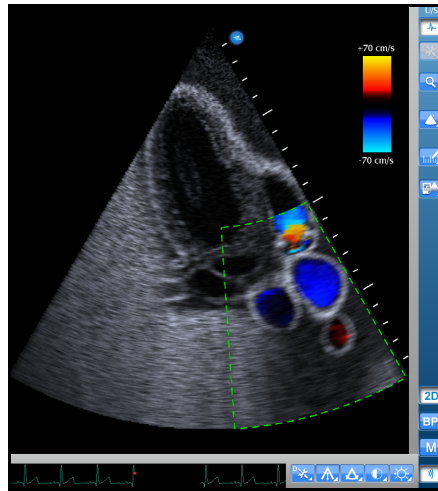


*The Color Doppler Button*

To use the color Doppler:

1. From the Ultrasound panel, click the **Color Doppler** button.
2. On the Ultrasound display, move the mouse over an area of interest and left-click to initially select the area.

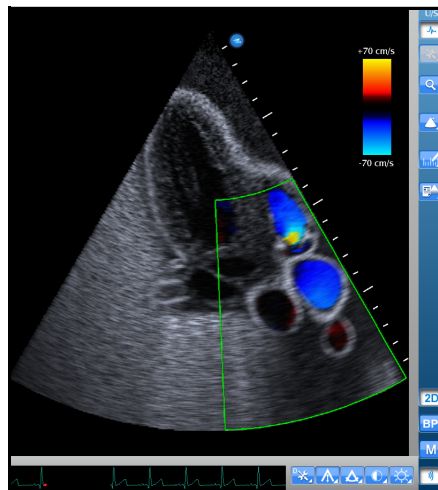
The area is selected and a dashed border appears around it.



***A Selected Doppler Area***

3. Move the mouse to adjust the selection size, and then click the mouse again to select the area.

The area is selected and the selection border becomes solid.



***A Defined Doppler Area***

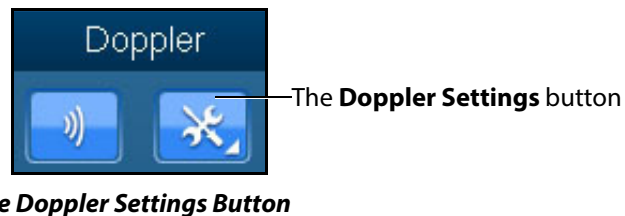
## Adjusting the Doppler Settings

To adjust Doppler settings:

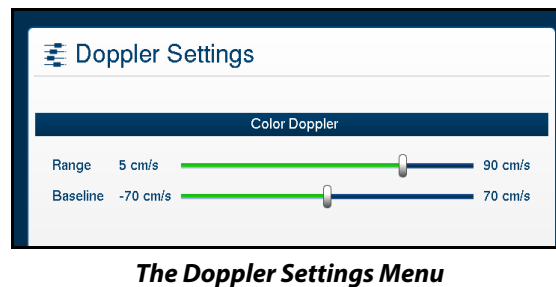
1. Ensure the Doppler mode is selected.
2. From the **Settings** panel, click the **Doppler Settings** button.



**NOTE:** When using the expanded toolbar view, click the **Doppler Settings** button located in the Doppler section of the **Ultrasound** panel.



The Doppler Settings menu appears.



3. From the Doppler Settings menu, modify the range and baseline velocity scales as needed.

## Adjusting the Depth of Field

Users can control the depth of the ultrasound beam by changing the depth of field settings. Depth of Field can be modified by scrolling the mouse wheel or from the **Settings** panel, click the **Depth of Field** button to access the **Depth of Field** slider.



Users can also adjust settings by using the plus or minus buttons on each side.



**The Depth of Field Slider**

**NOTE:** When using the expanded toolbar view, adjust the depth of field by clicking on the **Depth of Field** slider located in the Settings section of the Ultrasound panel.

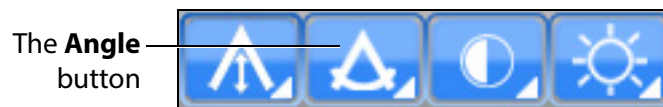


The **Depth of Field** slider

**The Settings Section**

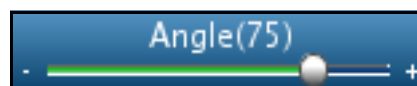
## Adjusting the Angle

From the **Settings** panel, click the **Angle** button to access the **Angle** slider.



**The Settings Panel**

To increase the angle of the ultrasound beam, move the slider to the right. To decrease the angle of the ultrasound beam, move the slider to the left. Users can also adjust settings by using the plus or minus buttons on each side.



**The Angle Slider**

**NOTE:** When using the expanded toolbar view, adjust the depth of field by clicking on the **Angle** slider located in the Settings section of the Ultrasound panel.



**The Settings Section**

## Adjusting the Contrast

From the **Settings** panel, click the **Contrast** button to access the **Contrast** slider.



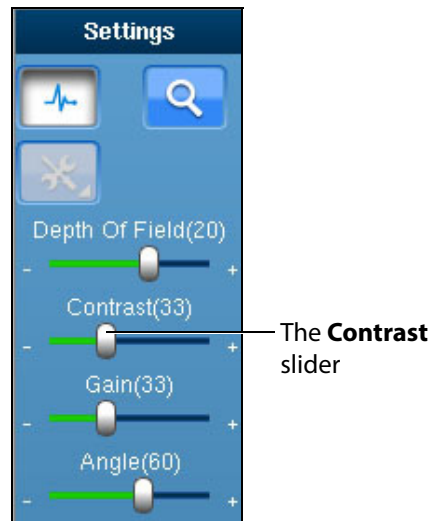
**The Settings Panel**

To increase or decrease the contrast on the Ultrasound display, move the **Contrast** slider to the left or right. Using the plus or minus buttons on each side also increases and decreases the contrast.



**The Contrast Slider**

**NOTE:** When using the expanded toolbar view, adjust the contrast by clicking on the **Contrast** slider located in the Settings section of the Ultrasound panel.



**The Settings Section**

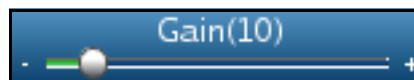
## Adjusting the Gain

From the **Settings** panel, click the **Gain** button to access the **Gain** slider.



**The Settings Panel**

To increase or decrease the gain of the Ultrasound display, move the **Gain** slider to the left or right. Users can also adjust settings by using the plus or minus buttons on each side.



**The Gain Slider**



**NOTE:** When using the expanded toolbar view, adjust the gain by clicking on the **Gain** slider located in the Settings section of the Ultrasound panel.



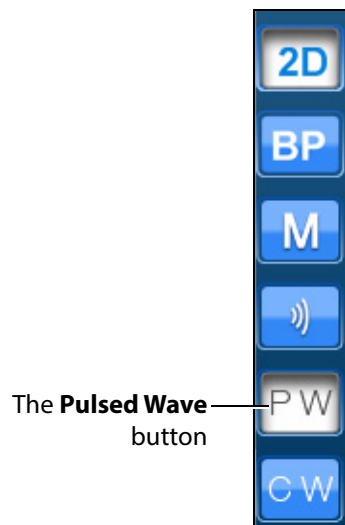
**The Settings Section**

**NOTE:** The depth of field, contrast and gain startup values can be modified in the Simulation Settings window.

## Using Pulsed Wave Doppler

Pulsed Wave Doppler measures are supported at the four heart valves and their surrounding regions.

To access Pulsed Wave Doppler, click the **PW** button located near the bottom of the Ultrasound panel.



**The Ultrasound Panel - Mode Buttons**

The trace analysis (point velocity, systolic/diastolic and trace) are included. To access the trace analysis measures, the velocity plot has to be paused using the space bar. The trace analysis measures are contained within the **Measurements** menu.

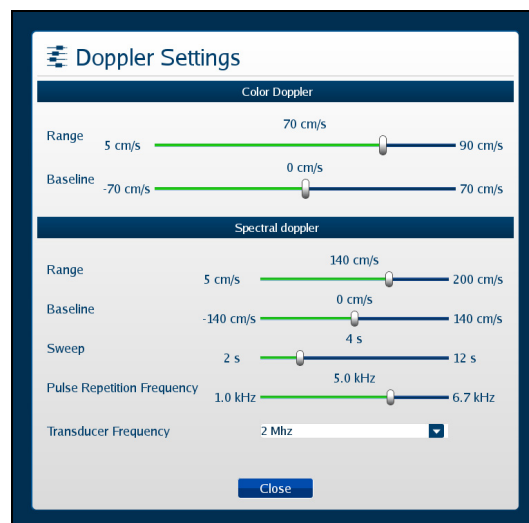


**The Measurements Button**

Spectral related settings such as range, baseline, and pulse repetition frequency are configurable through the **Doppler Settings** menu.



**The Doppler Settings Button**

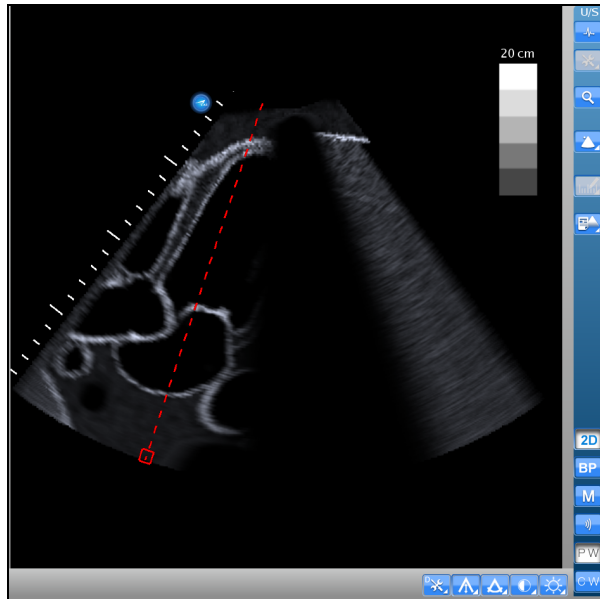


**The Doppler Settings Window**

To use the Pulsed Wave Doppler:

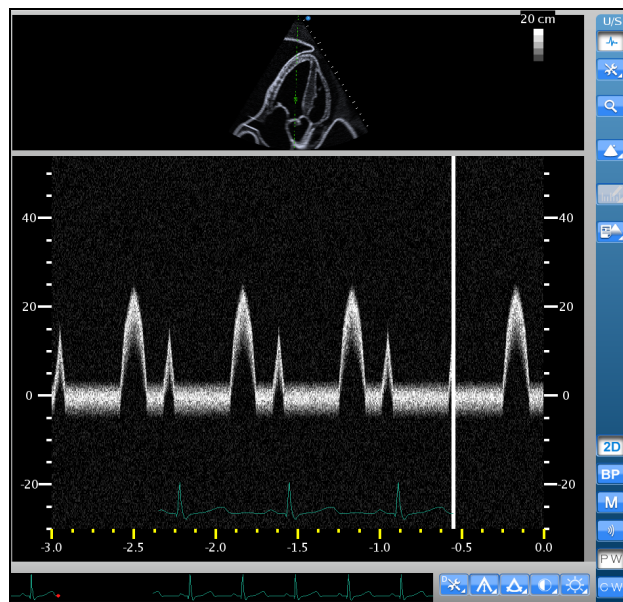
1. From the Ultrasound panel, click the **PW** button.
2. On the Ultrasound display, move the mouse to select the **PW** measurement region on the ultrasound image. A dashed selection line and ROI box will be visible.

The selection line will turn from red to green to indicate supported **PW** investigation regions in the heart.



**A Doppler Area**

3. Left-click to select the area and display the Pulsed Wave Doppler.



**A Defined Doppler Area**

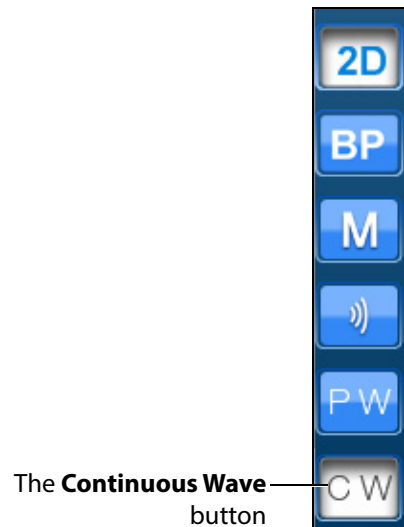
When finished, left-click on the Ultrasound display to reset the image.

Click the **PW** button to exit the Pulsed Wave Doppler.

## Using Continuous Wave Doppler

Continuous Wave Doppler measures are supported at the four heart valves and their surrounding regions.

To access Continuous Wave Doppler, click the **CW** button located near the bottom of the Ultrasound panel.



*The Ultrasound Panel - Mode Buttons*

The trace analysis (point velocity, systolic/diastolic and trace) are included. To access the trace analysis measures, the velocity plot has to be paused using the space bar. The trace analysis measures are contained within the **Measurements** menu.

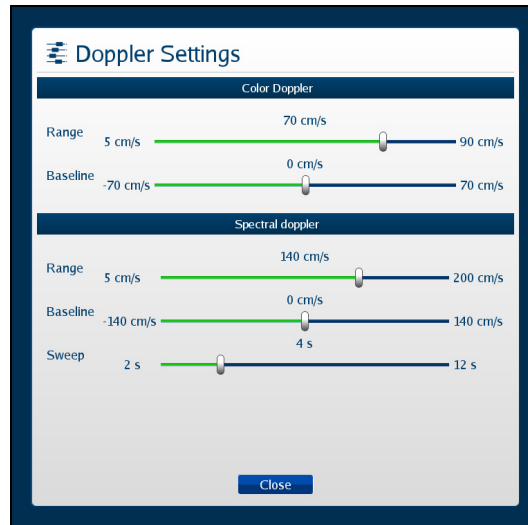


*The Measurements Button*

Spectral related settings such as range, baseline, and pulse repetition frequency are configurable through the **Doppler Settings** menu.



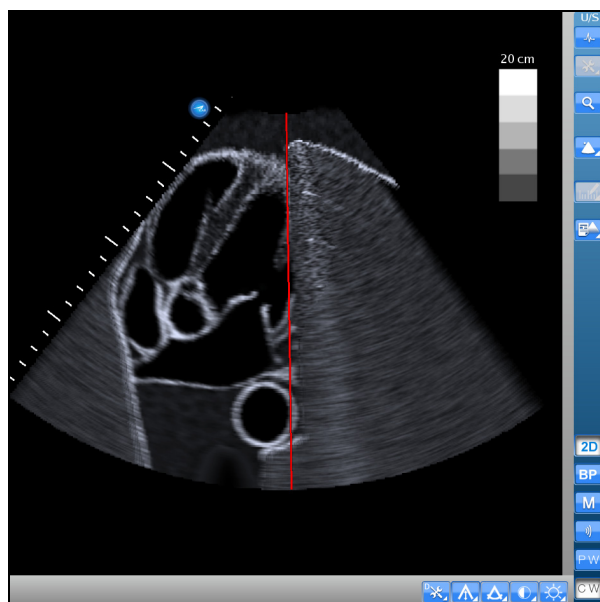
*The Doppler Settings Button*



**The Doppler Settings Window**

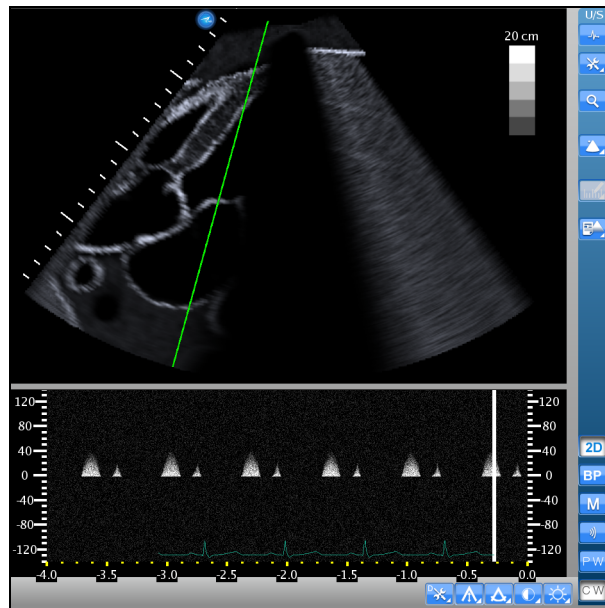
To use the Continuous Wave Doppler:

1. From the Ultrasound panel, click the **CW** button.
2. On the Ultrasound display, move the mouse to select the **CW** measurement region on the ultrasound image.  
A dashed selection line will be visible.  
The selection line will turn from red to green to indicate supported **CW** investigation regions in the heart.



**A Doppler Area**

3. Left-click to select this area and display the Continuous Wave Doppler.



*A Defined Doppler Area*

When finished, left-click on the Ultrasound display to reset the image.

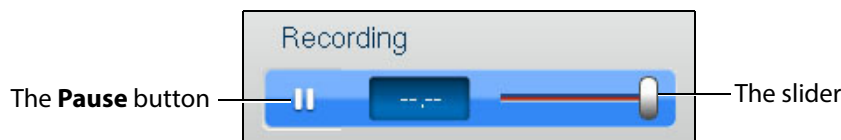
Click the **CW** button to exit the Continuous Wave Doppler.

## Using the Recording Controls

The current session can be paused and reviewed using the controls under the **Recording** panel on the upper-right side of the screen.

To pause the session, click the **Pause** button. To resume, click the **Pause** button again.

To review the session, use the slider to scroll back up to 12 seconds.



*The Recording Controls*

## Using Capture Controls

The Vimedix software is capable of capturing screen images and recording video clips of simulator activity.

## Capturing Images

To capture an image of the VIMEDIX interface, click the **Screen Capture** button or press the **Print Screen** key on the keyboard.

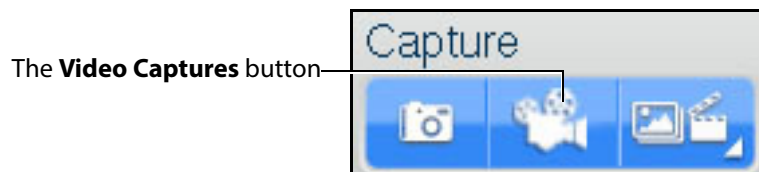


*The Capture Panel*

A capture of the current screen is taken and can be accessed by clicking the **Captures Menu** button.

## Recording Video

To record a video of simulator activity, click the **Video Captures** button.



*The Capture Panel*

The simulator activity is recorded for the length of time specified in the video capture settings. In addition to specifying the length of time for videos, users can specify whether to record the entire interface, the Ultrasound display only or the AR display only.

## Modifying Image and Video Capture Settings

To modify image or video capture settings, click the **Captures Menu** button.



The **Captures Menu** button

*The Capture Panel*

The Simulation Captures window appears and the **Capture Settings** tab is selected.



The **Capture Settings** tab

*The Capture Settings Tab*



## Viewing Image Captures

Image captures can be reviewed from the VIMEDIX software.

To view an image capture:

1. On the upper-right side of the screen, click the **Captures Menu** button.

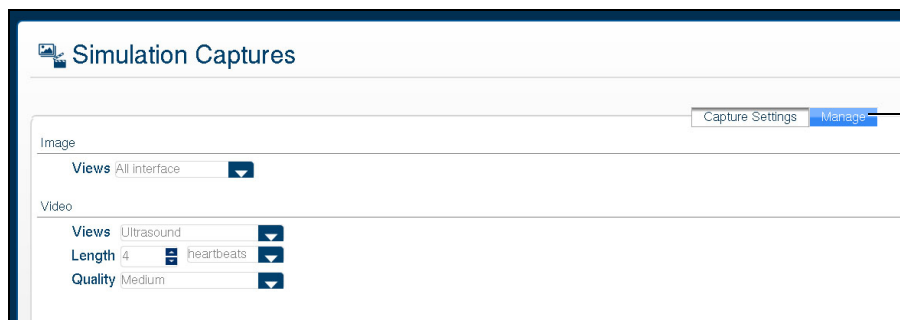


The **Captures Menu** button

*The Capture Panel*

The Simulation Captures window appears and the **Capture Settings** tab is selected.

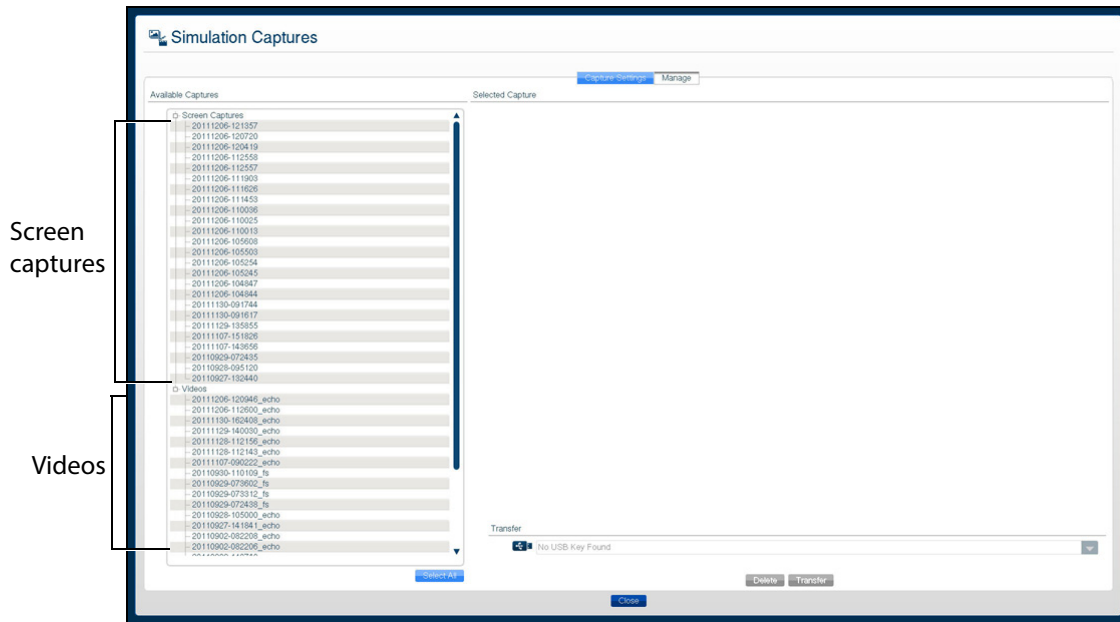
2. Select the **Manage** tab.



The **Manage** tab

*The Simulation Captures Window*

The Manage tab appears, showing all the videos and image captures currently stored on the system.



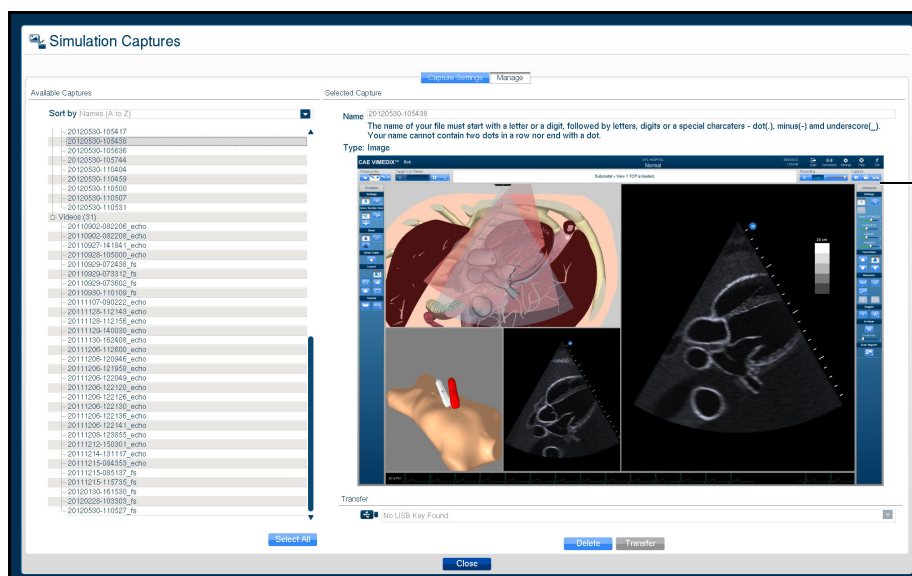
Screen captures

Videos

**The Manage Tab**

3. On the **Manage** tab, from the Available Captures panel, select an image capture to view.

The image appears in the Selected Capture panel.



The Selected Captures panel

**The Simulation Captures Window**

## Transferring Image Captures and Videos

Image captures and videos can be transferred to a USB storage device.

**IMPORTANT:** Once transferred to a USB storage device, image captures and videos are **deleted** from the Vimedix system and **cannot** be recovered.

To transfer image captures and videos:

1. Insert a USB storage device in one of the USB ports on the front of the Vimedix computer.
2. From the **Capture** panel, click the **Captures Menu** button.



The **Captures Menu** button

**The Capture Panel**

The Simulation Captures window appears and the **Capture Settings** tab is selected.

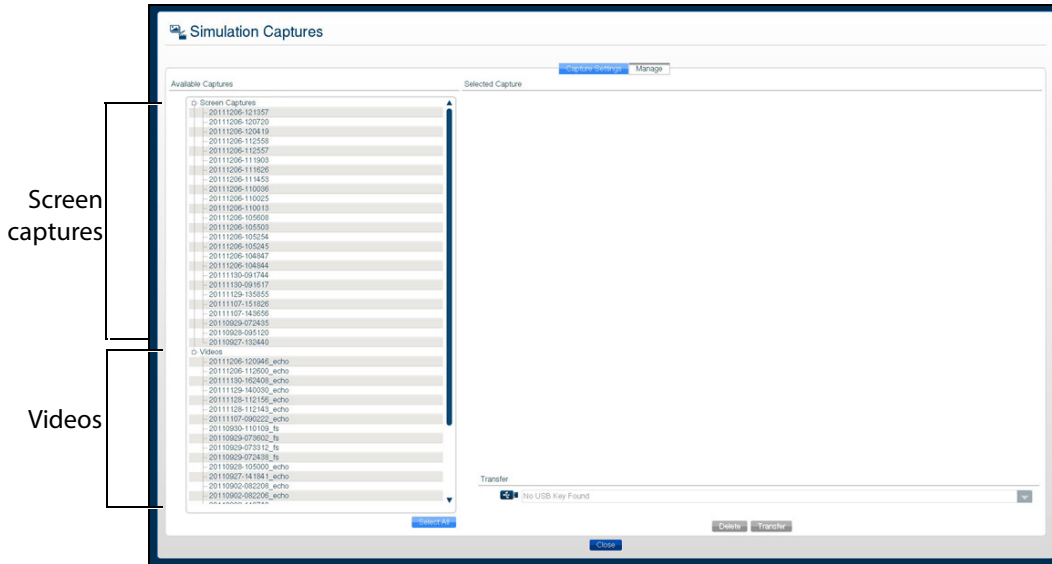
3. Select the **Manage** tab.



The **Manage** tab

**The Simulation Captures Screen**

The **Manage** tab appears, showing all the videos and image captures currently stored on the system.



**The Manage Tab**

4. On the **Manage** tab, from the Available Captures panel, select the videos and image captures to export.

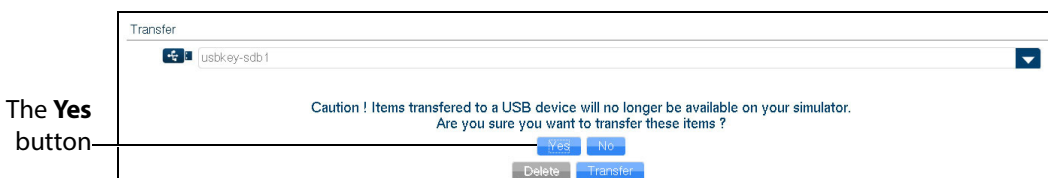
To select multiple image captures or videos, hold the **Ctrl** key on the keyboard while using the mouse to select the files to export, or click **Select All** to select all available image captures and videos.

5. Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Manage** tab.
6. Click **Transfer** to transfer the image captures and videos to the USB storage device.



**The Simulation Captures Window**

A warning message appears asking if you are sure you want to transfer the items.

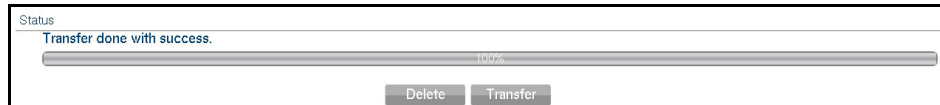


**The Simulation Captures Window**

- Click **Yes**.

The images are transferred. The transfer progress is indicated by a progress bar near the bottom of the Simulation Captures window.

Once the transfer is complete, the transfer success message appears.



**The Transfer Success Message**

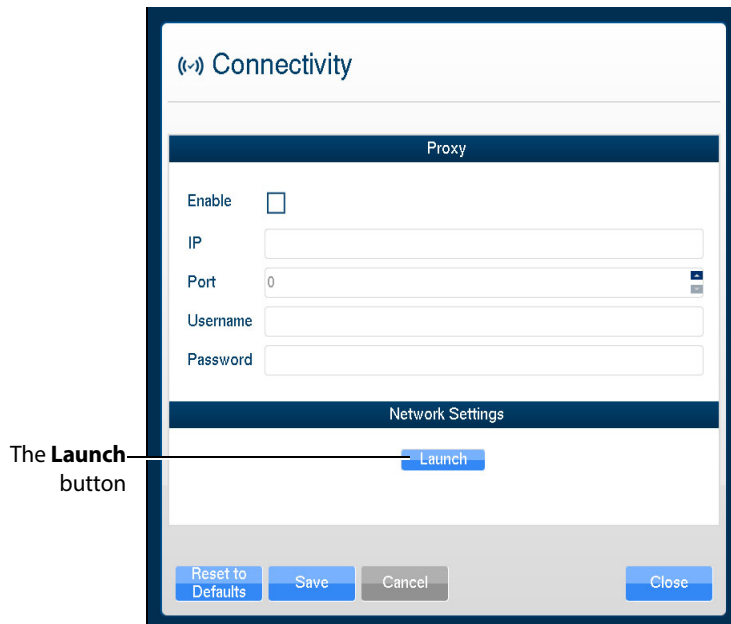
## Managing Network Settings

Network settings can be managed from the Connectivity window. To access the Connectivity window, click the **Connection** icon.



**The Connection Icon**

The Connectivity window appears.



**The Connectivity Window**

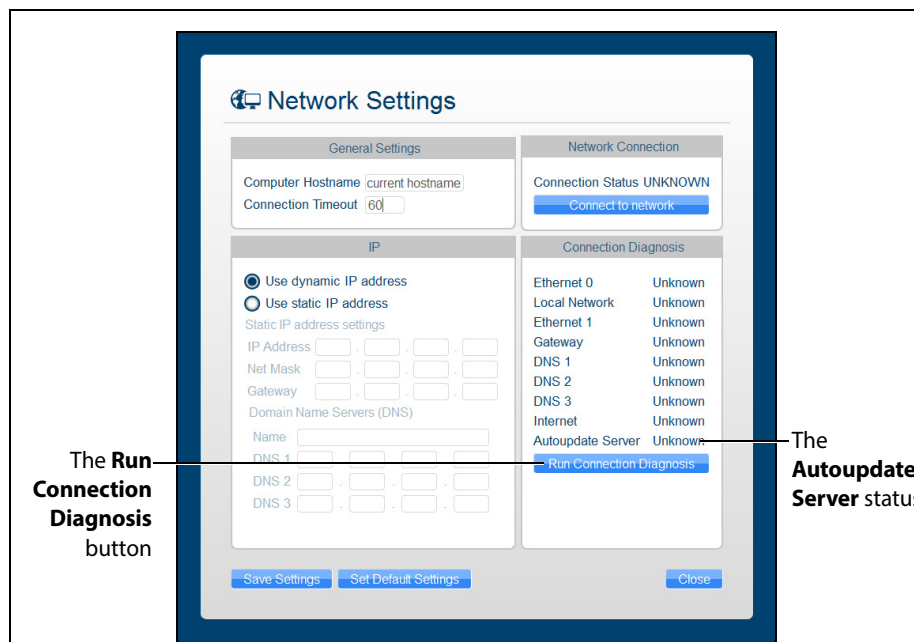
- To ensure Vimedix is configured to access updates, click the **Launch** button. You may need to scroll down to view the Launch button.

The **Network Settings** window appears.

2. In the right-hand column, click the **Run Connection Diagnosis** button.

**Autoupdate Server** should show *Online* status.

If Autoupdate Server does not show *Online* status, contact your IT department to allow access to **Port 3690, IP 67.228.7.120**.



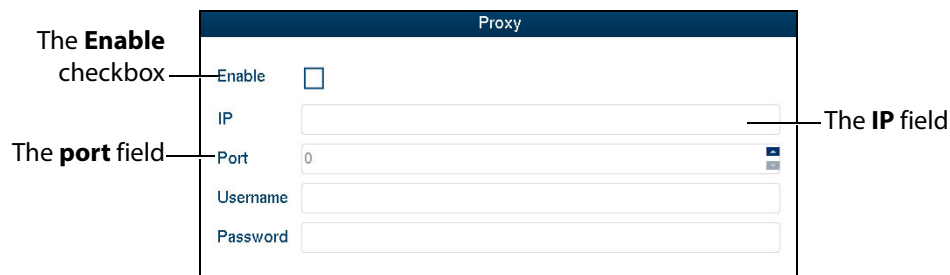
**The Network Settings Window**

### Configuring Proxy Settings

Some networks may require the configuration of a proxy server to allow the Vimedix system access to the Internet. Note that this is not always the case. Please contact your IT department to determine if a proxy server needs to be used on your network.

To manually enable proxy connection:

1. In the Connectivity window, under the **Proxy** heading, click the **Enable** checkbox.
2. In the **IP** field, enter the IP address of the Proxy server as provided by your IT department.
3. In the **Port** field, enter the port specified by your IT department.



*The Connectivity Window*

4. If applicable, enter the **Username** and **Password** specified by your IT department.
5. At the bottom of the Connectivity window, click **Save**.

### Configuring Custom Network Settings

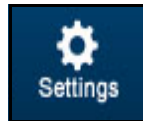
To configure other network settings, under the **Network Settings** heading, click the **Launch** button. The Network Settings window appears, containing custom settings options.

Contact your Network Administrator or IT professional for help with configuring custom network settings, if necessary.

**NOTE:** If customized connection settings are required for the network, leave the OWL and Proxy server information in the Connectivity window blank.

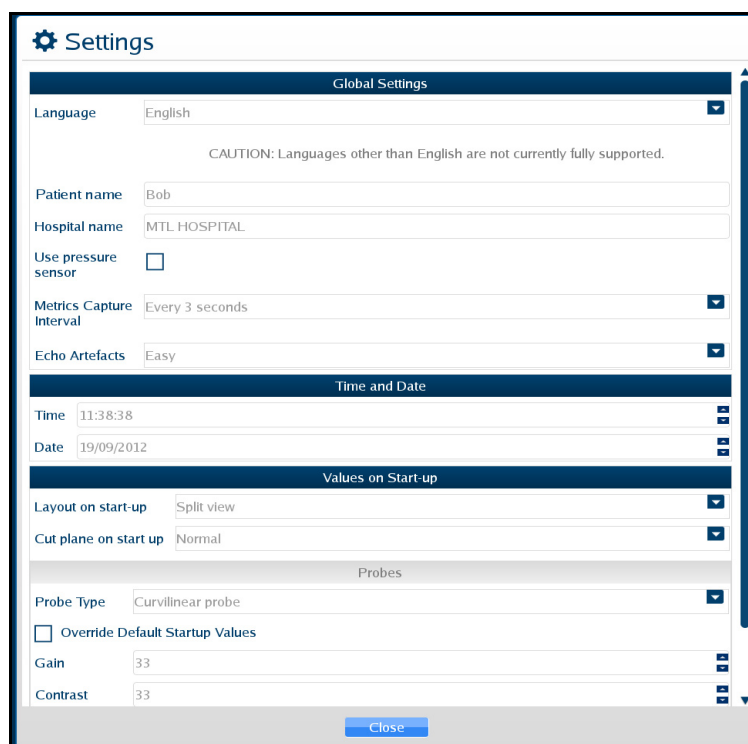
## Modifying Simulator Settings

Simulator settings can be modified from the Settings window. To access the Settings window, click the **Settings** icon.



*The Settings Icon*

The Settings window appears.



*The Settings Window*

### Language

To modify the simulator language, from the Settings window, select the desired language from the **Language** drop-down and click **Close**.

**NOTE:** Some languages not fully supported.



## Patient Name

The patient name, which is determined prior to shipping by the type of mannequin, appears at the top of the Vimedix screen and on simulator-generated reports. Bob is the default patient name for the male mannequin and Catherine is the default patient name for the female mannequin. Users can change the patient name at their discretion and that manually assigned name will remain the same for future use until it is changed.

**NOTE:** The patient name as indicated in the Settings window automatically appears on echo reports by default.

## Hospital Name

The hospital name, which is chosen prior to shipment, appears at the top of the VIMEDIX interface and on simulator-generated reports.

## Use Pressure Sensor

The pressure sensor can be turned on or off. When the pressure sensor is turned on, the probe must be in contact with the mannequin to obtain an ultrasound image. When the sensor is turned off, an image can be obtained by placing the probe close to the mannequin.

The pressure sensor is turned on by default. To turn the pressure sensor off, from the Settings window, uncheck the **Use pressure sensor** box, then click **Close** to exit the simulator settings.

## Metrics Capture Interval

The **Metrics Capture Interval** setting determines how often the movement of the probe is captured for metrics reports. CAE Healthcare recommends leaving **Realtime** selected.

## Image Quality

The **Image Quality** setting can be used to change the level of noise on the ultrasound view. The default setting is **Easy**. To increase the noise, change the setting to **Difficult**.

## Use Popup Toolbar

The popup toolbar displays a condensed version of the CAE VIMEDIX interface and the options are available in a drop-down menu format. This format is intended to simulate the monitor display on a real ultrasound machine.

The popup toolbar mode is activated by default. To activate the expanded view from the Settings window, uncheck the **Use Popup Toolbar** box, then click **Close** to exit the simulator settings.

### Time and Date

Users can customize the system time and date in the **Time and Date** section of the Settings window.

### Layout on start-up

The default screen layout on startup can be modified. To modify the default layout, in the Settings window, from the **Layout on Start-up** drop-down menu, select the desired layout.

### Probe Type

The probe type can be selected from the **Probe Type** menu in the Settings window. By default, the connected probe type is automatically selected.

### Override Default Startup Values

The **Override Default Startup Values** checkbox can be used to enable modification of the gain, contrast and depth of field values used upon simulator startup.

### Gain, Contrast Depth of Field and Angle

To modify the gain, contrast and depth of field and angle settings used upon simulator startup:

1. In the Settings window, check the **Override Default Startup Values** box.
2. Use the arrows next to the **Gain, Contrast, Depth of Field** and **Angle** fields to change the settings.

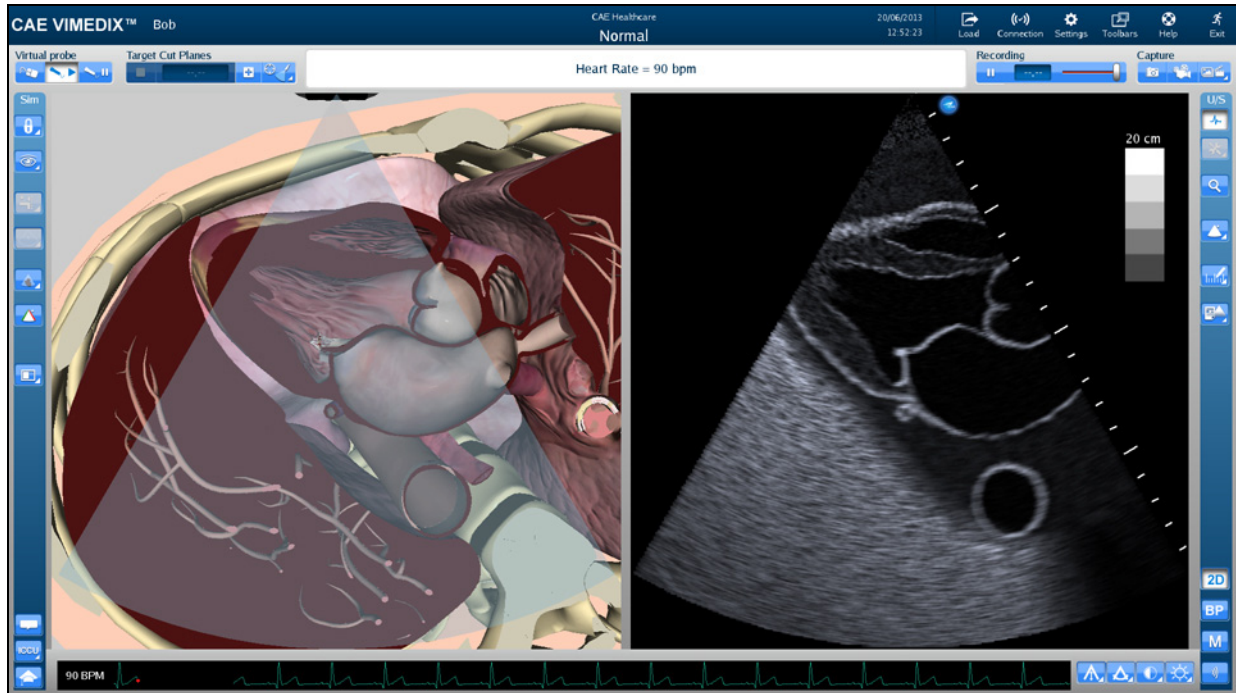
The selected settings are applied to the Ultrasound and AR displays each time the simulator is started.

**NOTE:** The gain, contrast, depth of field and angle can be modified at any time from the **Ultrasound** panel under the **Settings** section using the **Depth of Field, Contrast, Gain** and **Angle** sliders. However, each time the simulator is restarted, the gain, contrast, depth of field and angle revert to the default settings or the settings specified in the Settings window.

## Hiding the Toolbars

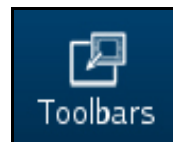
The Vimedix interface appears with a toolbar on each side of the screen that contains all of the available functions for the AR and Ultrasound displays.

Users can hide the toolbars to increase the size of the AR and Ultrasound displays.



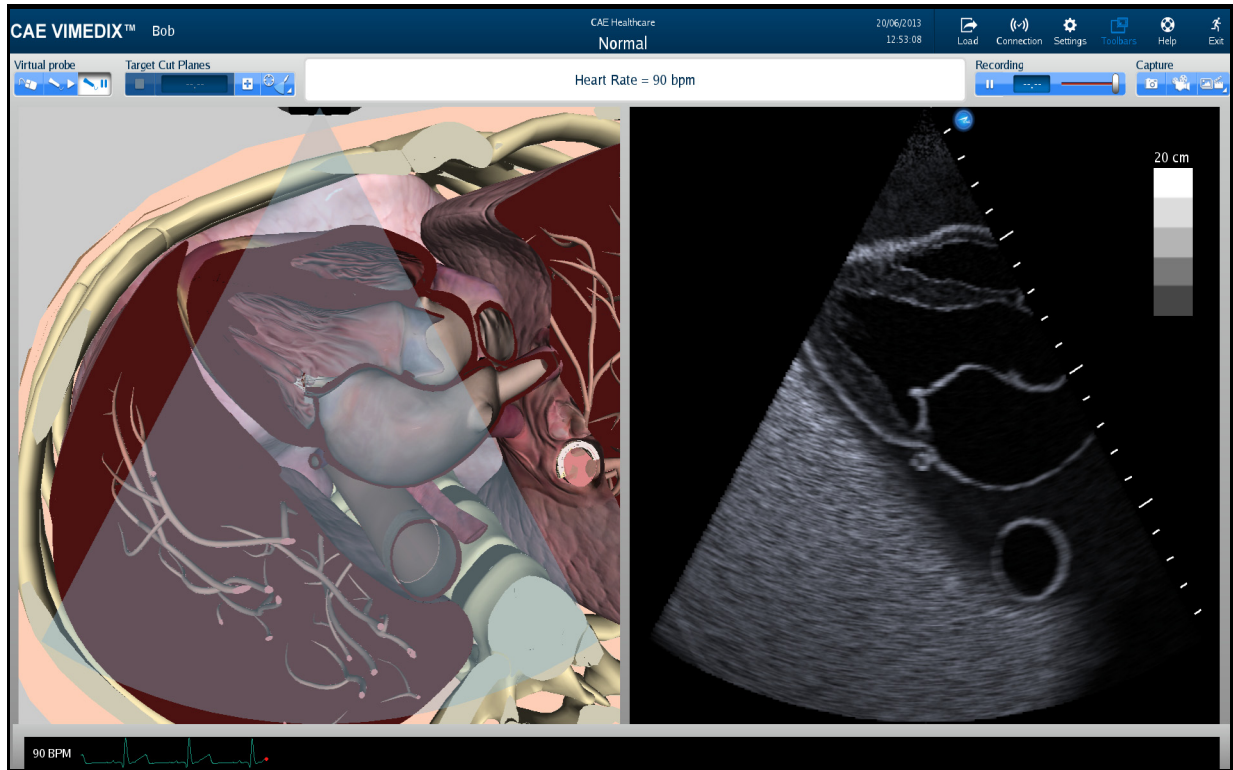
*The VIMEDIX Simulator Interface*

To hide the toolbars, click the **Toolbars** icon.



*The Toolbars Icon*

The toolbars are now hidden from view.



*The Hidden Toolbars Mode*

## Accessing the Help Menu

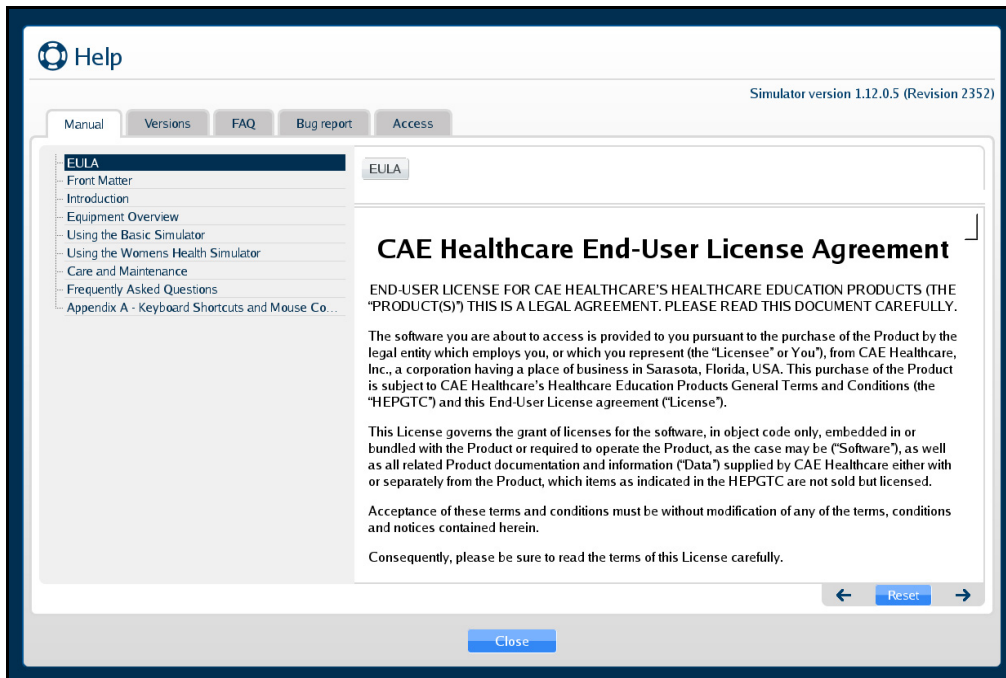
From the help menu, users can access the Vimedix User Guide, review simulator version updates, browse Frequently Asked Questions and submit bug reports.

To access the Help window, click the **Help** icon in the upper-right corner of the screen.



*The Help Icon*

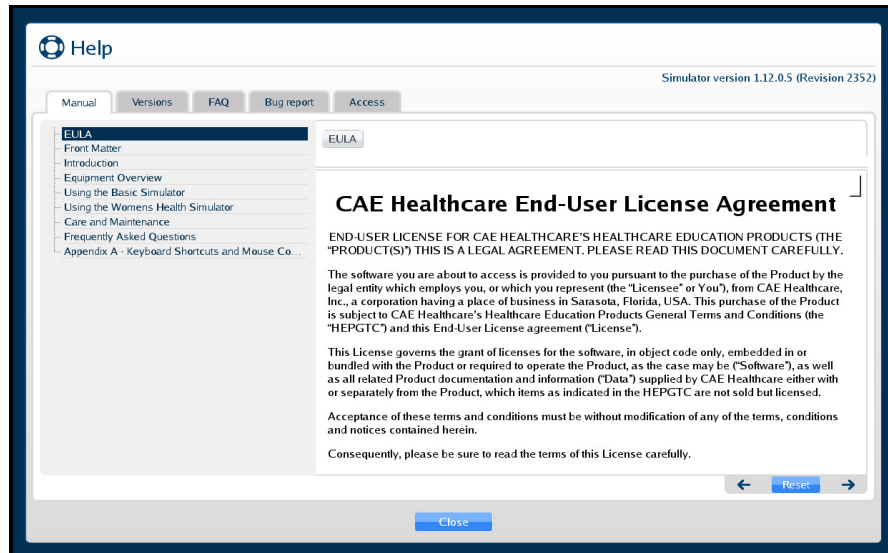
The Help window appears.



***The Help Window***

## Manual

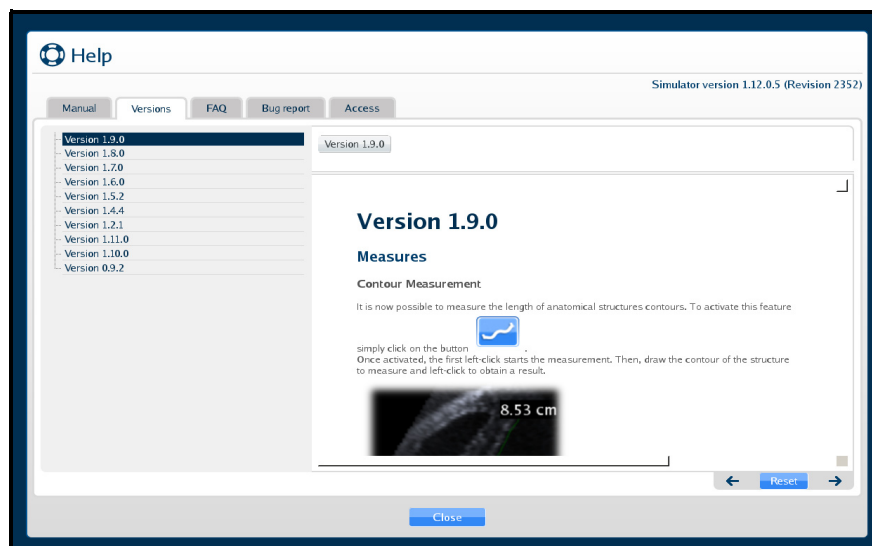
The **Manual** tab is selected by default and displays an electronic version of the user guide.



The Manual Tab

## Versions

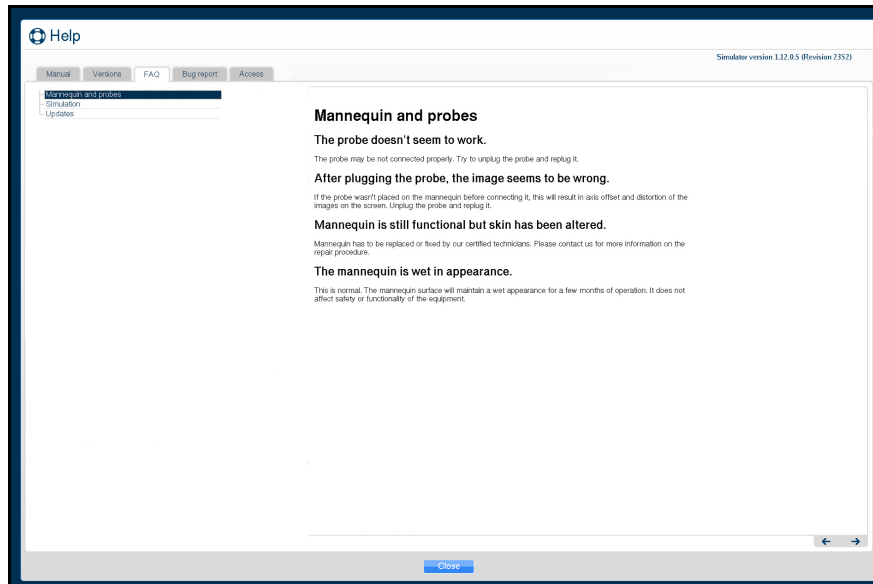
Click on the **Versions** tab to view the latest features associated with software updates.



The Versions Tab

## FAQ

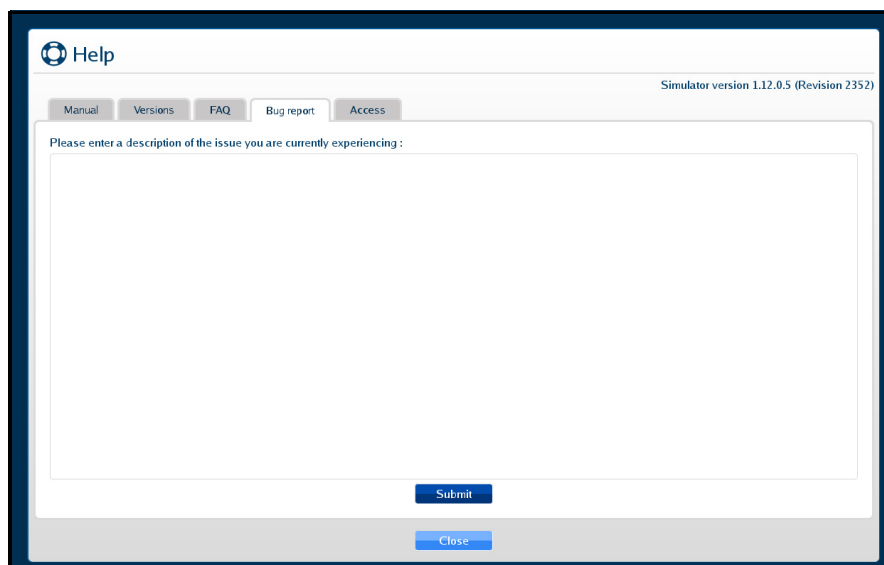
Click on the **FAQ** tab to view the troubleshooting tips for frequently asked questions.



*The FAQ Tab*

## Bug Report

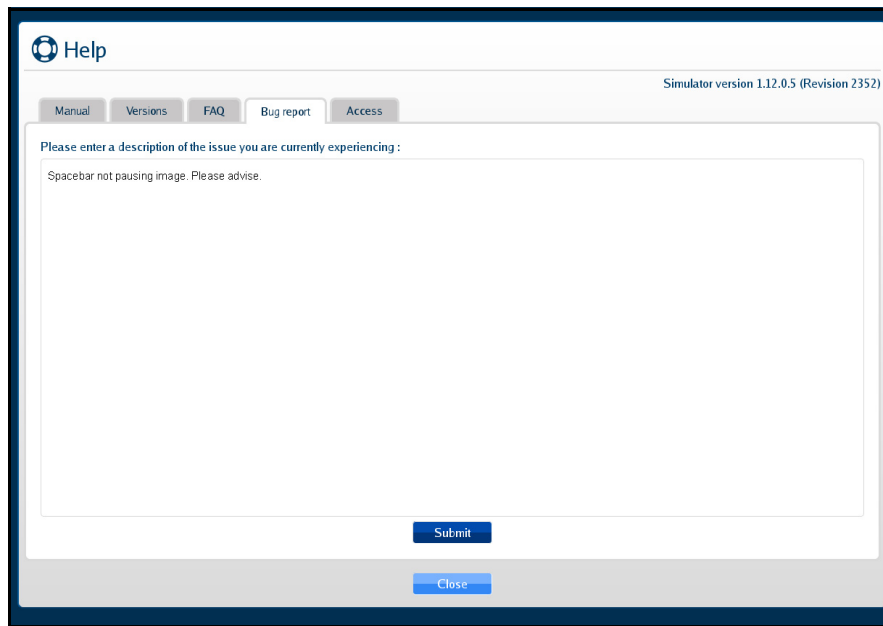
Click on the **Bug report** tab to report an issue with the software.



*The Bug Report Tab*

To submit a bug report:

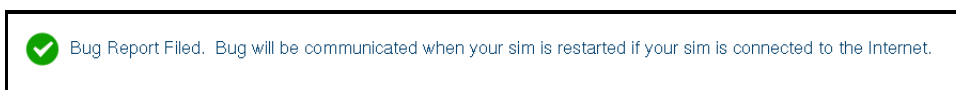
1. Click in the Bug Report text box and describe the nature of the problem in the text box provided.
2. Click **Submit** when finished.



The screenshot shows a help window titled "Help" with a "Bug report" tab selected. The window contains a text area for describing the issue, a "Submit" button, and a "Close" button. The text area contains the text: "Spacebar not pausing image. Please advise." The window also displays "Simulator version 1.12.0.5 (Revision 2352)" in the top right corner.

***The Bug Report Tab***

The confirmation message will appear when the Bug Report is successfully filed.

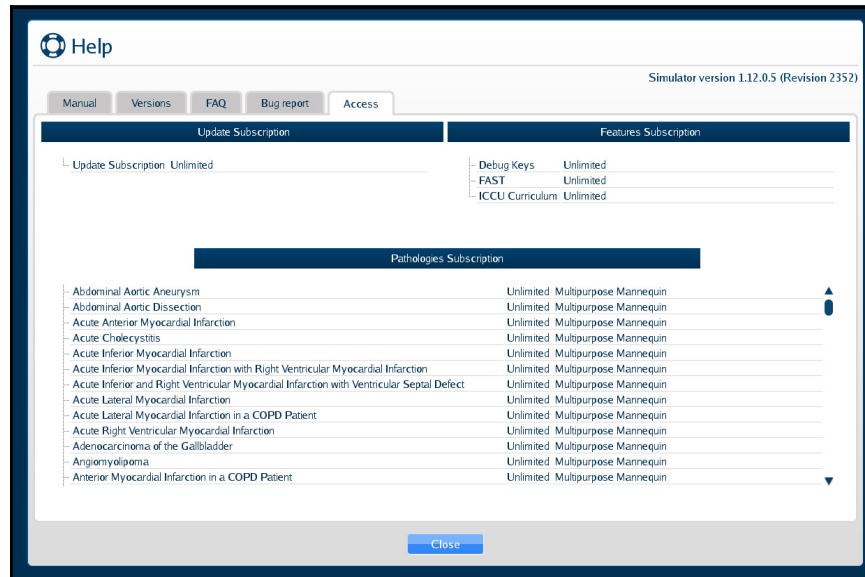


***The Confirmation Message***



## Access

Click on the **Access** tab to confirm which packages and the types of subscriptions that were purchased for your Vimedix simulator.



**The Access Tab**

## Shutting Down

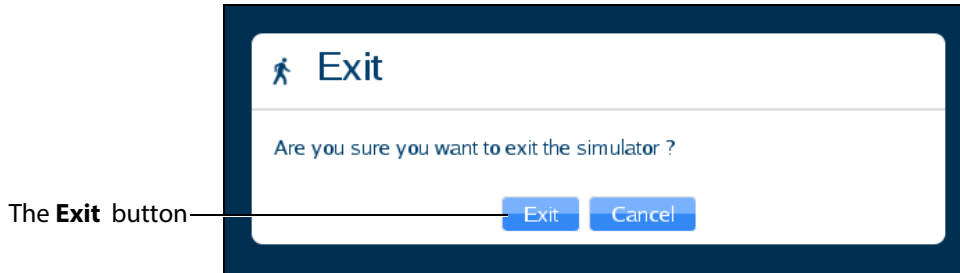
To shut down the simulator:

1. Click the **Exit** icon in the upper-right corner of the screen.



**The Exit Icon**

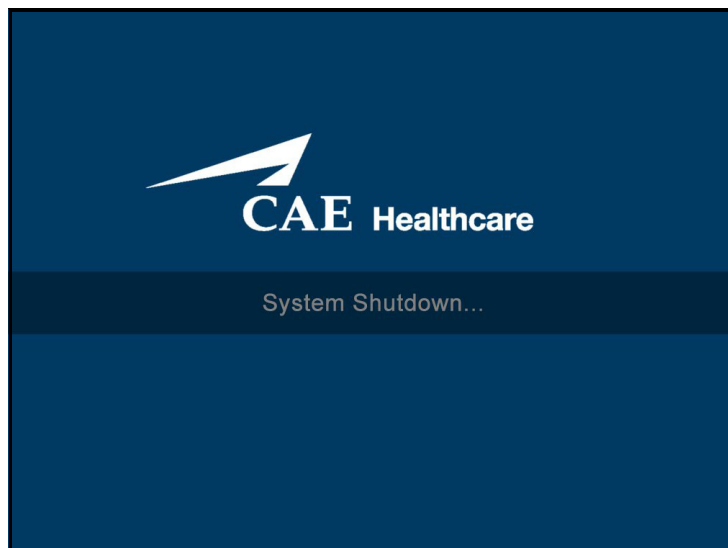
The Exit window appears and contains a message asking if you are sure you want to exit the simulator.



***The Exit Window***

2. In the Exit window, click **Exit**.

The system shut down screen appears.



***The System Shut Down Screen***

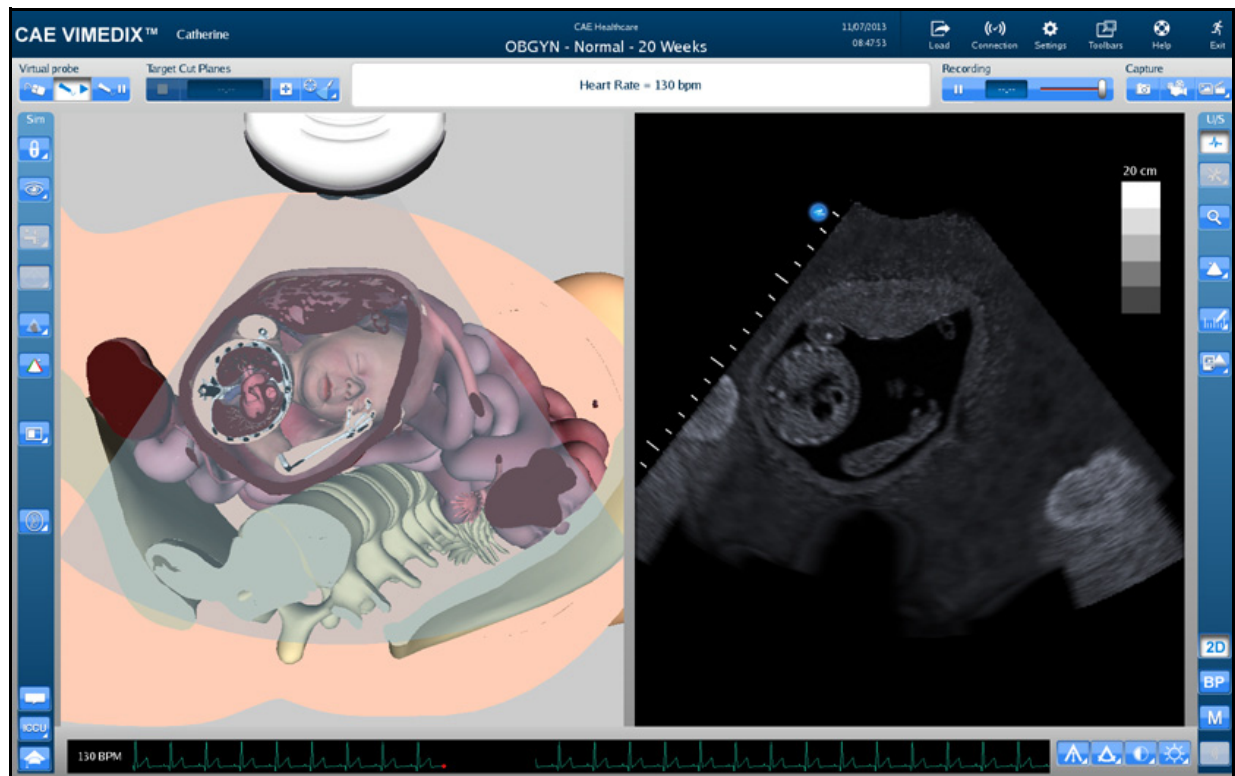
When the monitor screen appears black, the simulator is shut down.

# USING THE OB/GYN SIMULATOR

The Vimedix simulator is designed to give learners an exploratory training environment to practice using an ultrasonography machine. The female mannequin is currently only provided with the purchase of the ob-gyn module.

## Interface Overview

The Vimedix simulator interface consists of the Augmented Reality (AR) display, the Ultrasound display and multiple features that allow the user to perform various functions and adjust settings for educational purposes.

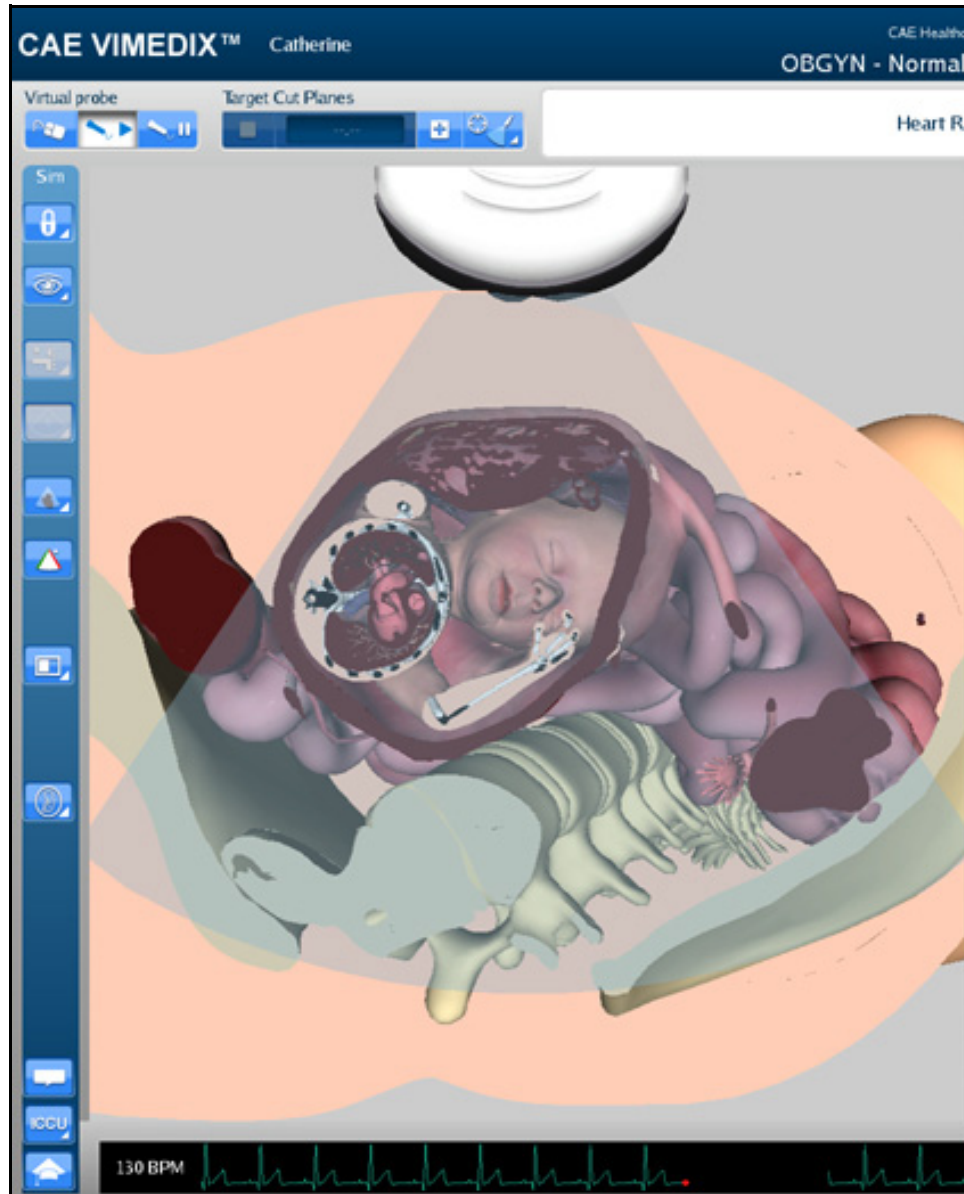


*The Vimedix Simulator Interface*

## Augmented Reality Display

The left side of the Split View interface displays an interactive, animated 3D anatomical depiction of the organs and artifacts located in the scanned area. The AR display shows a representation of the

ultrasound beam placement to help the learner generate an accurate ultrasound image. Structures and artifacts can be “removed” from view for learning purposes using the Structures Visibility feature.



*The AR Display*

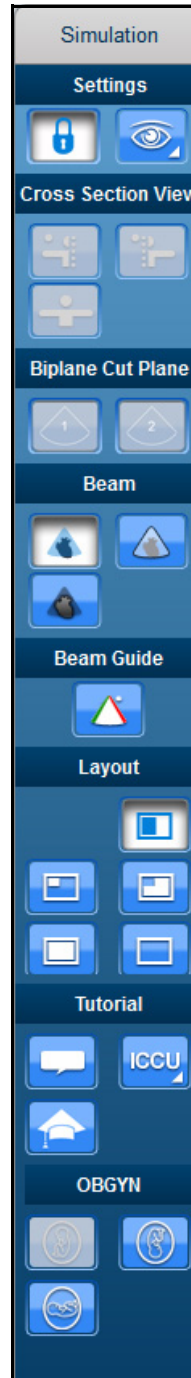
## Simulation Panel

The buttons under the **Simulation** panel on the left side of the interface allow the user to customize the training experience.



*The Simulation Panel*

The expanded panel view is available and it can be accessed by deselecting the **Use Popup Toolbar** checkbox in the Settings window.









*The Simulation Panel - Expanded View*



**NOTE:** The OBGYN fetal positioning buttons are not present in the 8-week OBGYN module.

For more information on expanding the panel view, see *Modifying Simulator Settings on page 274*.

## Simulation Panel Buttons

The **Simulation** panel buttons are categorized and separated into sections by the relevance of their functions.

Simulation Panel Buttons	
	Located in the Settings section, the <b>Lock</b> button is used to activate the view lock feature.
	Located in the Settings section, the <b>Unlock</b> button is used to deactivate the view lock feature.
	Located in the Settings section, the <b>Structures Visibility</b> button is used to choose which organs are shown on the AR and Ultrasound displays.
	Located in the Biplane section, the <b>Biplane View</b> button allows users to select an Augmented Reality view based on either the primary or secondary ultrasound beam when in Biplane imaging mode.
	Located in the Beam section, the <b>Transparent</b> button enables the transparent beam on the AR display. By default, the beam is set to transparent upon simulator startup.
	Located in the Beam section, the <b>Edge</b> button enables the transparent beam with a red border on the AR display.
	Located in the Beam section, the <b>Ultrasound</b> button enables the ultrasound mode of the beam on the AR display.
	Located in the Beam Guide section, the <b>Beam Guide</b> button enables a green line and a red line on the left and right side of the beam to indicate the orientation

Simulation Panel Buttons	
	Located in the Layout section, the <b>Split View</b> button activates the split view of the AR and Ultrasound displays. By default, the interface is in Split View upon simulator startup.
	Located in the Layout section, the <b>Small</b> button activates a view with a smaller AR display and a larger Ultrasound display.
	Located in the Layout section, the <b>Large</b> button activates a view with a larger AR display and a smaller Ultrasound display.
	Located in the Layout section, the <b>Only Augmented Reality</b> button activates a view with only the AR display.
	Located in the Layout section, the <b>Hide Augmented Reality</b> button activates a view with only the Ultrasound display.
	Located in the Tutorial section, the <b>Tutorial</b> button activates the Tutorial mode. In Tutorial mode, users can scroll over different anatomical structures using the mouse in the Augmented Reality display and the name of the structure appears.
	Located in the Tutorial section, the <b>Instructional Content</b> button opens the menu where users can select a ranges of self-directed learning tasks covering several disciplines and skill areas. Tasks include obtaining standard views (without and without the aid of references), optimizing image settings, and performing measures.
	Located in the ObGyn section, the <b>Breech</b> button sets the fetus in the AR and Ultrasound displays to a “bottom down” position.
	Located in the ObGyn section, the <b>Cephalic</b> button sets the fetus in the AR and Ultrasound displays to a “head down” position.



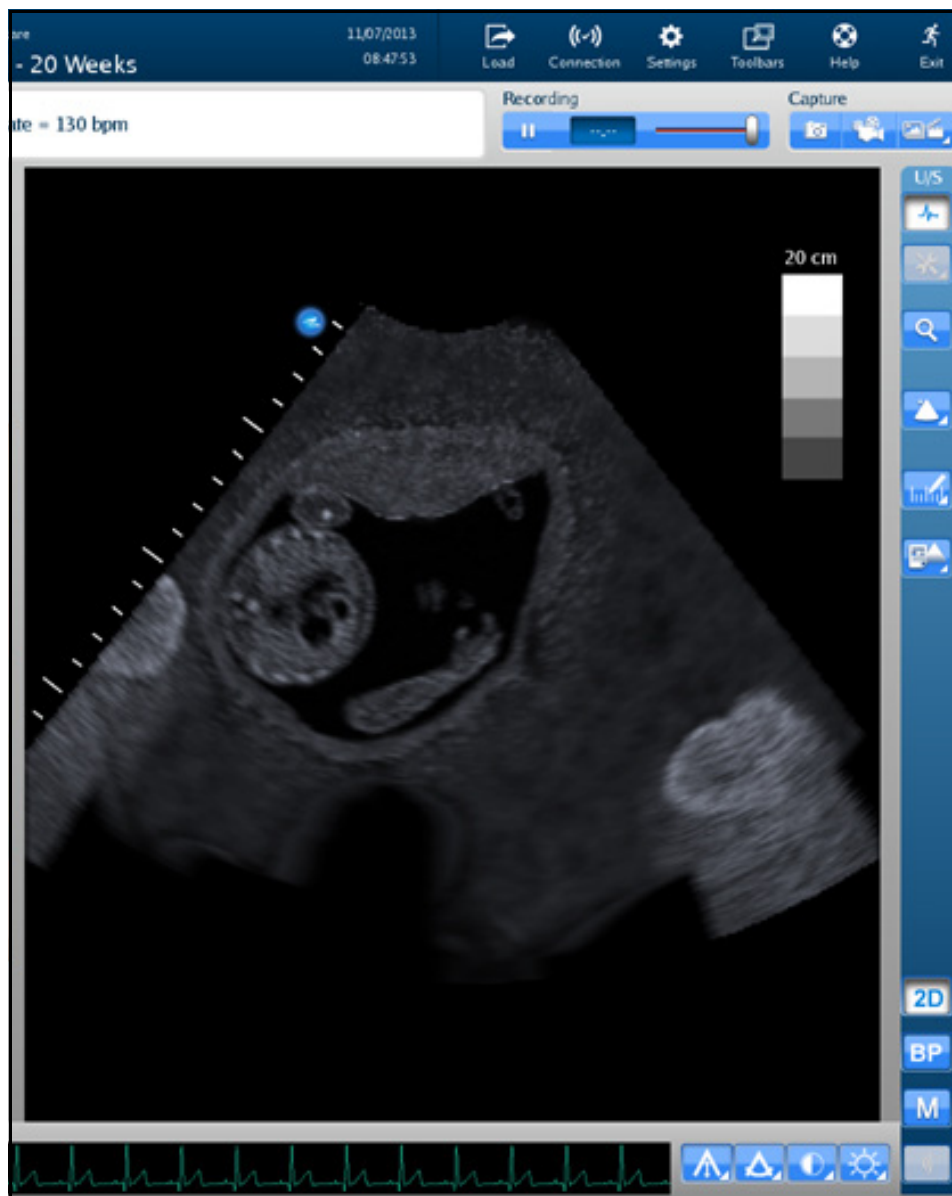
**Simulation Panel Buttons**



Located in the ObGyn section, the **Transverse** button sets the fetus in the AR and Ultrasound displays to a “sideways” position.

## Ultrasound Display

The right side of the Split View interface shows the ultrasound image and contains different features to achieve the desired view.



*The Ultrasound Display*

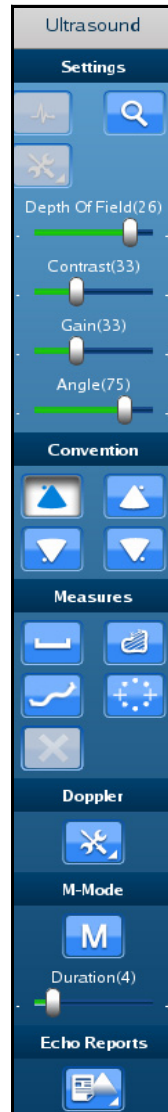
## Ultrasound Panel

The buttons under the **Ultrasound** panel on the right side of the interface are used to modify and interact with the Ultrasound display.



*The Ultrasound Panel*

The expanded panel view is available and it can be accessed by deselecting the **Use Popup Toolbar** checkbox in the Settings window.





















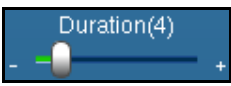
*The Ultrasound Panel - Expanded View*




For more information on expanding the panel view, see *Modifying Simulator Settings on page 274*.

### Ultrasound Panel Buttons

The buttons are categorized and separated into sections by the relevance of their functions.

Ultrasound Panel Buttons	
	<p>Located in the Settings section, the <b>Zoom</b> button allows the user to zoom in on a specific area of the Ultrasound image.</p>
	<p>Located in the Settings section, the <b>Depth of Field</b> slider controls the depth of the ultrasound beam. The Depth of Field can also be modified by scrolling the mouse wheel. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.</p>
	<p>Located in the Settings section, the <b>Contrast</b> slider controls the contrast of the Ultrasound display. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.</p>
	<p>Located in the Settings section, the <b>Gain</b> slider controls the gain on the Ultrasound display. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.</p>
	<p>Located in the Settings section, the <b>Angle</b> slider controls the angle of the ultrasound beam. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.</p>
	<p>Located in the Convention section, the <b>Cardiology and Anesthesiology Convention</b> button activates the cardiology and anesthesiology convention.</p>
	<p>Located in the Convention section, the <b>Radiology Convention</b> button activates the radiology convention.</p>
	<p>Located in the Convention section, the <b>Mayo Clinic Cardiac Convention</b> button activates the Mayo Clinic cardiac convention.</p>
	<p>Located in the Convention section, the <b>Cardiac Pediatric Convention</b> button activates the cardiac pediatric convention.</p>

Ultrasound Panel Buttons	
	Located in the Measures section, the <b>Measurements</b> button activates the drop-down menu for the measurement options.
	Located in the Measures section, the <b>Electronic Caliper</b> button enables the electronic caliper tool to measure lengths of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Area Measurement</b> button enables the area measurement tool to measure area of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Contour Measurement</b> button enables the contour measurement tool to measure the contours of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Circumference Measurement</b> button enables the circumference measurement tool to measure circumference of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Edit Measurements</b> button allows users to adjust points on a measurement.
	Located in the Measures section, the <b>Delete Last Measurements</b> button deletes the last measurements in the Ultrasound display.
	Located in the Doppler section, the <b>Doppler Settings</b> button opens the Doppler settings window where users can customize the Doppler settings.
	Located in the M-Mode section, the <b>M-Mode</b> button activates the M-Mode feature in the Ultrasound display.
	Located in the M-Mode section, the <b>M-Mode Duration</b> slider controls the sweep speed of the M-mode display.

Ultrasound Panel Buttons	
	Located in the Biplane section, the <b>Biplane Mode</b> button activates the Biplane view in the Ultrasound display.
	Located in the Biplane section, the <b>Biplane Settings</b> button allows users to adjust characteristics of the Biplane view in the Ultrasound display.
	Located in the Echo Reports section, the <b>Reports</b> button allows users to create, complete and review obstetrics reports for training.

### Settings Panel Buttons




The Settings panel contains buttons which are relevant to the Ultrasound display.






*The Settings Panel*

When different modes are activated (Doppler, M-Mode, Biplane), the Settings panel contains additional settings buttons for the activated modes.




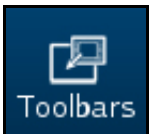
**NOTE:** The Settings buttons are located in the Ultrasound panel when the **Use Popup Toolbar** checkbox is deselected.


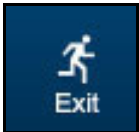
Settings Panel Buttons	
	Located in the Settings panel, the <b>Gain Settings</b> button activates the adjustment slider and allows users to modify the gain in the Ultrasound display.
	Located in the Settings panel, the <b>Contrast Settings</b> button activates the adjustment slider and allows users to modify the contrast in the Ultrasound display.
	Located in the Settings panel, the <b>Angle Settings</b> button activates the adjustment slider and allows users to modify the angle of the beam in the Ultrasound display.

Settings Panel Buttons	
	<p>Located in the Settings panel, the <b>Depth of Field Settings</b> button activates the adjustment slider and allows users to modify the depth of field in the Ultrasound display.</p>
	<p>Located in the Settings panel, the <b>Biplane Settings</b> button allows users to access the Biplane Settings window to adjust settings.</p>
	<p>Located in the Settings panel, the <b>M-Mode Settings</b> button allows users to access the M-Mode Settings window to adjust settings.</p>

## Control Panel

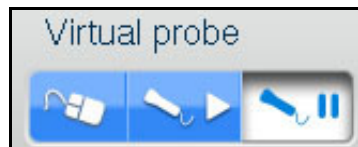
The **Control** panel is located in the upper-right corner of the interface. By clicking on the icons, users can load pathologies, modify connections and settings, access help tools and exit the program.

Control Panel Icons	
	<p>The <b>Load</b> icon is used to access the listing of available pathologies.</p>
	<p>The <b>Connection</b> icon allows the user to edit the network settings.</p>
	<p>The <b>Settings</b> icon allows the user to edit the simulator settings.</p>
	<p>The <b>Toolbars</b> icon allows the user to hide the Simulator and Ultrasound panels.</p>

	The <b>Help</b> icon provides access to the Help menu and information about simulator functions, settings and basic troubleshooting.
	The <b>Exit</b> icon is used to shut down the simulator.

## Selecting a Virtual Probe Option

The **Virtual Probe** panel contains three options: the **Mouse** button, the **Probe** button and the **Probe Pause** button.



*The Virtual Probe Options*

## Using the Mouse Controls

Click the **Mouse** button to control the various views of the simulator with the computer mouse.



*The Mouse Button*

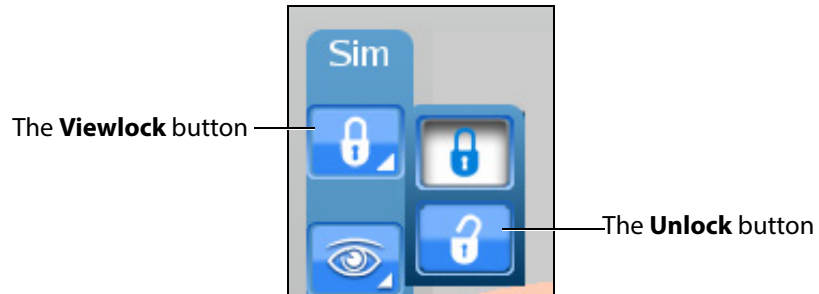
To move the body using the mouse without moving the ultrasound beam:

1. Click and hold the left button on the mouse
2. Drag the mouse.

To move the probe using the mouse:



1. Unlock the view lock by clicking the **Viewlock** button and selecting the **Unlock** button.



**The Viewlock buttons**

**NOTE:** When using the expanded toolbar view, click the Viewlock button one time to deactivate/unlock the viewlock.

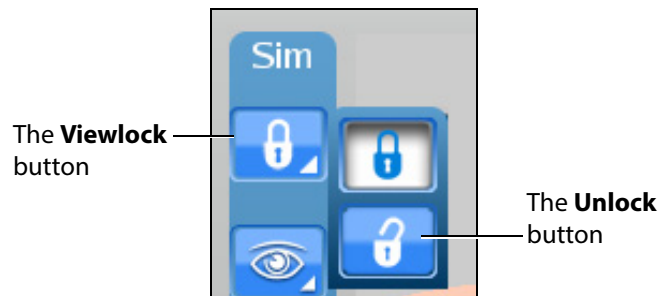


**The Settings Section**

2. Once the view lock is disabled, place the cursor in the AR display.
3. Click and hold the right button on the mouse.
4. Drag the mouse.

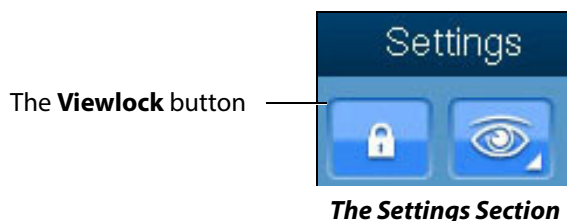
To move the body and the probe:

1. Unlock the view lock by clicking the **Viewlock** button and selecting the **Unlock** button.



**The Viewlock buttons**

**NOTE:** When using the expanded toolbar view, click the Viewlock button one time to deactivate/unlock the viewlock.



2. Once the view lock is disabled, place the cursor in the AR display.
3. Click and hold the left button on the mouse.
4. Drag the mouse.

To zoom in and out using the mouse:

1. Click and hold the wheel on the mouse.
2. Drag the mouse.

To adjust the depth of field using the mouse, roll the wheel on the mouse.

## Using the Probe

When the **Probe** button is selected, the probe connected in the port **SENSOR 1** on the front panel of the computer is activated and the probe can be used to scan the mannequin.



*The Probe Button*

## Using the Curvilinear Probe

**NOTE:** The curvilinear probe is only provided for users who have purchased the FAST, Abdominal or Ob/Gyn 20-week modules. Contact your CAE Healthcare sales representative to purchase one of these modules.

To use the curvilinear probe, place the tip of the probe on the mannequin's skin to obtain a view.

## Using the Endovaginal Probe

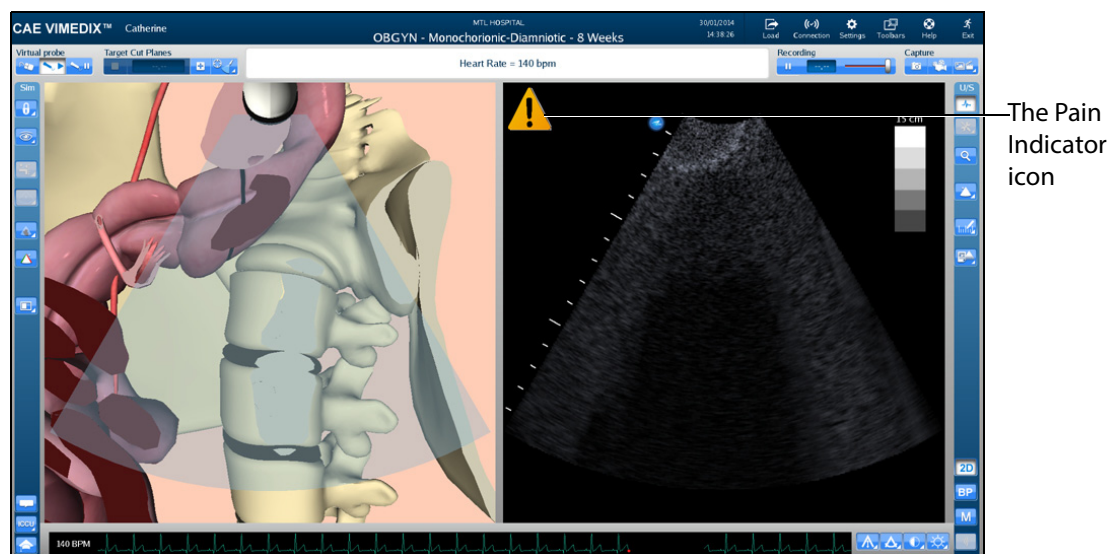
**NOTE:** The endovaginal probe is only provided for uses who have purchased the 8-week module. Contact your CAE Healthcare sales representative to purchase the 8-week module.

Prior to using the endovaginal probe, spray the vaginal insert with the CAE Healthcare-approved silicone spray (provided in new shipments with 8-module purchase or in vaginal insert installation kit).

The endovaginal probe can only be inserted into Catherine mannequins with a vaginal insert present. If the mannequin contains a vaginal plug instead of a vaginal insert, contact CAE Healthcare Customer Service to request a vaginal insert installation kit.

If a 20 week pathology is loaded (i.e., Normal 20 Weeks) when the endovaginal probe is connected, a message will appear notifying the user that the incorrect probe is connected. The endovaginal probe is only compatible with 8-week module normal case and pathologies.

To use the endovaginal probe, slowly insert the probe tip into the vaginal insert. If the probe is utilized in a manner that could cause the patient pain, the Pain Indicator icon appears.



*The VIMEDIX Interface - 8 Week Module*

The icon disappears when the probe manipulation that may cause pain is no longer being performed.

## Using the Probe Pause Feature

The **Probe Pause** button freezes the AR and Ultrasound displays on the last scanned cycle and loops the cycle on the displays. The probe pause feature is useful for analyzing cut planes.



*The Probe Pause Button*

## Loading Pathologies

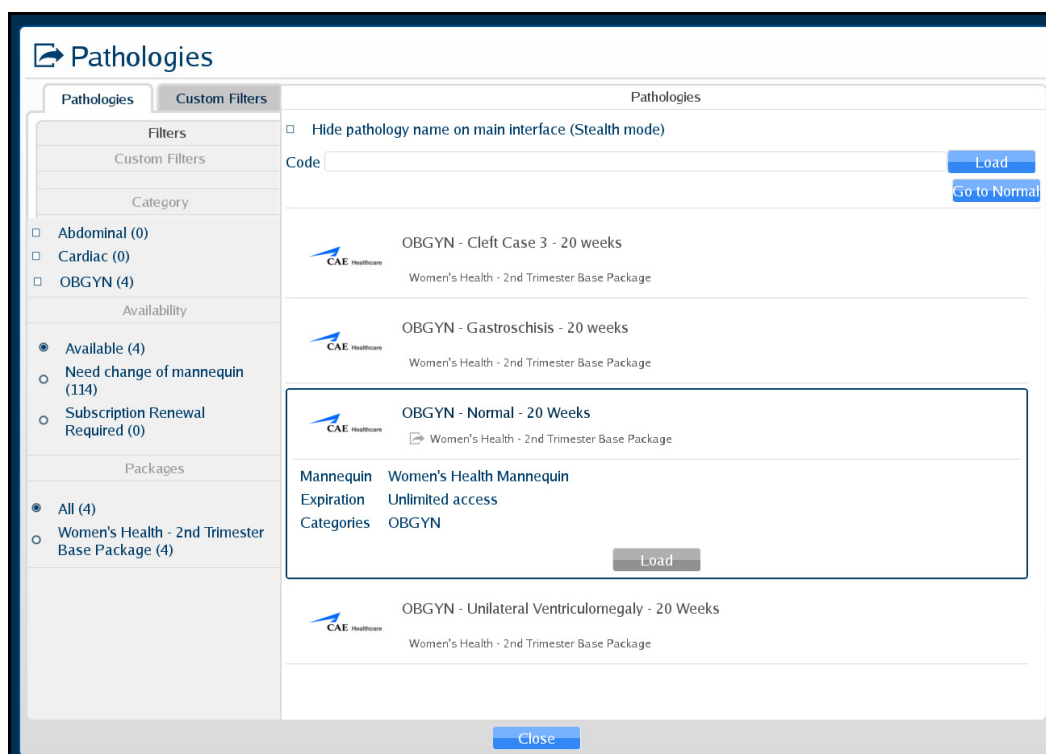
Pathologies are cases to help learners recognize abnormalities in ultrasound images.

Click the **Load** icon to access pathologies.



**The Load Icon**

The Pathologies window appears.



**The Pathologies Window**

Users can find and load pathologies using the features in the Pathologies window. Clicking the **Go to Normal** button highlights the normal case in the pathology selection window.

## Loading a Pathology in Standard Mode

Users can load pathologies in standard mode and organize the selections using criteria in the **Filters** panel. The filters feature allows users to organize pathologies by Category or Availability criteria.

Users have the option to narrow the pathologies displayed in the **Pathologies** panel based on the type of module (FAST and ICCU), area of focus (OBGYN, Abdominal, Cardiac and Pleural), availability (Available or Expired) or the type of mannequin (Need change of mannequin).

If no filter criteria is selected in the **Filters** panel, all available pathologies will appear by default.

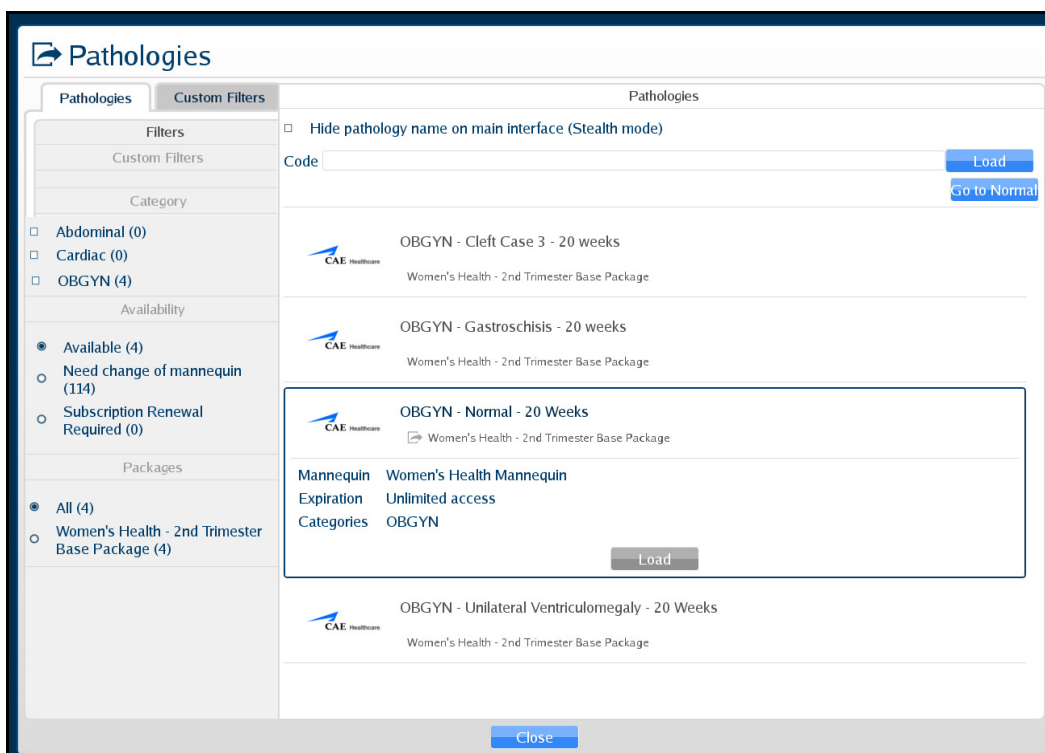
To load a pathology:

1. Click the **Load** icon.



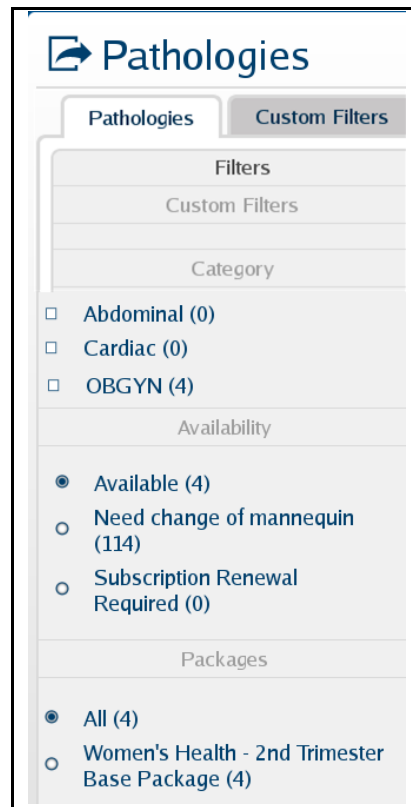
**The Load Icon**

The Pathologies window appears.



**The Pathologies Window**

2. Select the search criteria from the **Filters** panel.



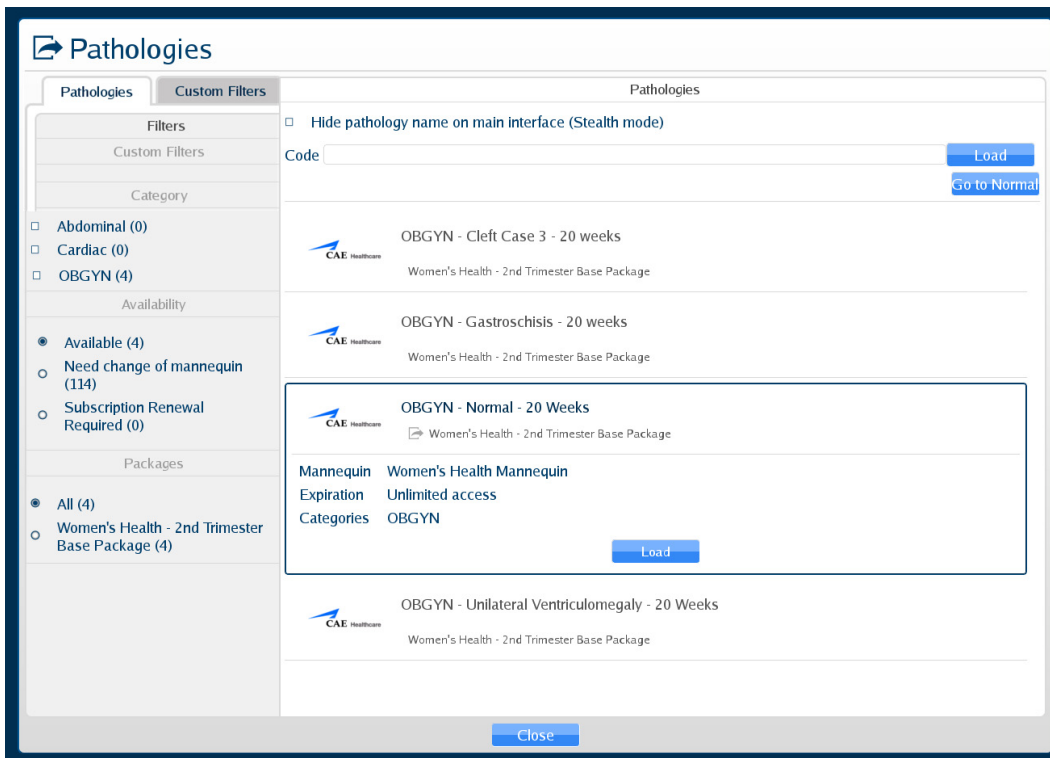
***The Filters Panel***

**NOTE:** Information for creating **Custom Filters** follows this section.

The pathologies update automatically in the **Pathologies** panel. If no criteria is selected, all available pathologies display in the **Pathologies** panel.

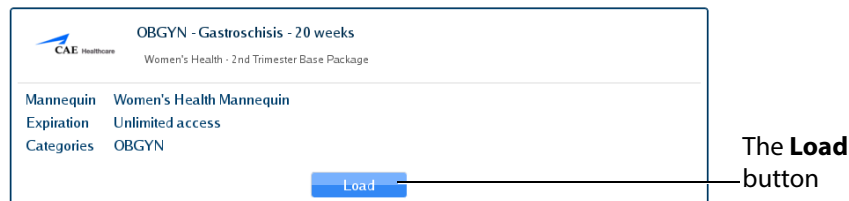
3. Select the desired pathology.

The pathology selection expands.



**The Pathologies Window**

4. Click the **Load** button.



**The Selected Pathology**

The Loading Pathology window appears.



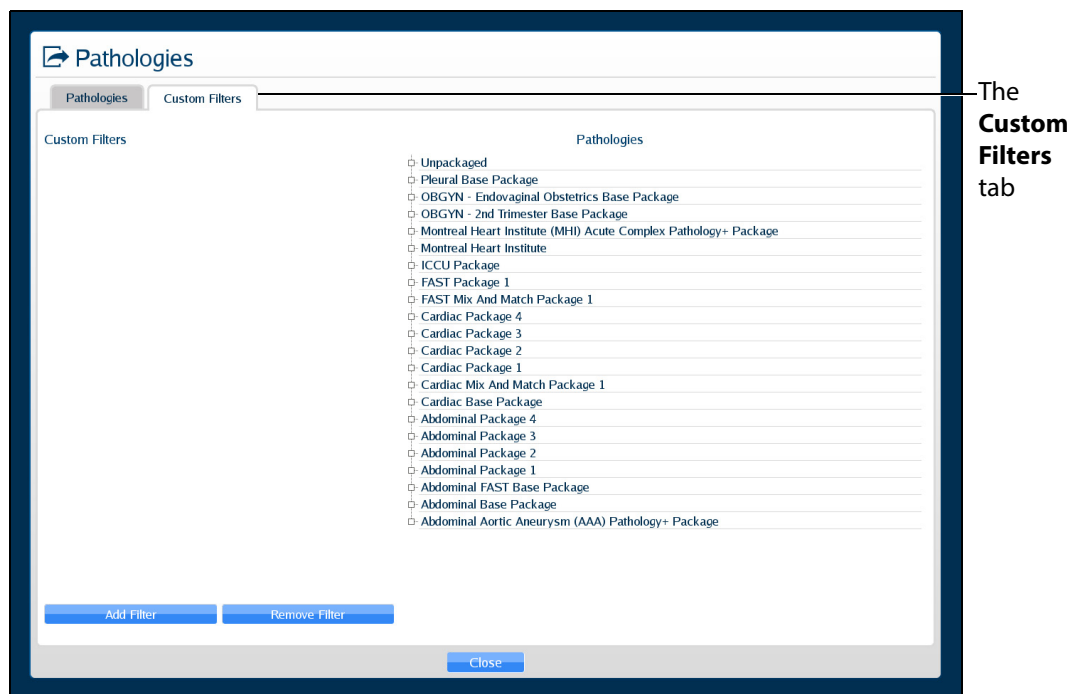
**The Loading Pathology Window**

**NOTE:** When loading a Montreal Heart Institute pathology, the Pathologies Loading window contains a brief synopsis of the patient's history and a **Continue** button. Users must click the **Continue** button after reviewing the synopsis to access the loaded pathology.

When the main interface screen appears, the pathology is loaded.

To create a Custom Filter:

1. Click the **Custom Filters** tab.

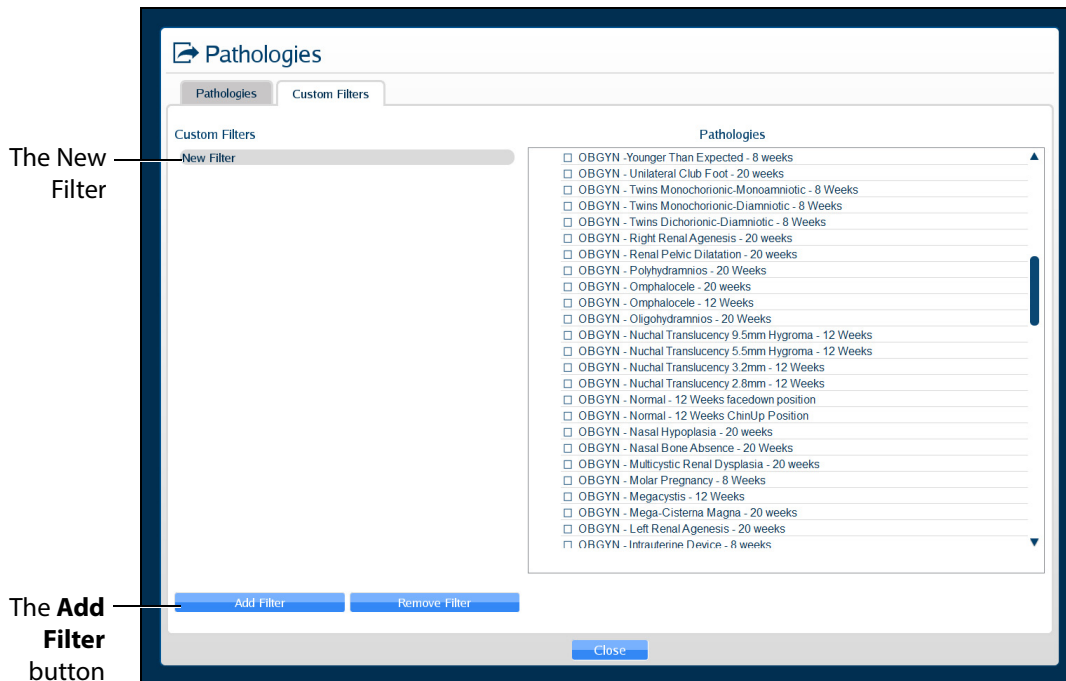


**The Custom Filters Window**

2. Click **Add Filter**.



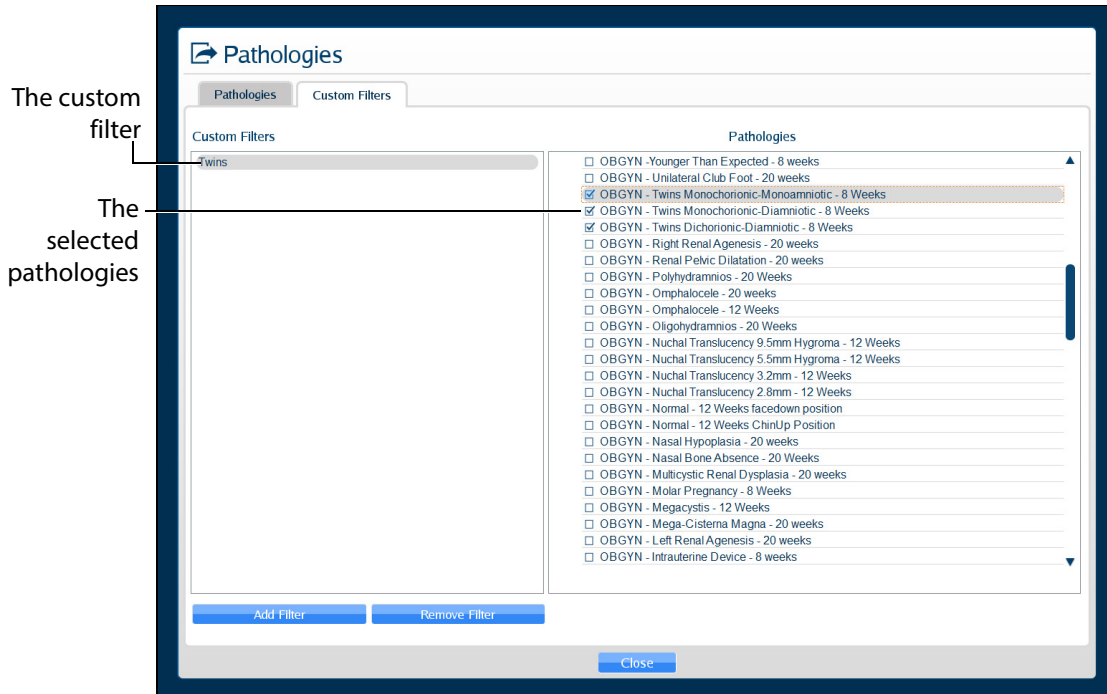
The New Filter is displayed.



***The Custom Filters Window***

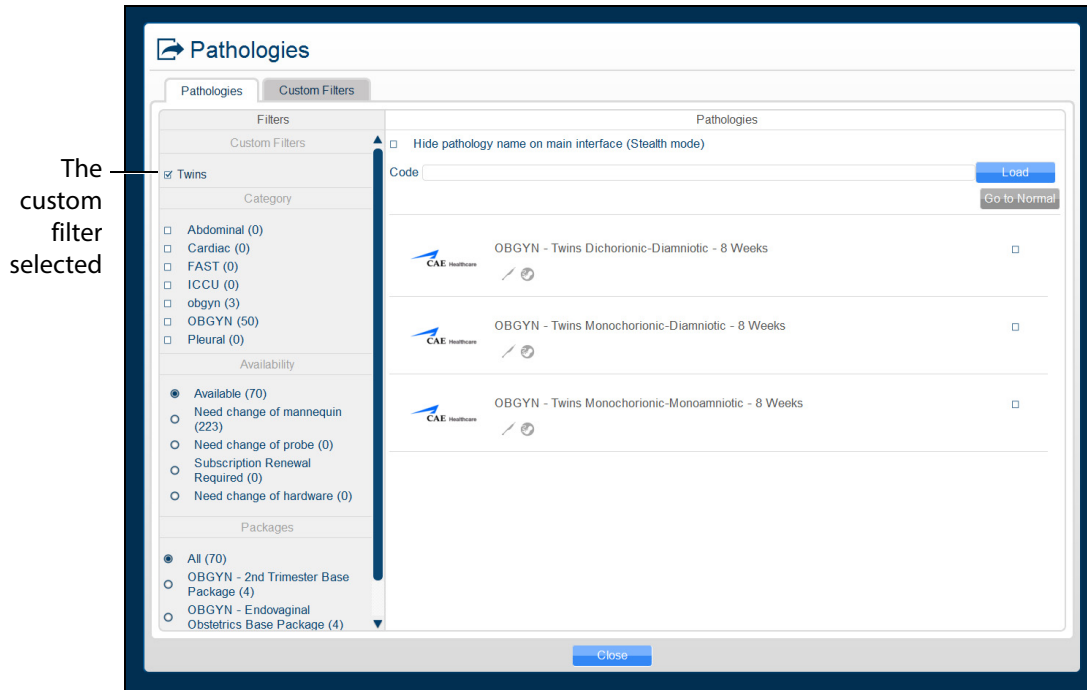
3. Double-click the New Filter to rename it. A new filter must be renamed before adding additional filters. Then, press Enter or click outside of the filter name to apply the name change.

4. Ensure the new filter is highlighted, then select (checkbox) the desired pathologies. The selected pathologies are automatically applied to the filter.



**The Custom Filters Window**

- When finished, click the **Pathologies** tab, then select (checkbox) the desired custom filter.



**The Pathologies Window**

**NOTE:** To refresh a custom filter, from the **Pathologies** tab, uncheck then re-check the desired custom filter.

To edit a Custom Filter:

- Click the **Custom Filters** tab.
- Ensure the desired filter is highlighted, then check or uncheck the desired pathologies.
- When finished, click the **Pathologies** tab, then select (checkbox) the desired custom filter.

**NOTE:** To remove a custom filter, ensure the custom filter name is highlighted, then click **Remove Filter**.

## Loading a Pathology in Stealth Mode

The Vimedix simulator offers a Stealth mode that allows instructors to hide the name of a loaded pathology. When a pathology is loaded in Stealth mode, the pathology name is replaced with **Stealth Mode Activated** at the top of the Vimedix simulator interface.

Pathologies can be loaded in Stealth mode from the Pathologies window using a pathology code or the **Hide pathology name on the main interface (Stealth mode)** checkbox.

To load a pathology in Stealth mode using a pathology code:

1. Click the **Load** icon



**The Load Icon**

The Pathologies window appears.

2. Use the Pathology Codes document to find the code for the desired pathology.
3. Enter the code into the **Code** text box.



**The Pathologies Window**

4. Click **Load**.

The pathology is loaded.

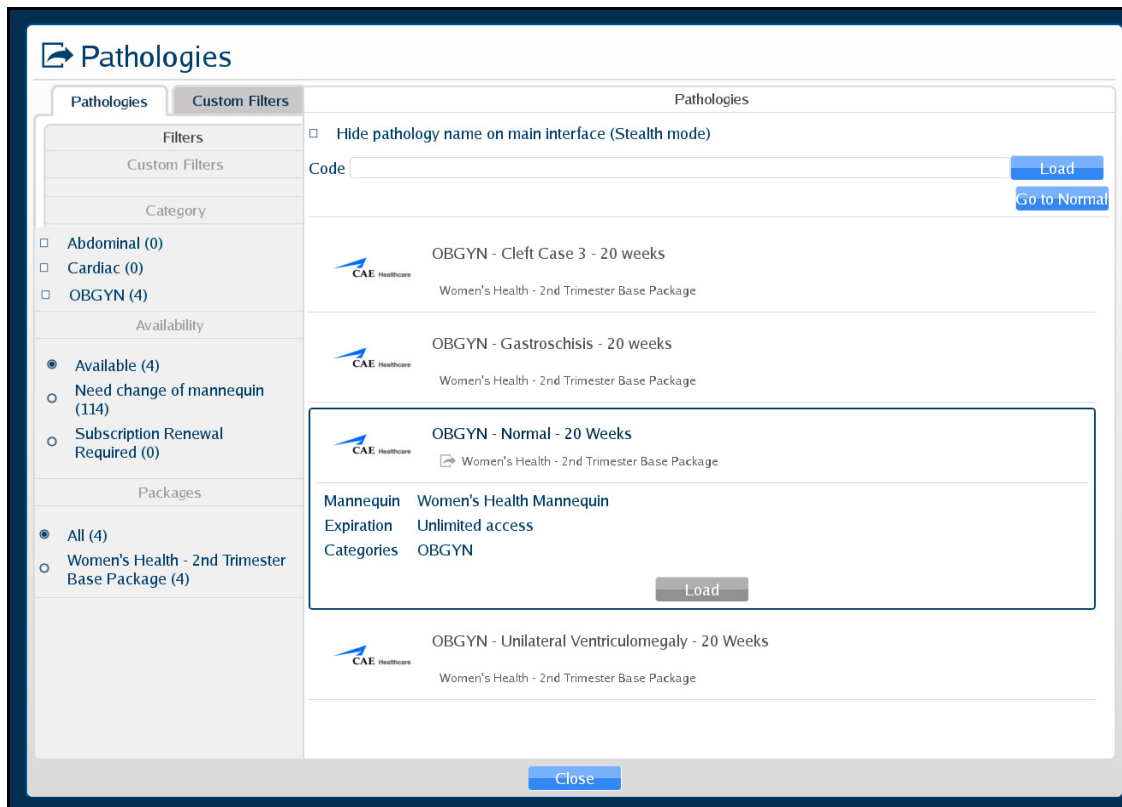
**NOTE:** If the code is incorrect, a message appears saying the pass code is not valid.



**The Pass Code Error Message**

To load a pathology in Stealth mode without a code using the checkbox feature:

1. Select the desired pathology from the **Pathologies** panel.



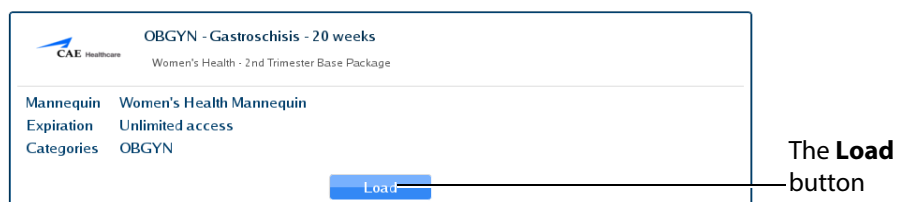
**The Pathologies Window**

2. Select the **Hide pathology name on the main interface (Stealth mode)** checkbox.



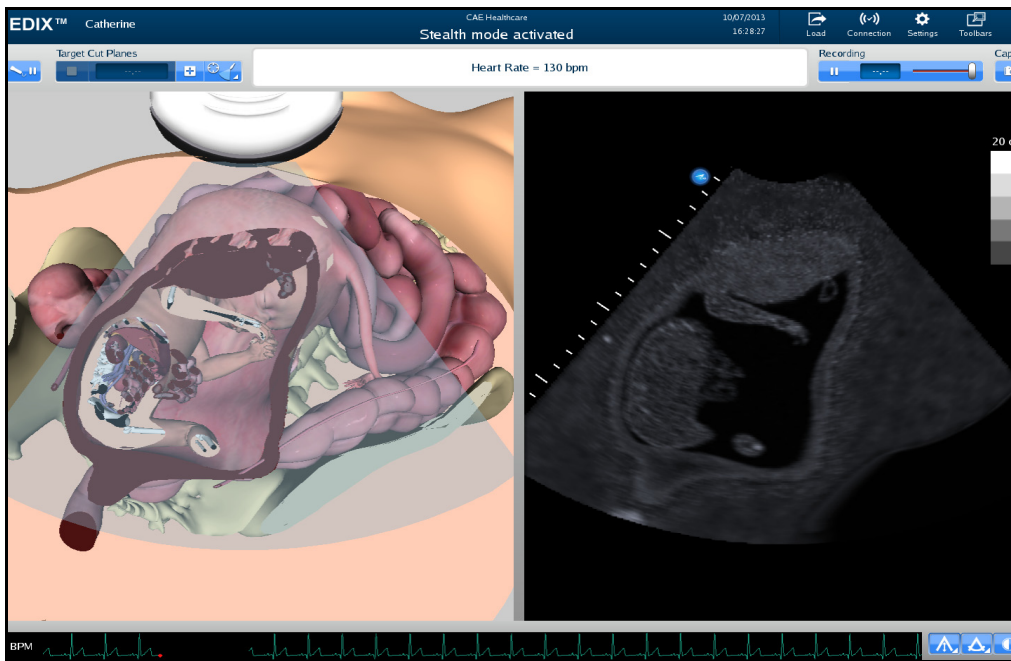
**The Pathologies Window**

3. Click **Load** in the selected pathology



**The Selected Pathology**

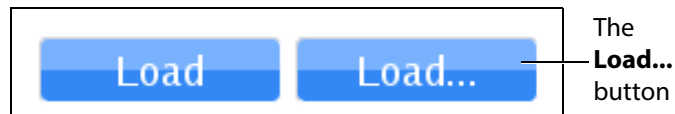
The pathology is loaded in Stealth mode.



*The Loaded Pathology with Stealth Mode Activated*

## Selecting Modalities

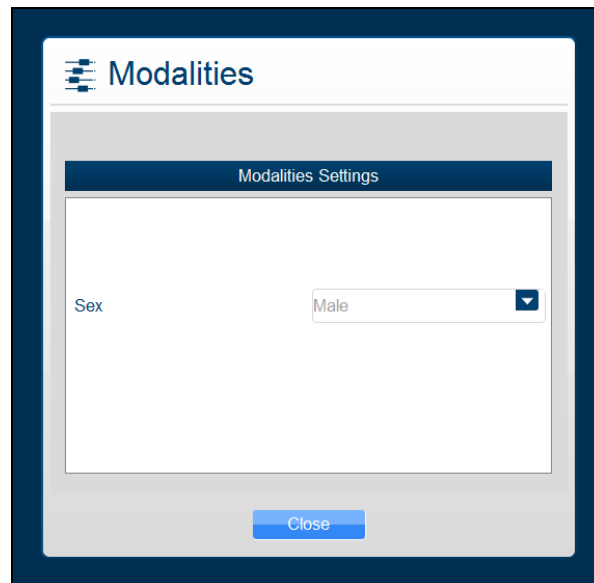
Select the **Load...** button when loading a case to access the **Modalities Settings** window.



*The Load Modalities Option*

The sex of the 20-week fetus (male or female) and the 8 and 12-week bladder (full or empty) can be selected by turning Modalities ON or OFF.

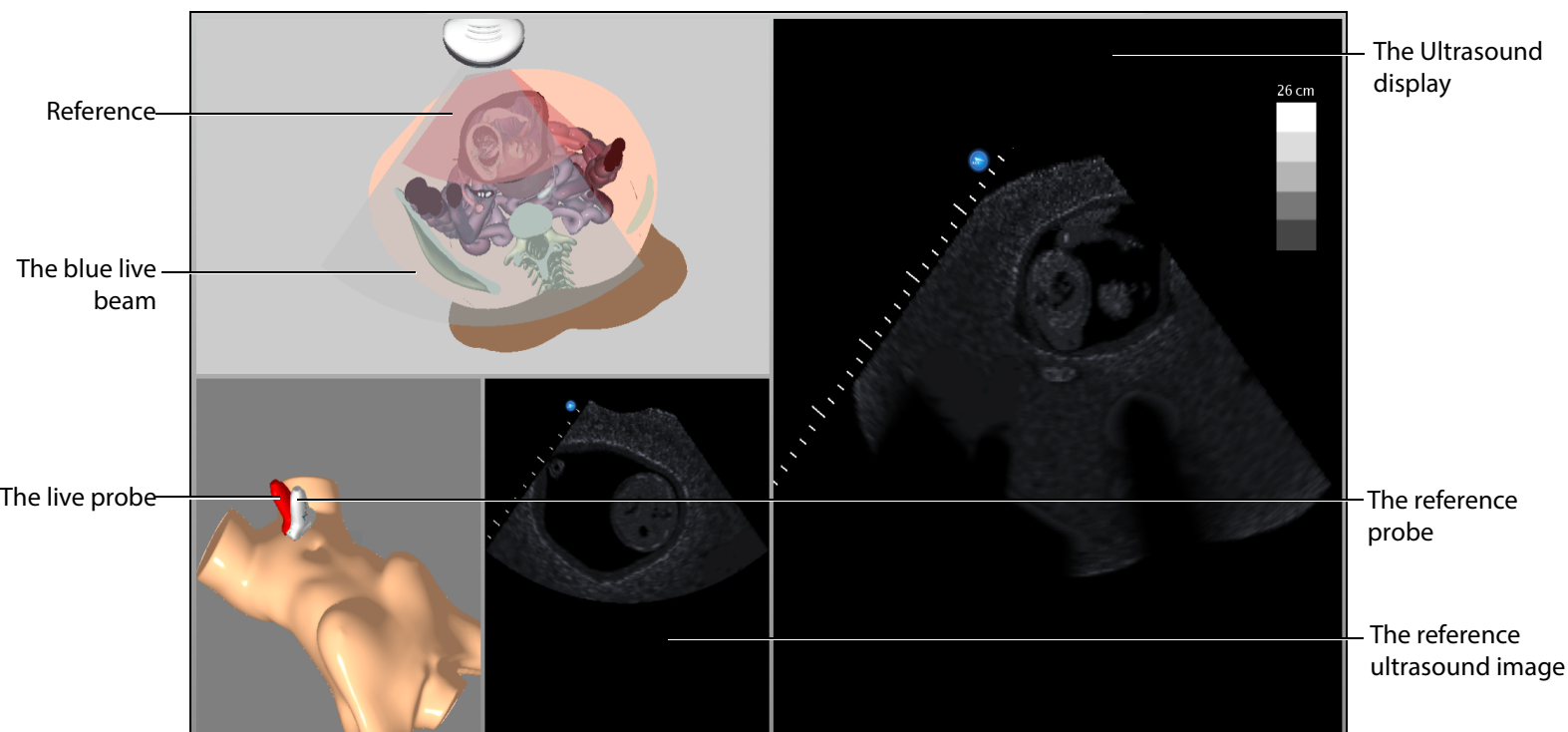
After loading the case (during imaging), click the modalities icon to access the **Modality Settings** window and turn modalities ON or OFF.



*The Modalities Icon and Settings Window*

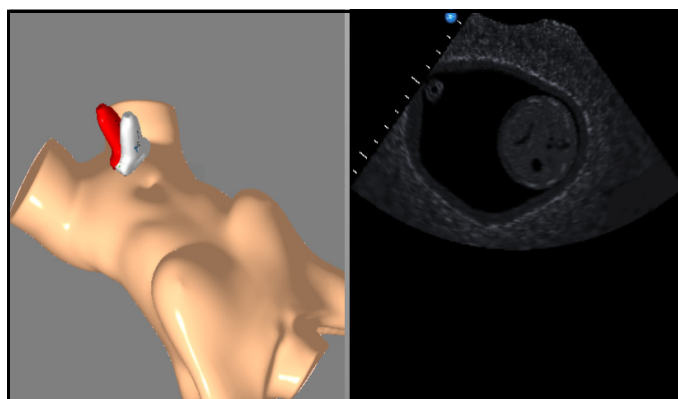
## Using Target Cut Planes

Target cut planes (TCP) are reference views that learners can use to mimic correct probe positioning. Instructors can select a pre-existing TCP or create a new TCP on any case.



**The Target Cut Plane Screen Features**

When a TCP is loaded, two additional displays appear: the mannequin placement display and the reference ultrasound image display.

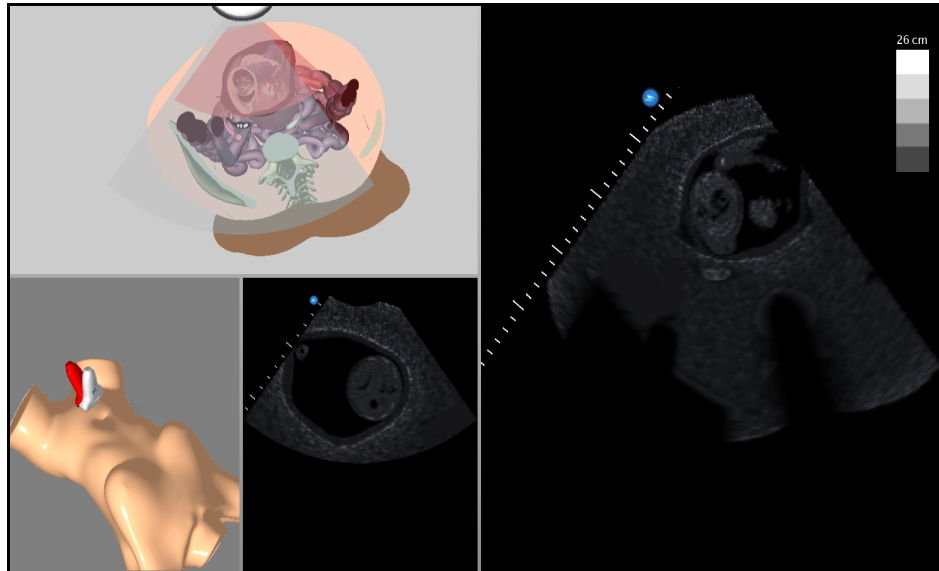


**The Mannequin Placement and Reference Ultrasound Image Displays**

In the AR Display, the red reference ultrasound beam identifies the cut plane the learner must achieve. The ultrasound beam on the AR display and the live ultrasound image display the cut plane of the live probe. The live ultrasound beam on the AR display and the live probe change color based on their

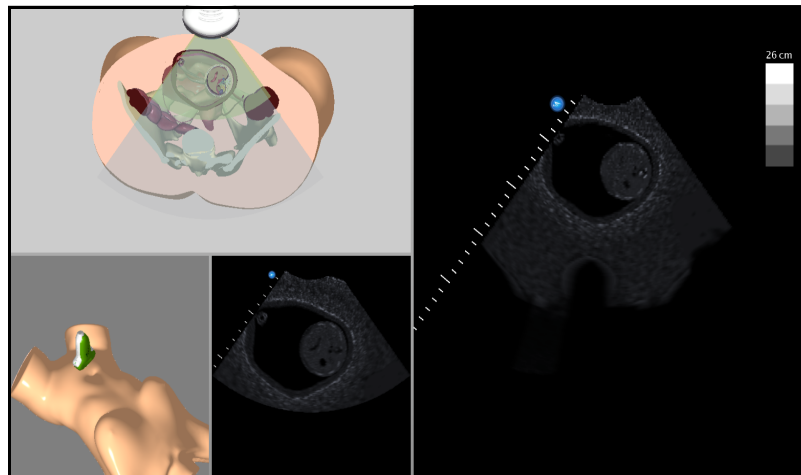


proximity to the target. When they are far from the target, they appear red. As the beam moves closer to the target, the beam and probe change from red to reddish-brown to greenish-brown to solid green.



**The Target Cut Plane Screen**

**Once the user achieves the target cut plane, the ultrasound beams align and turn green.**



**An Achieved Target Cut Plane**




The Vimedix simulator includes a metrics feature that allows users to load TCPs and assess their competency by recording the coordinates of their probe positioning and various parameters during the TCP. This data is compiled in an exportable spreadsheet.

**For more information on the metrics parameters, see *Metrics Parameters*.**

## Target Cut Planes Panel Buttons

Target cut planes are learning tools designed to allow learners to practice techniques in the absence of an instructor. The **Target Cut Planes** panel has three buttons: **Stop Metrics** button, **New** button and the **TCP Menu** button. By clicking the **New** button, the user creates the target cut plane from the current probe position. By clicking the **TCP Menu** button, the user can load a TCP and record metrics.

Target cut plane metrics are used to record a learner's actions during a target cut plane exercise.

Target Cut Planes Panel Buttons	
	The <b>New</b> button saves the current position of the probe to create a Personal target cut plane.
	The <b>TCP Menu</b> button opens the Target cut plane window where users can access Base or Personal TCPs.
	The <b>Stop Metrics</b> button allows users to stop recording metrics after starting a metrics session from the Target cut plane window.

## Creating a Target Cut Plane

Users can create personal TCPs that are saved with the loaded pathology under the **Personal** tab in the Target cut planes window.

**NOTE:** A user-created or Personal TCP is only valid for the pathology that was loaded during its creation.

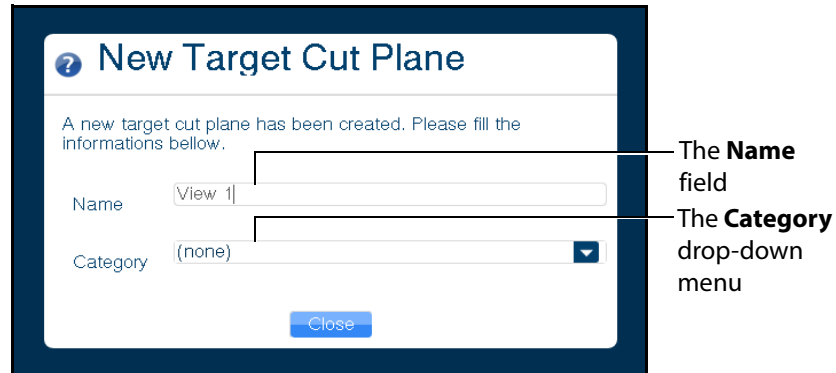
To create a Personal TCP:

1. Select a pathology, if desired.
2. Position the probe on the mannequin to obtain the desired view in the Ultrasound and AR displays.
3. From the **Target Cut Planes** panel, click the **New** button.



*The Target Cut Planes Panel*

The New Target Cut Plane window appears. By default, the name is a 10-digit auto-generated number and the TCP category is none.



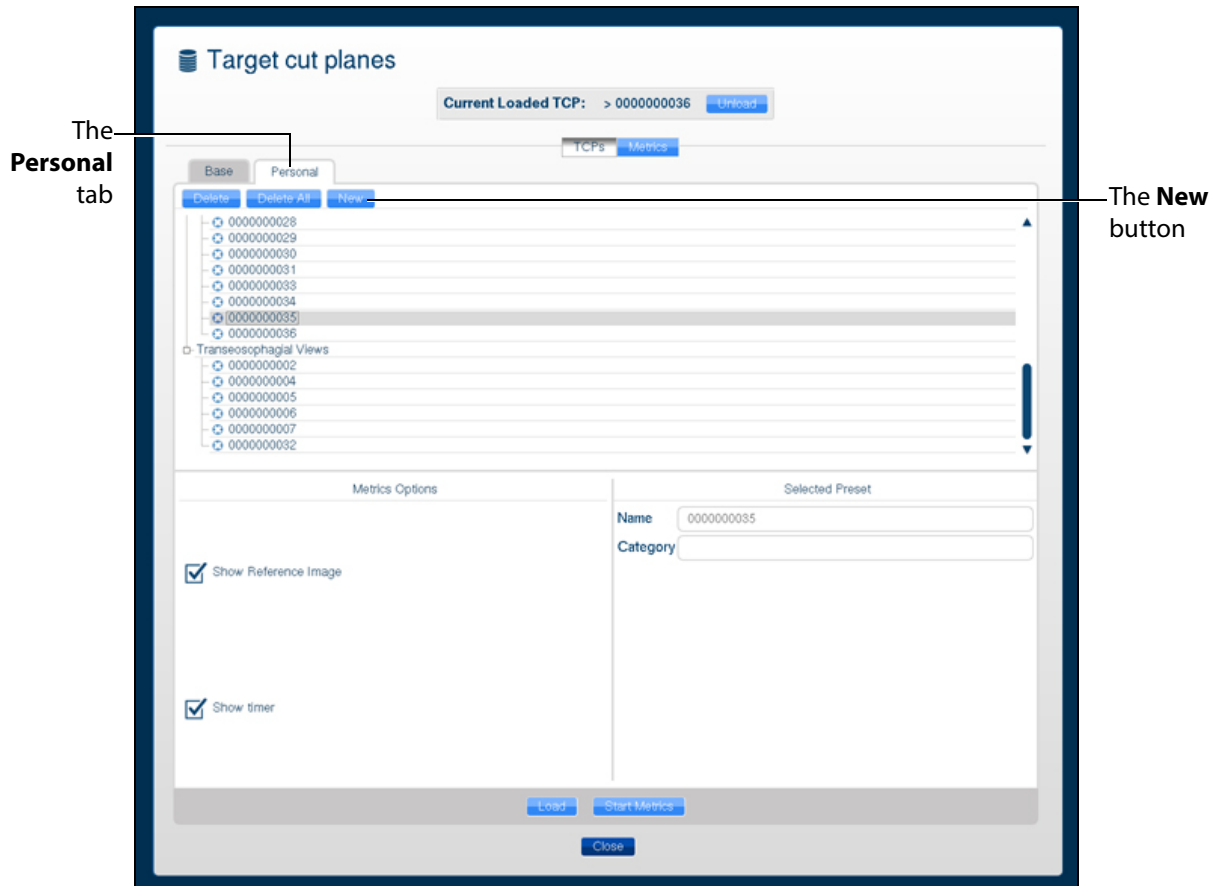
The **Name** field

The **Category** drop-down menu

*The New Target Cut Plane Window*

4. Enter the desired name of the new target cut plane in the **Name** field and select a category from the **Category** drop-down menu, if desired.
5. Click the **Close** button to save the entry.

**NOTE:** Users can also create a personal TCP from the Target cut planes window by clicking on the **Personal** tab and clicking the **New** button located above the list of available personal TCPs.



**The Target Cut Planes Window**

The TCP is created and available in the **Personal** tab in the Target cut planes window.

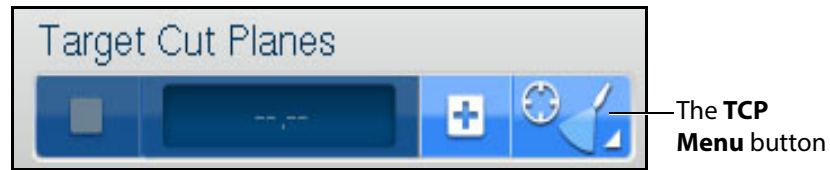
## Loading a Target Cut Plane

Users load existing TCPs to practice achieving specific probe positions and ultrasound views.

**NOTE:** The Vimedix simulator comes with pre-existing TCPs for the Normal pathology using the TTE probe only.

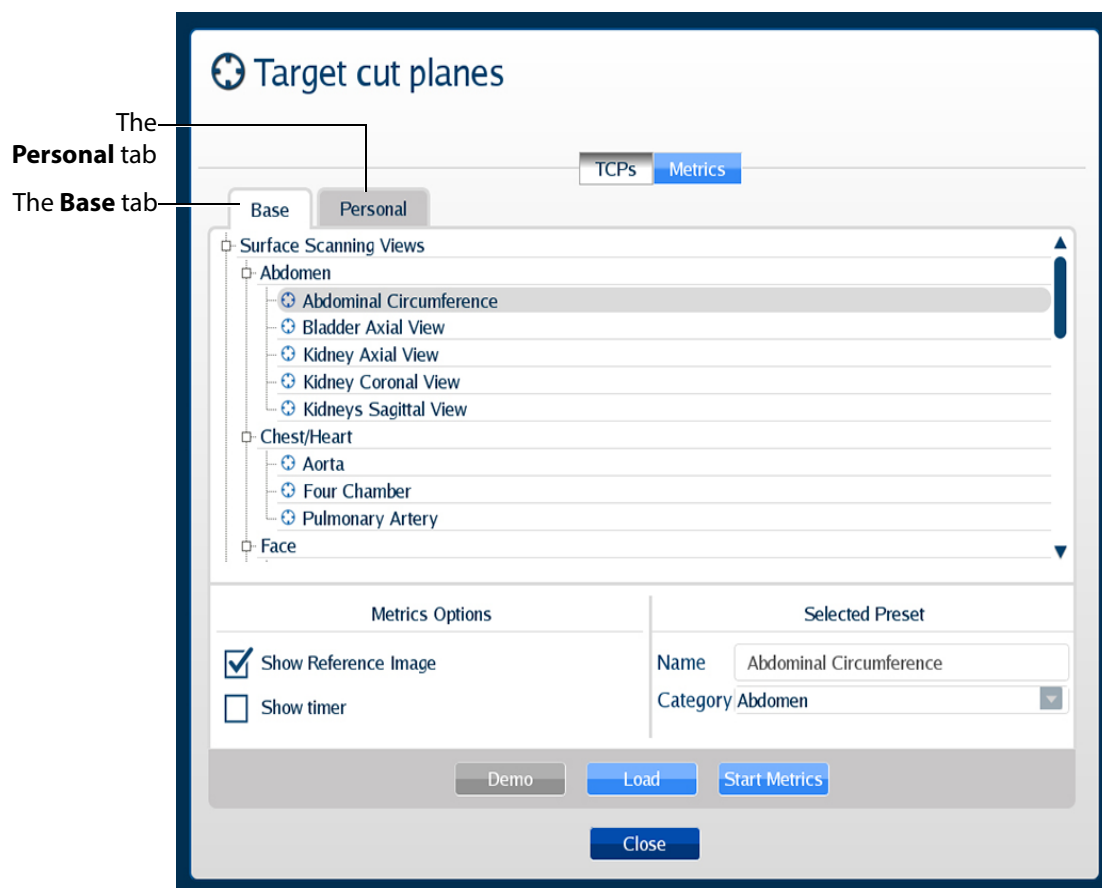
To load a TCP:

1. Click the **TCP menu** button.



**The Target Cut Planes Panel**

The Target cut planes window appears.

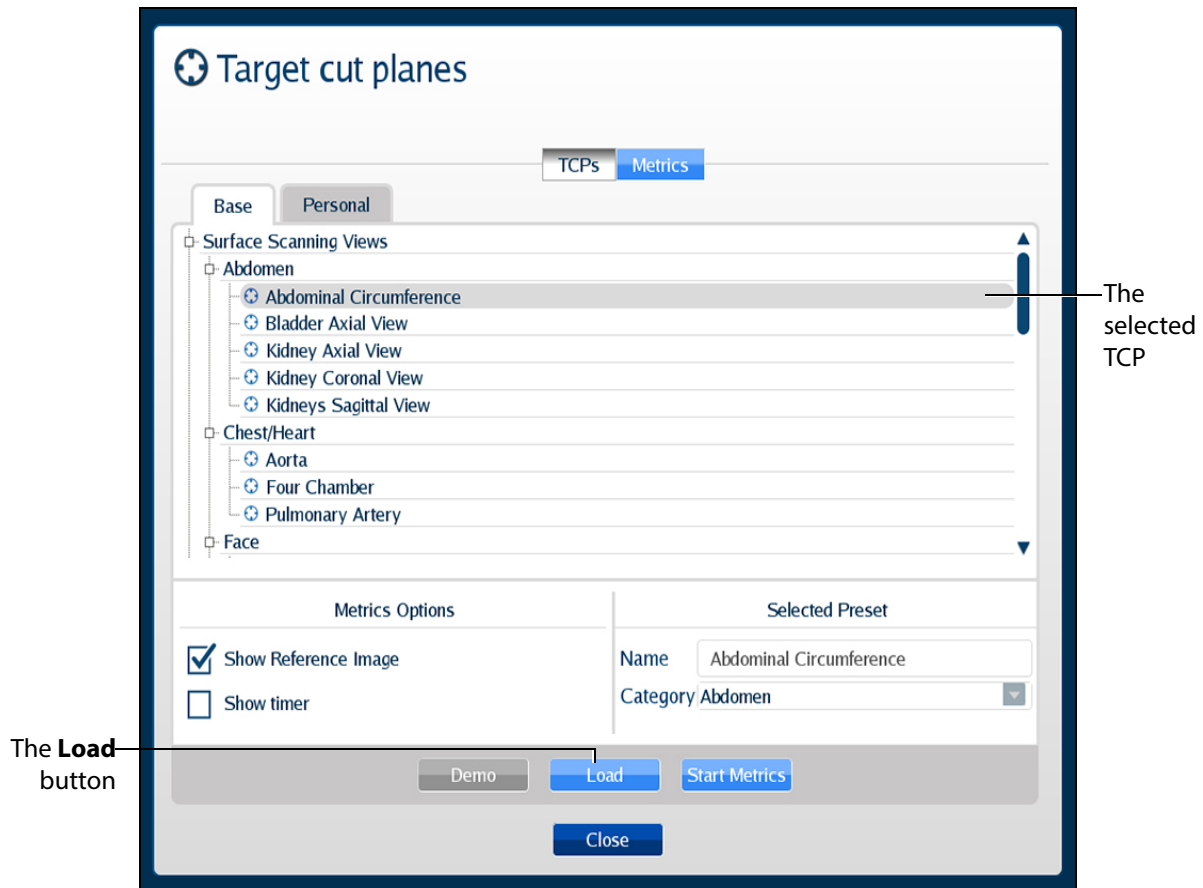


**The Target Cut Planes Window**

2. In the Target cut planes window, select the **Base** or **Personal** tab, depending on the type of target cut plane to be loaded.

The available TCPs are listed.

- 3. Select the TCP to load from the list.



*The Target Cut Planes Window*

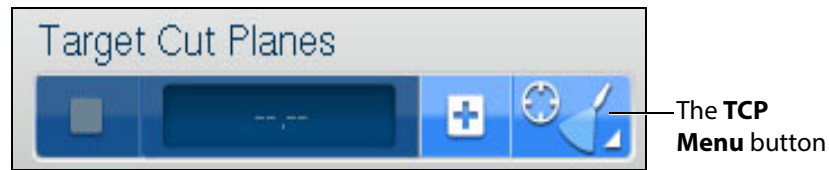
- 4. Click the **Load** button to launch the TCP.  
The TCP is loaded.

## Loading Multiple Target Cut Planes

Users can load multiple TCPs to practice achieving specific probe positions and ultrasound views in succession in the same manner a trained sonographer performs an ultrasound exam.

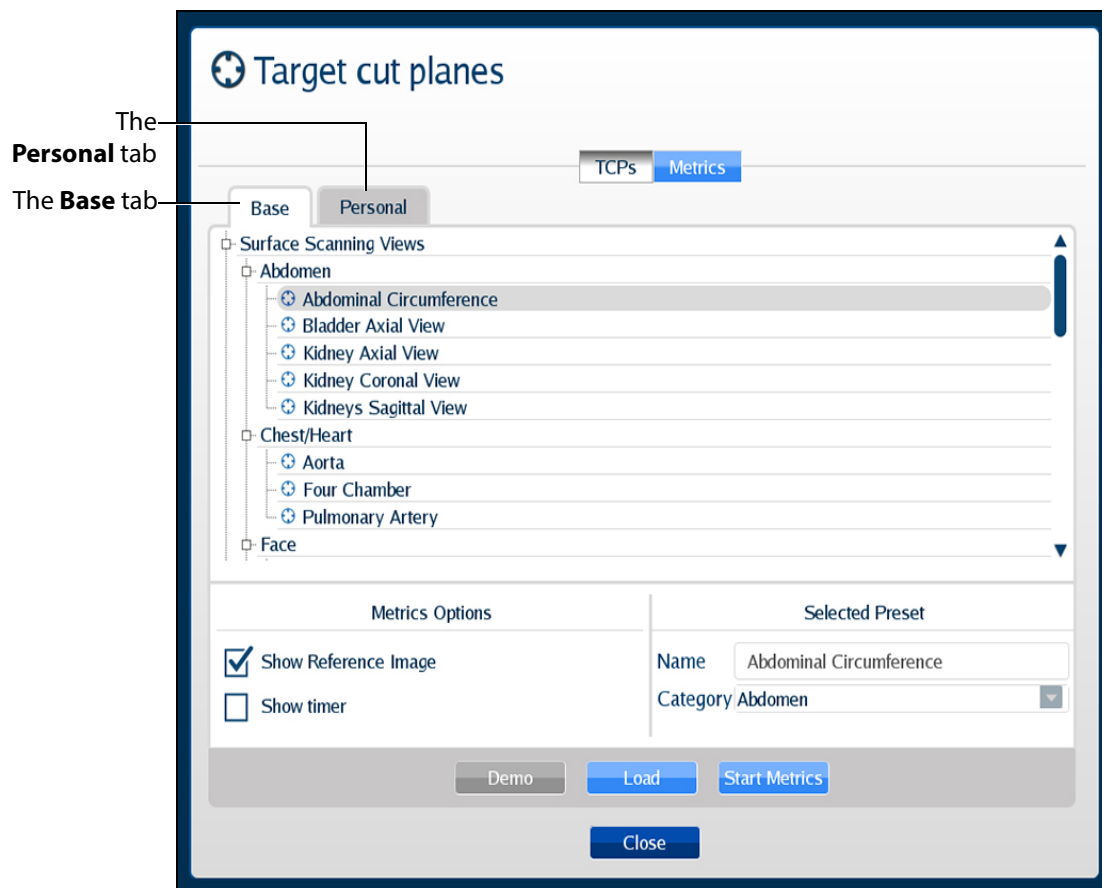
To load multiple TCPs:

1. Click the **TCP menu** button.



**The Target Cut Planes Panel**

The Target cut planes window appears.



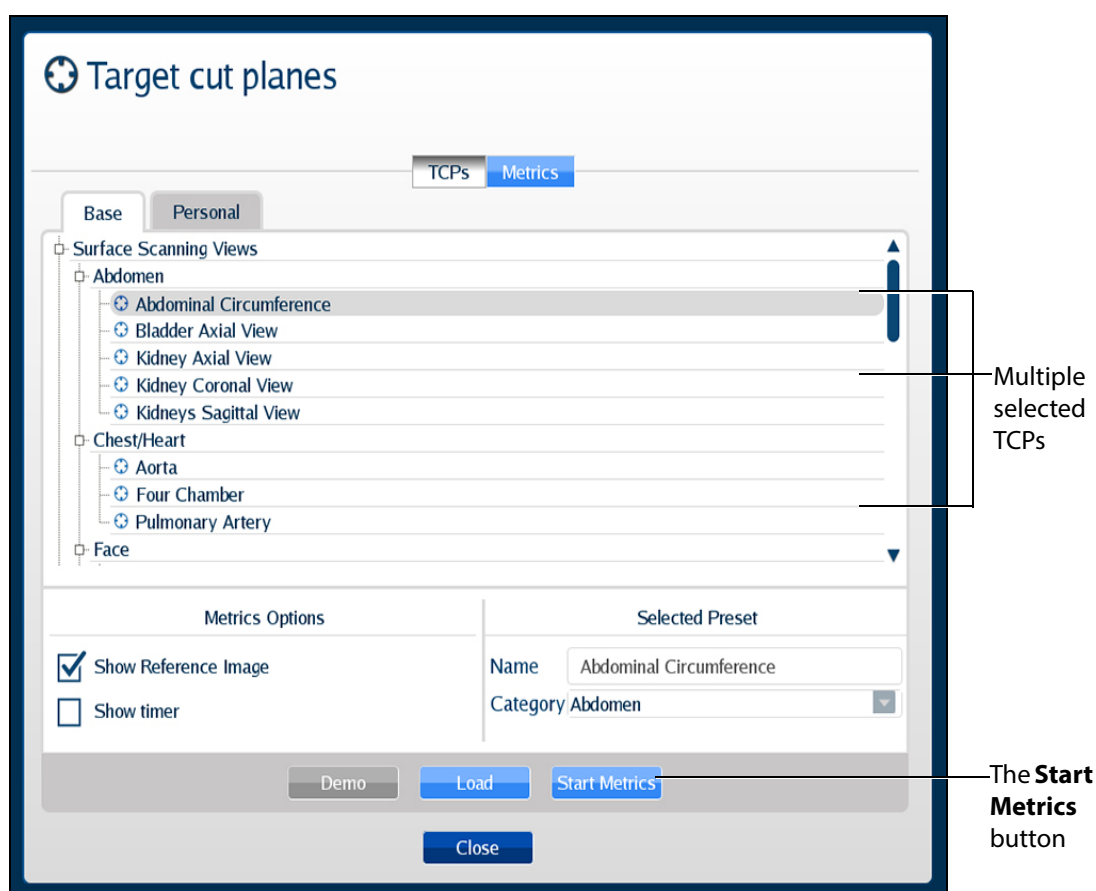
**The Target Cut Planes Window**

2. In the Target cut planes window, select the **Base** or **Personal** tab, depending on the type of target cut plane to be loaded.

The available TCPs are listed.

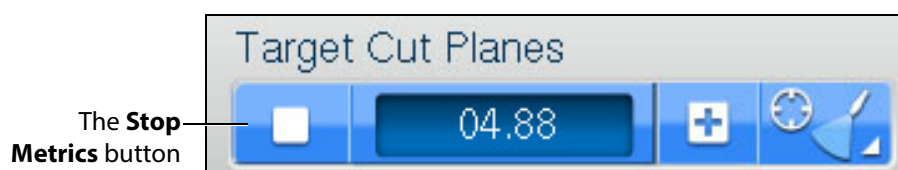
3. Select the TCPs to load from the list by holding down the CTRL key on the keyboard and selecting multiple TCPs.

**NOTE:** Users can select a combination of TCPs from both the **Base** and **Personal** tabs using the CTRL key and navigating between tabs.



**The Target Cut Planes Window**

4. Click the **Start Metrics** button to launch the first TCP.  
The first TCP loads and the Metrics begin recording activity.
5. Click the **Stop Metrics** button in the Target Cut Planes panel or press the **Enter** key on the keyboard to move on to the next TCP.



**The Target Cut Planes Panel**



For more information on stopping metrics, see *Stopping Metrics*.

## Unloading a Target Cut Plane

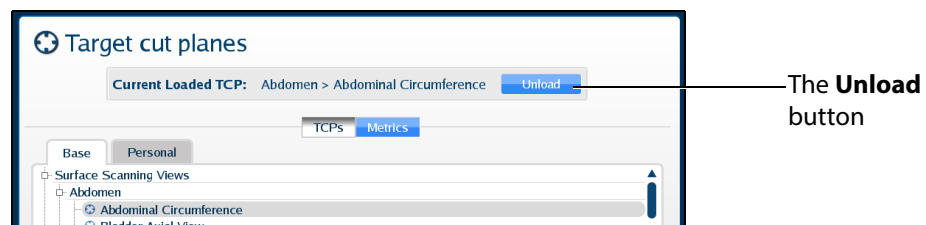
To unload a current TCP and return to the standard view:

1. Click the **TCP menu** button in the **Target Cut Planes** panel.



**The Target Cut Planes Panel**

The Target cut plane windows appears.



**The Target Cut Planes Window**

2. In the Target cut planes window, click the **Unload** button.

The TCP is unloaded.

## Using Metrics

TCP Metrics is a feature used to assess the performance of a learner trying to match a reference cut plane. When a user clicks the **Start Metrics** button, the TCP display appears and a timer is activated. The timer is a measurement tool to record the length of time learners take to achieve a TCP. The Metrics feature also records the coordinates and other parameters from the learner's probe use during the TCP.

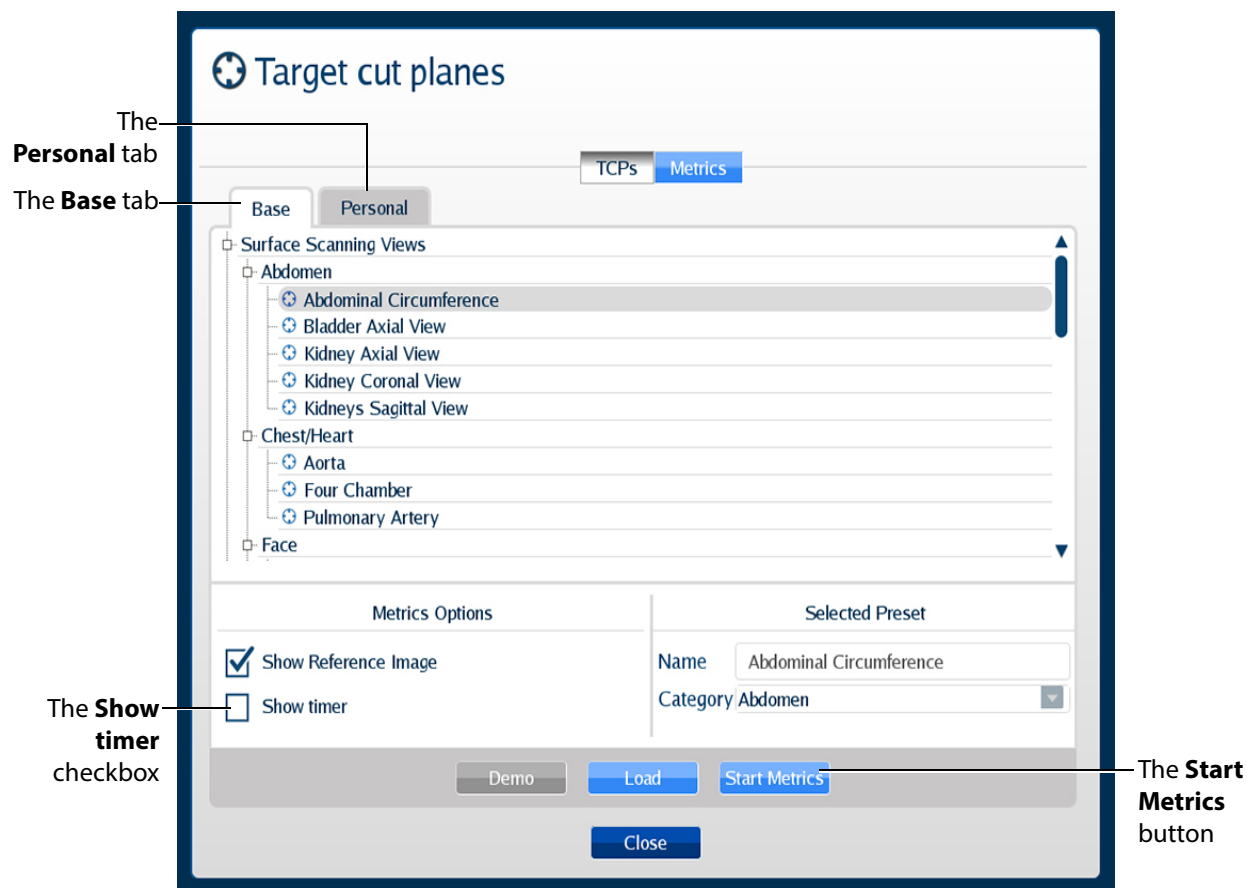
For more information on metrics parameters, see *Metrics Parameters*.

## Starting Metrics

To record the metrics of a TCP:

1. Click the **TCP menu** button located in the **Target Cut Planes** panel.

The Target cut planes window appears.



**The Target Cut Planes Window**

2. Select the desired TCP from the **Base** or **Personal** tabs.
3. From the **Metrics Options** panel, users can select the **Show timer** checkbox.

When selected, the timer in the **Target Cut Planes** panel will start running after the user clicks the **Start Metrics** button.

4. Click the **Start Metrics** button to load the TCP and begin the timer for the user to achieve the TCP.

The metrics timer begins.

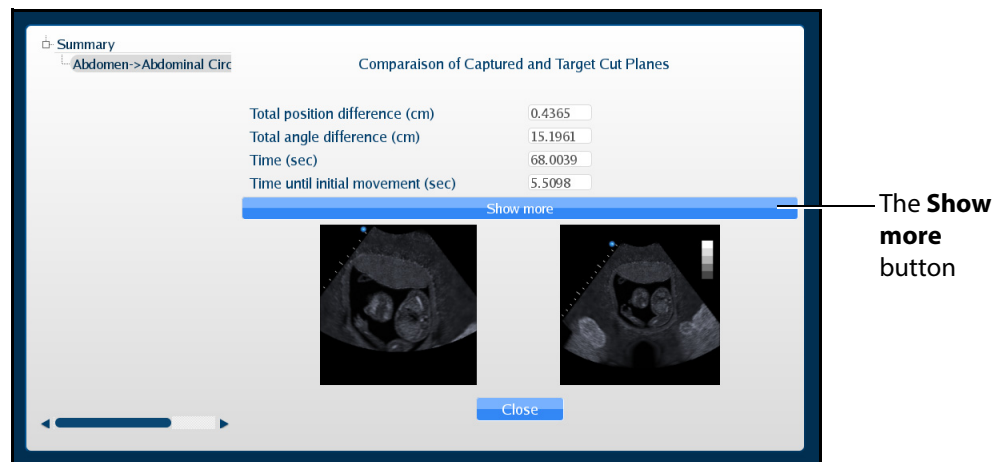
## Stopping Metrics

To stop the timer during a TCP metrics session, click the **Stop Metrics** button located in the **Target Cut Planes** panel or press the **Enter** key on the keyboard.



**The Target Cut Planes Panel**

The Metrics Summary window appears.



**The Metrics Summary Window**

This window displays the completed target cut planes, a summary of the basics metrics and a comparison of the capture and target cut planes. Users can choose to see additional parameters by clicking the **Show more** button in the Metrics Summary window.

An expanded list of metrics appears.

Summary  
Abdomen->Abdominal Circ

Comparison of Captured and Target Cut Planes

Total position difference (cm)	0.4365
Total angle difference (cm)	15.1961
Time (sec)	68.0039
Time until initial movement (sec)	5.5098
Total distance travelled (cm)	79.3835
Total angular movement (degree)	5419.5757
Number of acceleration from Rest	13
Lateral(x) Position difference (cm)	0.3719
Longitudinal(y) position difference (cm)	0.2141
Anteroposterior(z) position difference (cm)	0.0798
Roll difference (degree)	-161.7953
Pitch difference (degree)	-7.8122
Yaw difference (degree)	161.4731
Beam depth of field difference (cm)	6.0000
Beam angle difference(degree)	0.0000

Show less

Close

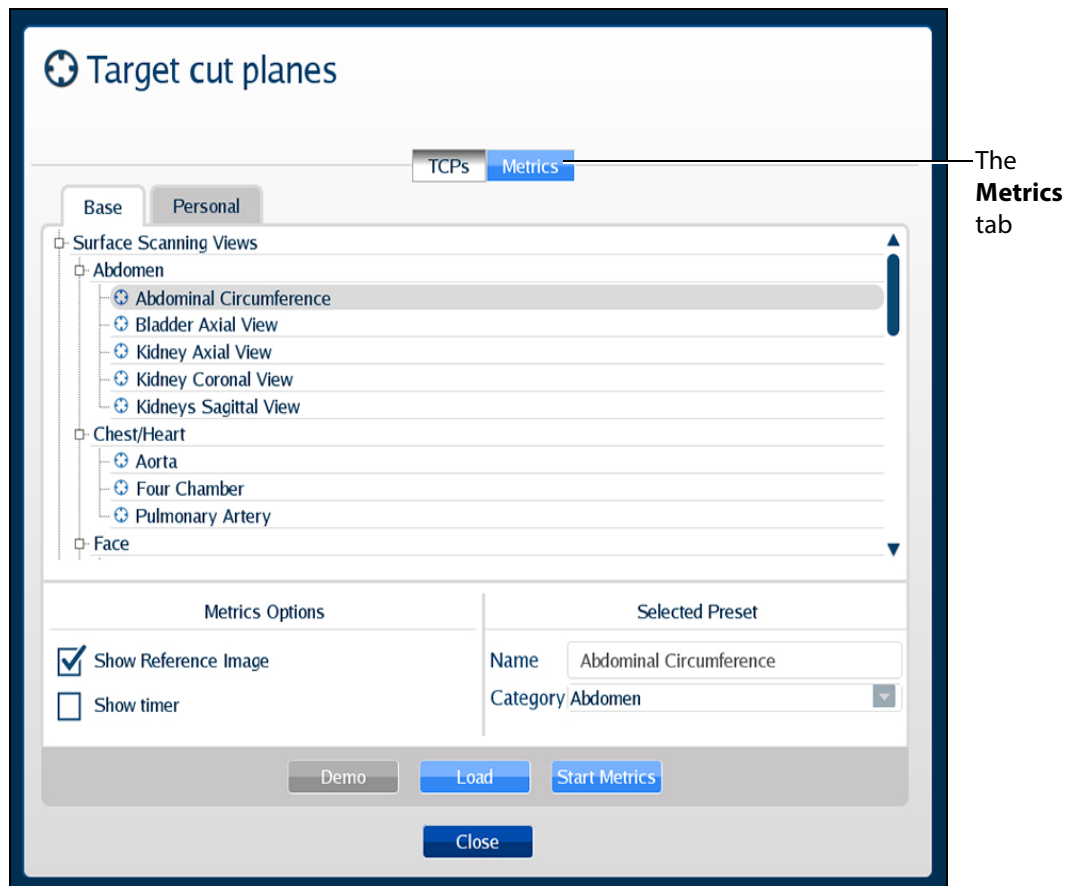
**The Metrics Summary Window**

## Reviewing Metrics

Users can review the last probe position and the images that were last displayed during a metrics session by using the metrics review feature.

To review the metrics:

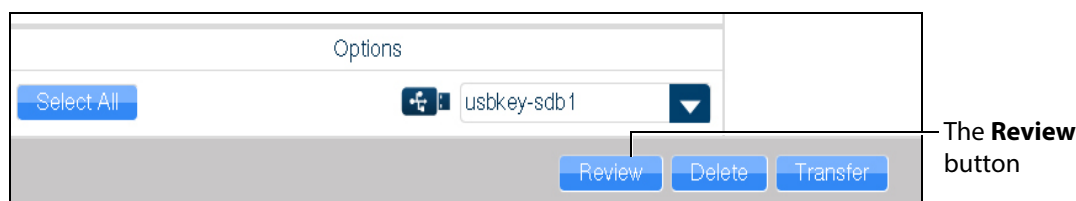
1. Click the **TCP and Metrics menu** button located in the **Target Cut Planes** panel. The Target cut planes window appears.



**The Target Cut Planes Window**

2. Click on the **Metrics** tab.  
The Metrics list displays.
3. Select the desired metrics from the list to review.

4. Click the **Review** button.



**The Metrics Tab**

The interface shows the last image recorded during the metrics session in the reference ultrasound image display.

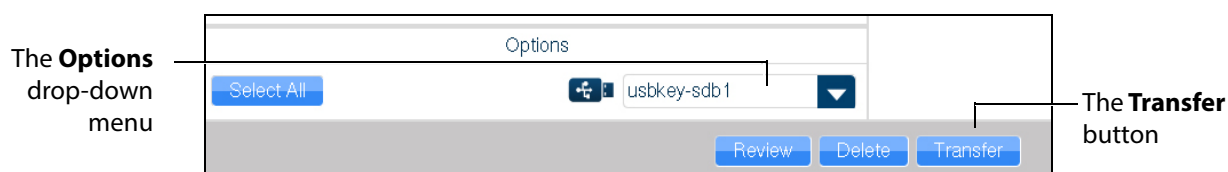
The AR and Ultrasound displays show the view from the current probe position. The mannequin placement display shows last probe's position and orientation during the metrics sessions in comparison to current probe's position and orientation.

## Exporting Metrics

All the captured metrics can be exported using a USB storage device.

To transfer the metrics to a USB storage device:

1. Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Metrics** tab.
2. From the Available metrics list, select the metrics session to be exported or click the **Select All** button to select all metrics sessions.
3. Click the **Transfer** button.

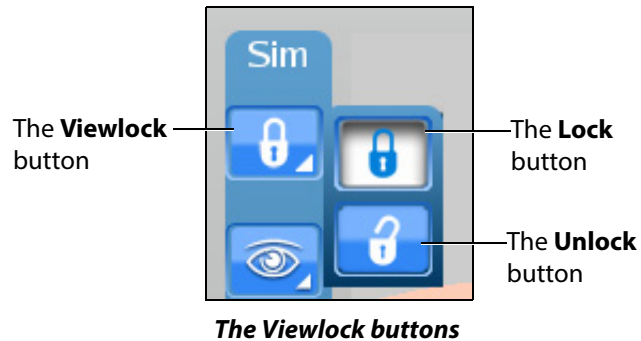


**The Metrics Tab**

**IMPORTANT:** Once metrics are transferred to a USB storage device, the sessions are **deleted** from the Vimedix simulator and **cannot** be recovered.

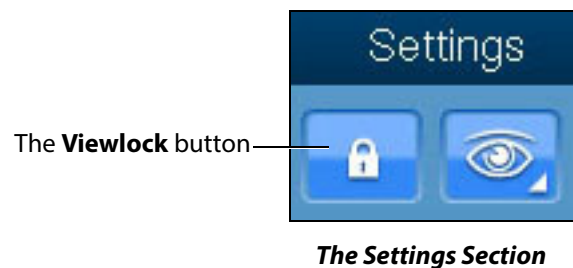
## Using the View Lock Feature

Click the **Viewlock** button, located in the Simulation panel to lock or unlock the view. The view lock is activated by default.



**NOTE:** When using the expanded toolbar view, click the **Viewlock** button one time to deactivate/ unlock the viewlock.

Settings section of the **Simulation** panel to activate or deactivate the view lock feature.



When the view lock is activated, the AR and Ultrasound displays are always synchronized.

When view lock is deactivated, the AR display can be manipulated by using the mouse. In this case, the Ultrasound and AR displays provide different perspectives of the structures.

## Modifying the Structures Visibility

Users can hide structures from view during a training by modifying the checkboxes in the Structures Visibility window.

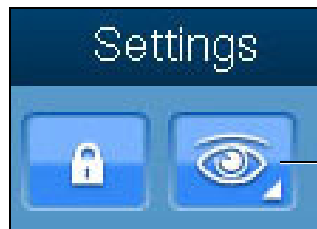
To modify structures visibility:

1. Click on the **Structures Visibility** button located in the **Simulation** panel.



**The Structures Visibility Button**

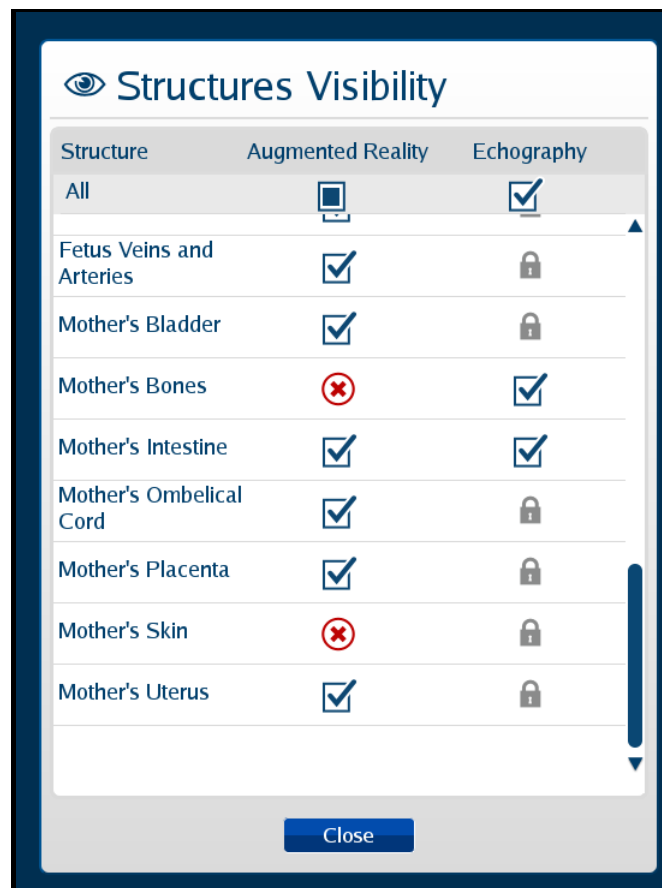
**NOTE:** When using the expanded toolbar view, click the Structures Visibility button located in the Settings section of the Simulation panel.



The **Structures Visibility** button

**The Settings Section**

The Structures Visibility window appears.



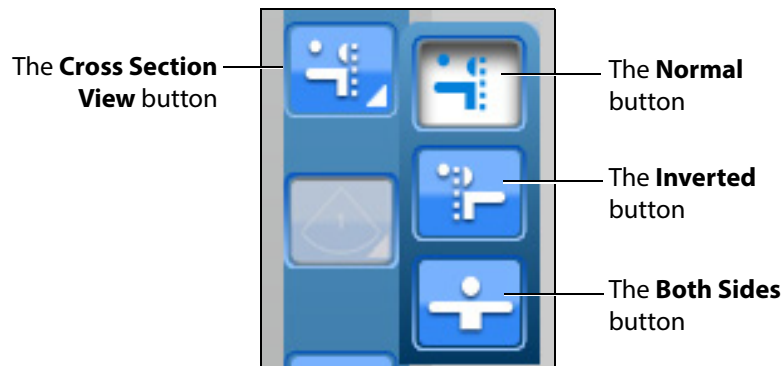
**The Structures Visibility Window**



2. Uncheck the boxes in the left column to remove structures from the AR display.
3. Uncheck the boxes in the right column to remove artifacts from the Ultrasound display.  
**NOTE:** Some structures cannot be removed from the Ultrasound display. These structures are denoted by a lock symbol.
4. Click the **Close** button to apply the changes and exit the Structures Visibility window.

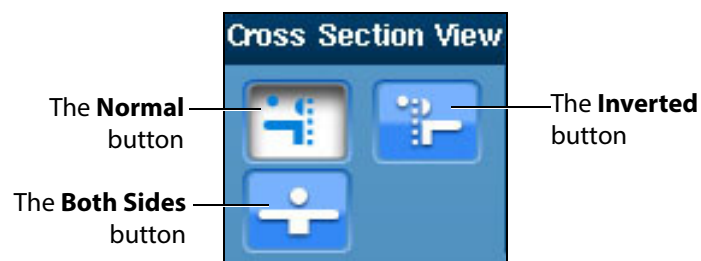
## Selecting a Cross Section View

Using the **Cross Section View** button, users can select the desired cross section view from the available options.



**The Cross Section View Options**

**NOTE:** When using the expanded toolbar view, click the desired cross section button located in the Cross Section View section of the Simulation panel.



**The Cross Section View Section**

The **Normal** button enables the Normal cut plane view. By default, the cross section view is set to Normal upon simulator startup.



*The Normal Cross Section Button*

The **Inverted** button enables the Inverted cross section view.



*The Inverted Cross Section Button*

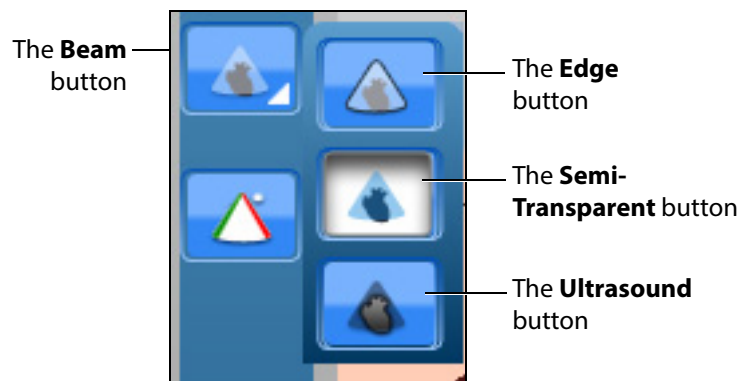
The **Both Sides** button disables the cross section view in the AR display.



*The Both Sides Cross Button*

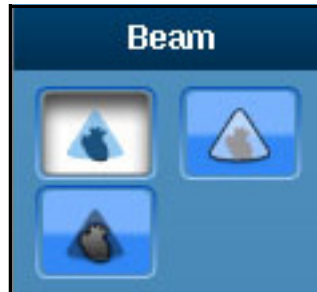
## Selecting the Beam Type

Using the **Beam** button, users can choose from three available beam options. The selected beam determines how the ultrasound beam appears on the AR display. Click on the desired beam button to select the beam type.



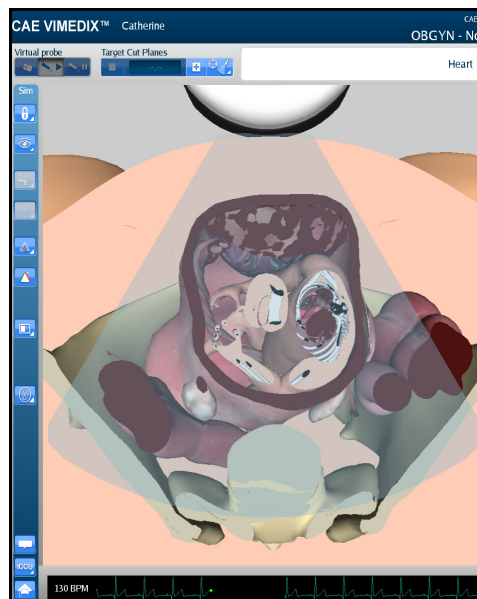
*The Beam Type Options*

**NOTE:** When using the expanded toolbar view, click on the appropriate beam button in the **Beam** section, located in the **Simulation** panel.



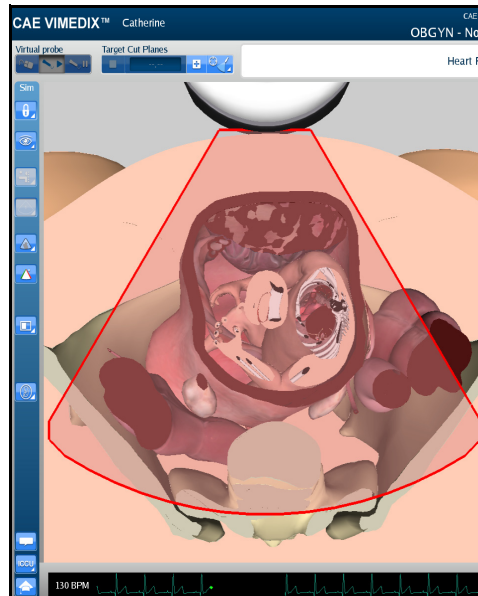
*The Beam Section*

The default AR beam is **Semi-Transparent**.



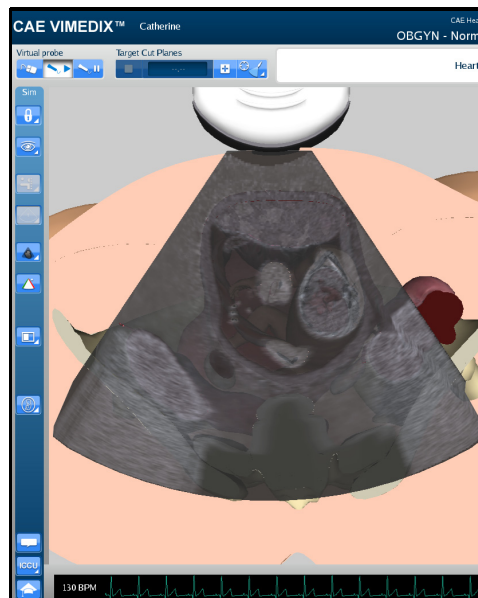
*A Semi-Transparent AR Beam*

The Edge AR beam is similar to the Semi-Transparent AR beam, but includes a red line around the edge of the ultrasound beam.



**An Edge AR Beam**

The **Ultrasound** AR beam displays the structures within the ultrasound beam using an ultrasound view.

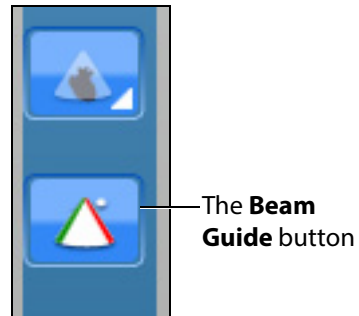


**An Ultrasound AR Beam**

## Using the Beam Guide

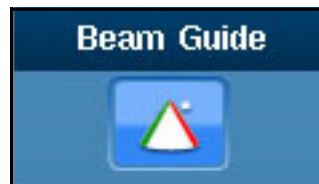
The beam guide allows users to identify the orientation of the beam using red and green lateral borders.

To activate the cut plane guide, click the **Beam Guide** button located in the **Simulation** panel



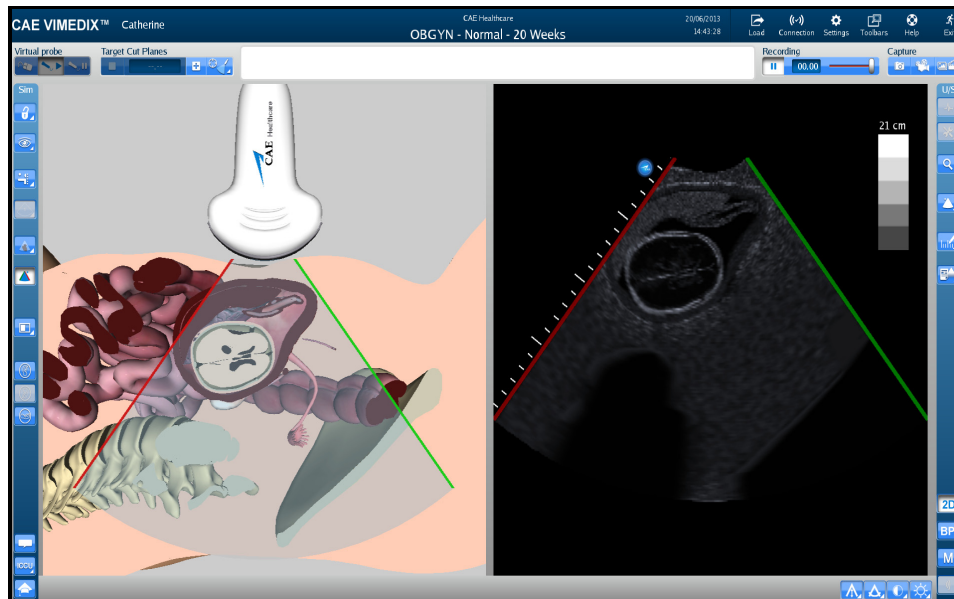
*The Beam Guide Button*

**NOTE:** When using the expanded toolbar view, click on the appropriate beam button in the **Beam Guide** section, located in the **Simulation** panel.



*The Beam Guide Section*

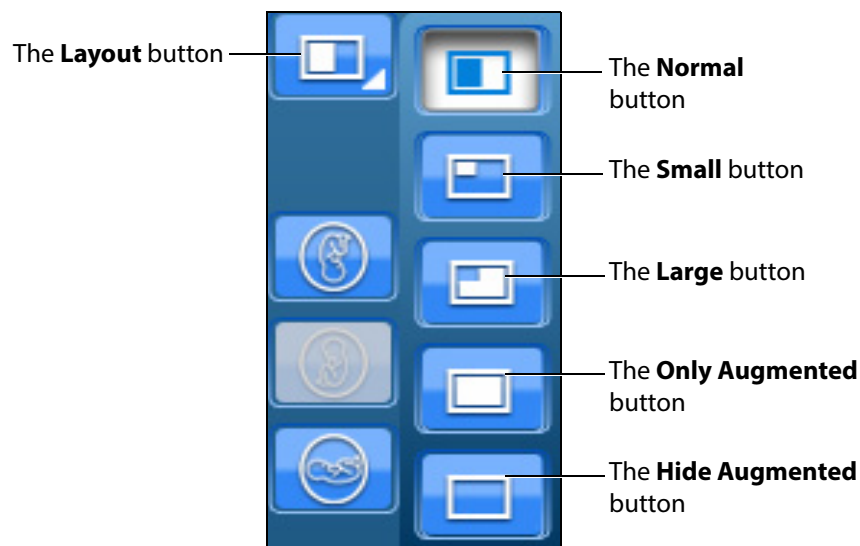
The green and red borders appear to show the user the orientation of the beam.



*The Activated Beam Guide*

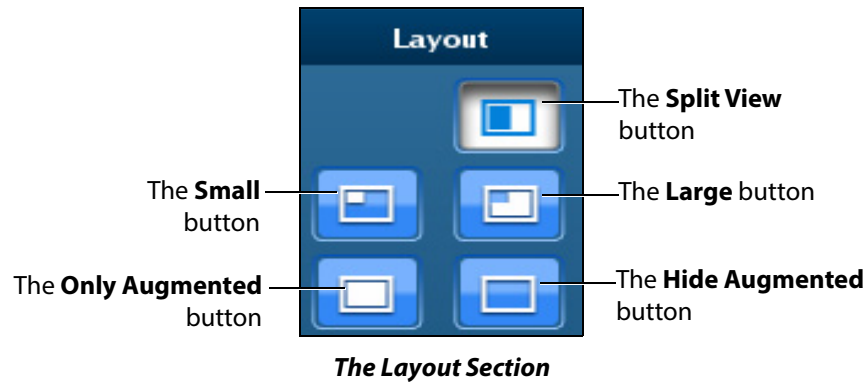
## Changing the Display Layout

Using the **Layout** button, users can select the desired display layout from the available options.

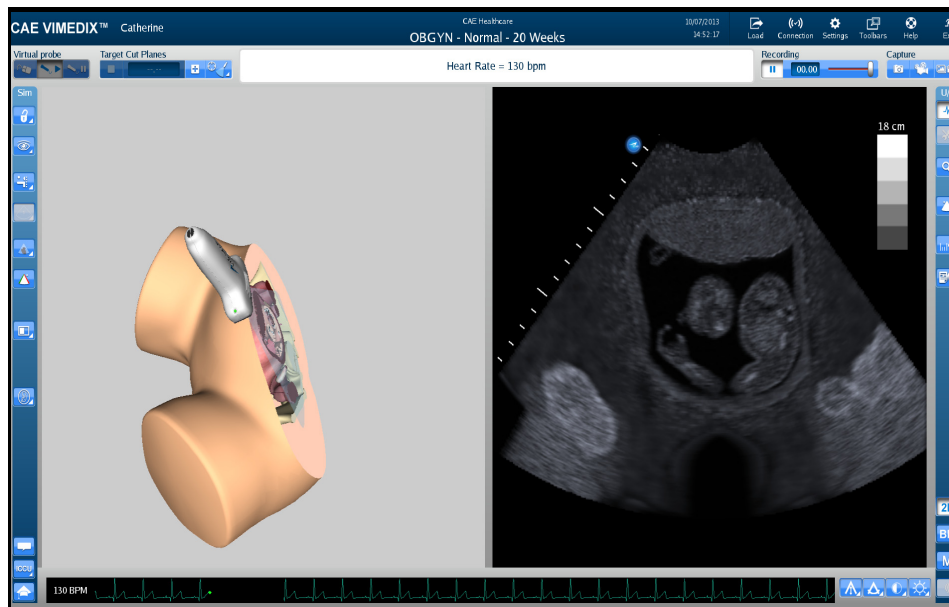


*The Layout Options*

**NOTE:** When using the expanded toolbar view, click the desired layout button located in the Layout section of the Simulation panel.



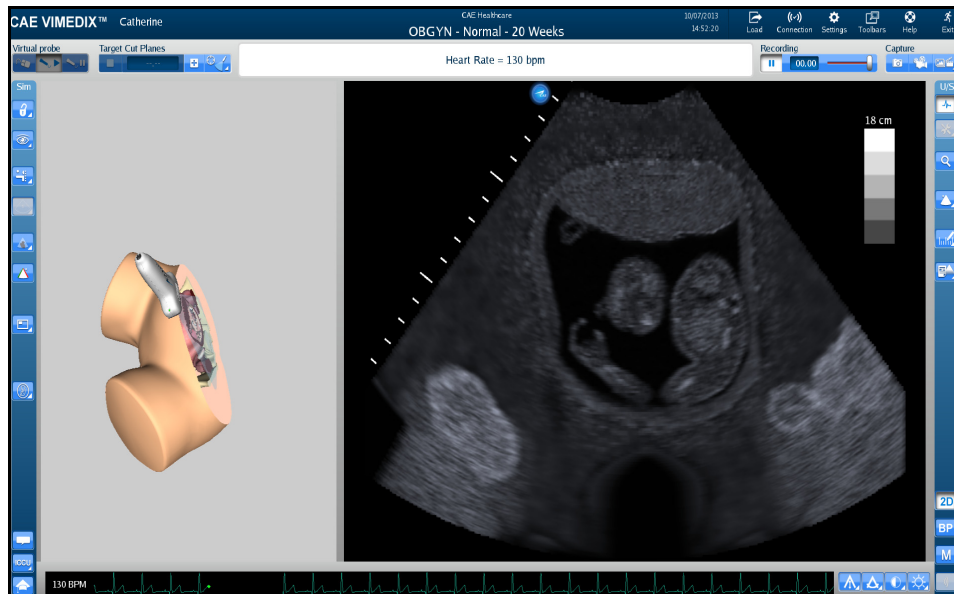
The Split View button adjusts the interface to show the both AR and Ultrasound displays evenly.



**The Split View Display Mode**

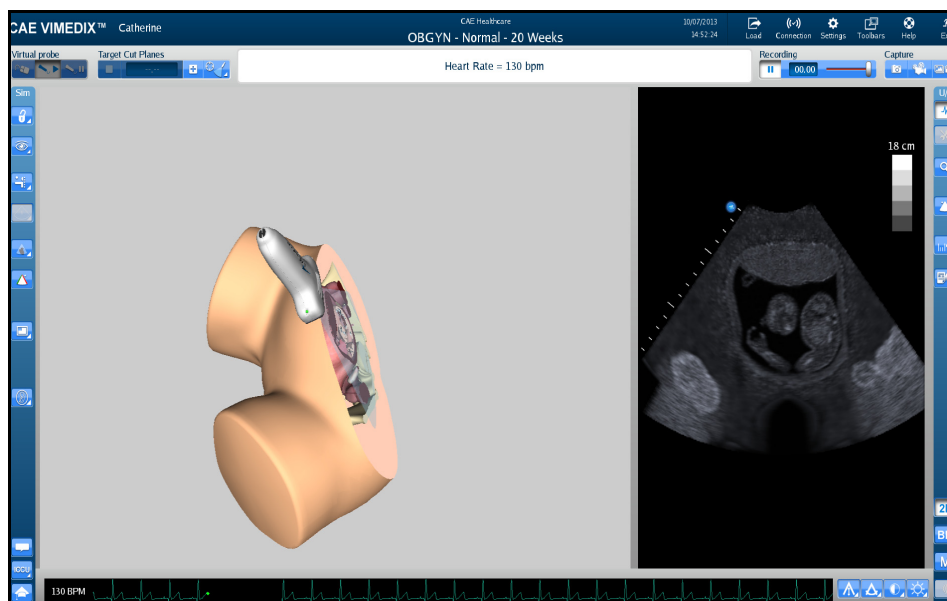
By default, the interface is in Split View upon simulator startup. The default view on startup can be changed in the simulator settings.

The **Small** button adjusts the interface to a smaller AR display and a larger Ultrasound display.



**The Small Display Mode**

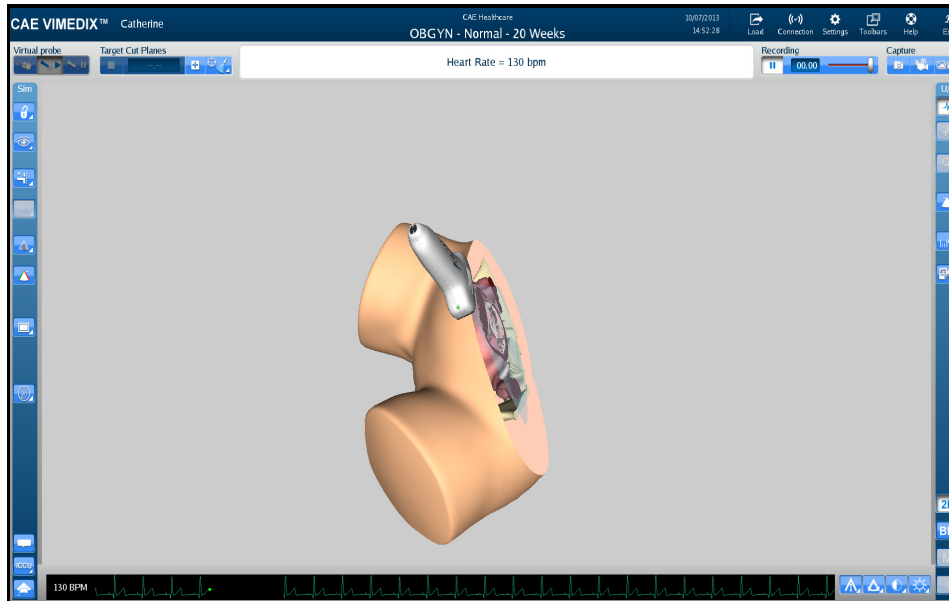
The **Large** button displays a larger AR display and a smaller Ultrasound display.



**The Large Display Mode**

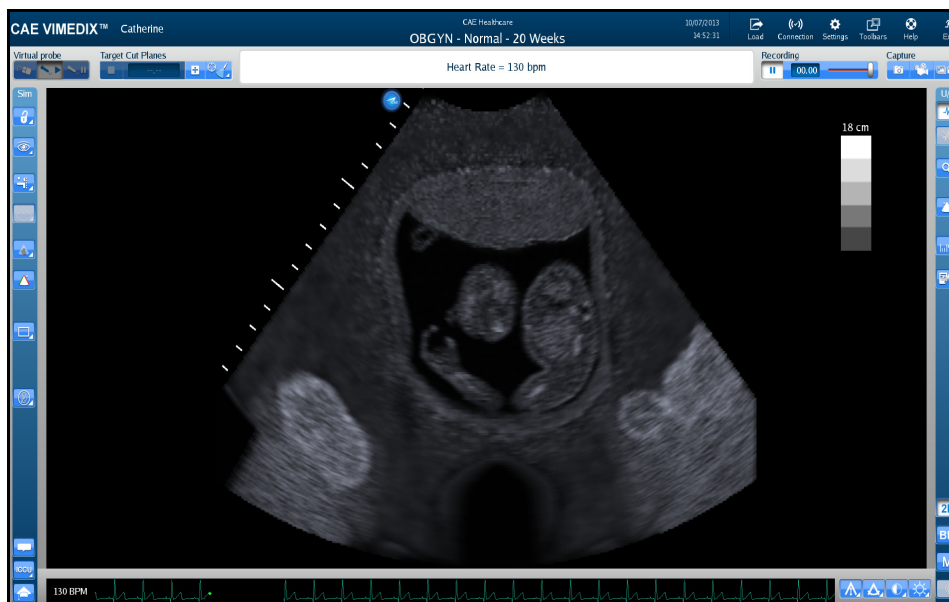


The **Only augmented** button expands the AR display and removes the Ultrasound display.



*The Only Augmented Display Mode*

The **Hide augmented** button expands the Ultrasound display and removes the AR display.

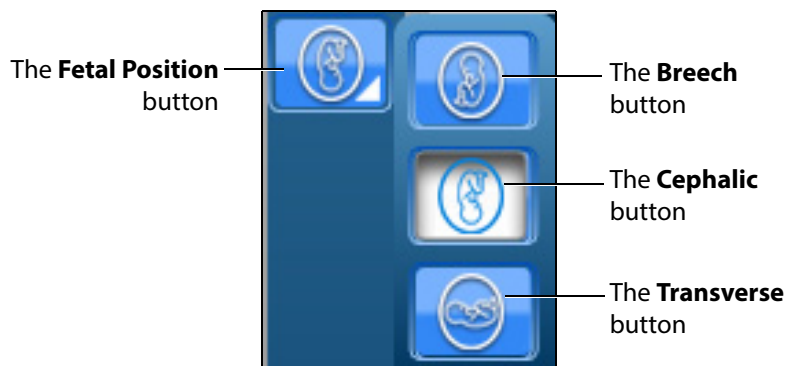


*The Hide Augmented Display Mode*

## Changing the Fetal Position

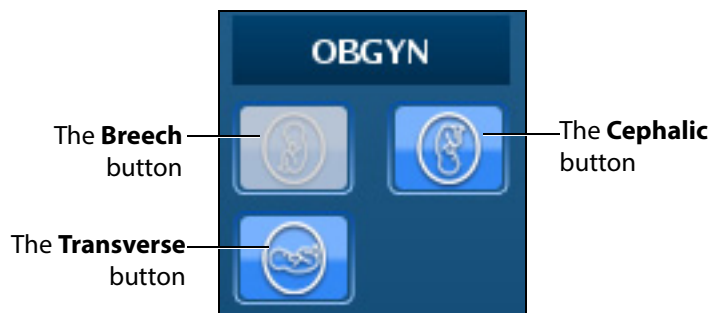
Using the buttons in the **OBGYN** section of the **Simulation** panel, users can modify the fetal position in the AR and Ultrasound displays.

The **Fetal Position** button adjusts the position of the fetus in the both the AR and Ultrasound displays.



**The Fetal Position Buttons**

**NOTE:** When using the expanded toolbar view, click the desired fetal position button located in the OBGYN section of the Simulation panel.



**The OBGYN Section**

## Using the Tutorial Feature

The tutorial feature helps users identify anatomical structures on the AR display.

To use the tutorial feature:

1. Obtain a view of the AR display using the probe.  
**NOTE:** To freeze the view while using the tutorial mode, click the **Probe pause** button located in the **Virtual Probe** panel or press the spacebar on the keyboard.
2. Click the **Tutorial** button on the left side of the screen at the bottom of the **Simulation** panel.



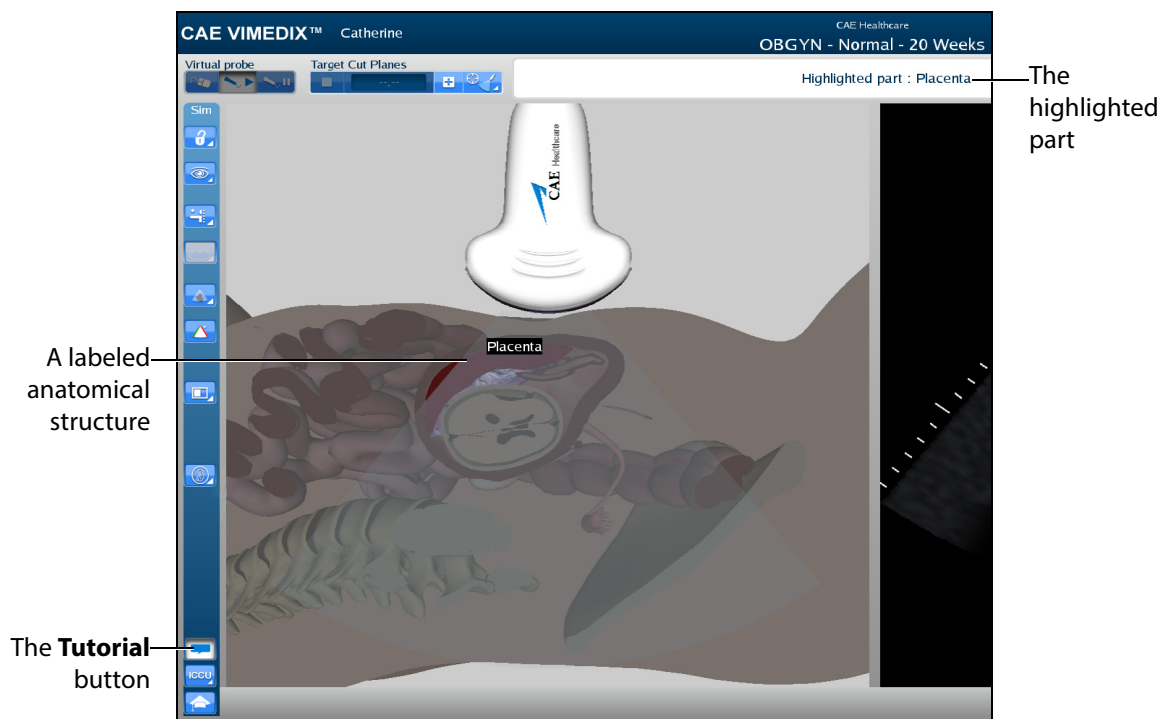
**NOTE:** When using the expanded toolbar, the **Tutorial** button is located in the Tutorial section of the **Simulation** panel.



**The Tutorial Section**

3. Hover over the anatomical structures on the AR display using the mouse.

As the mouse scrolls over each structure, the name of the structure appears near the top of the screen.



**The AR Display**

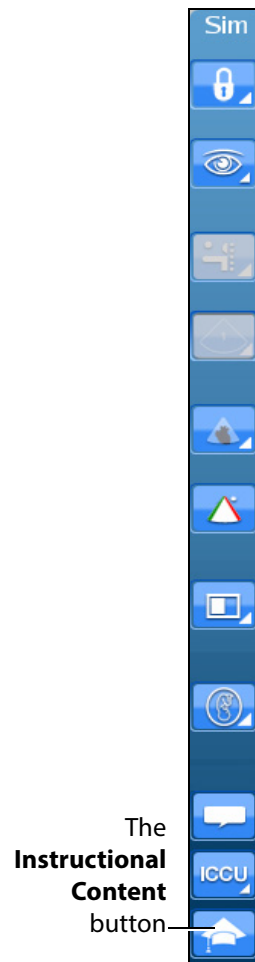
4. To exit the tutorial mode, click the **Tutorial** button again.

## Using the Instructional Content Feature

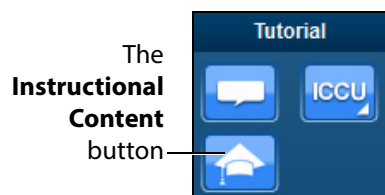
The Instructional Content feature allows users to engage in self-directed learning on the simulator through a range of tasks covering several disciplines and skill areas. Tasks include probe manipulation, obtaining standard views, optimizing image settings, and performing measures. Task results are provided when all tasks are completed.

To use the instructional content feature:

1. Click the **Instructional Content** button

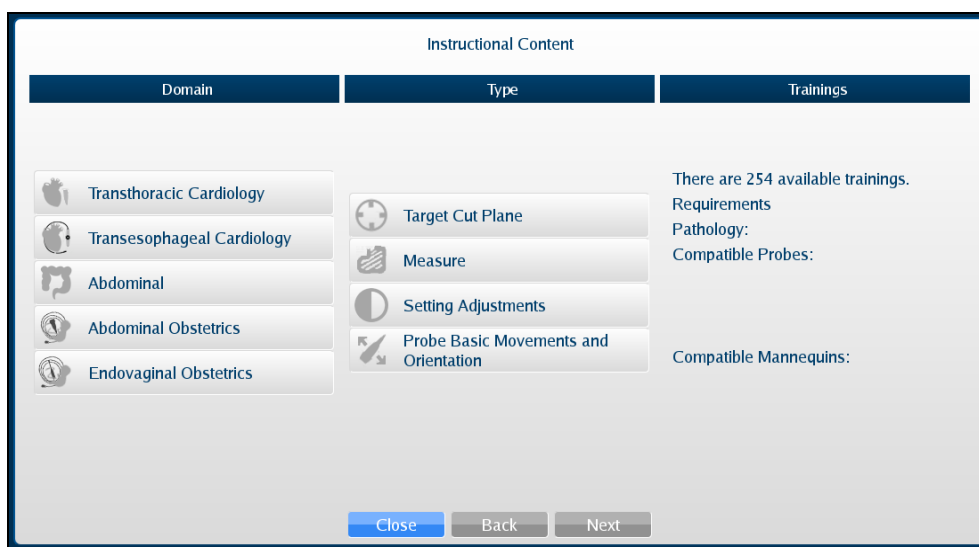


**NOTE:** When using the expanded toolbar, the **Instructional Content** button is located in the Tutorial section of the **Simulation** panel.



**The Tutorial Section**

The Instructional Content menu window opens.



**The Instructional Content Menu Window**

2. Under the Domain column, select the desired applicable discipline.
3. Under the Type column, select the desired type.

**TIP:** Additional information about the selected exercise Type is shown under the Trainings column.

4. Click Next.

The Task menu window appears.



**The Instructional Content Task Menu Window**

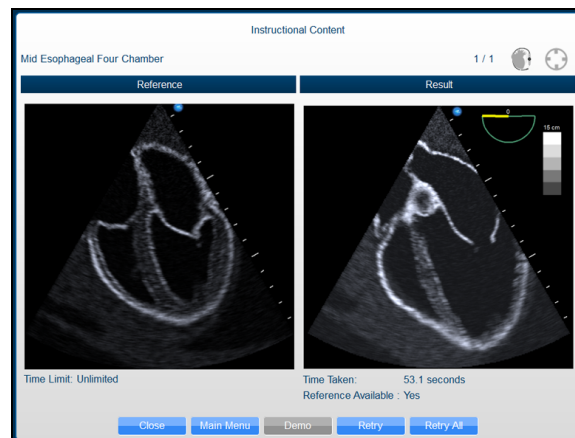
By default, all tasks are checked. Check or uncheck desired tasks.

Click **Instructions** for additional task descriptions.

Adjust additional parameters under **Options** as desired.

5. When ready, click **Start**.
6. Follow the on-screen instructions to complete the task. Instructions are also located near the top of the screen where the heart rate is usually located.

When all tasks are completed, the Results window appears. (Clicking the Instructional Content button or pressing the Enter key will also end the tasks and display the results.)



**The Results Window Samples**

Depending on the type of task, the Results window allows you to view a Demo, How-To instructions, Retry, return to Main Menu, or Close and exit tasks.

## Adjusting the Heart Rate

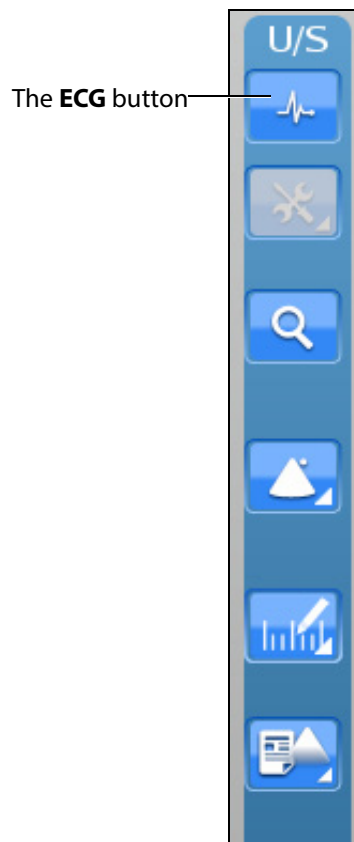
Users can adjust the Heart Rate in different cases to the appropriate rate for a training session. The default Heart Rate during Normal Heart is set to 90 beats per minute (bpm). The default for a tamponade case is 120 bpm.

To adjust the Heart Rate:

- Click the **Page Up** key on the keyboard to increase the Heart Rate by increments of 5 beats per minute
- Click the **Page Down** key on the keyboard to decrease the Heart Rate by increments of 5 beats per minute

## Using the ECG Tracing

The **ECG** button is used to enable or disable the ECG tracing on the bottom of the screen. ECG tracing is enabled by default upon startup.

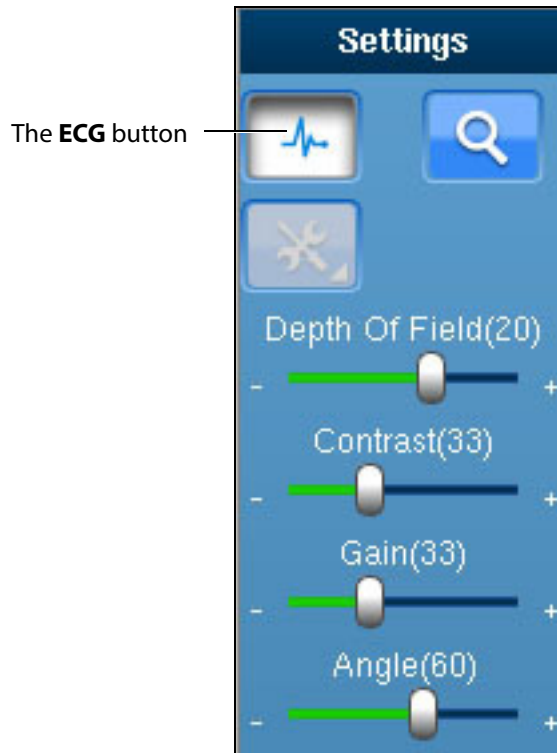


***The Ultrasound Panel***

The featured ECG is a normal ECG and it will be disabled in some non-applicable cases.



**NOTE:** When the expanded toolbar is activated, the ECG button appears in the Settings section of the Ultrasound panel.



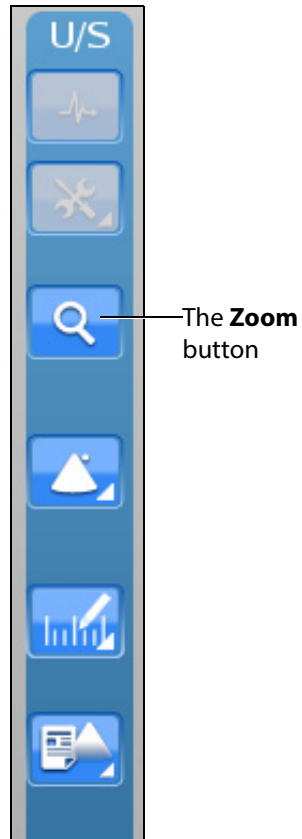
**The ECG Button**

## Using the Zoom Feature

The Zoom button allows the user to zoom in on a specific area of the Ultrasound image.

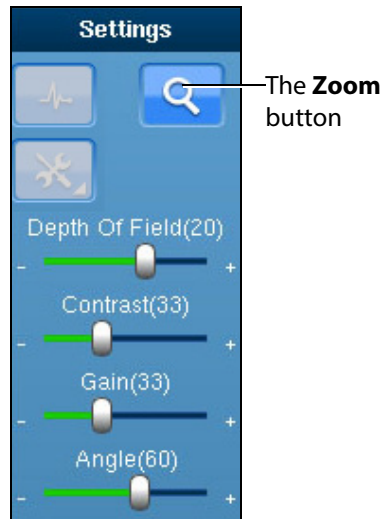
To zoom in on an Ultrasound image:

1. Click the **Zoom** button located in the **Ultrasound** panel.



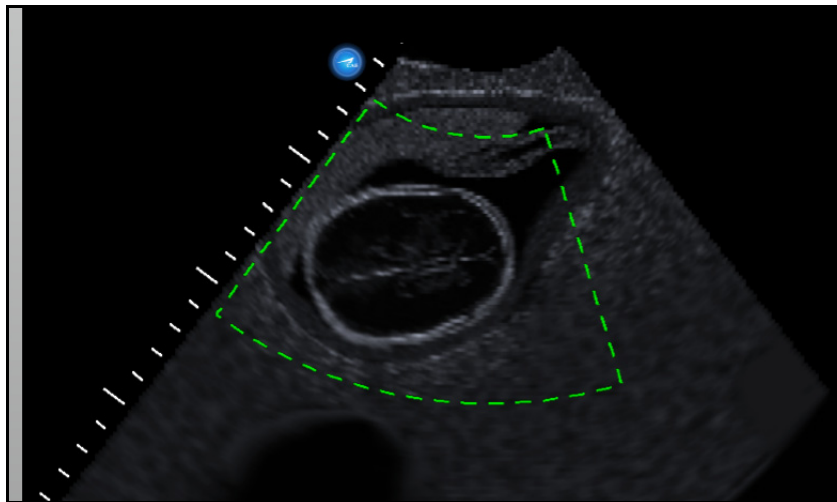
**The Zoom Button**

**NOTE:** When using the expanded toolbar, the **Zoom** button is located in the Settings section of the Ultrasound panel.



***The Settings Section***

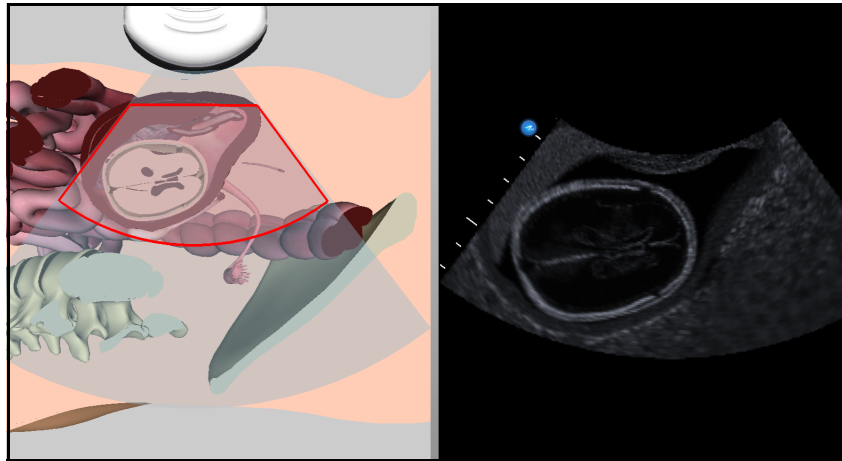
2. Center the mouse in the desired zoom area on the Ultrasound display.
3. Click and hold the left mouse button.
4. Drag the mouse to span the desired area with the green frame.



***The Selected Zoom Area***

5. Once the area is identified using the green frame, release the mouse button.
6. Click the left mouse button once in the Ultrasound display.

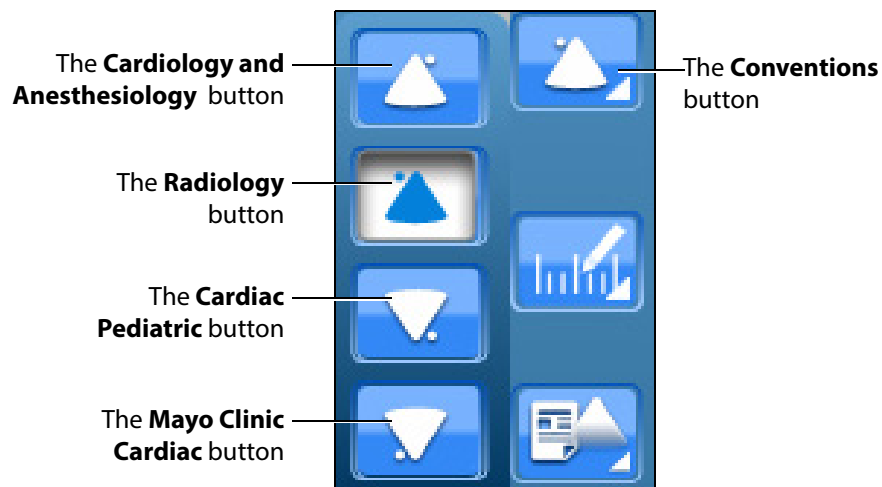
The zoom area is enlarged in the Ultrasound display and a red outline denotes the zoomed area in the AR Display.



*A Zoomed Area*

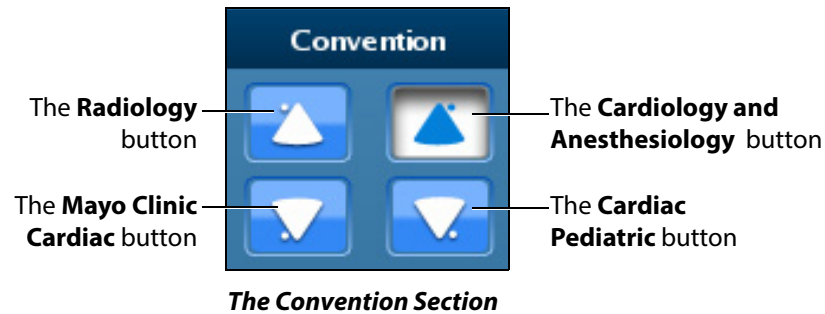
## Selecting a Convention

The Vimedix simulator contains four different conventions options: Cardiology and Anesthesiology convention, Radiology convention, Cardiac Pediatric convention and Mayo Clinic Cardiac convention.



*The Convention Options*

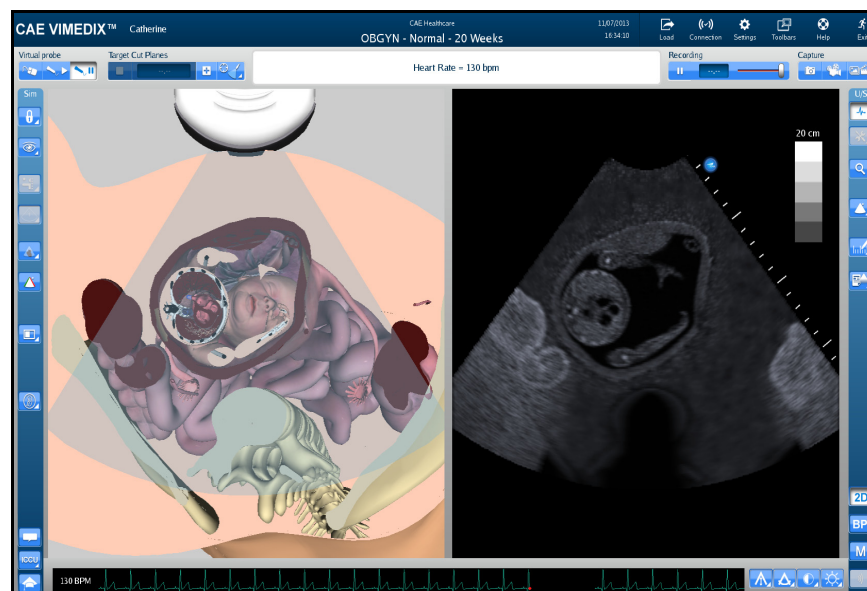
**NOTE:** When using the expanded toolbar view, click the desired convention button located in the Convention section of the Ultrasound panel.



For the cardiac modules, the cardiology and anesthesiology convention is selected by default. For the Vimedix Ob/Gyn ultrasound simulator, the radiology convention is selected by default.

## Cardiology and Anesthesiology Convention

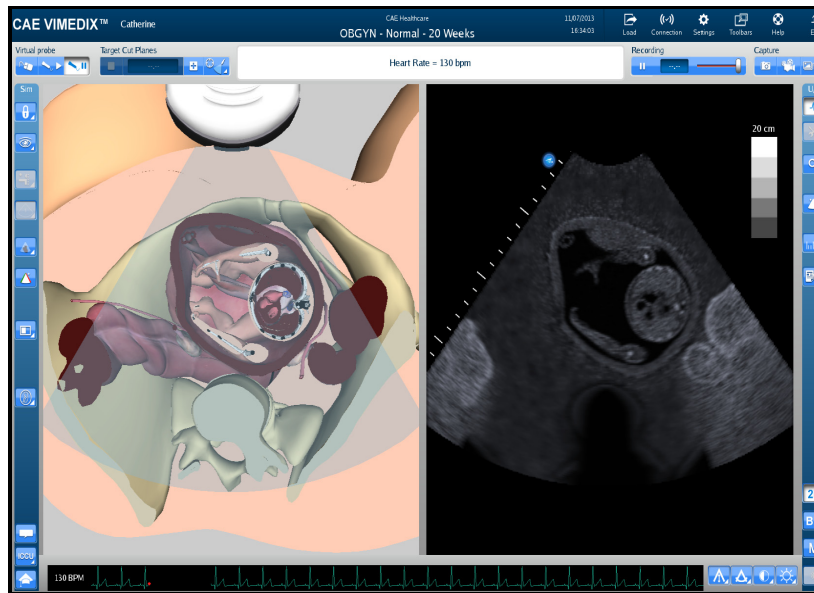
Click the **Cardiology and Anesthesiology Convention** button with the circle in the upper-right corner to select the cardiology and anesthesiology convention.



**The Cardiology and Anesthesiology Convention**

## Radiology Convention

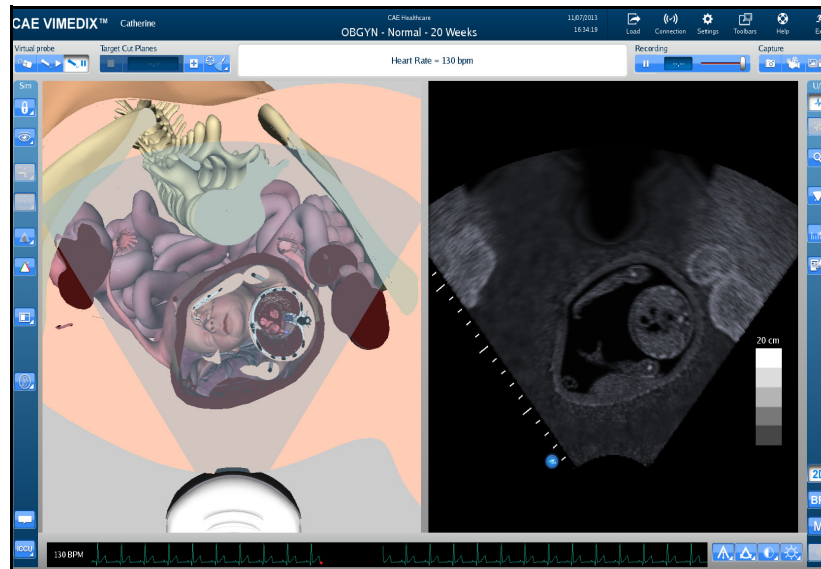
Click the **Radiology Convention** button with the circle in the upper-left corner to select the radiology convention. This convention is selected by default when the curvilinear probe is connected to the simulator.



*The Radiology Convention*

## Mayo Clinic Cardiac Convention

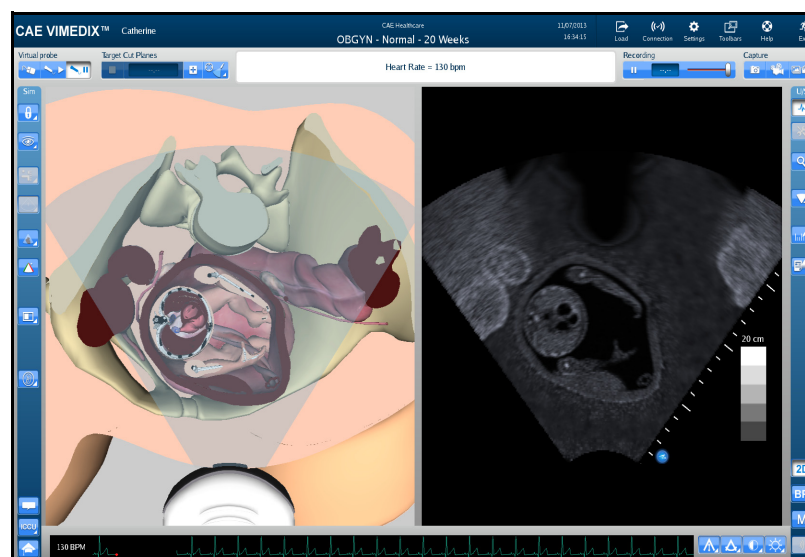
Click the **Mayo Clinic Cardiac** button with the circle in the lower-left corner to select the Mayo Clinic cardiac convention.



*The Mayo Clinic Cardiac Convention*

## Cardiac Pediatric Convention

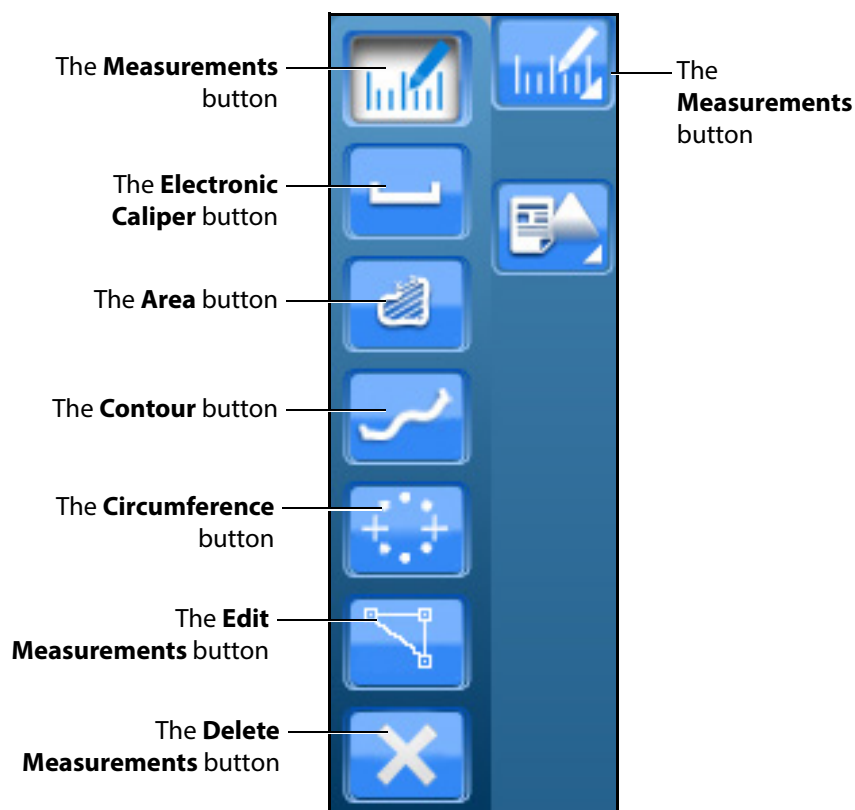
Click the **Cardiac Pediatric Convention** button with the circle in the lower-right corner to select the cardiac pediatric convention.



*The Cardiac Pediatric Convention*

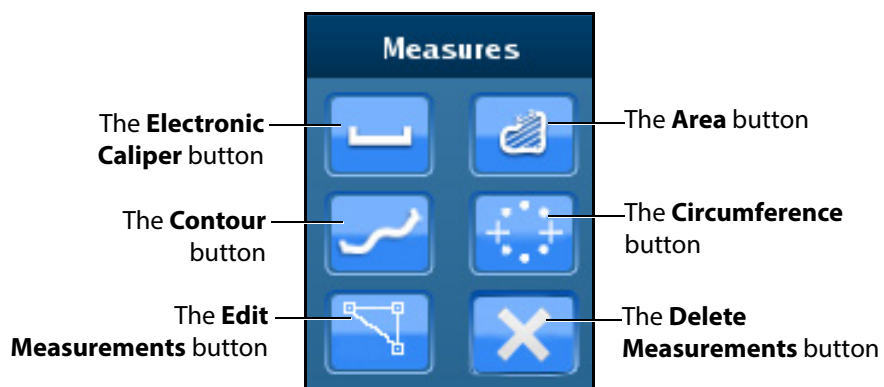
## Using the Measurement Features

Users can access and utilize several measurement tools to record the length, area, circumference and shape of the simulated anatomical structures.



**The Measurements Options**

**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.

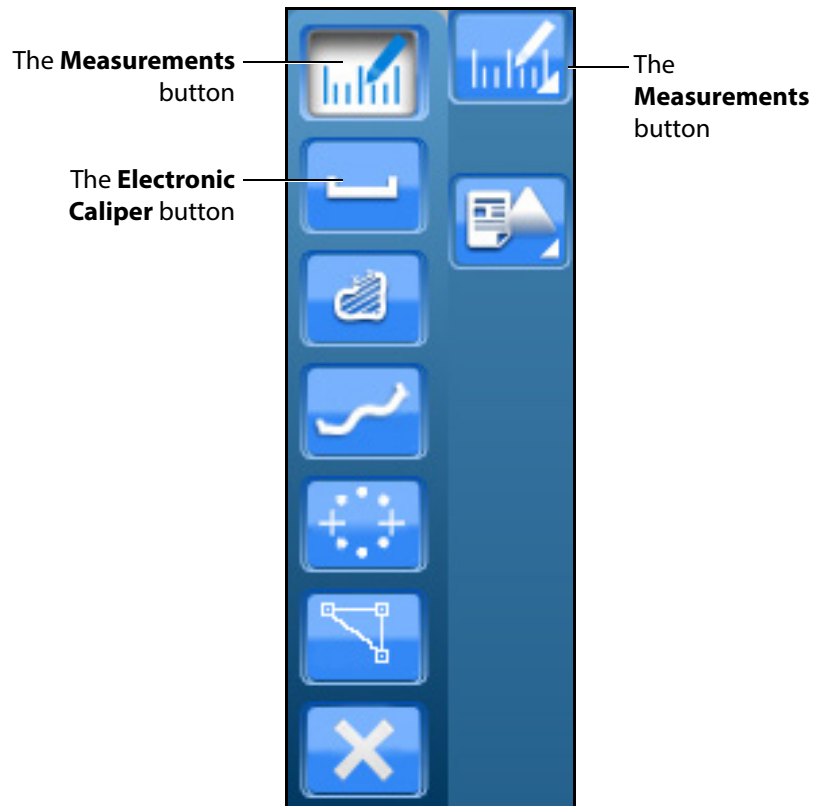


**The Measures Section**



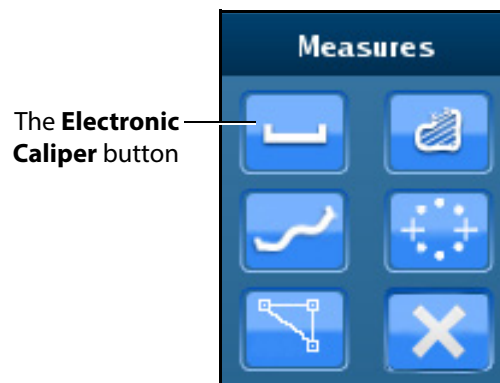
## Using the Electronic Caliper

The electronic caliper is used to measure length or distance on the Ultrasound display. To access the button, click the **Measurements** button and select the **Electronic Caliper** button from the drop-down options.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the **Electronic Caliper** button located in the Measures section of the Ultrasound panel.

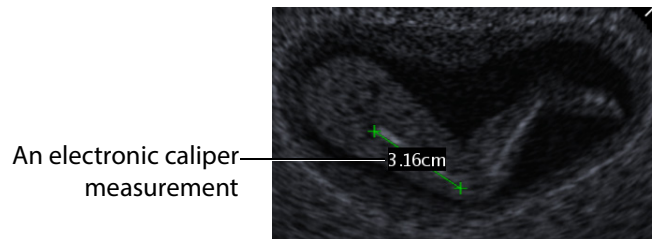


*The Measures Section*

To use the electronic caliper:

1. Select the caliper by clicking the **Electronic Caliper** button.
2. On the Ultrasound display, left-click the mouse at one extremity of the structure to be measured.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Left-click the mouse again at the opposite extremity of the structure to be measured.

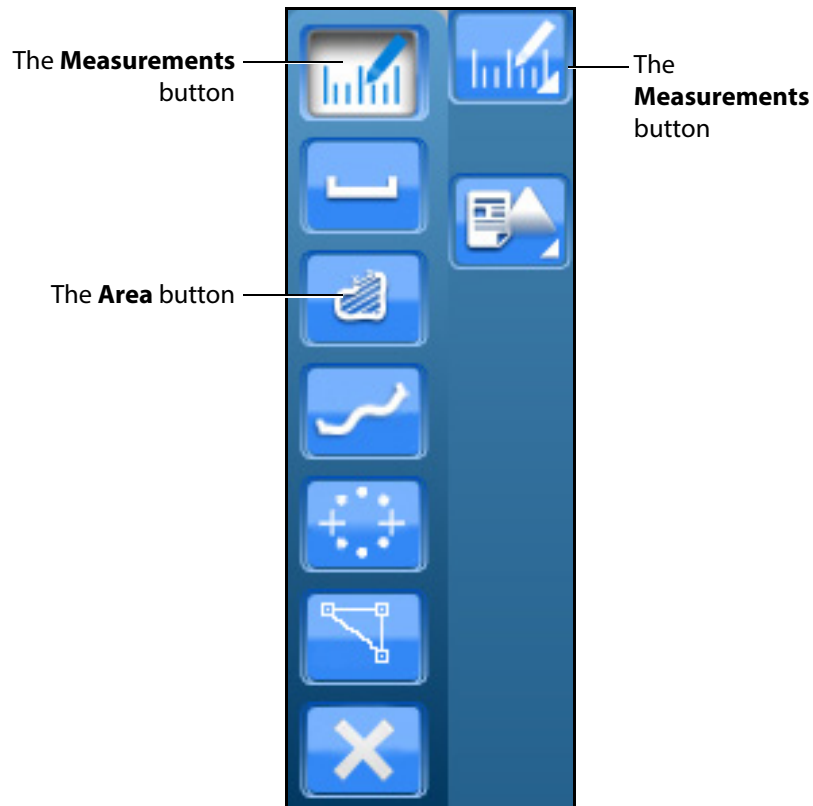
Another + marker appears on the Ultrasound display in the place where the mouse is clicked and the measurement appears between the two markers.



*The Ultrasound Display*

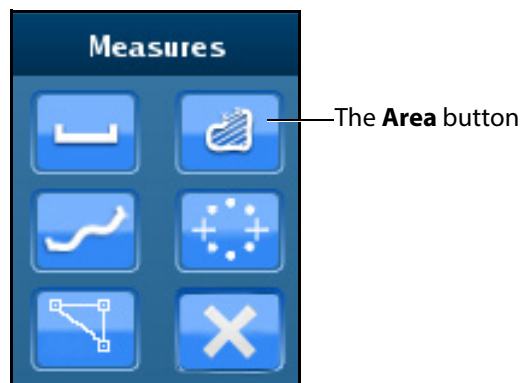
## Using the Area Measurement Tool

The area measurement tool is used to measure the surface of a traced area on the Ultrasound display. To access the button, click the **Measurements** button and select the **Area** button from the drop-down options.



**The Measurements Options**

**NOTE:** When using the expanded toolbar view, click the **Area** button located in the Measures section of the Ultrasound panel.

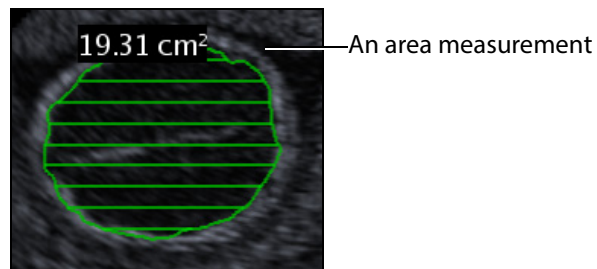


**The Measures Section**

To use the area measurement tool:

1. Select the tool by clicking the **Area Measurement** button.
2. On the Ultrasound display, left-click the mouse at any point on the periphery of the area to be measured.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Using the mouse, trace the periphery of the area to be measured, returning to the starting point where the + marker appears.
4. After tracing all the way back to the starting point, left-click the mouse.

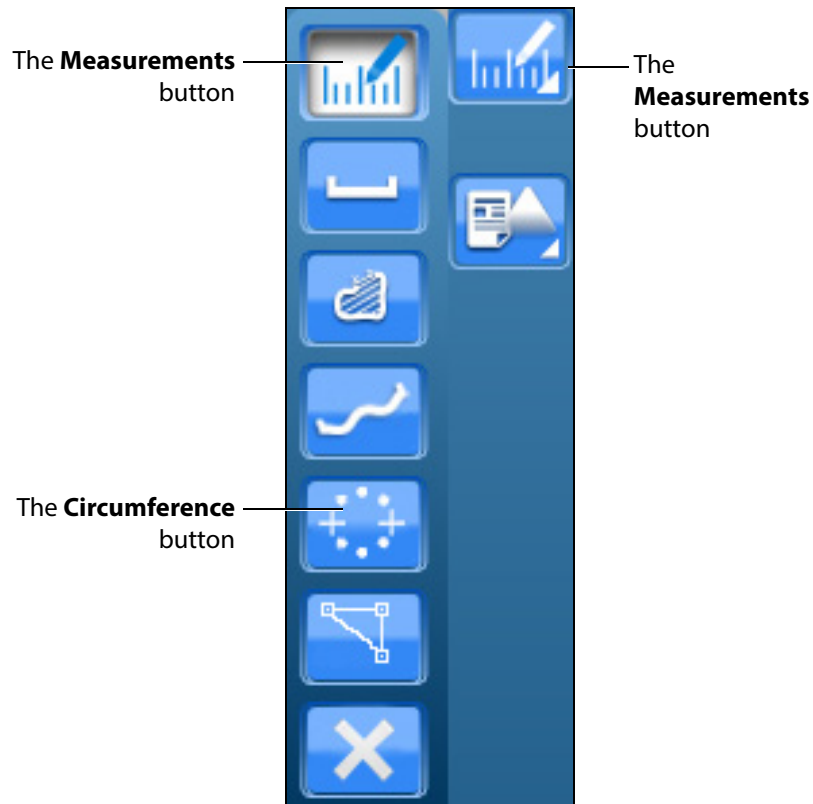
The traced area is selected and the measurement is displayed in  $\text{cm}^2$ .



*The Ultrasound Display*

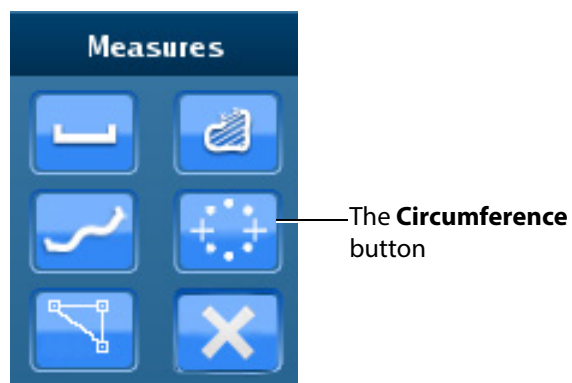
## Using the Circumference Measurement Tool

The circumference measurement tool is used to measure the length of an anatomical structure's circumference. To access the button, click the **Measurements** button and select the **Circumference** button from the drop-down options.



**The Measurements Options**

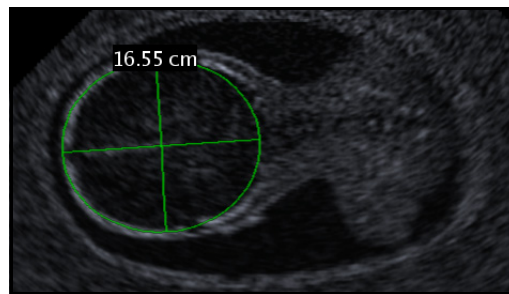
**NOTE:** When using the expanded toolbar view, click the **Circumference** button located in the Measures section of the Ultrasound panel.



**The Measures Section**

To use the circumference measurement tool:

1. From the **Measures** section of the **Ultrasound** panel, click on the **Circumference** button.
2. On the Ultrasound display, left-click the mouse at any point to begin measuring.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Left-click the mouse to mark the beginning point of the diameter.
4. Move the mouse to expand the circumference to the desired area and left-click the mouse to hold the circumference measurement.

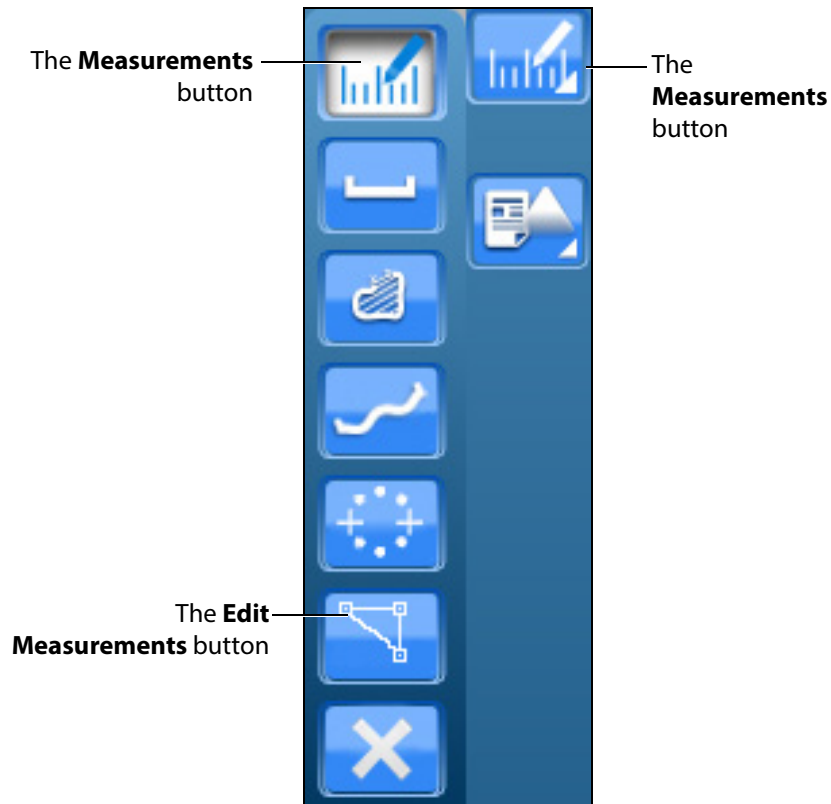


*The Ultrasound Display*

The measurement is displayed in centimeters.

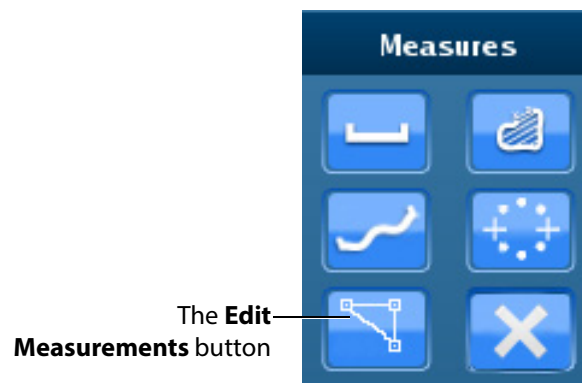
## Editing a Measurement

Users are able to edit measurements which are taken incorrectly or need to be adjusted for accuracy. This feature is only available for the electronic caliper and circumference measurement tools.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.



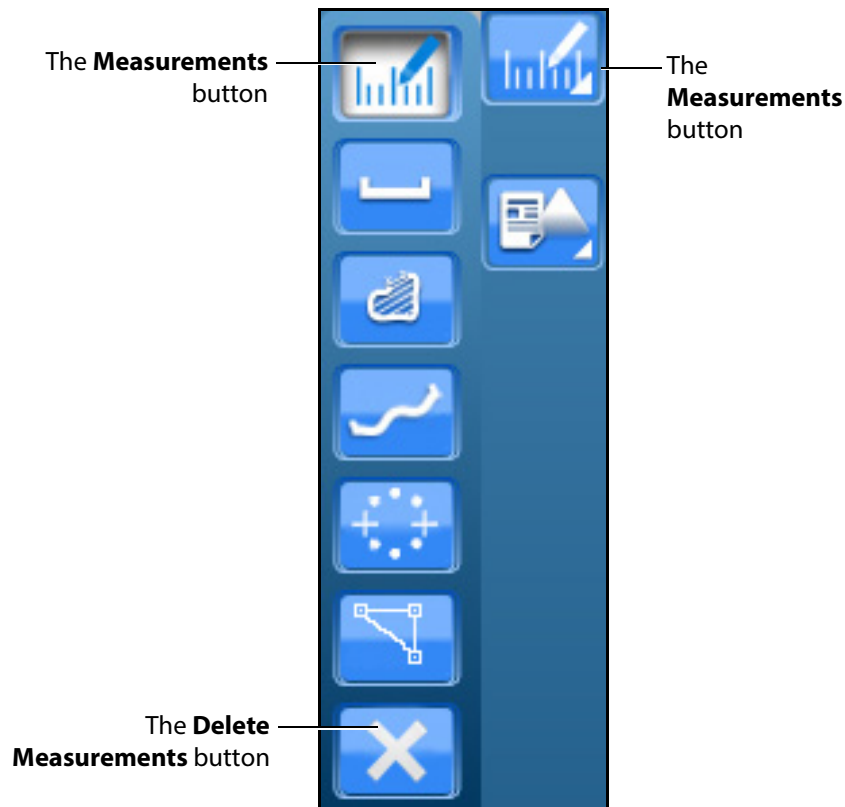
*The Measures Section*

To edit a measurement on the Ultrasound display:

1. Click the **Edit Measurements** button.  
The measurement points become squares, indicating that users can move the points as desired.
2. Upon finishing the measurement point adjustment, click the **Measurements** button or the selected measurement tool button to save the adjustment.

## Deleting a Measurement

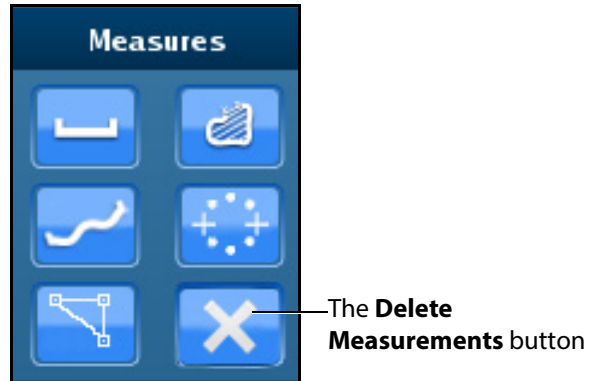
Users are able to delete measurements which are taken incorrectly or no longer relevant to the pathology.



*The Measurements Options*



**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.



*The Measures Section*

To delete the last measurement on the Ultrasound display, press the **Backspace** key on the keyboard or click the **Delete Measurements** button.

To delete all measurements, double-click the **Delete Measurements** button.

## Using Reports

The Reports features can be used to create obstetrics reports.



**The Ultrasound Panel**

**NOTE:** When using the expanded toolbar view, click the **Reports** button located in the Echo Reports section of the Ultrasound panel.

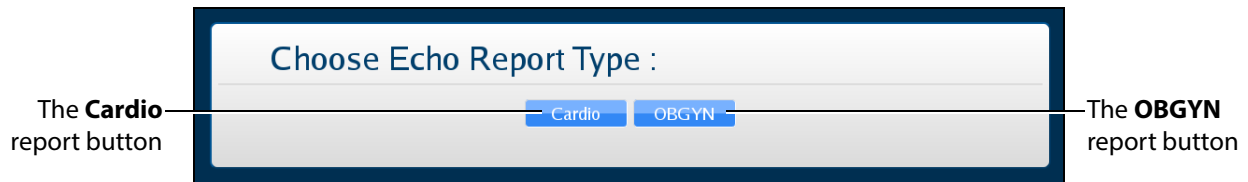


**The Reports Button**

## Creating a Report

To create a report, click the **Reports** button.

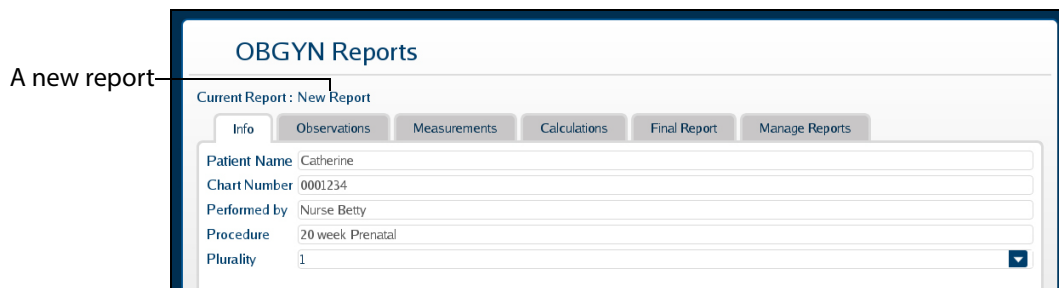
The Choose Echo Report Type window appears.



**The Choose Echo Report Type Window**

For the women's health module using the Catherine mannequin, select **OBGYN**.

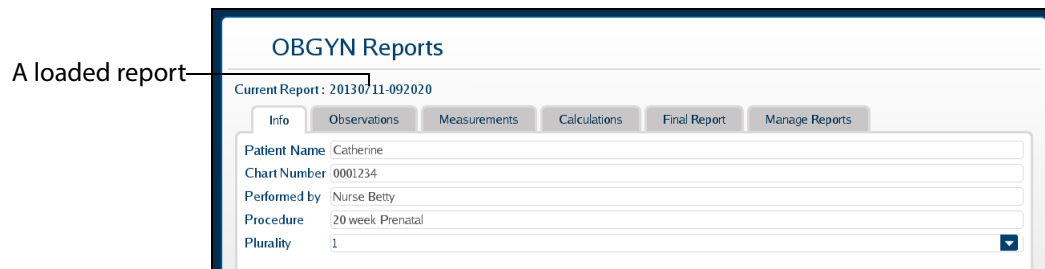
The OBGYN Reports window appears.



**The OBGYN Reports Window**

If a report has not already been saved or loaded during the current session, the upper left of the OBGYN Reports window indicates a new report.

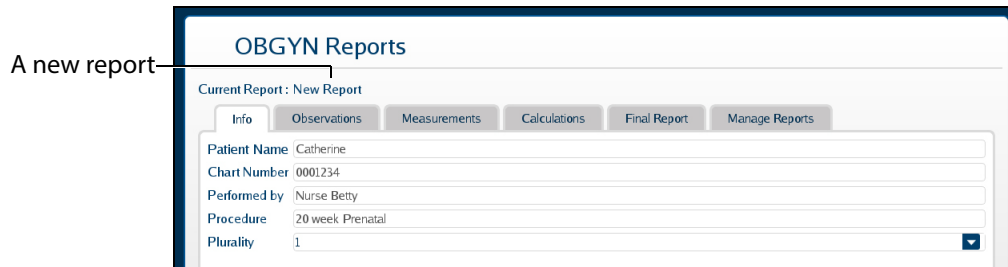
**NOTE:** If a report has already been saved or loaded during the current session, the report name appears in the upper left of the OBGYN Reports window.



**The OBGYN Reports Window**

## Entering Report Information

Report information can be entered from the OBGYN Reports window.



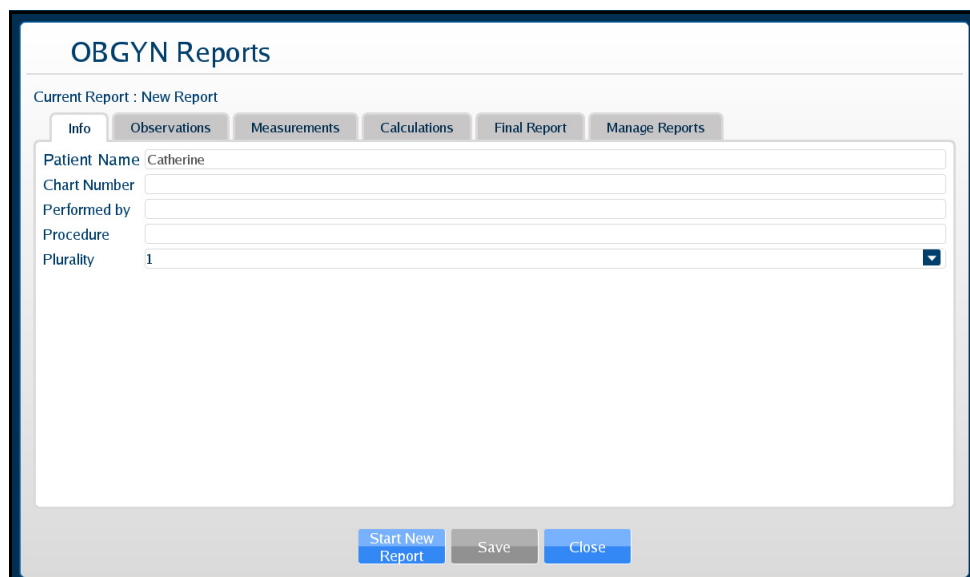
*The OBGYN Reports Window*

The window is pre-loaded with a new report or an existing report, depending on whether a report has already been created during the current session.

The Echo Reports window has six tabs for entering and viewing report information: the **Info** tab, the **Observations** tab, the **Measurements** tab, the **Calculations** tab, the **Final Report** tab and the **Manage Reports** tab.

### The Info Tab

The **Info** tab is used to enter the basic information including chart number, professional performing the exam, type of procedure, and plurality of pregnancy.



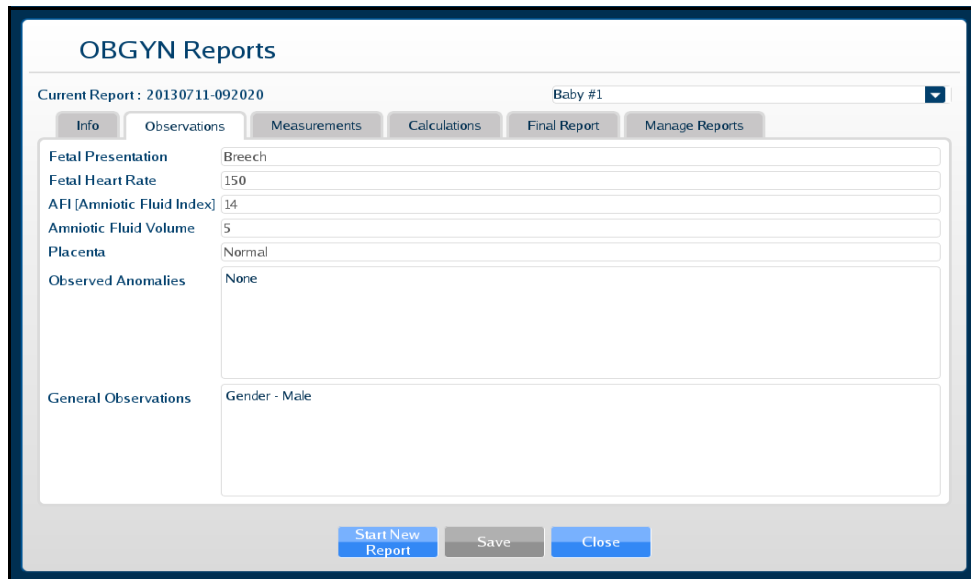
*The Info Tab*

## The Observations Tab

The **Observations** tab is used to note any remarkable observations during the examination.

To enter a measurement:

1. In the Echo Reports window on the **Observations** tab, click on the line item to be modified.



**OBGYN Reports**

Current Report : 20130711-092020 Baby #1

Info Observations Measurements Calculations Final Report Manage Reports

Fetal Presentation: Breech

Fetal Heart Rate: 150

AFI [Amniotic Fluid Index]: .14

Amniotic Fluid Volume: 5

Placenta: Normal

Observed Anomalies: None

General Observations: Gender - Male

Start New Report Save Close

***The Observations Tab***

2. Click **Save** to save the information.
3. Navigate to the next tab or click **Close** to exit the Echo Reports Window.

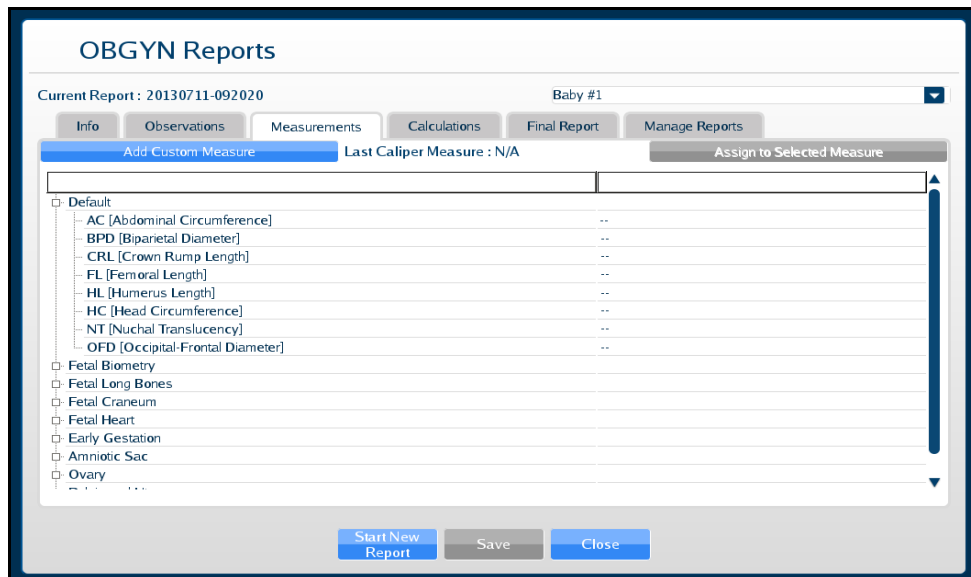
## The Measurements Tab

The **Measurements** tab is used for physiological measurements.

The Default measurements group is expanded to display the most common measurements. Click on individual measurement groups (e.g., Fetal Biometry, Fetal Long Bones, etc.) to expand the list and view the measurements.

To enter a measurement:

1. In the OBGYN Reports window on the **Measurements** tab, double-click on the item to be measured or modified.

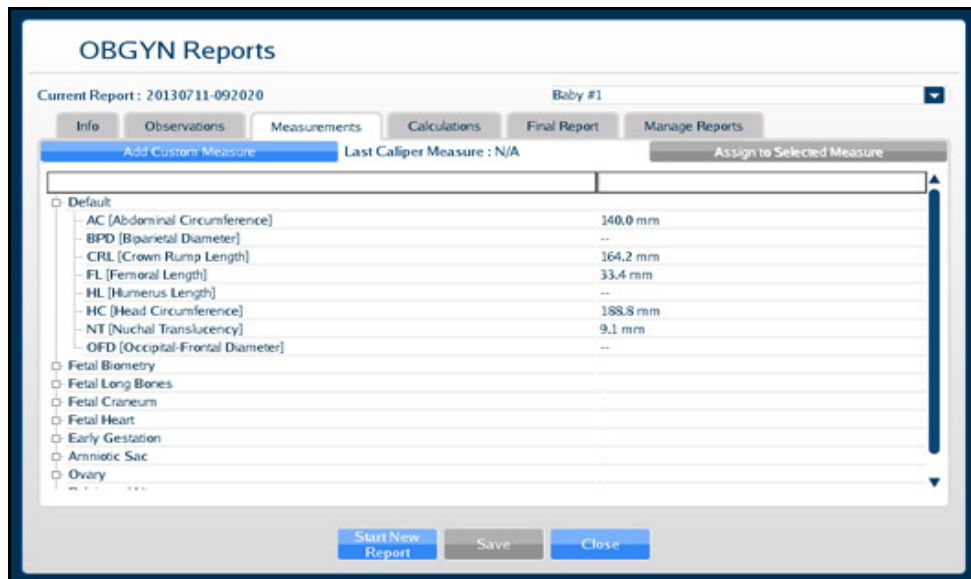


**The Measurements Tab**

The OBGYN Reports window closes.

2. Using the measurement tools, obtain the selected measurement from the Ultrasound display.

The OBGYN Reports window appears showing the measurement.



*The Measurements Tab*

## Adding a Custom Measurement

To add a custom measurement:

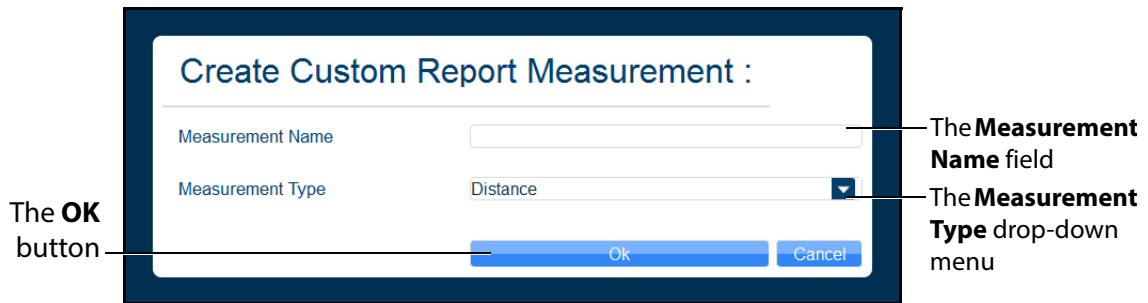
1. From the Measurements tab, click the **Add Custom Measure** button.



The **Add Custom Measure** button

*The Measurements Tab*

The Custom Measure window appears.



*The Create Custom Report Measurement Window*

2. Enter the desired measurement name in the **Measurement Name** field.
3. Select the measurement type from the **Measurement Type** drop-down menu.
4. Click **OK**.

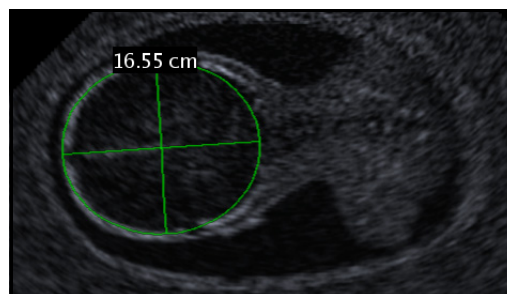
The custom measurement line appears on the Measurements tab.

## Assigning a Measurement

Users can take a measurement using any measurement tool and assign the measurement to an applicable, existing field in the Measurement tab.

To assign a recent measurement to an existing measurement field:

1. From the Ultrasound display, select a measurement tool.
2. Using the selected tool, perform the measurement.



*A Circumference Measurement*



3. From the Ultrasound Panel, click the **Reports** button.



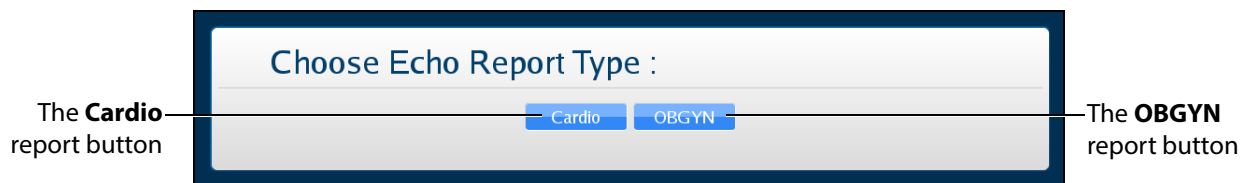
**The Ultrasound Panel**

**NOTE:** When using the expanded toolbar view, click the **Reports** button located in the Echo Reports section of the Ultrasound panel.



**The Reports Button**

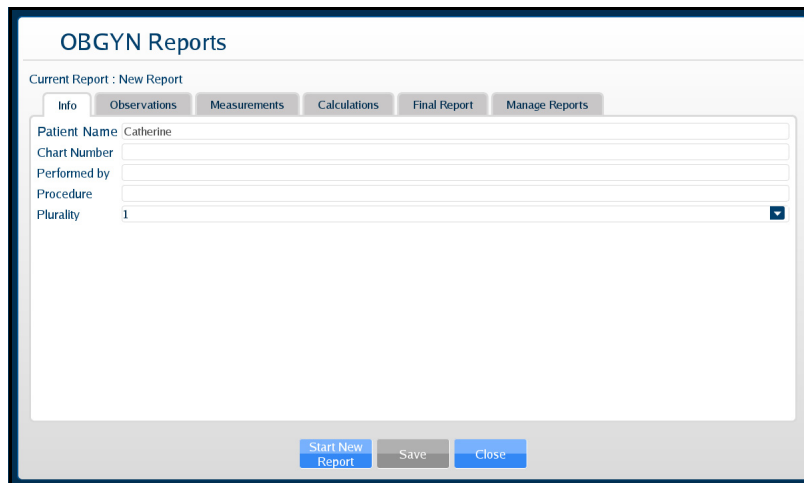
The Choose Echo Report Type window appears.



**The Choose Echo Report Type Window**

4. Select the **OBGYN** report button.

The OBGYN Reports window appears.



**The Info Tab**

5. Select the **Measurements** tab.



**The Measurements Tab**

6. Select the applicable measurement field.

The **Assign to Selected Measure** button is activated (appears blue).

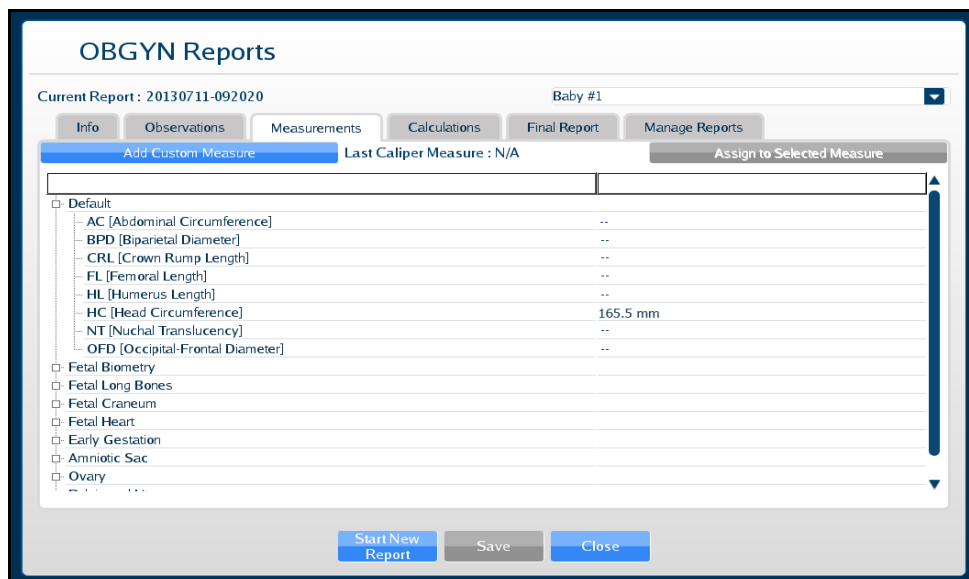


The **Assign to Selected Measure** button

**The Measurements Tab**

7. Click the **Assign to Selected Measure** button.

The measurement populates the selected measurement field.

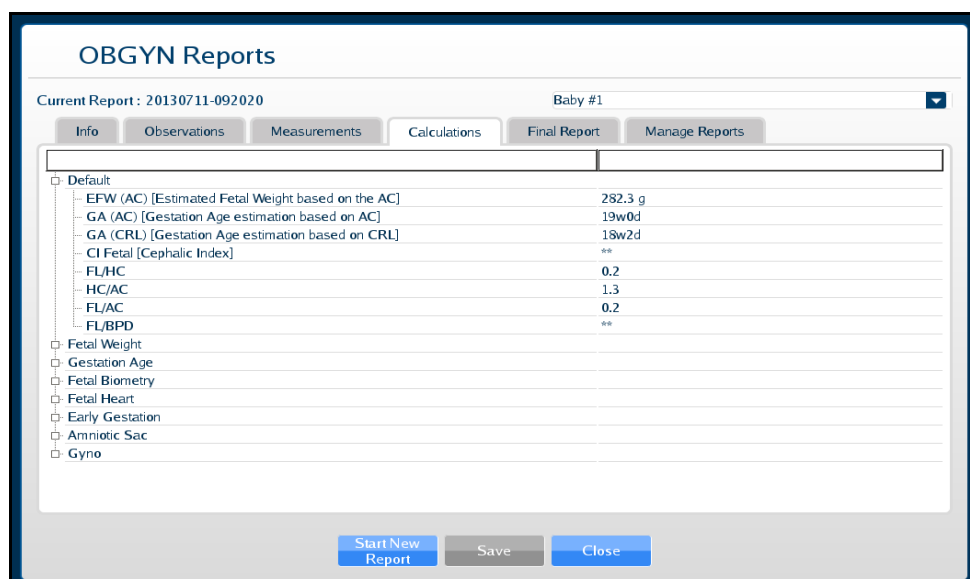


**The Measurements Tab**

## The Calculations Tab

The **Calculations** tab presents estimations of different fetal attributes based on the measurements recorded on the **Measurements** tab using proven formulas.

Click on the **Calculations** tab to view the estimations.



**The Calculations Tab**

The Default calculations group is expanded to display the most common calculations. Click on individual calculation groups (e.g., Fetal Weight, Gestation Age, etc.) to expand the list and view the calculations.

## The Final Report Tab

The **Final Report** tab displays the report information entered on the **Info**, **Observations**, **Measurements** and **Calculations** tabs as it will be exported.

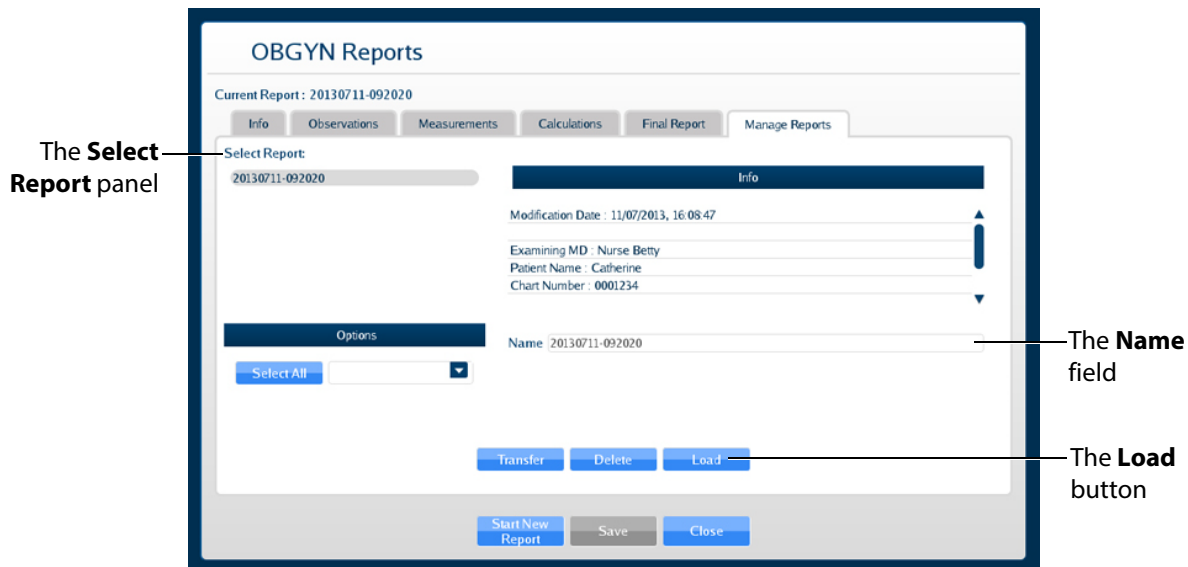
Once the desired report information has been entered, click the **Save** button at the bottom of the **Final Report** tab to save the report.

## Viewing an OBGYN Report

Reports can be loaded from the **Manage Reports** tab in the OBGYN Reports window.

To load a report:

1. Click the **Reports** button.  
The Choose Echo Report Type window appears.  
Select **OBGYN**.  
The OBGYN Reports window appears.
2. From the OBGYN Reports window, select the **Manage Reports** tab.  
The Manage Reports tab appears.



**The Manage Reports Tab**

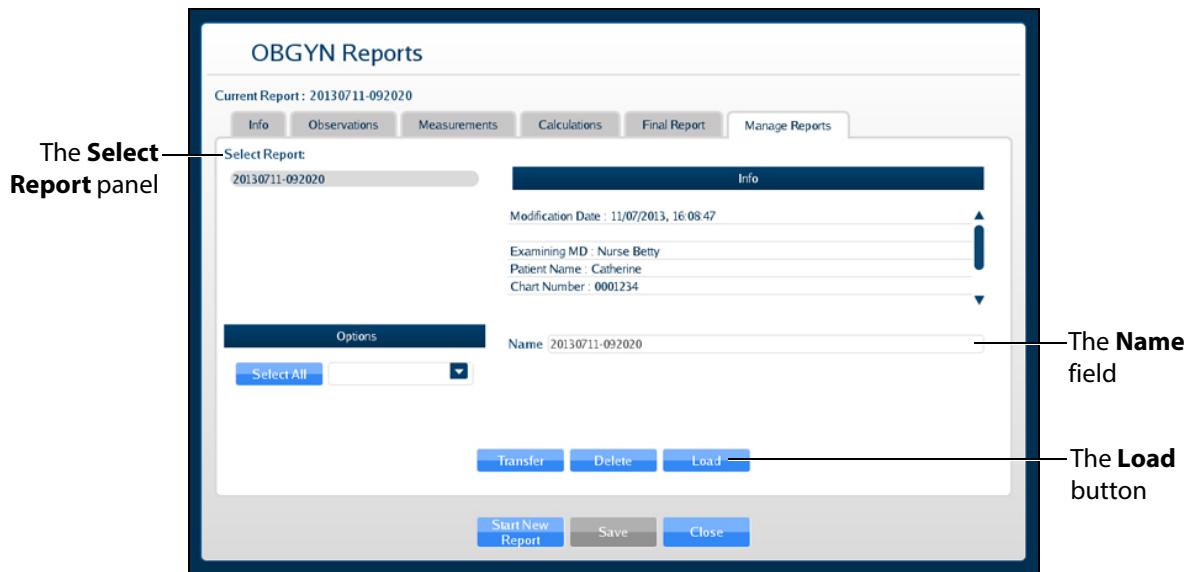
3. Select a report from the **Select Report** panel.  
The report name appears in the Name field.
4. Click **Load**.  
The report is loaded.
5. View the report information by clicking the desired tabs.

## Modifying a Report

To modify a report:

1. From the OBGYN Reports window, select the **Manage Reports** tab.

The Manage Reports tab appears.



**The Manage Reports Tab**

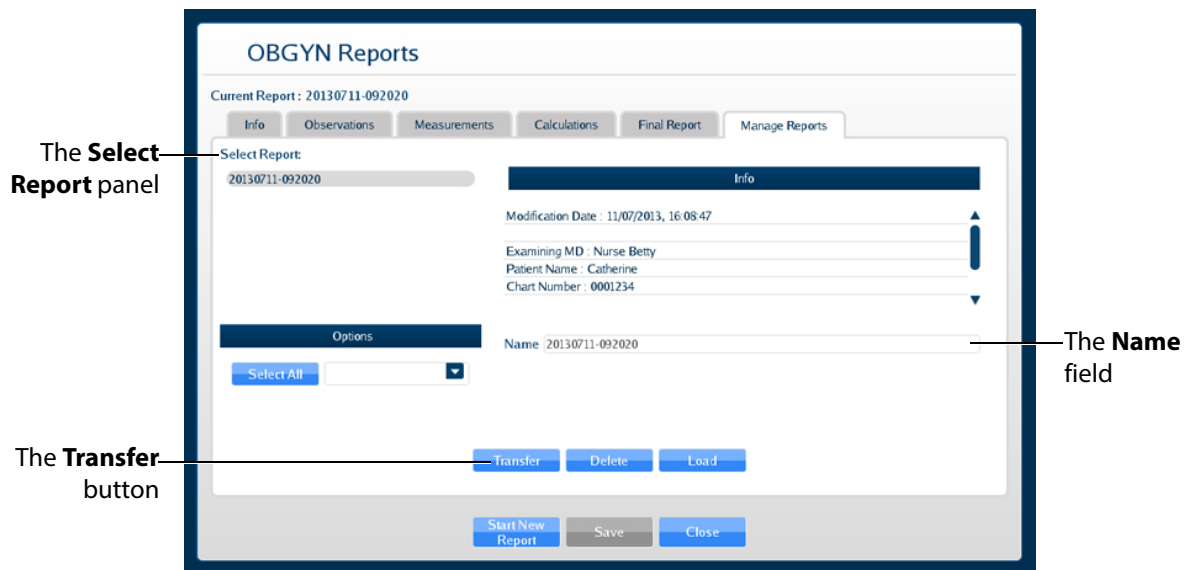
2. Select the desired report from the **Select Report** panel to modify.
3. Click **Load**.
4. Click the **Info**, **Observations**, **Measurements**, **Calculations**, and **Final Report** tabs and make the desired modifications.
5. Click **Save** at the bottom of the OBGYN Reports window.  
The modifications are saved.

## Transferring Reports

To transfer a report:

1. From the OBGYN Reports window, select the **Manage Reports** tab.

The **Manage Reports** tab appears.



**The Manage Reports Tab**

2. Select a report from the **Select Report** panel.
3. Select a single report by left-clicking it with the mouse. Select additional reports by holding down the **Control** key on the keyboard and left-clicking the reports with the mouse.

All reports can be selected by clicking the **Select All** key.

The report name appears in the **Name** field.

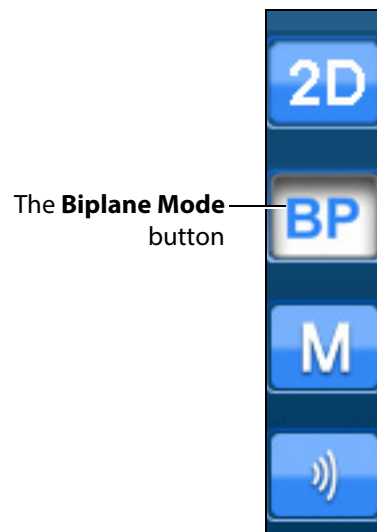
4. When multiple reports are selected, the **Info** panel says a multiple selection has been made and indicates the number of reports selected.
5. Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Manage Reports** tab.
6. Click **Transfer**.

The Transfer Status bar appears. When the Transfer Status bar reads 100%, the transfer is complete.

## Using the Biplane Mode

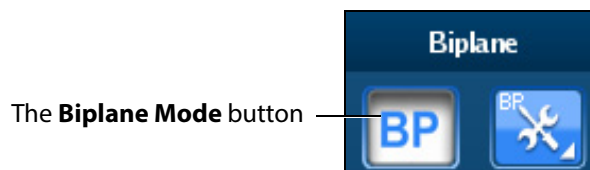
The Vimedix simulator is set to display images in standard 2D by default. Activating the Biplane Mode allows users to obtain two cross sections from one probe position. By default, the secondary beam is perpendicular; however, the position relative to the primary beam can be adjusted using the sweep, tilt and rotation settings in the Biplane Mode settings.

To activate the Biplane Mode, click the **Biplane Mode** button located in the Ultrasound panel.



*The Ultrasound Panel - Mode Buttons*

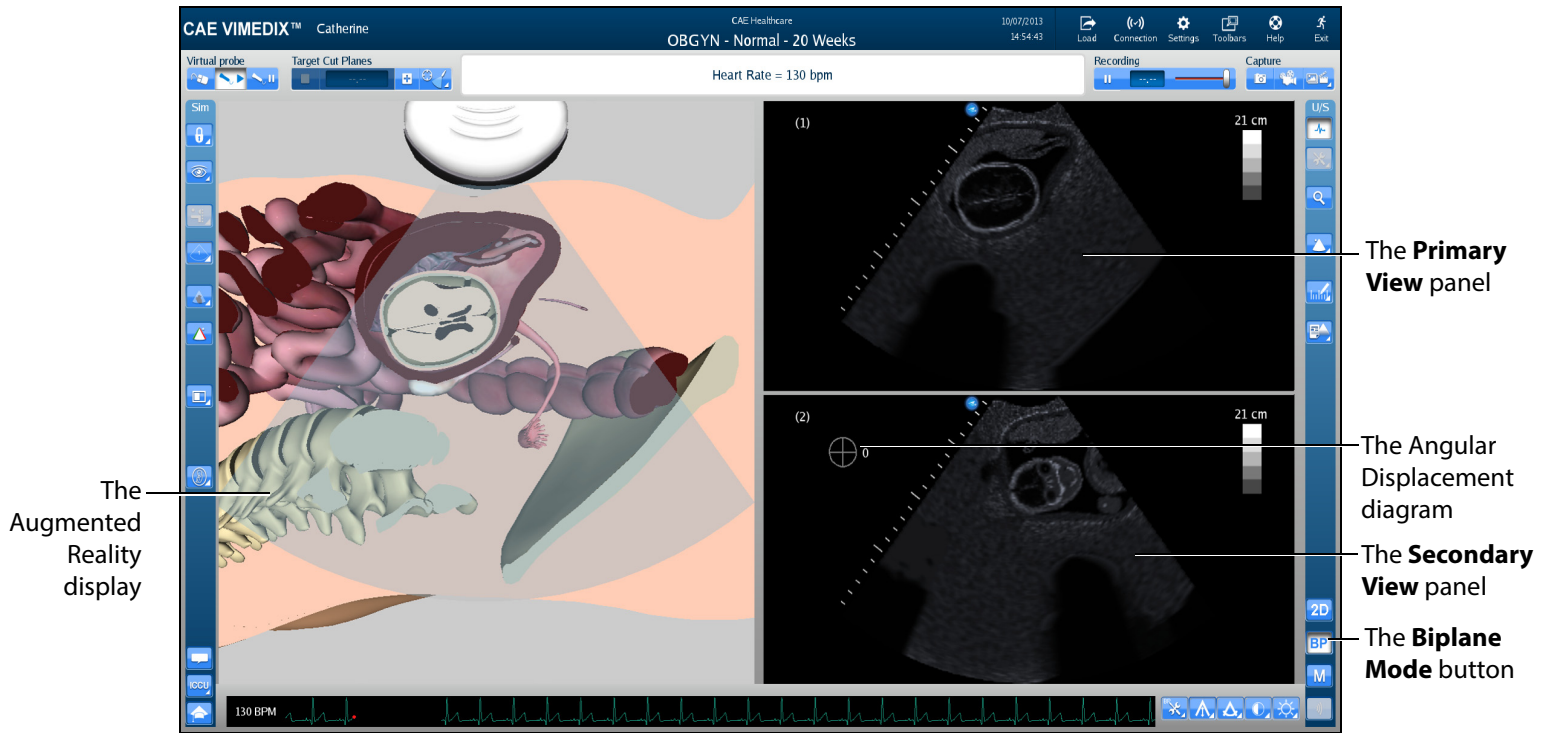
**NOTE:** When using the expanded toolbar view, click the **Biplane Mode** button located in the Biplane section of the Ultrasound panel.



*The Biplane Section*



The interface changes to a biplane view.



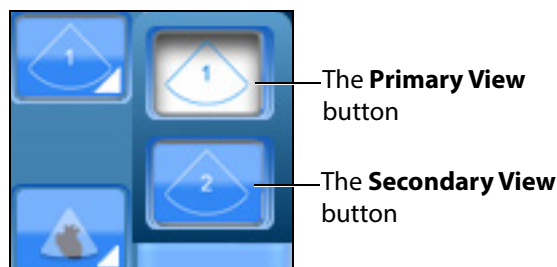
*A Biplane View*

Located in the Simulation panel, the **Biplane View** button allows users to switch the live probe view from View 1 to View 2 on the Augmented Reality display.



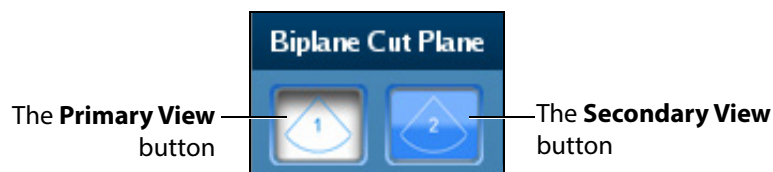
*The Biplane View Button*

Click the **Biplane View** button to access the drop-down menu and toggle between Primary View and Secondary View in the Augmented Reality display.



*The Biplane View Options*

**NOTE:** When using the expanded toolbar view, click the **Primary View** button or the **Secondary View** button located in the Biplane Cut Plane section of the Simulation panel.



*The Biplane Cut Plane Section*

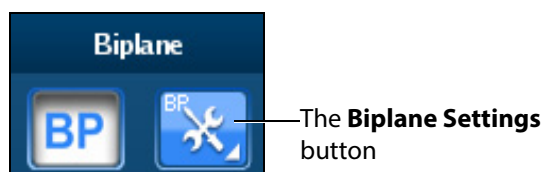
## Adjusting the Biplane Settings

When the Biplane Mode is activated, the **Biplane Settings** button appears in the Settings panel located near the bottom of the screen.



*The Settings Panel*

**NOTE:** When using the expanded toolbar view, click the **Biplane Settings** button located in the Biplane section of the Ultrasound panel.

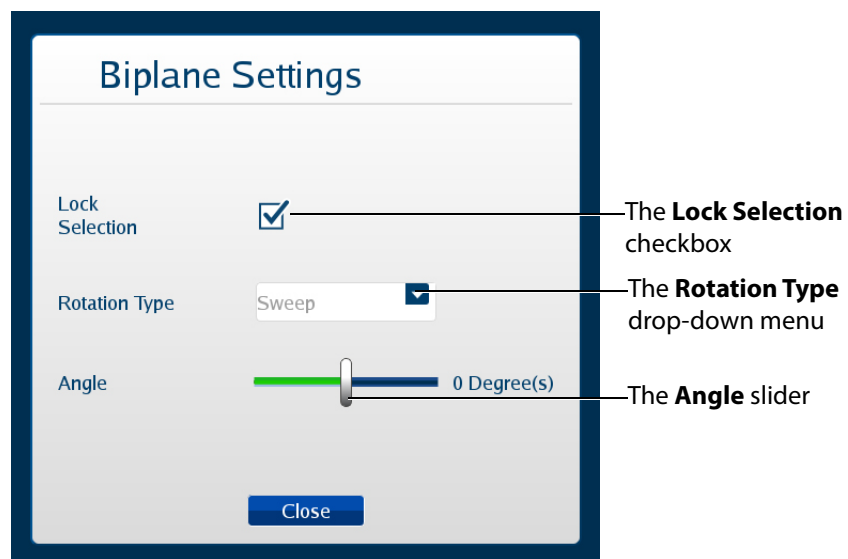


*The Biplane Section*

The Biplane Settings pop-up window appears.



**NOTE:** When using the expanded toolbar view, the Biplane Settings pop-up window appears differently but the settings are the same.



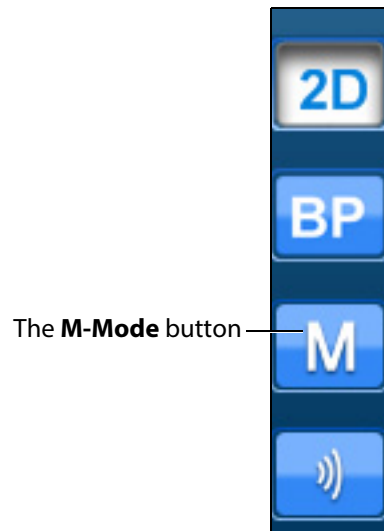
The **Lock Selection** option allows users to lock or unlock the primary and secondary views. When unlocked, the zoom feature can be used independently on each view. When the lock feature is activated, the zoom on the views will be equivalent.

The **Rotation Type** allows users to choose from three options how to rotate the second beam.

The **Angle** slider adjusts the angle of the secondary beam in the axis specified by the Rotation Type.

## Using M-Mode

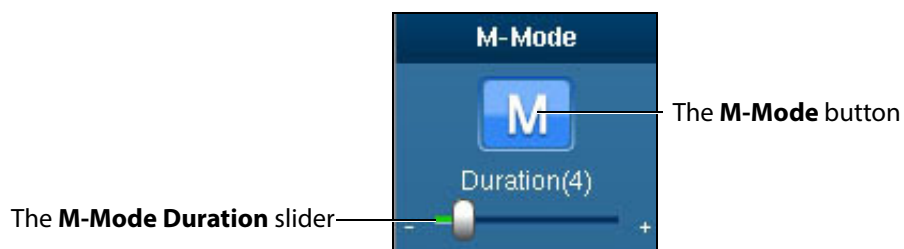
The M-mode is used to measure and evaluate the fine movements of the cardiac structures.



*The Ultrasound Panel - Mode Buttons*

To use M-Mode:

1. Activate M-mode by clicking the **M-mode** button.

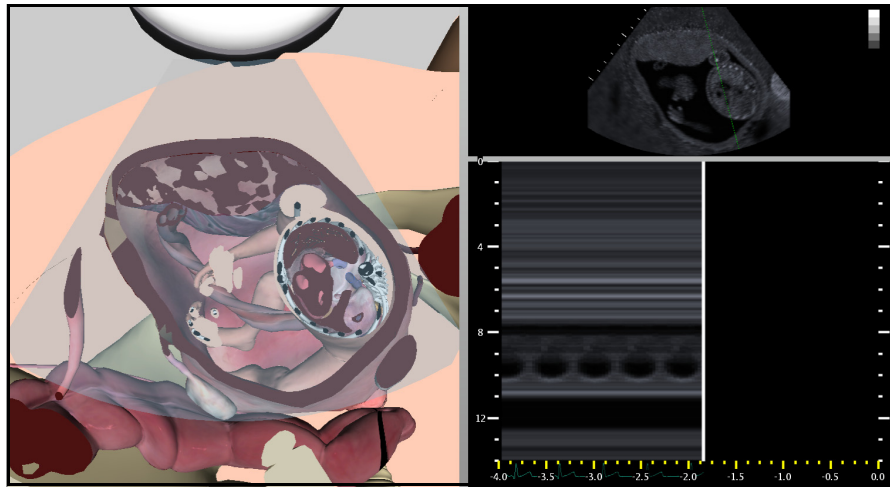


*The M-Mode Button*

Once M-mode is activated, a green line appears when the mouse is moved over the Ultrasound display. The line begins at the location of the ultrasound probe and moves left or right based on mouse position.

2. Obtain M-mode tracing by left-clicking on the Ultrasound display in the desired location.

The M-mode tracing appears.



**M-mode Tracing**

The M-mode display can be frozen by clicking the **Pause** button or pressing the space bar on the keyboard. Dimensions can be assessed within the M-mode tracing using the electronic caliper.

## Adjusting the M-Mode Settings

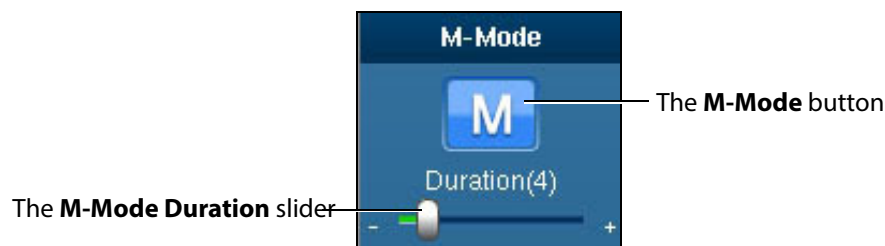
When the M-Mode is activated, the **M-Mode Settings** button appears in the Settings panel located near the bottom of the screen.



**The Settings Panel**

Click the **M-Mode Settings** button to access the duration slider.

**NOTE:** When using the expanded toolbar view, click the **M-Mode Duration slider** button located in the M-Mode section of the Ultrasound panel.



**The M-Mode Button**

Use the **Duration** slider to modify the sweep speed of the M-mode display.

## Adjusting the Depth of Field

Users can control the depth of the ultrasound beam by changing the depth of field settings. Depth of Field can be modified by scrolling the mouse wheel or from the **Settings** panel, click the **Depth of Field** button to access the **Depth of Field** slider.



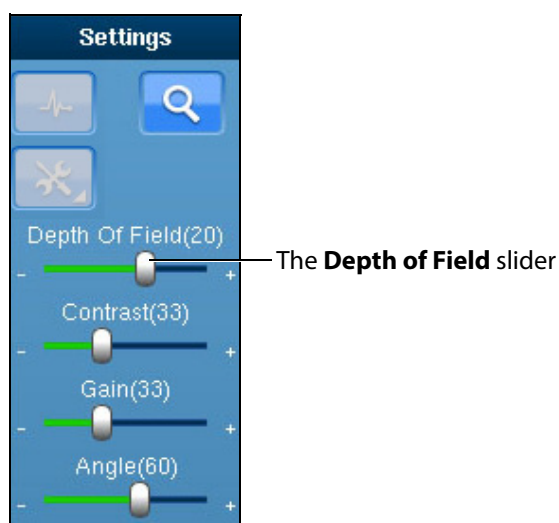
*The Settings Panel*

Users can also adjust settings by using the plus or minus buttons on each side.



*The Depth of Field Slider*

**NOTE:** When using the expanded toolbar view, adjust the depth of field by clicking on the **Depth of Field** slider located in the Settings section of the Ultrasound panel.



*The Settings Section*

## Adjusting the Angle

From the **Settings** panel, click the **Angle** button to access the **Angle** slider.



*The Settings Panel*

To increase the angle of the ultrasound beam, move the slider to the right. To decrease the angle of the ultrasound beam, move the slider to the left. Users can also adjust settings by using the plus or minus buttons on each side.



*The Angle Slider*

**NOTE:** When using the expanded toolbar view, adjust the depth of field by clicking on the **Angle** slider located in the Settings section of the Ultrasound panel.



The **Angle** slider

*The Settings Section*

## Adjusting the Contrast

From the **Settings** panel, click the **Contrast** button to access the **Contrast** slider.



*The Settings Panel*

To increase or decrease the contrast on the Ultrasound display, move the **Contrast** slider to the left or right. Using the plus or minus buttons on each side also increases and decreases the contrast.



*The Contrast Slider*

**NOTE:** When using the expanded toolbar view, adjust the contrast by clicking on the **Contrast** slider located in the Settings section of the Ultrasound panel.



*The Settings Section*



## Adjusting the Gain

From the **Settings** panel, click the **Gain** button to access the **Gain** slider.



*The Settings Panel*

To increase or decrease the gain of the Ultrasound display, move the **Gain** slider to the left or right. Users can also adjust settings by using the plus or minus buttons on each side.



*The Gain Slider*

**NOTE:** When using the expanded toolbar view, adjust the gain by clicking on the **Gain** slider located in the Settings section of the Ultrasound panel.



*The Settings Section*

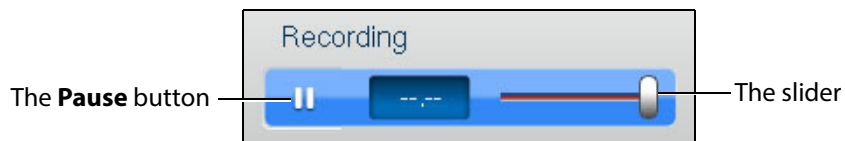
**NOTE:** The depth of field, contrast and gain startup values can be modified in the Simulation Settings window.

## Using the Recording Controls

The current session can be paused and reviewed using the controls under the **Recording** panel on the upper-right side of the screen.

To pause the session, click the **Pause** button. To resume, click the **Pause** button again.

To review the session, use the slider to scroll back up to 12 seconds.



*The Recording Controls*

## Using Capture Controls

The Vimedix software is capable of capturing screen images and recording video clips of simulator activity.

### Capturing Images

To capture an image of the VIMEDIX interface, click the **Screen Capture** button or press the **Print Screen** key on the keyboard.

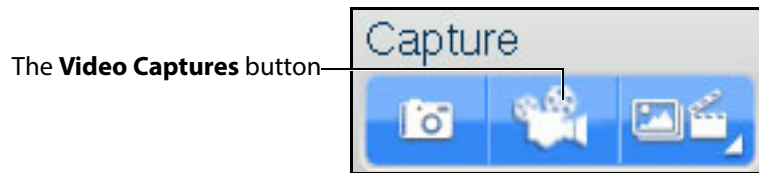


*The Capture Panel*

A capture of the current screen is taken and can be accessed by clicking the **Captures Menu** button.

## Recording Video

To record a video of simulator activity, click the **Video Captures** button.



*The Capture Panel*

The simulator activity is recorded for the length of time specified in the video capture settings. In addition to specifying the length of time for videos, users can specify whether to record the entire interface, the Ultrasound display only or the AR display only.

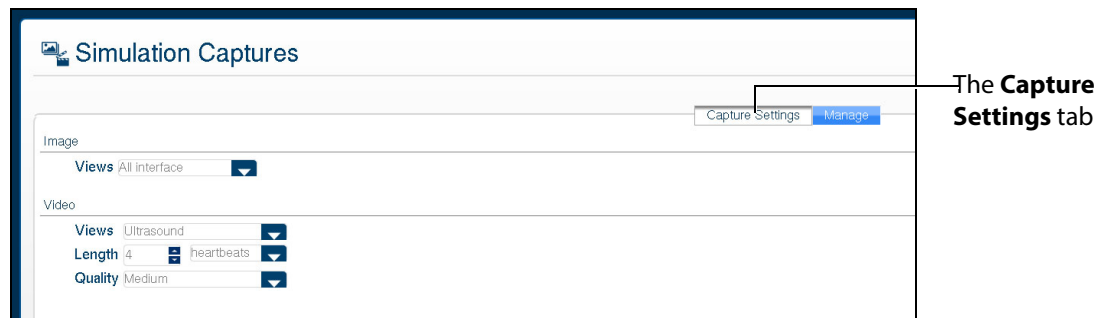
## Modifying Image and Video Capture Settings

To modify image or video capture settings, click the **Captures Menu** button.



*The Capture Panel*

The Simulation Captures window appears and the **Capture Settings** tab is selected.



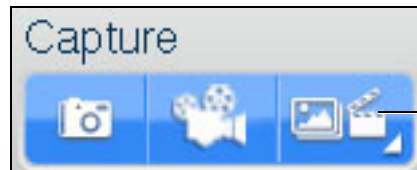
*The Capture Settings Tab*

## Viewing Image Captures

Image captures can be reviewed from the VIMEDIX software.

To view an image capture:

1. On the upper-right side of the screen, click the **Captures Menu** button.



The **Captures Menu** button

*The Capture Panel*

The Simulation Captures window appears and the **Capture Settings** tab is selected.

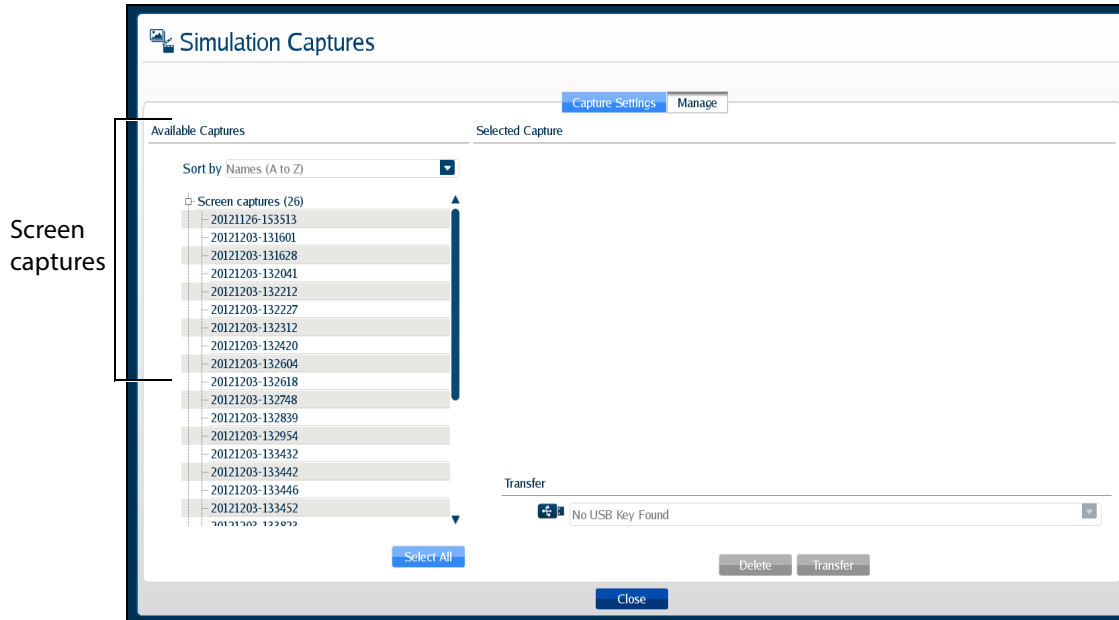
2. Select the **Manage** tab.



The **Manage** tab

*The Simulation Captures Window*

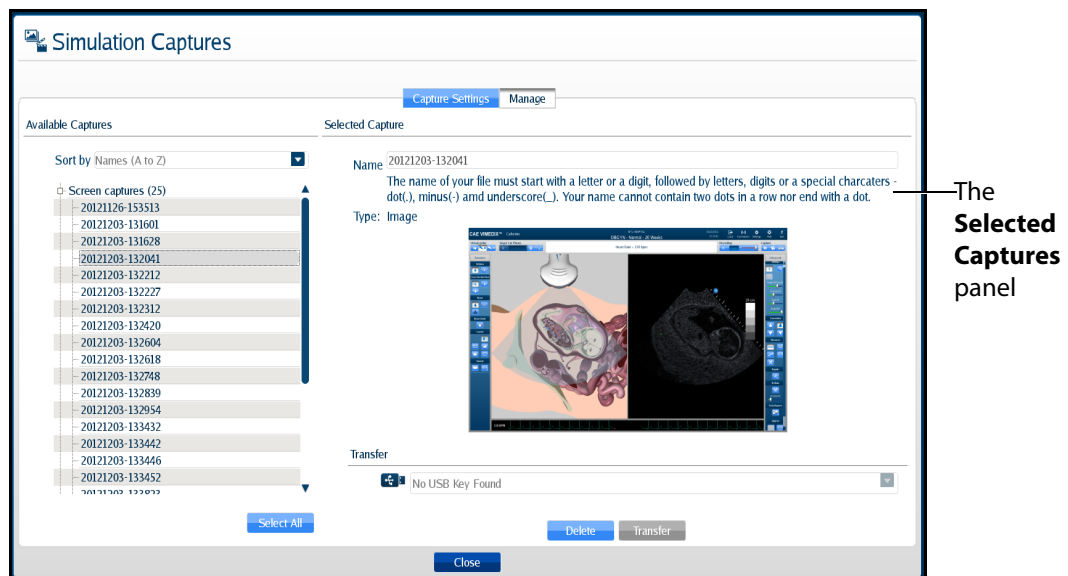
The Manage tab appears, showing all the videos and image captures currently stored on the system.



**The Manage Tab**

3. On the **Manage** tab, from the Available Captures panel, select an image capture to view.

The image appears in the Selected Capture panel.



**The Simulation Captures Window**

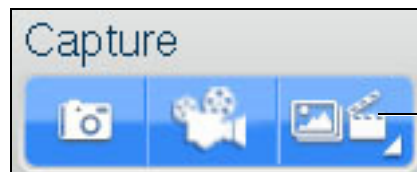
## Transferring Image Captures and Videos

Image captures and videos can be transferred to a USB storage device.

**IMPORTANT:** Once transferred to a USB storage device, image captures and videos are **deleted** from the Vimedx system and **cannot** be recovered.

To transfer image captures and videos:

1. Insert a USB storage device in one of the USB ports on the front of the Vimedx computer.
2. From the **Capture** panel, click the **Captures Menu** button.



*The Capture Panel*

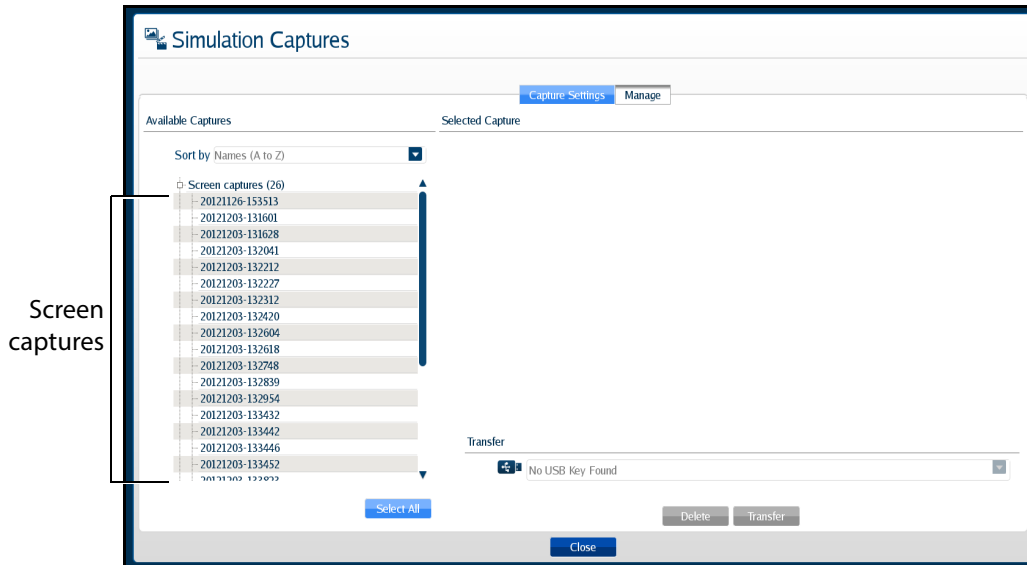
The Simulation Captures window appears and the **Capture Settings** tab is selected.

3. Select the **Manage** tab.



*The Simulation Captures Screen*

The **Manage** tab appears, showing all the videos and image captures currently stored on the system.

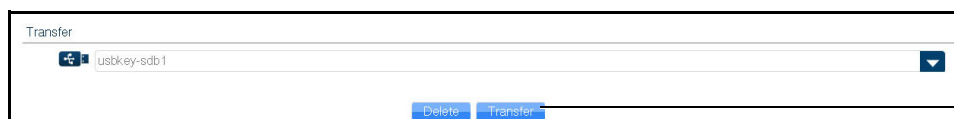


**The Manage Tab**

- On the **Manage** tab, from the Available Captures panel, select the videos and image captures to export.

To select multiple image captures or videos, hold the **Ctrl** key on the keyboard while using the mouse to select the files to export, or click **Select All** to select all available image captures and videos.

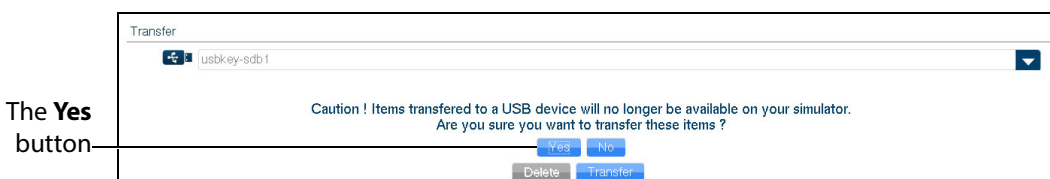
- Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Manage** tab.
- Click **Transfer** to transfer the image captures and videos to the USB storage device.



The **Transfer** button

**The Simulation Captures Window**

A warning message appears asking if you are sure you want to transfer the items.

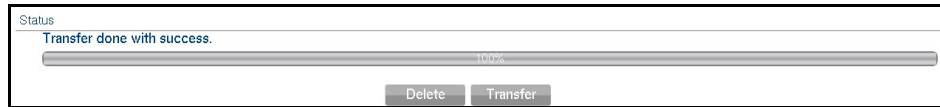


**The Simulation Captures Window**

7. Click **Yes**.

The images are transferred. The transfer progress is indicated by a progress bar near the bottom of the Simulation Captures window.

Once the transfer is complete, the transfer success message appears.



**The Transfer Success Message**

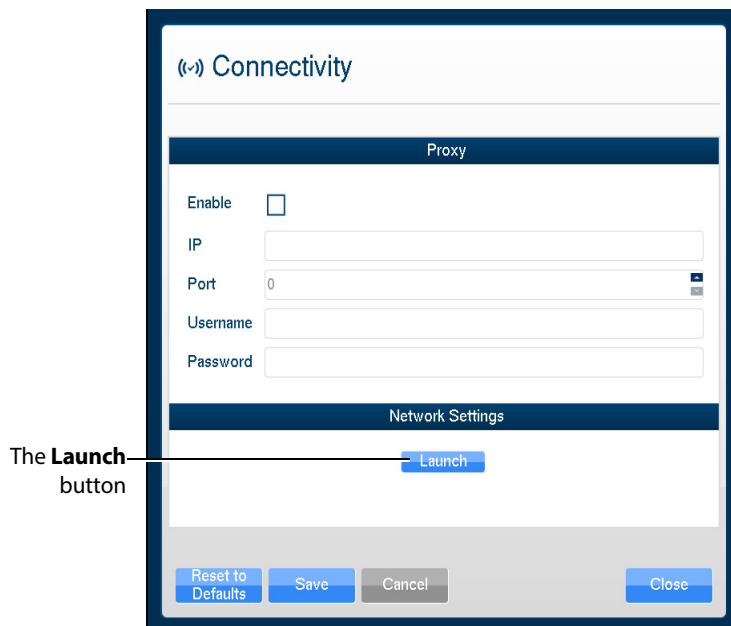
## Managing Network Settings

Network settings can be managed from the Connectivity window. To access the Connectivity window, click the **Connection** icon.



**The Connection Icon**

The Connectivity window appears.



**The Connectivity Window**

1. To ensure Vimedix is configured to access updates, click the **Launch** button. You may need to scroll down to view the Launch button.

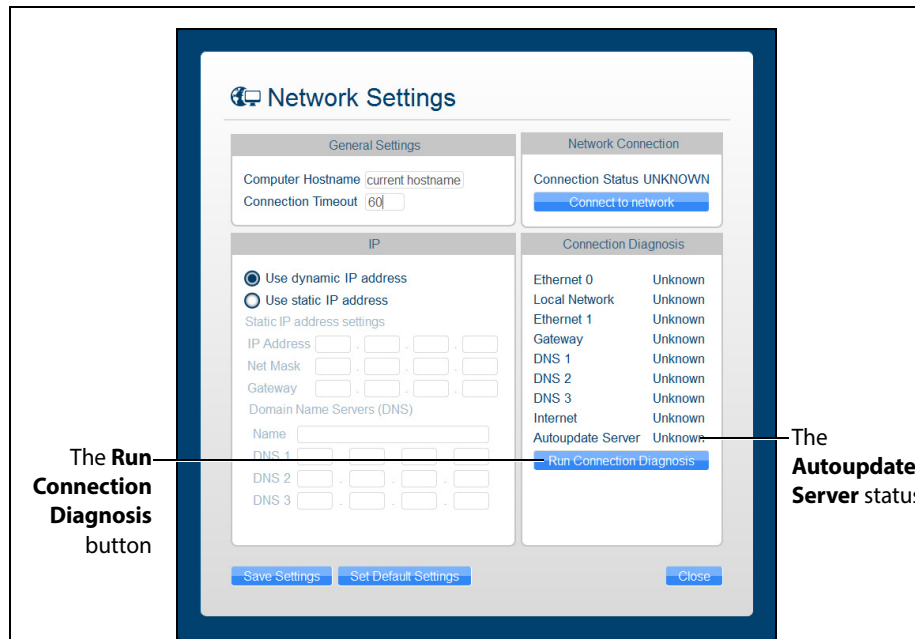


The **Network Settings** window appears.

- In the right-hand column, click the **Run Connection Diagnosis** button.

**Autoupdate Server** should show *Online* status.

If Autoupdate Server does not show *Online* status, contact your IT department to allow access to **Port 3690, IP 67.228.7.120**.



*The Network Settings Window*

## Configuring Proxy Settings

Some networks may require the configuration of a proxy server to allow the Vimedix system access to the Internet. Note that this is not always the case. Please contact your IT department to determine if a proxy server needs to be used on your network.

To manually enable proxy connection:

- In the Connectivity window, under the **Proxy** heading, click the **Enable** checkbox.
- In the **IP** field, enter the IP address of the Proxy server as provided by your IT department.

3. In the **Port** field, enter the port specified by your IT department.



The screenshot shows a window titled "Proxy" with the following fields and labels:

- Enable** checkbox: A label "The **Enable** checkbox" points to the "Enable" checkbox.
- IP** field: A label "The **IP** field" points to the "IP" text input field.
- Port** field: A label "The **port** field" points to the "Port" text input field, which contains the value "0".
- Username** field: A text input field for the proxy username.
- Password** field: A text input field for the proxy password.

*The Connectivity Window*

4. If applicable, enter the **Username** and **Password** specified by your IT department.
5. At the bottom of the Connectivity window, click **Save**.

## Configuring Custom Network Settings

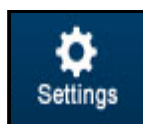
To configure other network settings, under the **Network Settings** heading, click the **Launch** button. The Network Settings window appears, containing custom settings options.

Contact your Network Administrator or IT professional for help with configuring custom network settings, if necessary.

**NOTE:** If customized connection settings are required for the network, leave the OWL and Proxy server information in the Connectivity window blank.

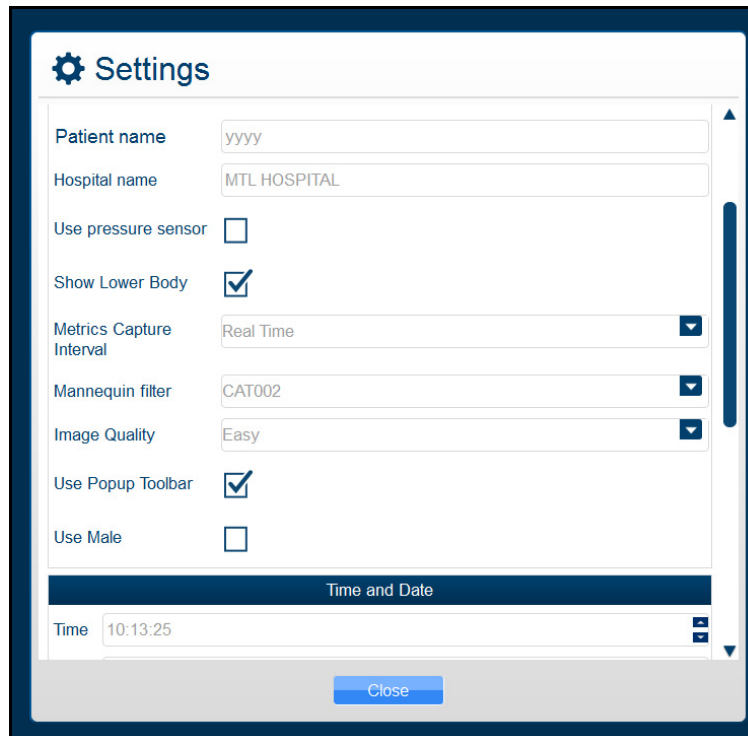
## Modifying Simulator Settings

Simulator settings can be modified from the Settings window. To access the Settings window, click the **Settings** icon.



*The Settings Icon*

The Settings window appears.



*The Settings Window*

## Language

To modify the simulator language, from the Settings window, select the desired language from the **Language** drop-down and click **Close**.

**NOTE:** Some languages not fully supported.

## Patient Name

The patient name, which is determined prior to shipping by the type of mannequin, appears at the top of the Vimedix screen and on simulator-generated reports. Bob is the default patient name for the male mannequin and Catherine is the default patient name for the female mannequin. Users can change the patient name at their discretion and that manually assigned name will remain the same for future use until it is changed.

**NOTE:** The patient name as indicated in the Settings window automatically appears on echo reports by default.

## Hospital Name

The hospital name, which is chosen prior to shipment, appears at the top of the VIMEDIX interface and on simulator-generated reports.

## Use Pressure Sensor

The pressure sensor can be turned on or off. When the pressure sensor is turned on, the probe must be in contact with the mannequin to obtain an ultrasound image. When the sensor is turned off, an image can be obtained by placing the probe close to the mannequin.

The pressure sensor is turned on by default. To turn the pressure sensor off, from the Settings window, uncheck the **Use pressure sensor** box, then click **Close** to exit the simulator settings.

## Metrics Capture Interval

The **Metrics Capture Interval** setting determines how often the movement of the probe is captured for metrics reports. CAE Healthcare recommends leaving **Realtime** selected.

## Image Quality

The **Image Quality** setting can be used to change the level of noise on the ultrasound view. The default setting is **Easy**. To increase the noise, change the setting to **Difficult**.

## Use Popup Toolbar

The popup toolbar displays a condensed version of the CAE VIMEDIX interface and the options are available in a drop-down menu format. This format is intended to simulate the monitor display on a real ultrasound machine.

The popup toolbar mode is activated by default. To activate the expanded view from the Settings window, uncheck the **Use Popup Toolbar** box, then click **Close** to exit the simulator settings.

## Use Male

When certain pathologies are loaded, the fetus gender can be changed to male.

The male fetus is not activated by default and is only presented as an available option for pathologies that offer an interchangeable gender option. To activate the male fetus from the Settings window, check the **Use Male** checkbox, then click **Close** to exit the simulator settings.

## Time and Date

Users can customize the system time and date in the **Time and Date** section of the Settings window.

## Layout on start-up

The default screen layout on startup can be modified. To modify the default layout, in the Settings window, from the **Layout on Start-up** drop-down menu, select the desired layout.

## Probe Type

The probe type can be selected from the **Probe Type** menu in the Settings window. By default, the connected probe type is automatically selected.

## Override Default Startup Values

The **Override Default Startup Values** checkbox can be used to enable modification of the gain, contrast and depth of field values used upon simulator startup.

### Gain, Contrast Depth of Field and Angle

To modify the gain, contrast and depth of field and angle settings used upon simulator startup:

1. In the Settings window, check the **Override Default Startup Values** box.
2. Use the arrows next to the **Gain, Contrast, Depth of Field** and **Angle** fields to change the settings.

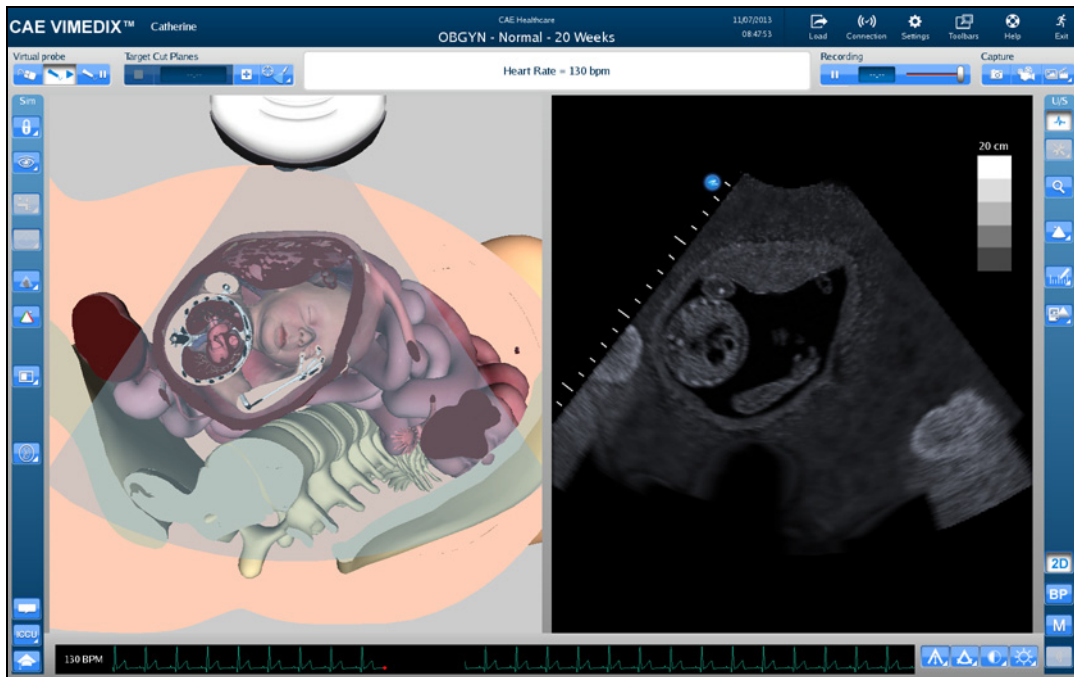
The selected settings are applied to the Ultrasound and AR displays each time the simulator is started.

**NOTE:** The gain, contrast, depth of field and angle can be modified at any time from the **Ultrasound** panel under the **Settings** section using the **Depth of Field, Contrast, Gain** and **Angle** sliders. However, each time the simulator is restarted, the gain, contrast, depth of field and angle revert to the default settings or the settings specified in the Settings window.

## Hiding the Toolbars

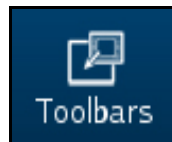
The Vimedix interface appears with a toolbar on each side of the screen that contains all of the available functions for the AR and Ultrasound displays.

Users can hide the toolbars to increase the size of the AR and Ultrasound displays.



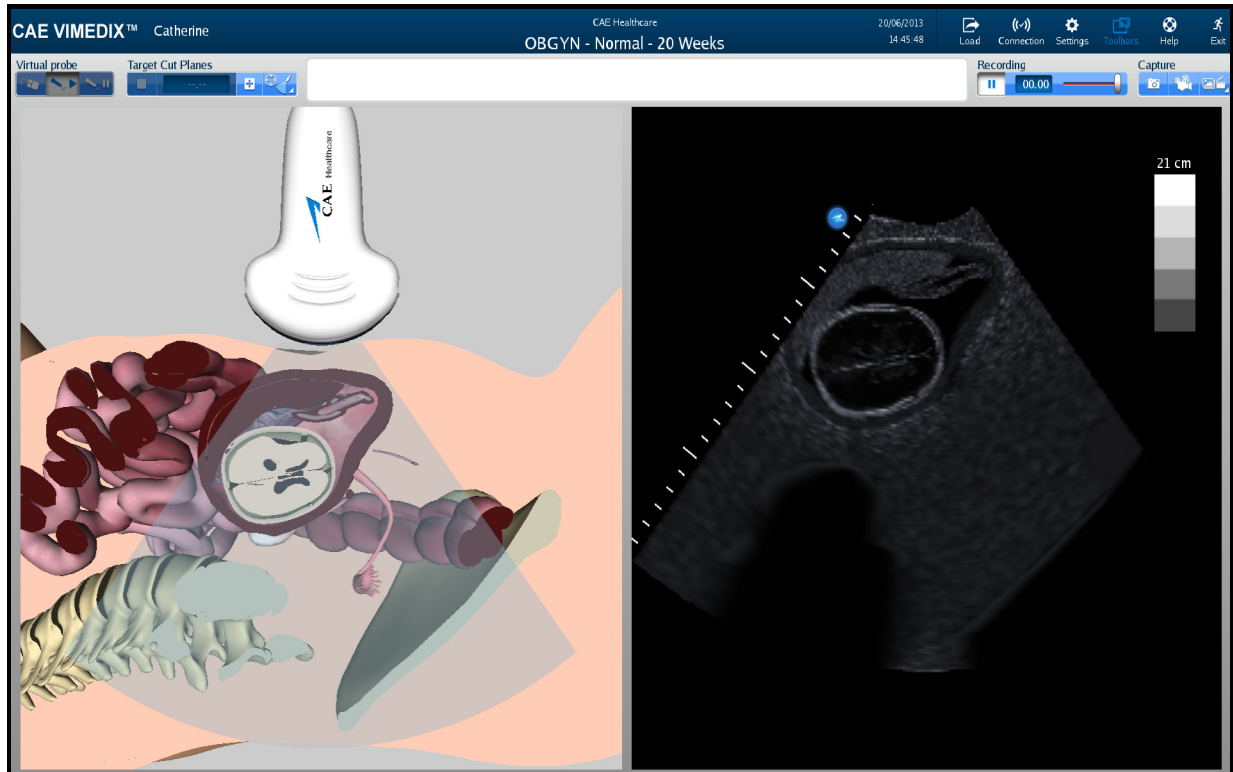
**The VIMEDIX Simulator Interface**

To hide the toolbars, click the **Toolbars** icon.



**The Toolbars Icon**

The toolbars are now hidden from view.



*The Hidden Toolbars Mode*

## Accessing the Help Menu

From the help menu, users can access the Vimedix User Guide, review simulator version updates, browse Frequently Asked Questions and submit bug reports.

To access the Help window, click the **Help** icon in the upper-right corner of the screen.



*The Help Icon*

The Help window appears.

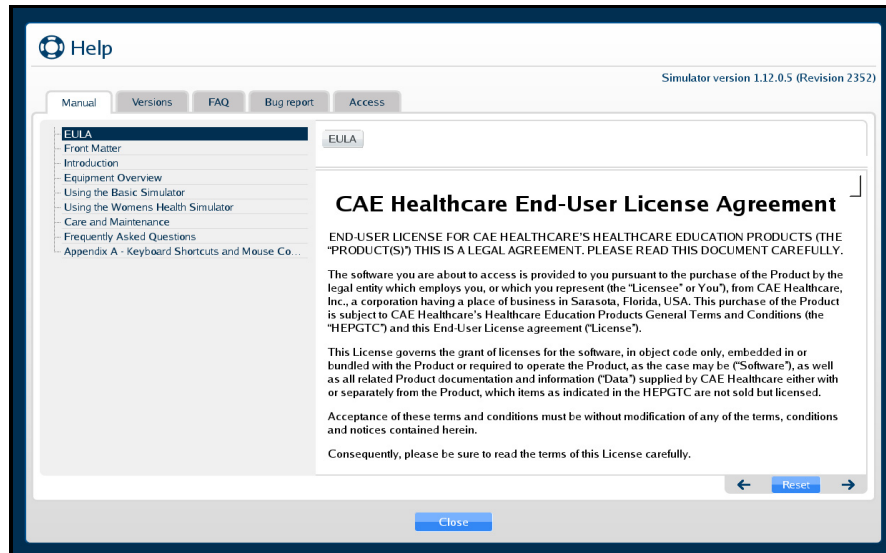


**The Help Window**



## Manual

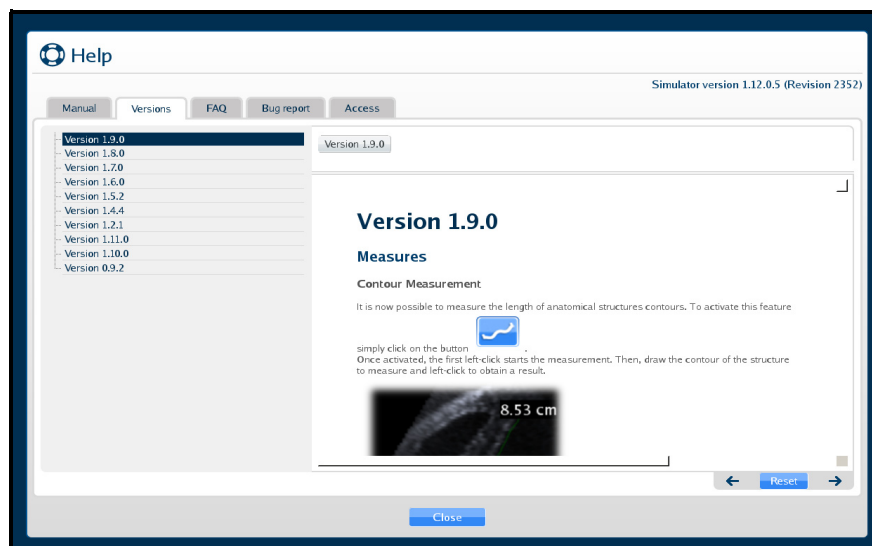
The **Manual** tab is selected by default and displays an electronic version of the user guide.



**The Manual Tab**

## Versions

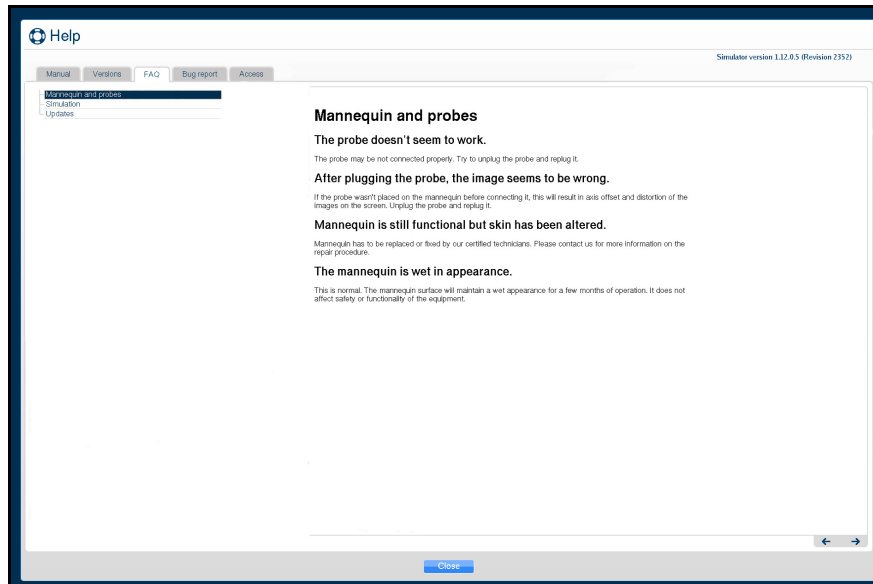
Click on the **Versions** tab to view the latest features associated with software updates.



**The Versions Tab**

## FAQ

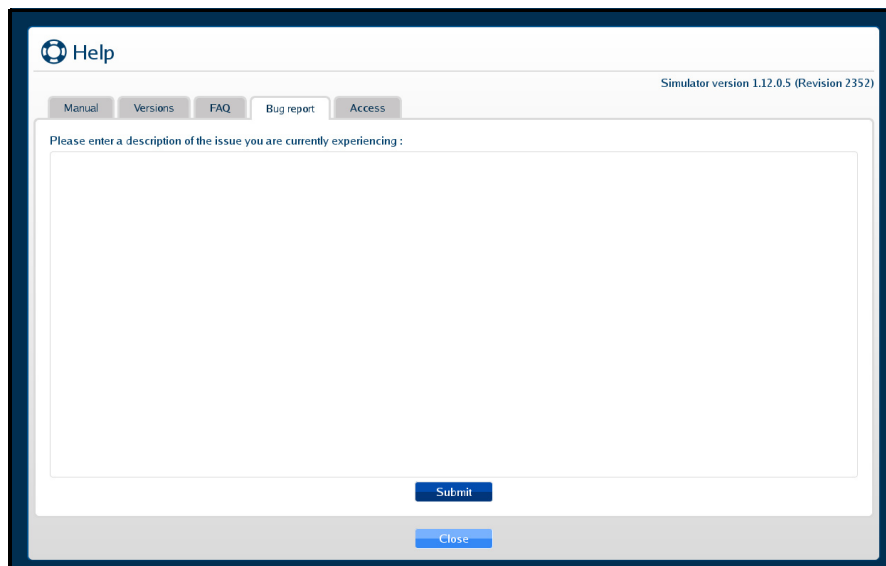
Click on the **FAQ** tab to view the troubleshooting tips for frequently asked questions.



*The FAQ Tab*

## Bug Report

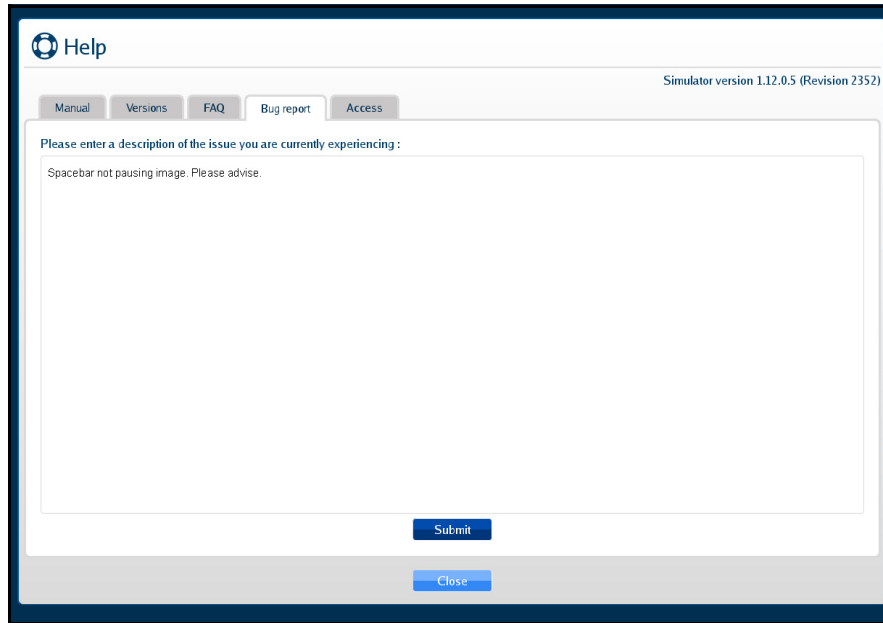
Click on the **Bug report** tab to report an issue with the software.



*The Bug Report Tab*

To submit a bug report:

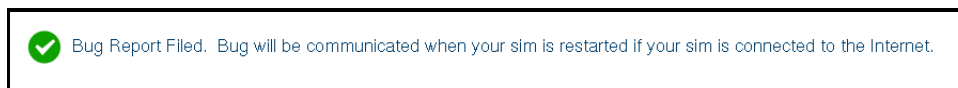
1. Click in the Bug Report text box and describe the nature of the problem in the text box provided.
2. Click **Submit** when finished.



The screenshot shows a help window titled "Help" with a "Bug report" tab selected. The window displays a text input area with the placeholder text "Please enter a description of the issue you are currently experiencing :". Below the input area is a "Submit" button. At the bottom of the window is a "Close" button. The text "Spacebar not pausing image. Please advise." is visible in the input area. The top right corner of the window shows "Simulator version 1.12.0.5 (Revision 2352)".

***The Bug Report Tab***

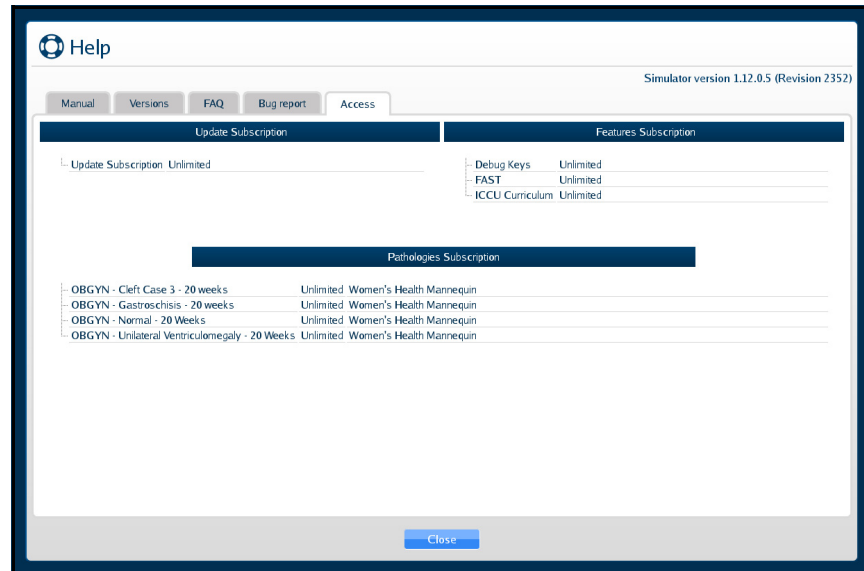
The confirmation message will appear when the Bug Report is successfully filed.



***The Confirmation Message***

## Access

Click on the **Access** tab to confirm which packages and the types of subscriptions that were purchased for your Vimedix simulator.

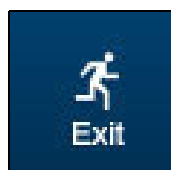


*The Access Tab*

## Shutting Down

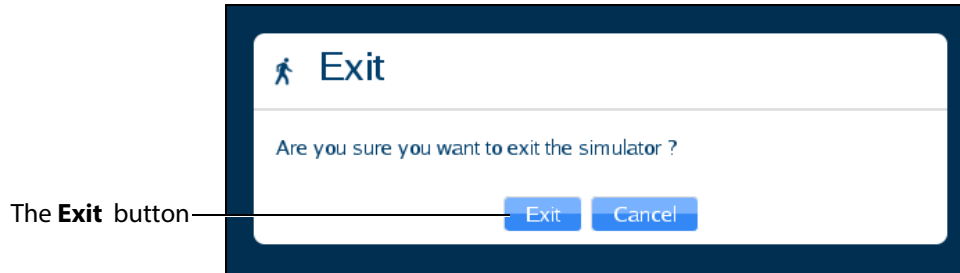
To shut down the simulator:

1. Click the **Exit** icon in the upper-right corner of the screen.



*The Exit Icon*

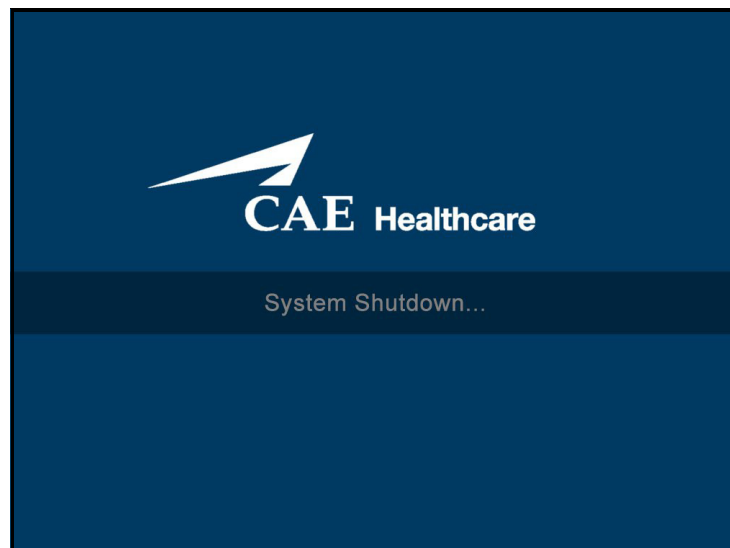
The Exit window appears and contains a message asking if you are sure you want to exit the simulator.



***The Exit Window***

2. In the Exit window, click **Exit**.

The system shut down screen appears.



***The System Shut Down Screen***

When the monitor screen appears black, the simulator is shut down.



## Using Augmented Reality (AR)

The Vimedix simulator is designed to give learners an exploratory environment to practice using an ultrasound machine. The Bob 1.13 male mannequin is required to use the HaloLens with the Vimedix Augmented Reality (AR) module.

## Interface Overview

The Vimedix simulator interface consists of the Augmented Reality (AR) display, the Ultrasound display and multiple features that allow the user to perform various functions and adjust settings for educational purposes.

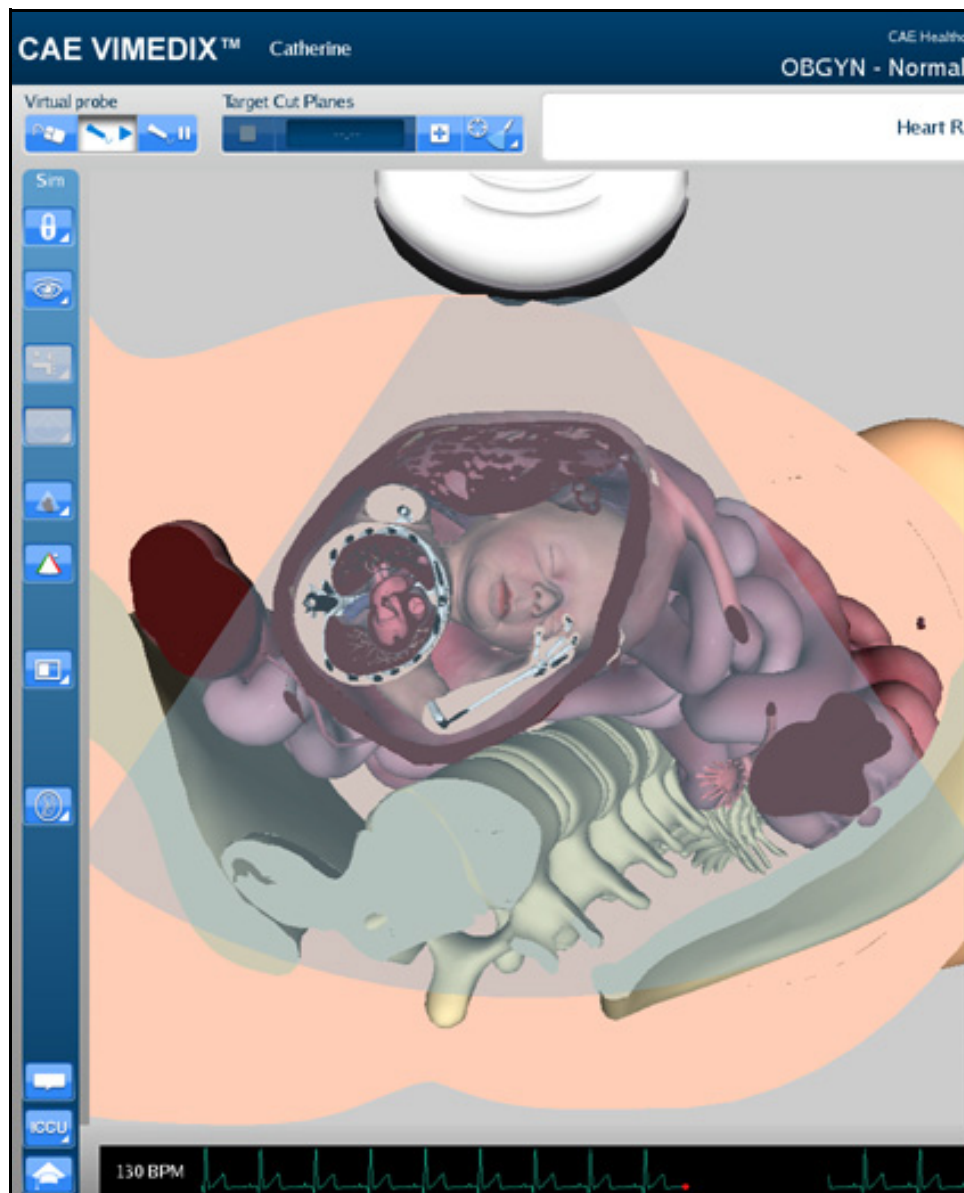


*The Vimedix Simulator Interface*

## Augmented Reality Display

The left side of the Split View interface displays an interactive, animated 3D anatomical depiction of the organs and artifacts located in the scanned area. The AR display shows a representation of the

ultrasound beam placement to help the learner generate an accurate ultrasound image. Structures and artifacts can be “removed” from view for learning purposes using the Structures Visibility feature.



*The AR Display*



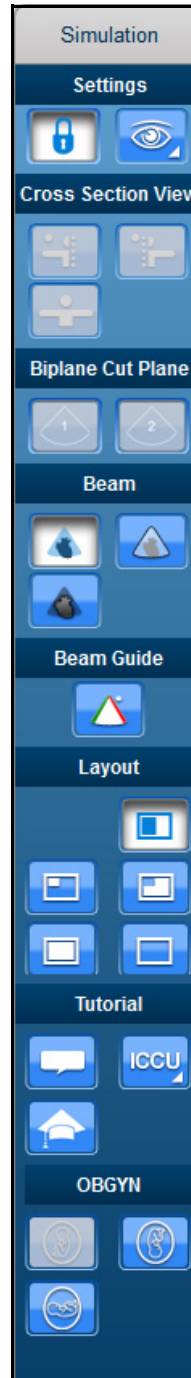
## Simulation Panel

The buttons under the **Simulation** panel on the left side of the interface allow the user to customize the training experience.



*The Simulation Panel*

The expanded panel view is available and it can be accessed by deselecting the **Use Popup Toolbar** checkbox in the Settings window.






*The Simulation Panel - Expanded View*










**NOTE:** The OBGYN fetal positioning buttons are not present in the 8-week OBGYN module.

For more information on expanding the panel view, see *Modifying Simulator Settings on page 399*.

### Simulation Panel Buttons

The **Simulation** panel buttons are categorized and separated into sections by the relevance of their functions.

Simulation Panel Buttons	
	Located in the Settings section, the <b>Lock</b> button is used to activate the view lock feature.
	Located in the Settings section, the <b>Unlock</b> button is used to deactivate the view lock feature.
	Located in the Settings section, the <b>Structures Visibility</b> button is used to choose which organs are shown on the AR and Ultrasound displays.
	Located in the Biplane section, the <b>Biplane View</b> button allows users to select an Augmented Reality view based on either the primary or secondary ultrasound beam when in Biplane imaging mode.
	Located in the Beam section, the <b>Transparent</b> button enables the transparent beam on the AR display. By default, the beam is set to transparent upon simulator startup.
	Located in the Beam section, the <b>Edge</b> button enables the transparent beam with a red border on the AR display.
	Located in the Beam section, the <b>Ultrasound</b> button enables the ultrasound mode of the beam on the AR display.
	Located in the Beam Guide section, the <b>Beam Guide</b> button enables a green line and a red line on the left and right side of the beam to indicate the orientation

Simulation Panel Buttons	
	Located in the Layout section, the <b>Split View</b> button activates the split view of the AR and Ultrasound displays. By default, the interface is in Split View upon simulator startup.
	Located in the Layout section, the <b>Small</b> button activates a view with a smaller AR display and a larger Ultrasound display.
	Located in the Layout section, the <b>Large</b> button activates a view with a larger AR display and a smaller Ultrasound display.
	Located in the Layout section, the <b>Only Augmented Reality</b> button activates a view with only the AR display.
	Located in the Layout section, the <b>Hide Augmented Reality</b> button activates a view with only the Ultrasound display.
	Located in the Tutorial section, the <b>Tutorial</b> button activates the Tutorial mode. In Tutorial mode, users can scroll over different anatomical structures using the mouse in the Augmented Reality display and the name of the structure appears.
	Located in the Tutorial section, the <b>Instructional Content</b> button opens the menu where users can select a ranges of self-directed learning tasks covering several disciplines and skill areas. Tasks include obtaining standard views (without and without the aid of references), optimizing image settings, and performing measures.
	Located in the ObGyn section, the <b>Breech</b> button sets the fetus in the AR and Ultrasound displays to a “bottom down” position.
	Located in the ObGyn section, the <b>Cephalic</b> button sets the fetus in the AR and Ultrasound displays to a “head down” position.

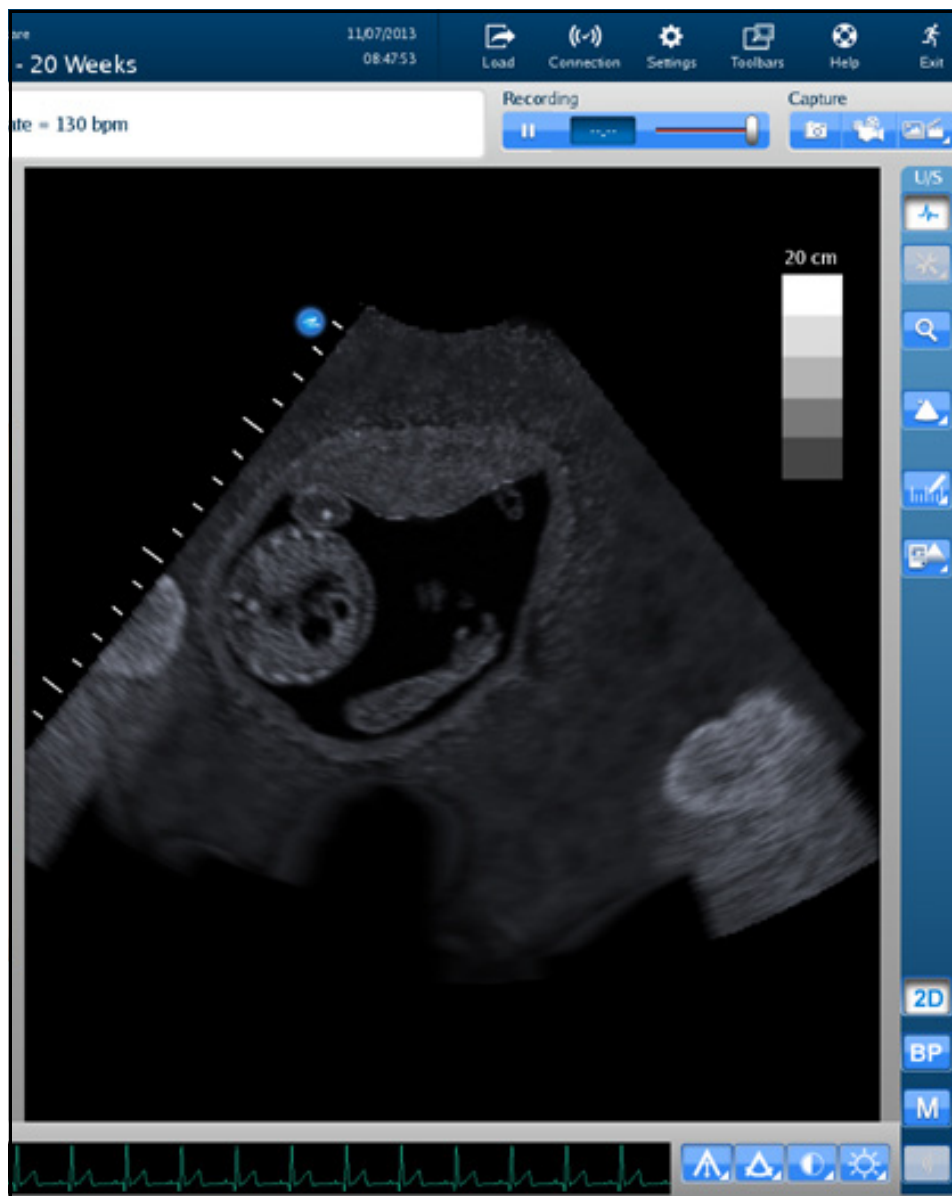
**Simulation Panel Buttons**



Located in the ObGyn section, the **Transverse** button sets the fetus in the AR and Ultrasound displays to a “sideways” position.

## Ultrasound Display

The right side of the Split View interface shows the ultrasound image and contains different features to achieve the desired view.



*The Ultrasound Display*

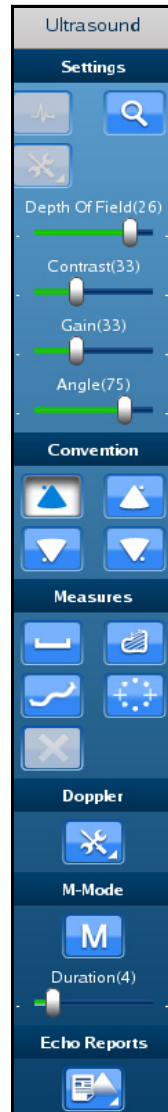
## Ultrasound Panel

The buttons under the **Ultrasound** panel on the right side of the interface are used to modify and interact with the Ultrasound display.



*The Ultrasound Panel*

The expanded panel view is available and it can be accessed by deselecting the **Use Popup Toolbar** checkbox in the Settings window.





*The Ultrasound Panel - Expanded View*










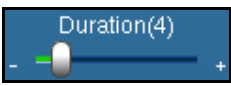
For more information on expanding the panel view, see *Modifying Simulator Settings on page 399*.




## Ultrasound Panel Buttons

The buttons are categorized and separated into sections by the relevance of their functions.

Ultrasound Panel Buttons	
	Located in the Settings section, the <b>Zoom</b> button allows the user to zoom in on a specific area of the Ultrasound image.
	Located in the Settings section, the <b>Depth of Field</b> slider controls the depth of the ultrasound beam. The Depth of Field can also be modified by scrolling the mouse wheel. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Settings section, the <b>Contrast</b> slider controls the contrast of the Ultrasound display. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Settings section, the <b>Gain</b> slider controls the gain on the Ultrasound display. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Settings section, the <b>Angle</b> slider controls the angle of the ultrasound beam. This slider is only found in the <b>Ultrasound</b> panel when the <b>Use Popup Toolbar</b> checkbox is deselected.
	Located in the Convention section, the <b>Cardiology and Anesthesiology Convention</b> button activates the cardiology and anesthesiology convention.
	Located in the Convention section, the <b>Radiology Convention</b> button activates the radiology convention.
	Located in the Convention section, the <b>Mayo Clinic Cardiac Convention</b> button activates the Mayo Clinic cardiac convention.
	Located in the Convention section, the <b>Cardiac Pediatric Convention</b> button activates the cardiac pediatric convention.



Ultrasound Panel Buttons	
	Located in the Measures section, the <b>Measurements</b> button activates the drop-down menu for the measurement options.
	Located in the Measures section, the <b>Electronic Caliper</b> button enables the electronic caliper tool to measure lengths of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Area Measurement</b> button enables the area measurement tool to measure area of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Contour Measurement</b> button enables the contour measurement tool to measure the contours of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Circumference Measurement</b> button enables the circumference measurement tool to measure circumference of the anatomy in the Ultrasound display.
	Located in the Measures section, the <b>Edit Measurements</b> button allows users to adjust points on a measurement.
	Located in the Measures section, the <b>Delete Last Measurements</b> button deletes the last measurements in the Ultrasound display.
	Located in the Doppler section, the <b>Doppler Settings</b> button opens the Doppler settings window where users can customize the Doppler settings.
	Located in the M-Mode section, the <b>M-Mode</b> button activates the M-Mode feature in the Ultrasound display.
	Located in the M-Mode section, the <b>M-Mode Duration</b> slider controls the sweep speed of the M-mode display.

Ultrasound Panel Buttons	
	Located in the Biplane section, the <b>Biplane Mode</b> button activates the Biplane view in the Ultrasound display.
	Located in the Biplane section, the <b>Biplane Settings</b> button allows users to adjust characteristics of the Biplane view in the Ultrasound display.
	Located in the Echo Reports section, the <b>Reports</b> button allows users to create, complete and review obstetrics reports for training.

### Settings Panel Buttons




The Settings panel contains buttons which are relevant to the Ultrasound display.






*The Settings Panel*

When different modes are activated (Doppler, M-Mode, Biplane), the Settings panel contains additional settings buttons for the activated modes.





**NOTE:** The Settings buttons are located in the Ultrasound panel when the **Use Popup Toolbar** checkbox is deselected.



Settings Panel Buttons	
	Located in the Settings panel, the <b>Gain Settings</b> button activates the adjustment slider and allows users to modify the gain in the Ultrasound display.
	Located in the Settings panel, the <b>Contrast Settings</b> button activates the adjustment slider and allows users to modify the contrast in the Ultrasound display.
	Located in the Settings panel, the <b>Angle Settings</b> button activates the adjustment slider and allows users to modify the angle of the beam in the Ultrasound display.

Settings Panel Buttons	
	<p>Located in the Settings panel, the <b>Depth of Field Settings</b> button activates the adjustment slider and allows users to modify the depth of field in the Ultrasound display.</p>
	<p>Located in the Settings panel, the <b>Biplane Settings</b> button allows users to access the Biplane Settings window to adjust settings.</p>
	<p>Located in the Settings panel, the <b>M-Mode Settings</b> button allows users to access the M-Mode Settings window to adjust settings.</p>

## Control Panel

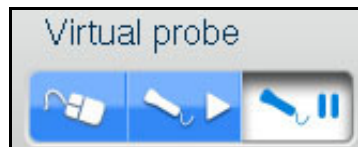
The **Control** panel is located in the upper-right corner of the interface. By clicking on the icons, users can load pathologies, modify connections and settings, access help tools and exit the program.

Control Panel Icons	
	<p>The <b>Load</b> icon is used to access the listing of available pathologies.</p>
	<p>The <b>Connection</b> icon allows the user to edit the network settings.</p>
	<p>The <b>Settings</b> icon allows the user to edit the simulator settings.</p>
	<p>The <b>Toolbars</b> icon allows the user to hide the Simulator and Ultrasound panels.</p>

	The <b>Help</b> icon provides access to the Help menu and information about simulator functions, settings and basic troubleshooting.
	The <b>Exit</b> icon is used to shut down the simulator.

## Selecting a Virtual Probe Option

The **Virtual Probe** panel contains three options: the **Mouse** button, the **Probe** button and the **Probe Pause** button.



*The Virtual Probe Options*

## Using the Mouse Controls

Click the **Mouse** button to control the various views of the simulator with the computer mouse.



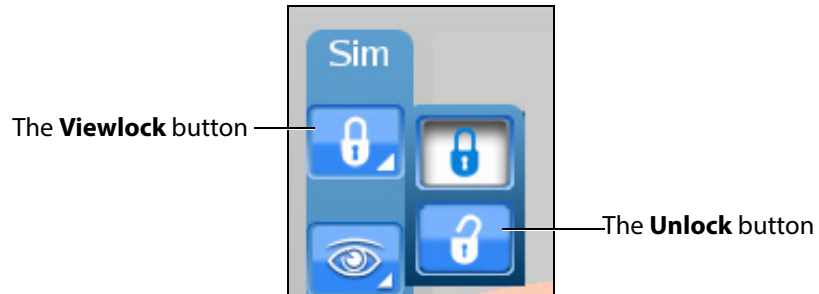
*The Mouse Button*

To move the body using the mouse without moving the ultrasound beam:

1. Click and hold the left button on the mouse
2. Drag the mouse.

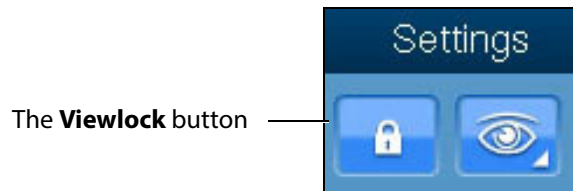
To move the probe using the mouse:

1. Unlock the view lock by clicking the **Viewlock** button and selecting the **Unlock** button.



**The Viewlock buttons**

**NOTE:** When using the expanded toolbar view, click the Viewlock button one time to deactivate/unlock the viewlock.

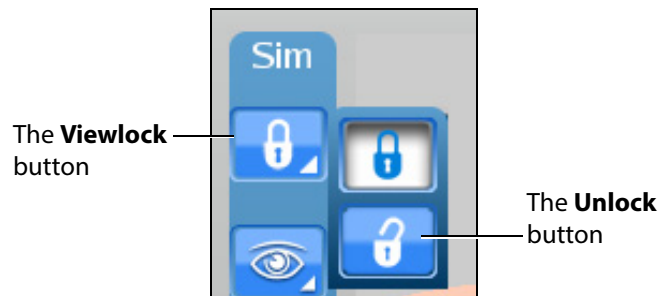


**The Settings Section**

2. Once the view lock is disabled, place the cursor in the AR display.
3. Click and hold the right button on the mouse.
4. Drag the mouse.

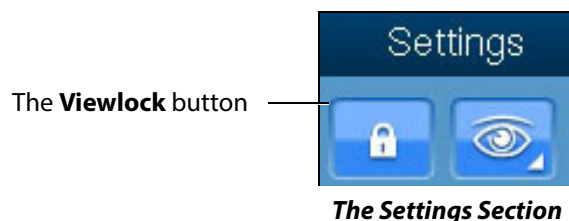
To move the body and the probe:

1. Unlock the view lock by clicking the **Viewlock** button and selecting the **Unlock** button.



**The Viewlock buttons**

**NOTE:** When using the expanded toolbar view, click the Viewlock button one time to deactivate/unlock the viewlock.



2. Once the view lock is disabled, place the cursor in the AR display.
3. Click and hold the left button on the mouse.
4. Drag the mouse.

To zoom in and out using the mouse:

1. Click and hold the wheel on the mouse.
2. Drag the mouse.

To adjust the depth of field using the mouse, roll the wheel on the mouse.

## Using the Probe

When the **Probe** button is selected, the probe connected in the port **SENSOR 1** on the front panel of the computer is activated and the probe can be used to scan the mannequin.



*The Probe Button*

## Using the Curvilinear Probe

**NOTE:** The curvilinear probe is only provided for users who have purchased the FAST, Abdominal or Ob/Gyn 20-week modules. Contact your CAE Healthcare sales representative to purchase one of these modules.

To use the curvilinear probe, place the tip of the probe on the mannequin's skin to obtain a view.

## Using the Endovaginal Probe

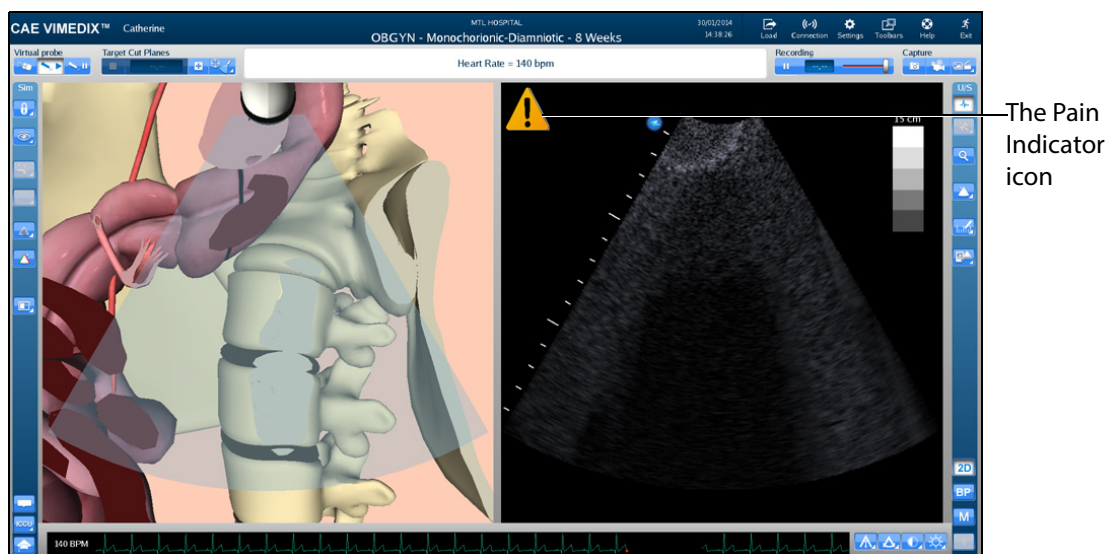
**NOTE:** The endovaginal probe is only provided for uses who have purchased the 8-week module. Contact your CAE Healthcare sales representative to purchase the 8-week module.

Prior to using the endovaginal probe, spray the vaginal insert with the CAE Healthcare-approved silicone spray (provided in new shipments with 8-module purchase or in vaginal insert installation kit).

The endovaginal probe can only be inserted into Catherine mannequins with a vaginal insert present. If the mannequin contains a vaginal plug instead of a vaginal insert, contact CAE Healthcare Customer Service to request a vaginal insert installation kit.

If a 20 week pathology is loaded (i.e., Normal 20 Weeks) when the endovaginal probe is connected, a message will appear notifying the user that the incorrect probe is connected. The endovaginal probe is only compatible with 8-week module normal case and pathologies.

To use the endovaginal probe, slowly insert the probe tip into the vaginal insert. If the probe is utilized in a manner that could cause the patient pain, the Pain Indicator icon appears.



**The VIMEDIX Interface - 8 Week Module**

The icon disappears when the probe manipulation that may cause pain is no longer being performed.

## Using the Probe Pause Feature

The **Probe Pause** button freezes the AR and Ultrasound displays on the last scanned cycle and loops the cycle on the displays. The probe pause feature is useful for analyzing cut planes.



**The Probe Pause Button**

# Loading Pathologies

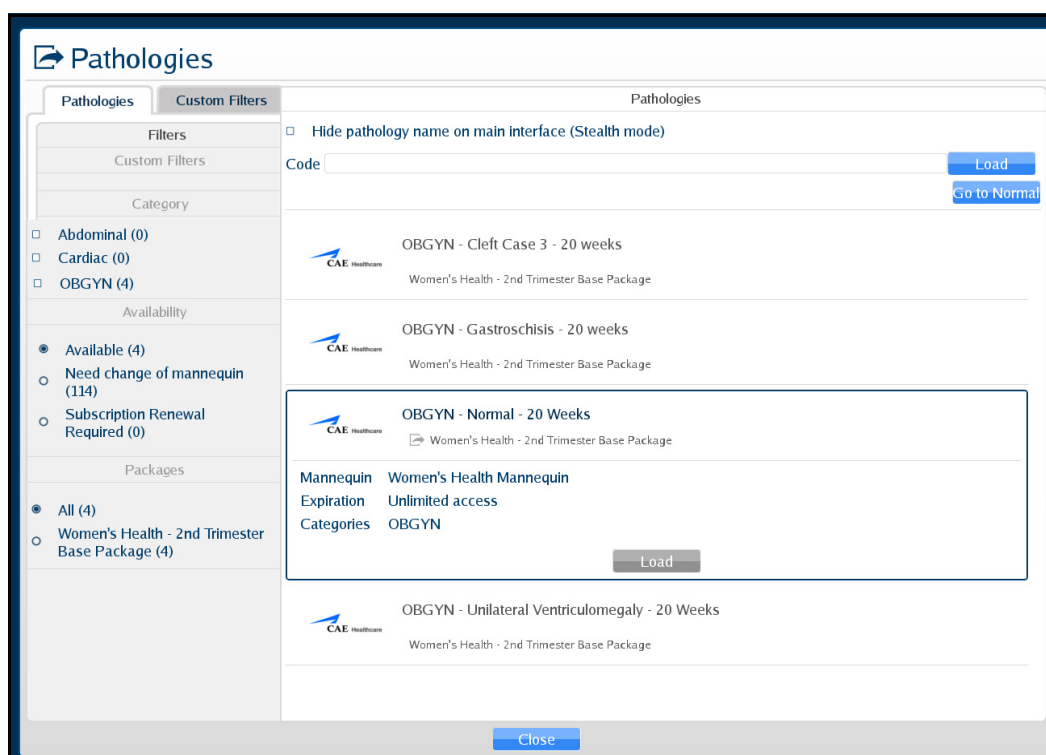
Pathologies are cases to help learners recognize abnormalities in ultrasound images.

Click the **Load** icon to access pathologies.



**The Load Icon**

The Pathologies window appears.



**The Pathologies Window**

Users can find and load pathologies using the features in the Pathologies window. Clicking the **Go to Normal** button highlights the normal case in the pathology selection window.



## Loading a Pathology in Standard Mode

Users can load pathologies in standard mode and organize the selections using criteria in the **Filters** panel. The filters feature allows users to organize pathologies by Category or Availability criteria.

Users have the option to narrow the pathologies displayed in the **Pathologies** panel based on the type of module (FAST and ICCU), area of focus (OBGYN, Abdominal, Cardiac and Pleural), availability (Available or Expired) or the type of mannequin (Need change of mannequin).

If no filter criteria is selected in the **Filters** panel, all available pathologies will appear by default.

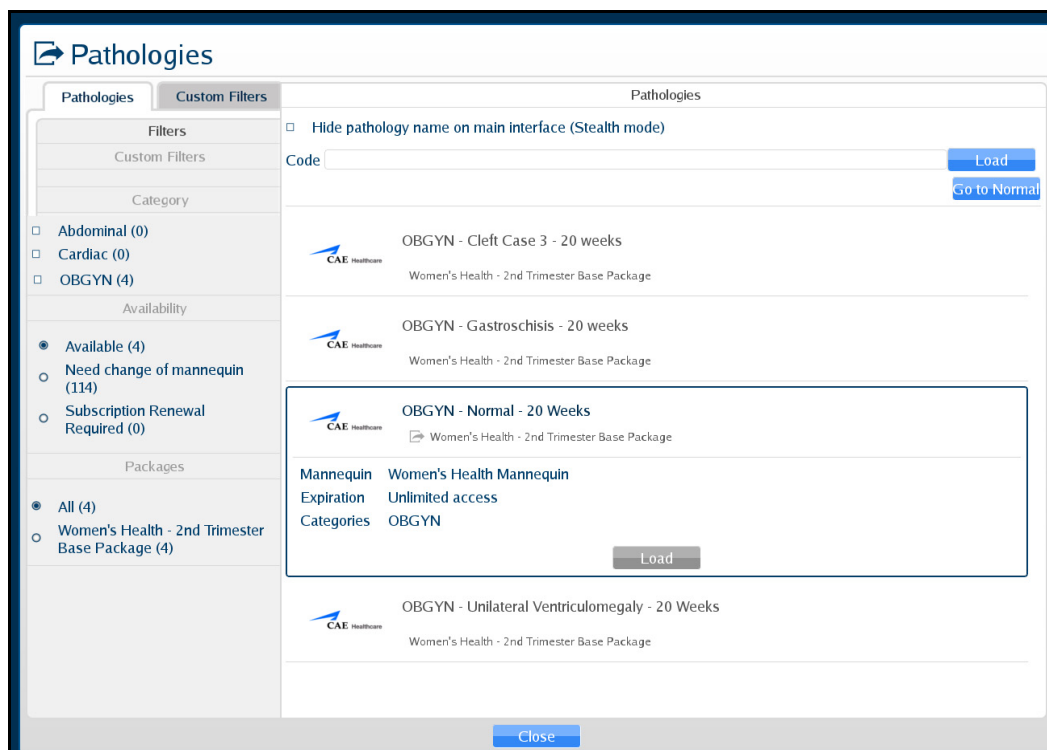
To load a pathology:

1. Click the **Load** icon.



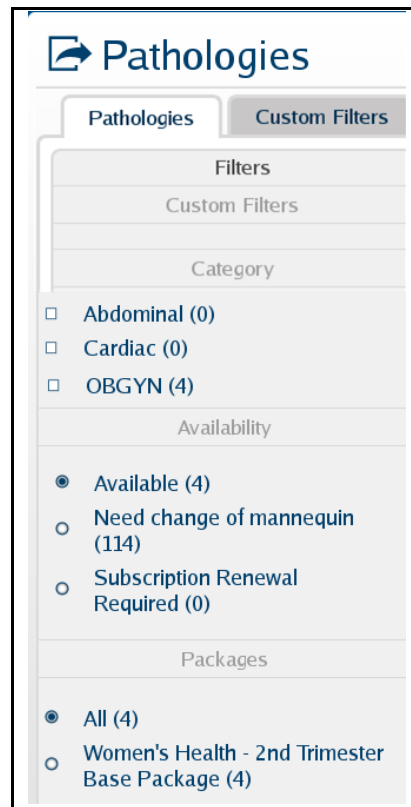
**The Load Icon**

The Pathologies window appears.



**The Pathologies Window**

2. Select the search criteria from the **Filters** panel.



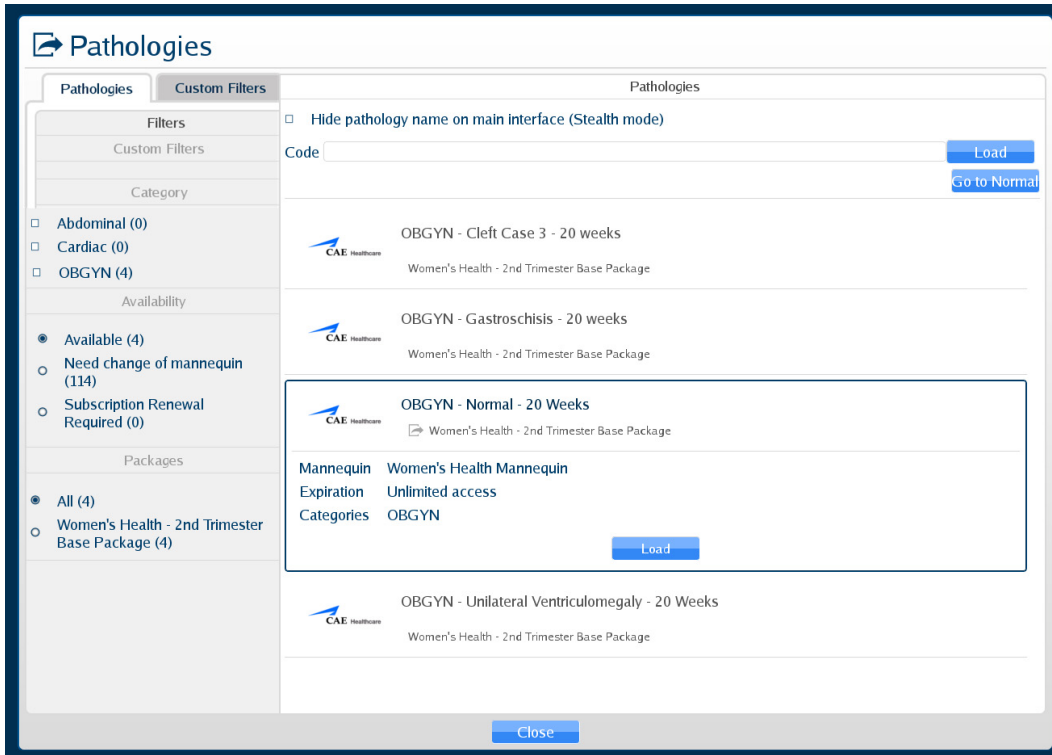
**The Filters Panel**

**NOTE:** Information for creating **Custom Filters** follows this section.

The pathologies update automatically in the **Pathologies** panel. If no criteria is selected, all available pathologies display in the **Pathologies** panel.

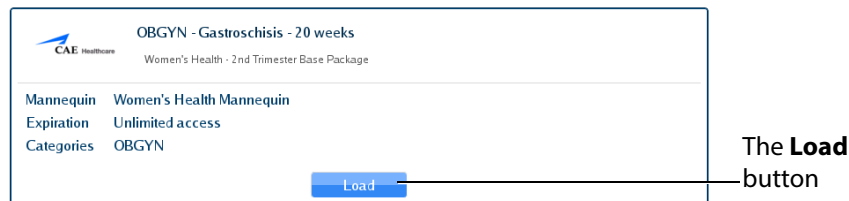
3. Select the desired pathology.

The pathology selection expands.



**The Pathologies Window**

4. Click the **Load** button.



**The Selected Pathology**

The Loading Pathology window appears.



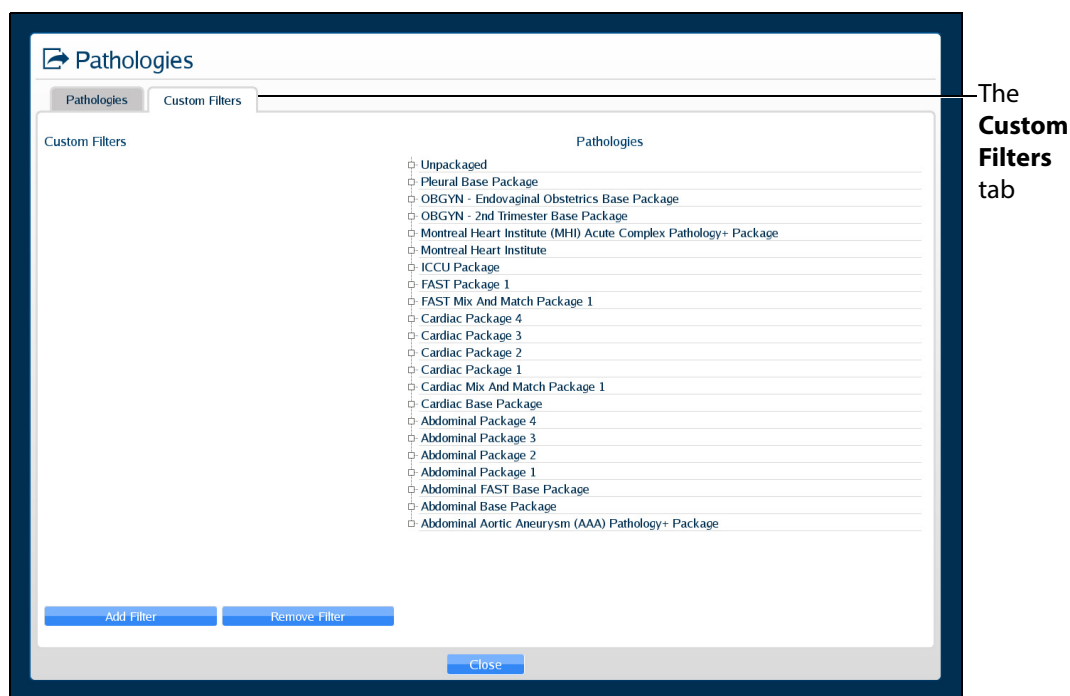
**The Loading Pathology Window**

**NOTE:** When loading a Montreal Heart Institute pathology, the Pathologies Loading window contains a brief synopsis of the patient’s history and a **Continue** button. Users must click the **Continue** button after reviewing the synopsis to access the loaded pathology.

When the main interface screen appears, the pathology is loaded.

To create a Custom Filter:

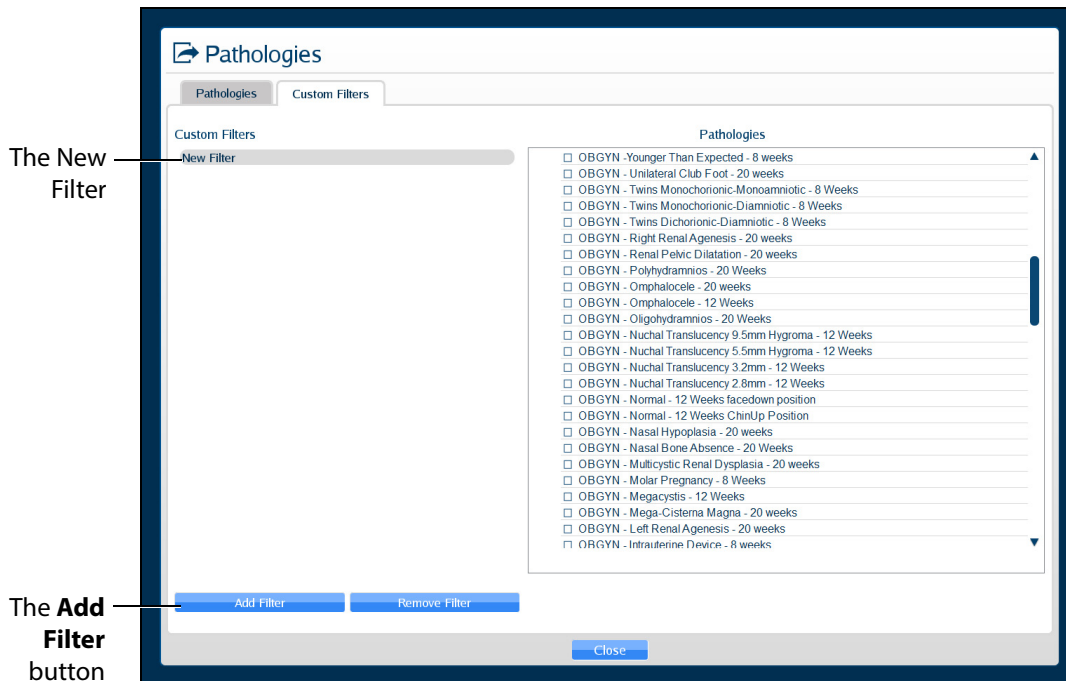
1. Click the **Custom Filters** tab.



**The Custom Filters Window**

2. Click **Add Filter**.

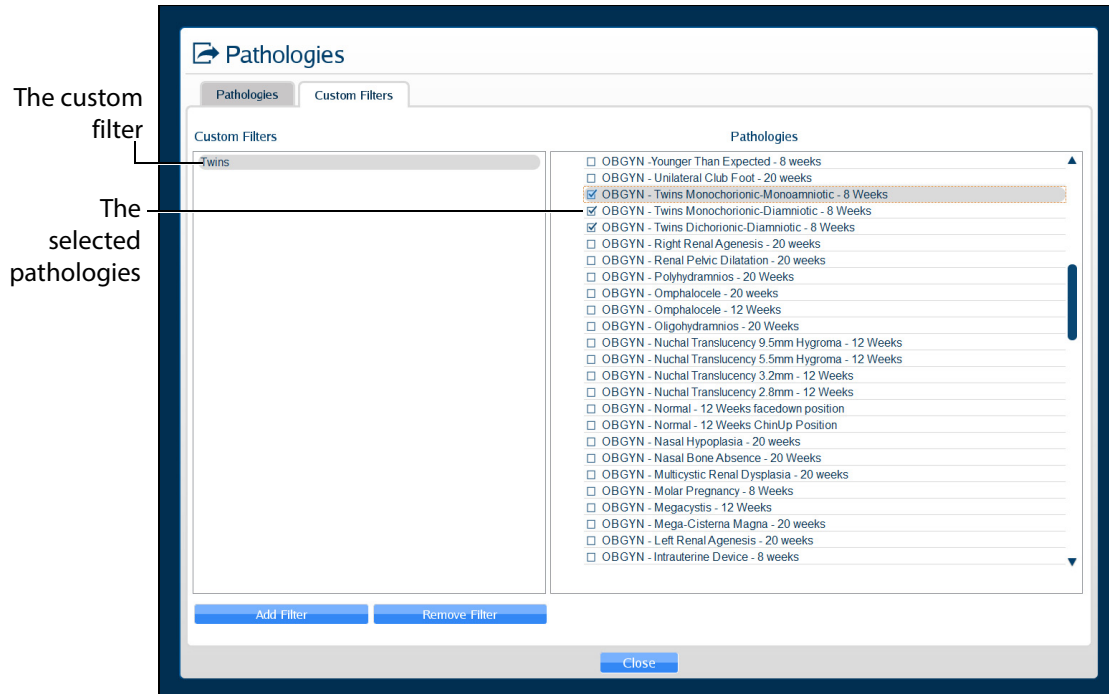
The New Filter is displayed.



***The Custom Filters Window***

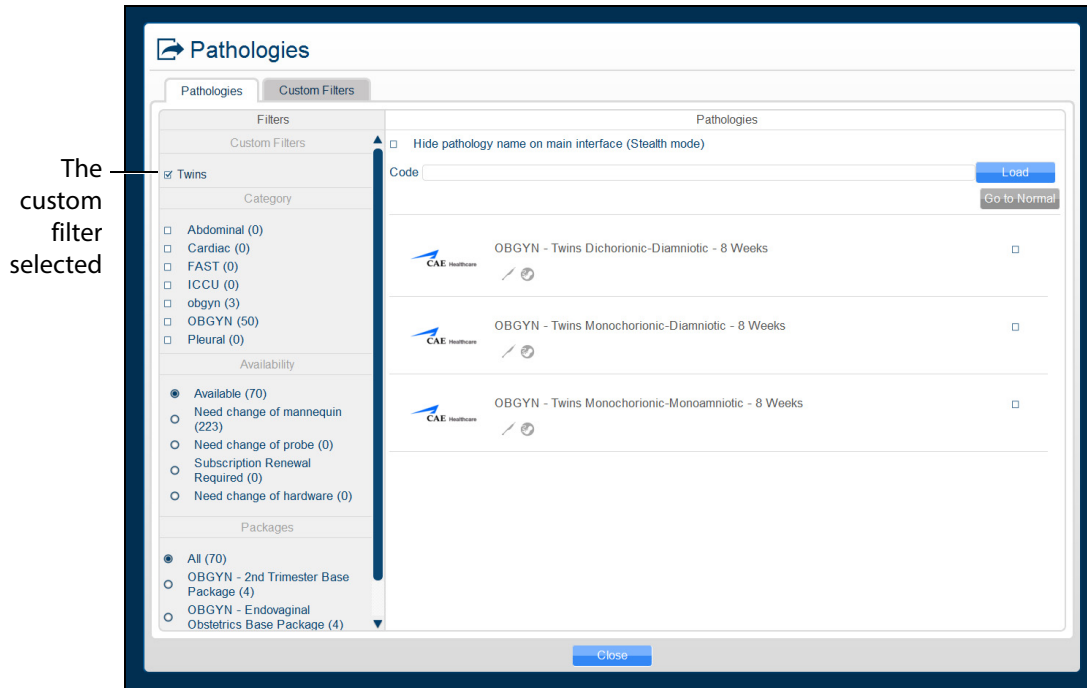
3. Double-click the New Filter to rename it. A new filter must be renamed before adding additional filters. Then, press Enter or click outside of the filter name to apply the name change.

4. Ensure the new filter is highlighted, then select (checkbox) the desired pathologies. The selected pathologies are automatically applied to the filter.



**The Custom Filters Window**

- When finished, click the **Pathologies** tab, then select (checkbox) the desired custom filter.



**The Pathologies Window**

**NOTE:** To refresh a custom filter, from the **Pathologies** tab, uncheck then re-check the desired custom filter.

To edit a Custom Filter:

- Click the **Custom Filters** tab.
- Ensure the desired filter is highlighted, then check or uncheck the desired pathologies.
- When finished, click the **Pathologies** tab, then select (checkbox) the desired custom filter.

**NOTE:** To remove a custom filter, ensure the custom filter name is highlighted, then click **Remove Filter**.

## Loading a Pathology in Stealth Mode

The Vimedix simulator offers a Stealth mode that allows instructors to hide the name of a loaded pathology. When a pathology is loaded in Stealth mode, the pathology name is replaced with **Stealth Mode Activated** at the top of the Vimedix simulator interface.

Pathologies can be loaded in Stealth mode from the Pathologies window using a pathology code or the **Hide pathology name on the main interface (Stealth mode)** checkbox.

To load a pathology in Stealth mode using a pathology code:

1. Click the **Load** icon



**The Load Icon**

The Pathologies window appears.

2. Use the Pathology Codes document to find the code for the desired pathology.
3. Enter the code into the **Code** text box.



**The Pathologies Window**

4. Click **Load**.

The pathology is loaded.

**NOTE:** If the code is incorrect, a message appears saying the pass code is not valid.

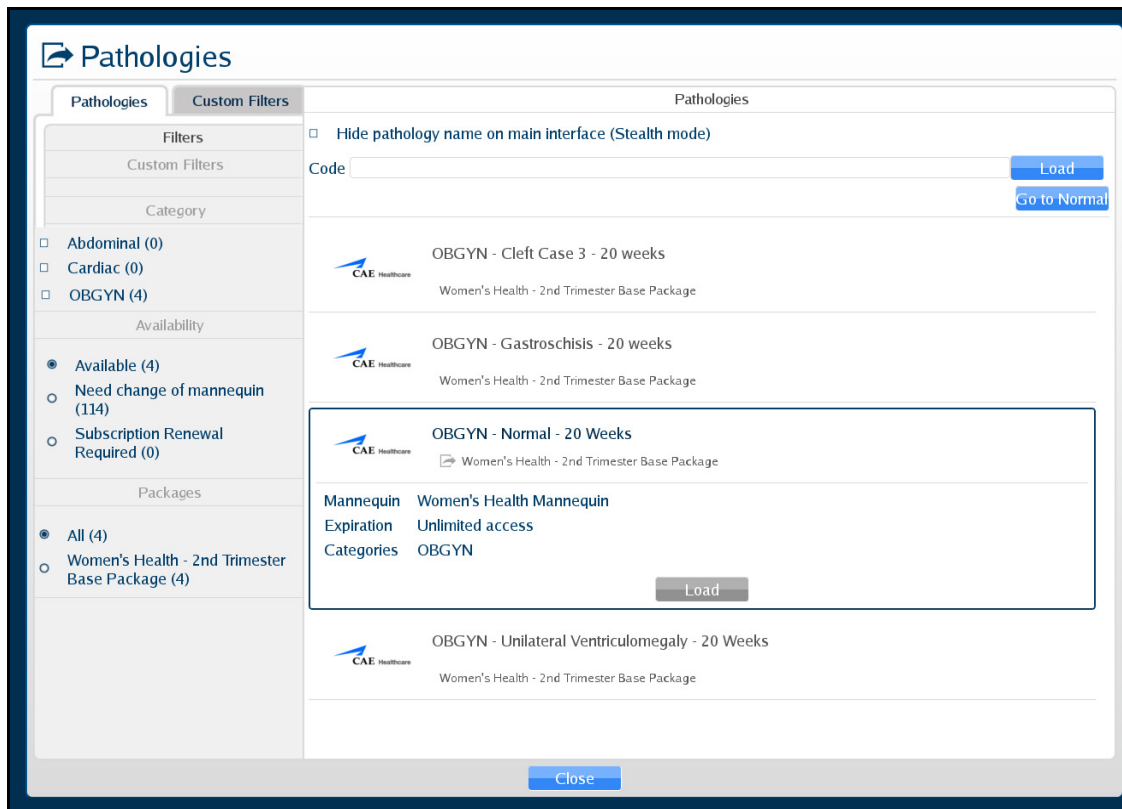


**The Pass Code Error Message**

To load a pathology in Stealth mode without a code using the checkbox feature:



1. Select the desired pathology from the **Pathologies** panel.



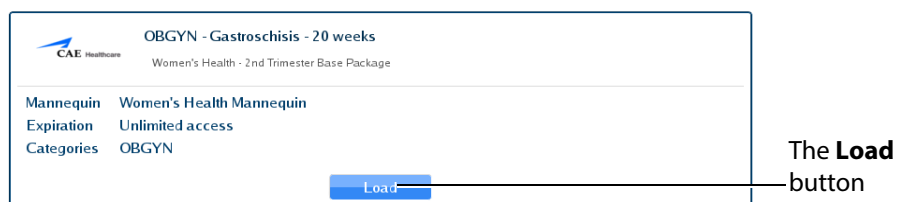
**The Pathologies Window**

2. Select the **Hide pathology name on the main interface (Stealth mode)** checkbox.



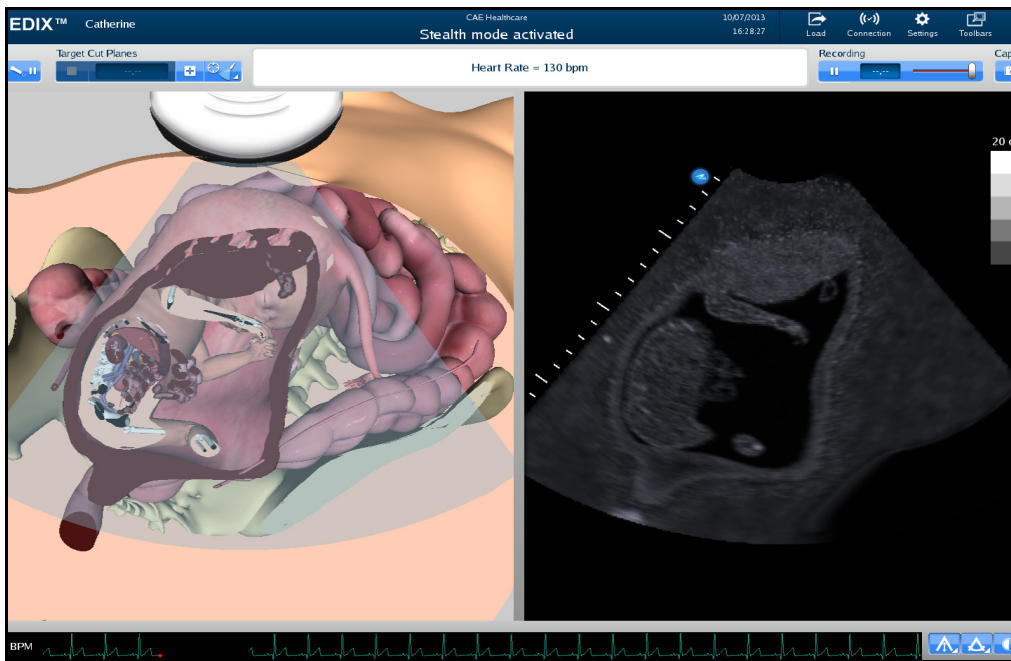
**The Pathologies Window**

3. Click **Load** in the selected pathology



**The Selected Pathology**

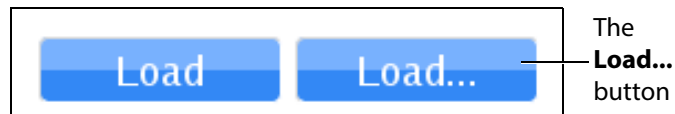
The pathology is loaded in Stealth mode.



*The Loaded Pathology with Stealth Mode Activated*

## Selecting Modalities

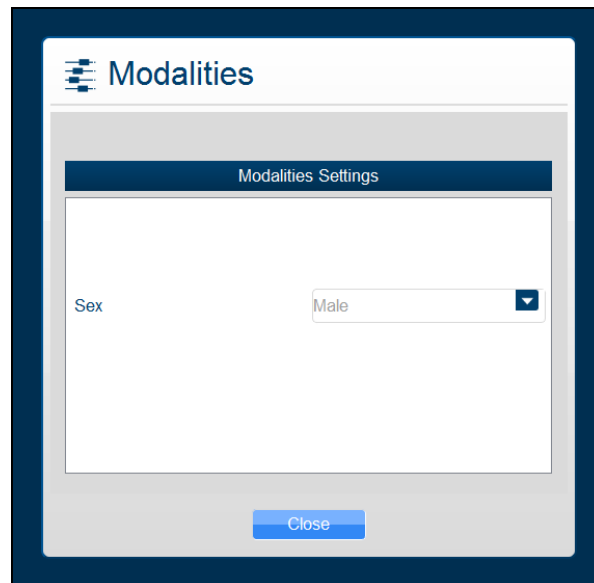
Select the **Load...** button when loading a case to access the **Modalities Settings** window.



*The Load Modalities Option*

The sex of the 20-week fetus (male or female) and the 8 and 12-week bladder (full or empty) can be selected by turning Modalities ON or OFF.

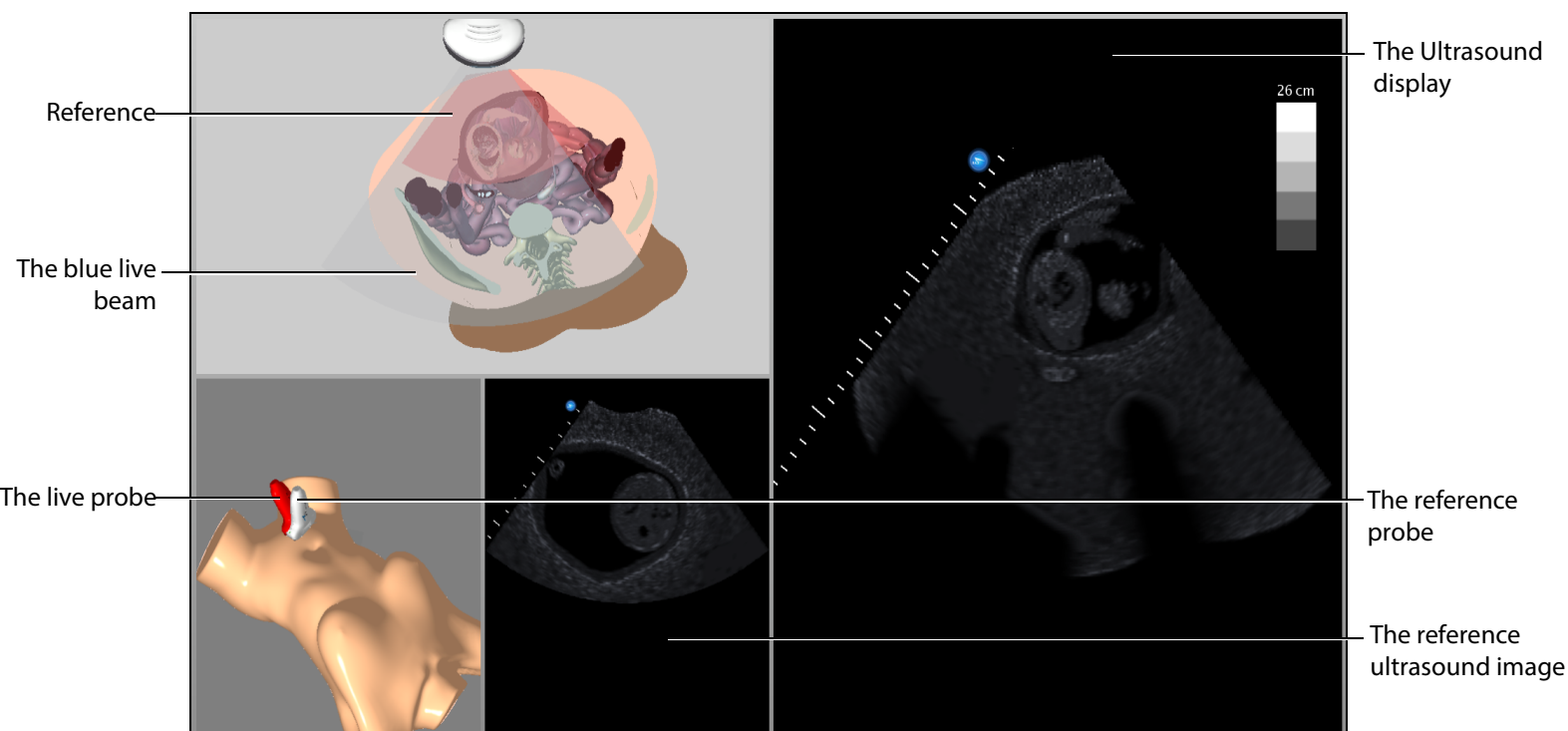
After loading the case (during imaging), click the modalities icon to access the **Modality Settings** window and turn modalities ON or OFF.



***The Modalities Icon and Settings Window***

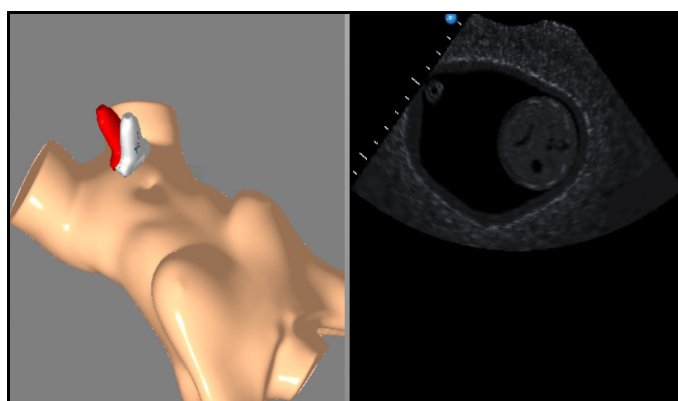
## Using Target Cut Planes

Target cut planes (TCP) are reference views that learners can use to mimic correct probe positioning. Instructors can select a pre-existing TCP or create a new TCP on any case.



***The Target Cut Plane Screen Features***

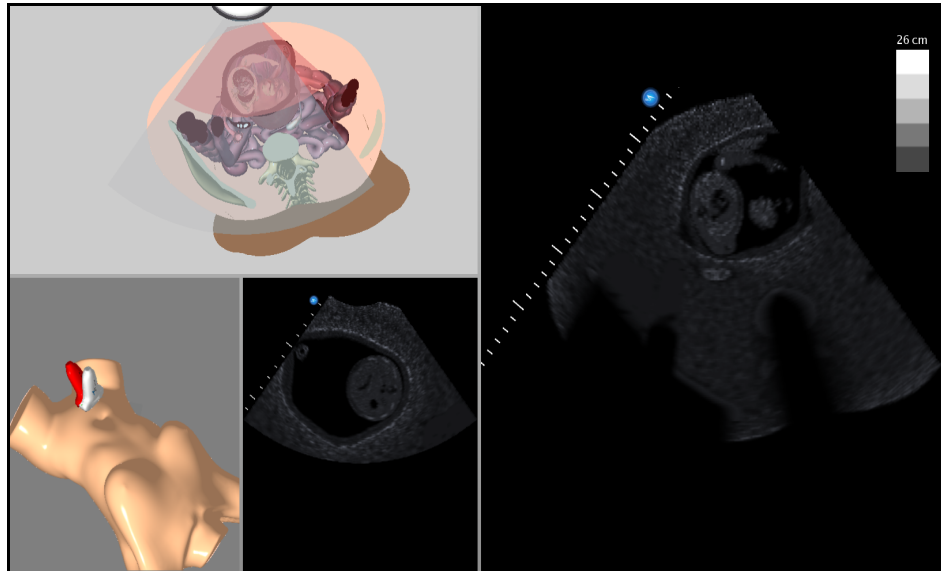
When a TCP is loaded, two additional displays appear: the mannequin placement display and the reference ultrasound image display.



***The Mannequin Placement and Reference Ultrasound Image Displays***

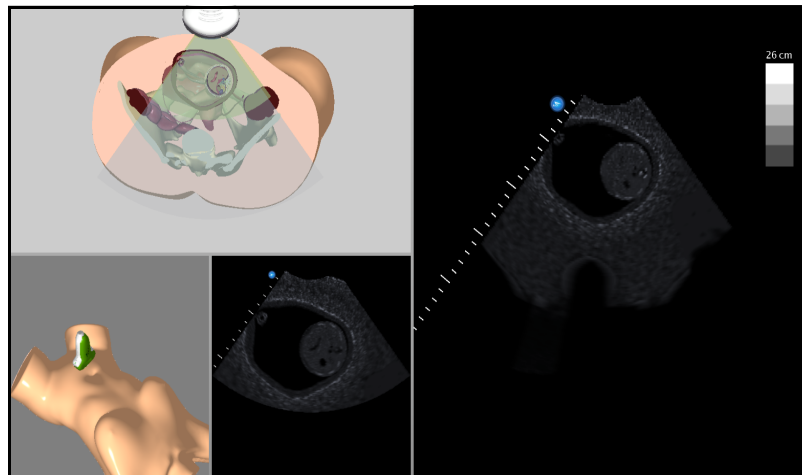
In the AR Display, the red reference ultrasound beam identifies the cut plane the learner must achieve. The ultrasound beam on the AR display and the live ultrasound image display the cut plane of the live probe. The live ultrasound beam on the AR display and the live probe change color based on their

proximity to the target. When they are far from the target, they appear red. As the beam moves closer to the target, the beam and probe change from red to reddish-brown to greenish-brown to solid green.



**The Target Cut Plane Screen**

**Once the user achieves the target cut plane, the ultrasound beams align and turn green.**



**An Achieved Target Cut Plane**




The Vimedix simulator includes a metrics feature that allows users to load TCPs and assess their competency by recording the coordinates of their probe positioning and various parameters during the TCP. This data is compiled in an exportable spreadsheet.

**For more information on the metrics parameters, see *Metrics Parameters*.**

## Target Cut Planes Panel Buttons

Target cut planes are learning tools designed to allow learners to practice techniques in the absence of an instructor. The **Target Cut Planes** panel has three buttons: **Stop Metrics** button, **New** button and the **TCP Menu** button. By clicking the **New** button, the user creates the target cut plane from the current probe position. By clicking the **TCP Menu** button, the user can load a TCP and record metrics.

Target cut plane metrics are used to record a learner's actions during a target cut plane exercise.

Target Cut Planes Panel Buttons	
	The <b>New</b> button saves the current position of the probe to create a Personal target cut plane.
	The <b>TCP Menu</b> button opens the Target cut plane window where users can access Base or Personal TCPs.
	The <b>Stop Metrics</b> button allows users to stop recording metrics after starting a metrics session from the Target cut plane window.

## Creating a Target Cut Plane

Users can create personal TCPs that are saved with the loaded pathology under the **Personal** tab in the Target cut planes window.

**NOTE:** A user-created or Personal TCP is only valid for the pathology that was loaded during its creation.

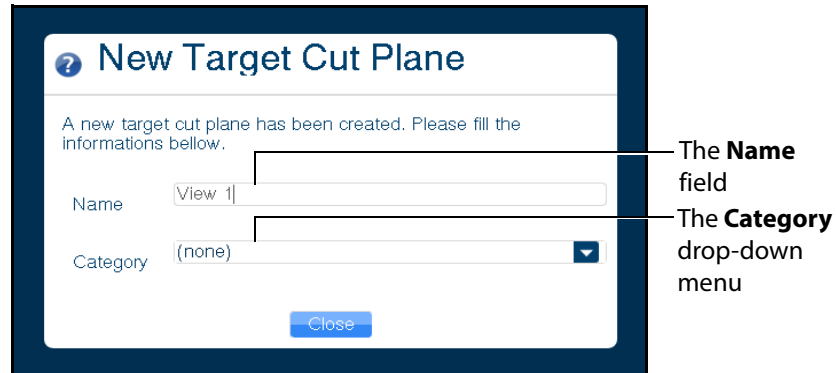
To create a Personal TCP:

1. Select a pathology, if desired.
2. Position the probe on the mannequin to obtain the desired view in the Ultrasound and AR displays.
3. From the **Target Cut Planes** panel, click the **New** button.



*The Target Cut Planes Panel*

The New Target Cut Plane window appears. By default, the name is a 10-digit auto-generated number and the TCP category is none.



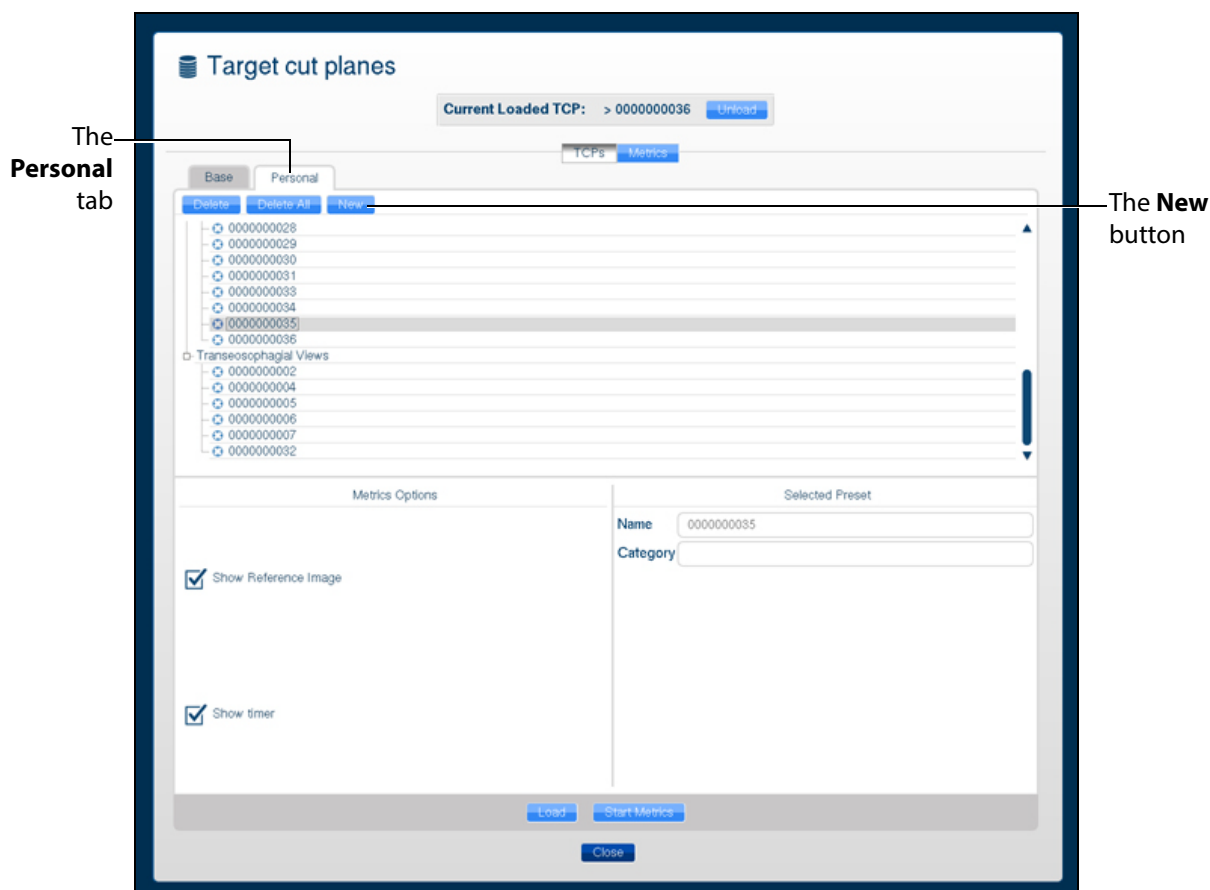
The **Name** field

The **Category** drop-down menu

***The New Target Cut Plane Window***

4. Enter the desired name of the new target cut plane in the **Name** field and select a category from the **Category** drop-down menu, if desired.
5. Click the **Close** button to save the entry.

**NOTE:** Users can also create a personal TCP from the Target cut planes window by clicking on the **Personal** tab and clicking the **New** button located above the list of available personal TCPs.



**The Target Cut Planes Window**

The TCP is created and available in the **Personal** tab in the Target cut planes window.

## Loading a Target Cut Plane

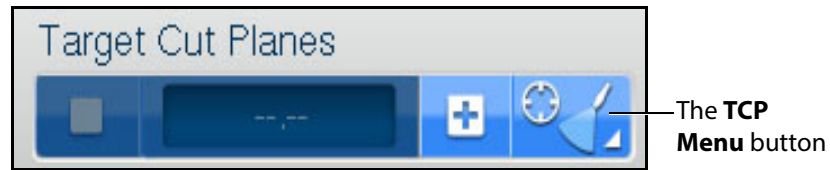
Users load existing TCPs to practice achieving specific probe positions and ultrasound views.

**NOTE:** The Vimedix simulator comes with pre-existing TCPs for the Normal pathology using the TTE probe only.

To load a TCP:

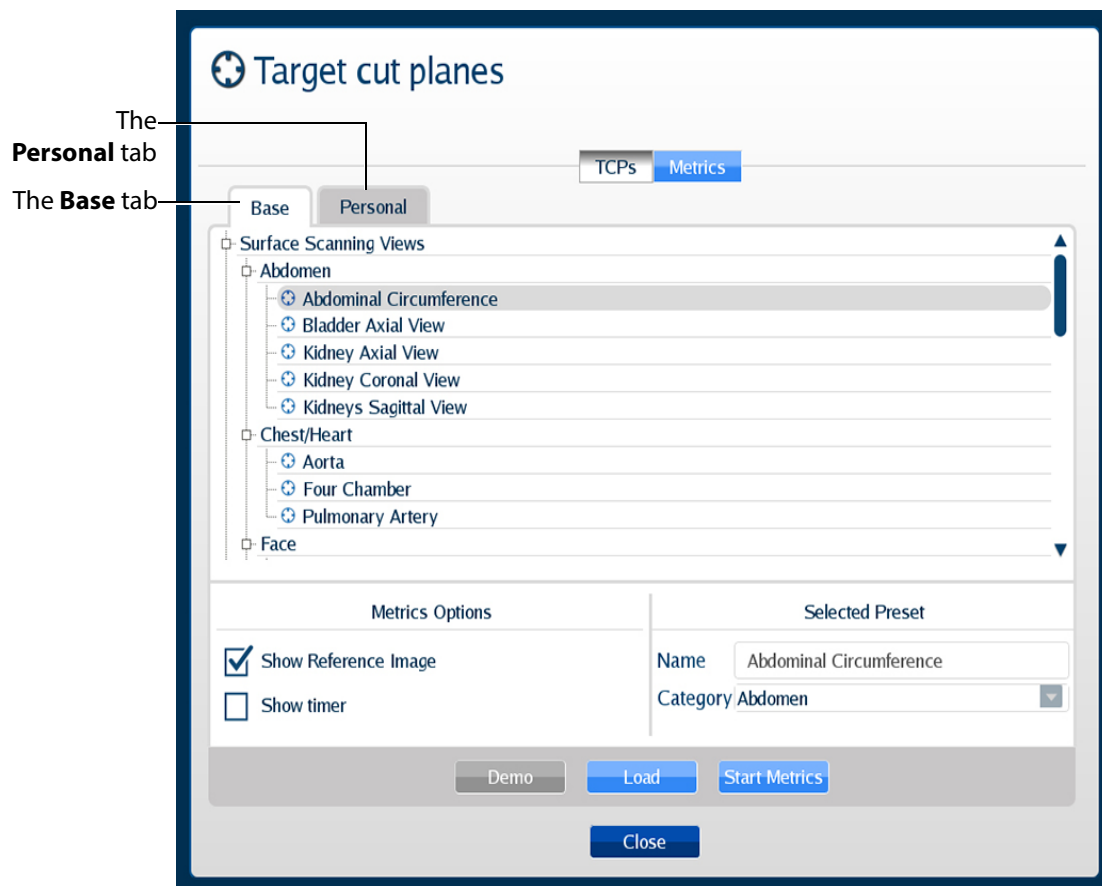


1. Click the **TCP menu** button.



**The Target Cut Planes Panel**

The Target cut planes window appears.

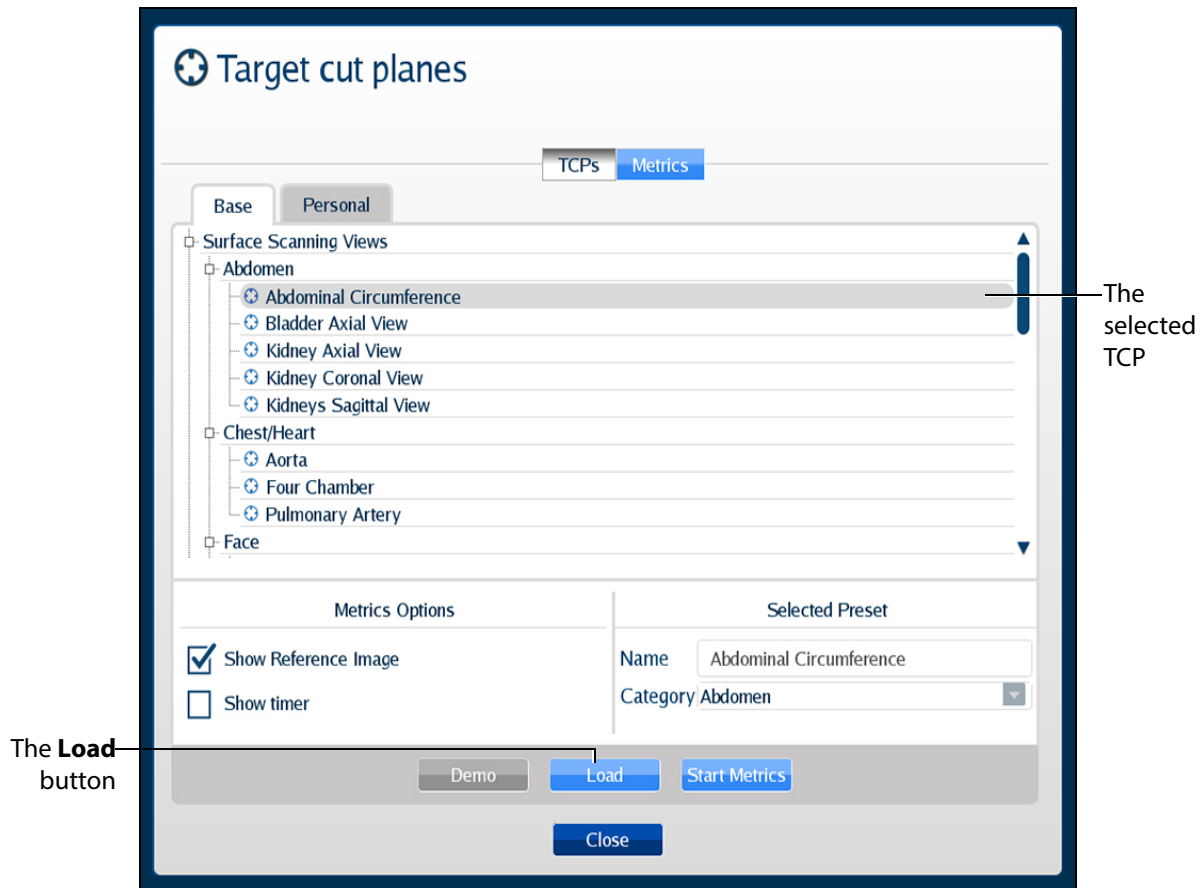


**The Target Cut Planes Window**

2. In the Target cut planes window, select the **Base** or **Personal** tab, depending on the type of target cut plane to be loaded.

The available TCPs are listed.

3. Select the TCP to load from the list.



*The Target Cut Planes Window*

4. Click the **Load** button to launch the TCP.  
The TCP is loaded.

## Loading Multiple Target Cut Planes

Users can load multiple TCPs to practice achieving specific probe positions and ultrasound views in succession in the same manner a trained sonographer performs an ultrasound exam.

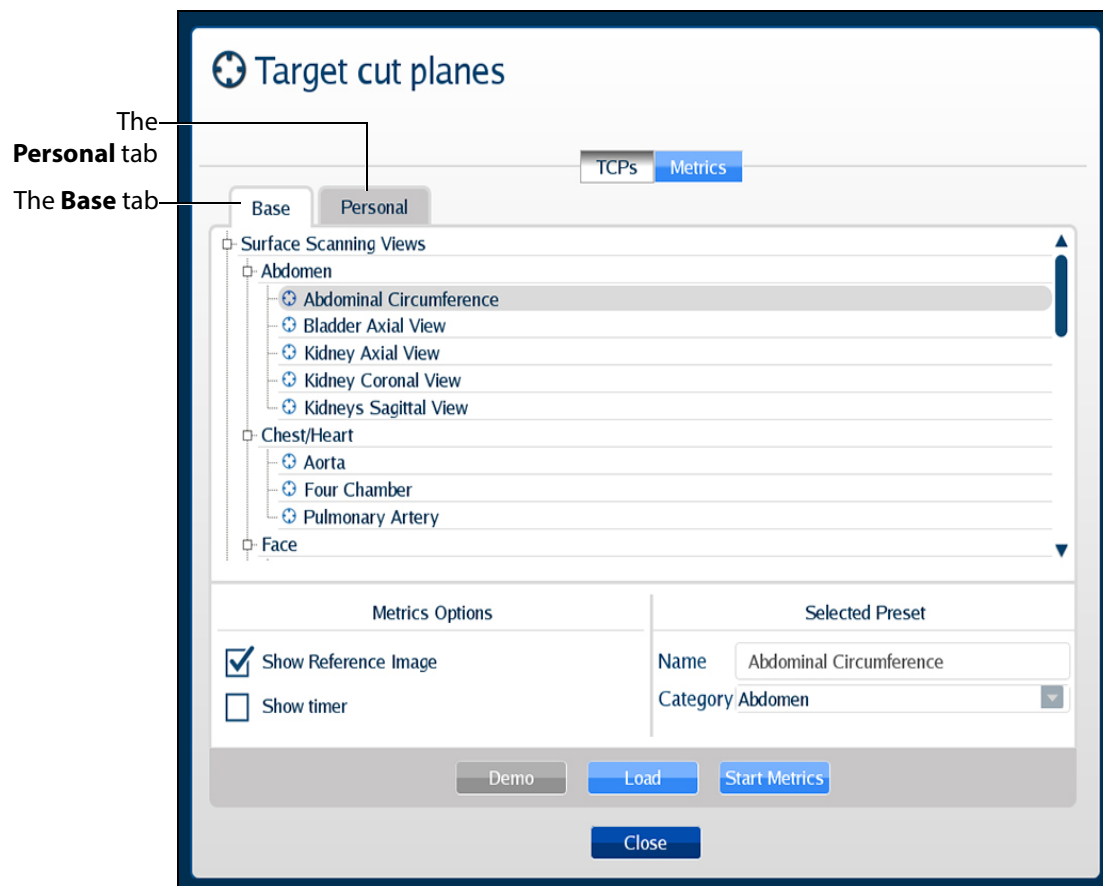
To load multiple TCPs:

1. Click the **TCP menu** button.



*The Target Cut Planes Panel*

The Target cut planes window appears.



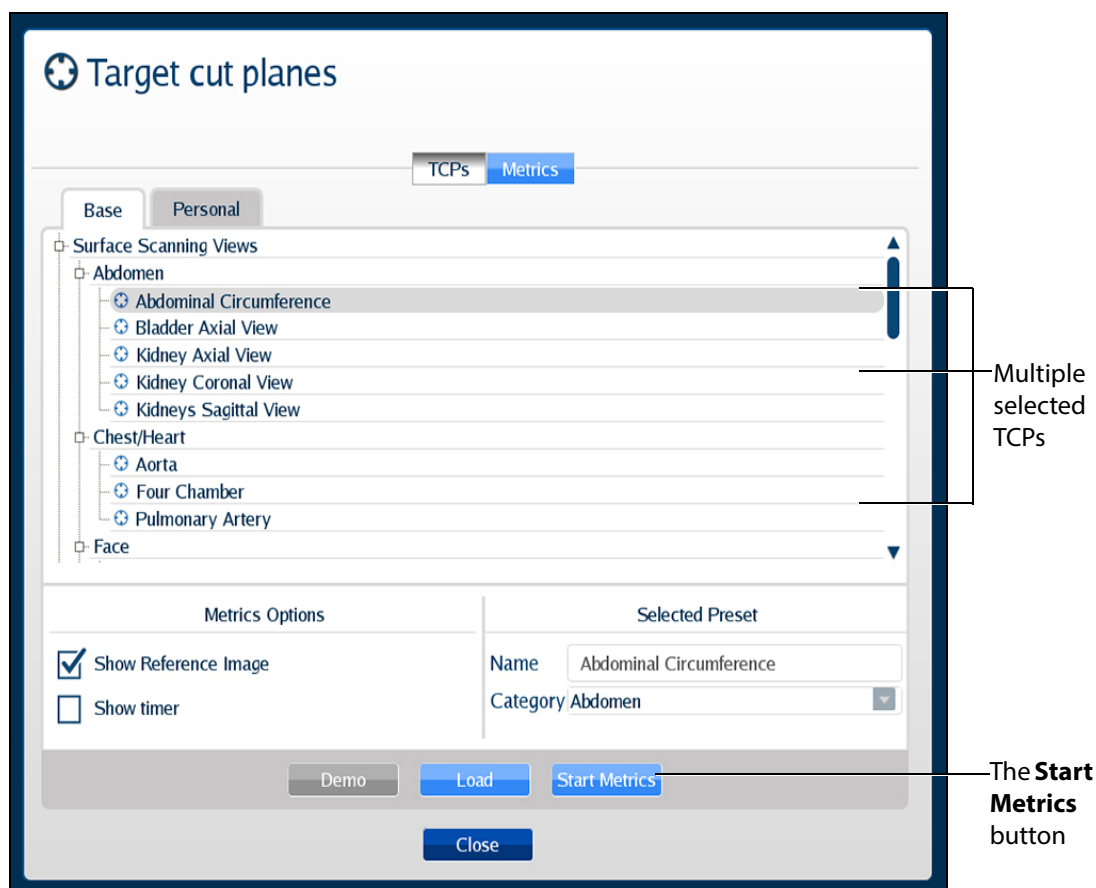
*The Target Cut Planes Window*

2. In the Target cut planes window, select the **Base** or **Personal** tab, depending on the type of target cut plane to be loaded.

The available TCPs are listed.

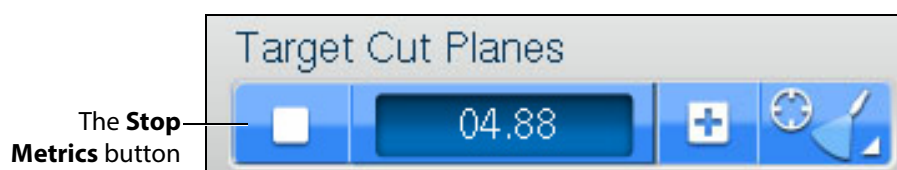
3. Select the TCPs to load from the list by holding down the CTRL key on the keyboard and selecting multiple TCPs.

**NOTE:** Users can select a combination of TCPs from both the **Base** and **Personal** tabs using the CTRL key and navigating between tabs.



*The Target Cut Planes Window*

4. Click the **Start Metrics** button to launch the first TCP.  
The first TCP loads and the Metrics begin recording activity.
5. Click the **Stop Metrics** button in the Target Cut Planes panel or press the **Enter** key on the keyboard to move on to the next TCP.



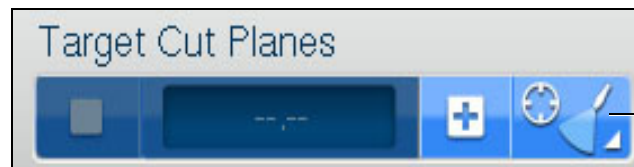
*The Target Cut Planes Panel*

For more information on stopping metrics, see *Stopping Metrics*.

## Unloading a Target Cut Plane

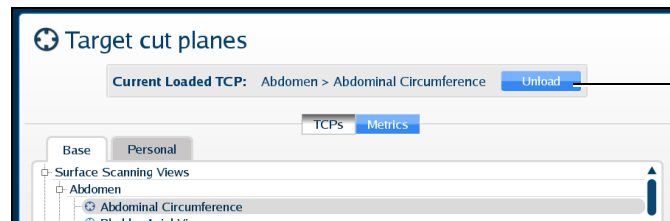
To unload a current TCP and return to the standard view:

1. Click the **TCP menu** button in the **Target Cut Planes** panel.



**The Target Cut Planes Panel**

The Target cut plane windows appears.



**The Target Cut Planes Window**

2. In the Target cut planes window, click the **Unload** button.

The TCP is unloaded.

## Using Metrics

TCP Metrics is a feature used to assess the performance of a learner trying to match a reference cut plane. When a user clicks the **Start Metrics** button, the TCP display appears and a timer is activated. The timer is a measurement tool to record the length of time learners take to achieve a TCP. The Metrics feature also records the coordinates and other parameters from the learner's probe use during the TCP.

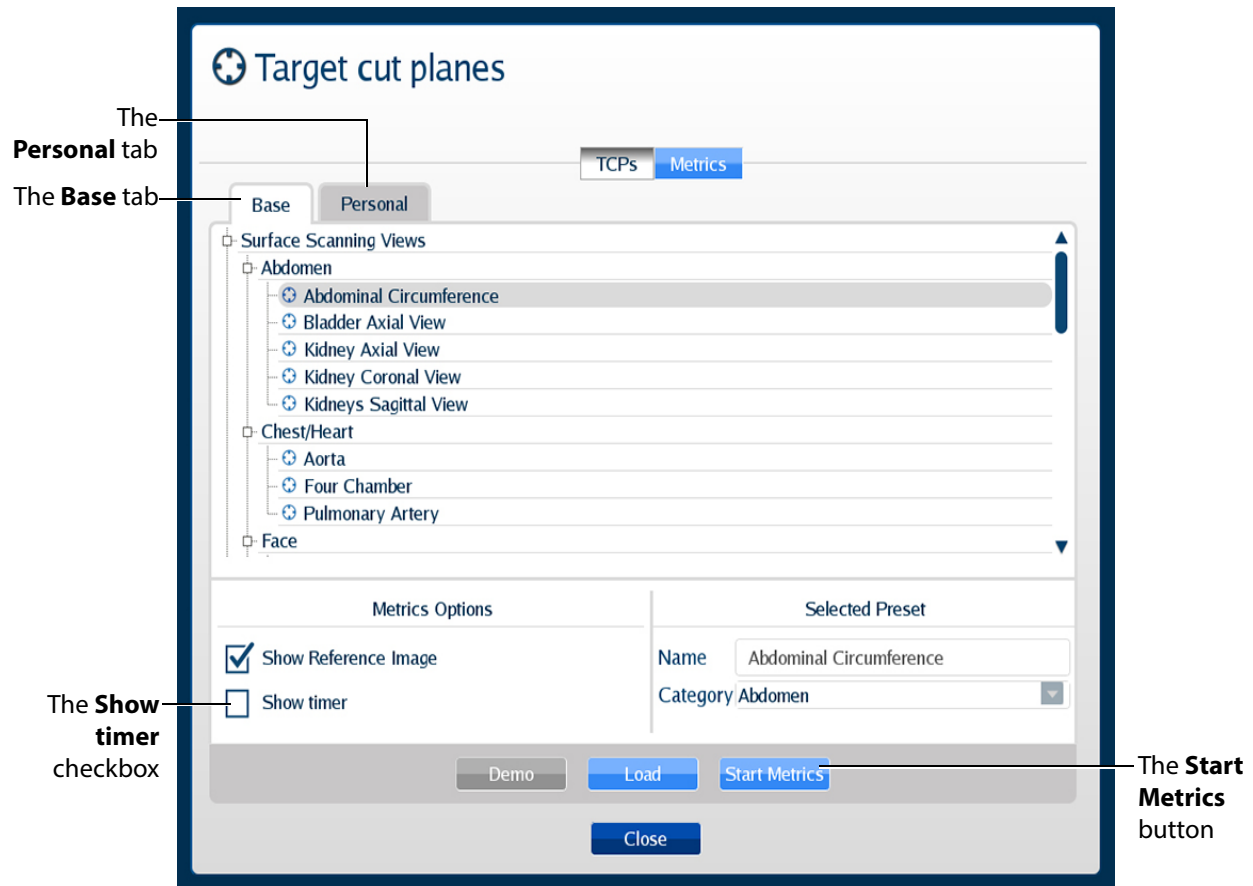
For more information on metrics parameters, see *Metrics Parameters*.

## Starting Metrics

To record the metrics of a TCP:

1. Click the **TCP menu** button located in the **Target Cut Planes** panel.

The Target cut planes window appears.



**The Target Cut Planes Window**

2. Select the desired TCP from the **Base** or **Personal** tabs.
3. From the **Metrics Options** panel, users can select the **Show timer** checkbox.

When selected, the timer in the **Target Cut Planes** panel will start running after the user clicks the **Start Metrics** button.

4. Click the **Start Metrics** button to load the TCP and begin the timer for the user to achieve the TCP.

The metrics timer begins.

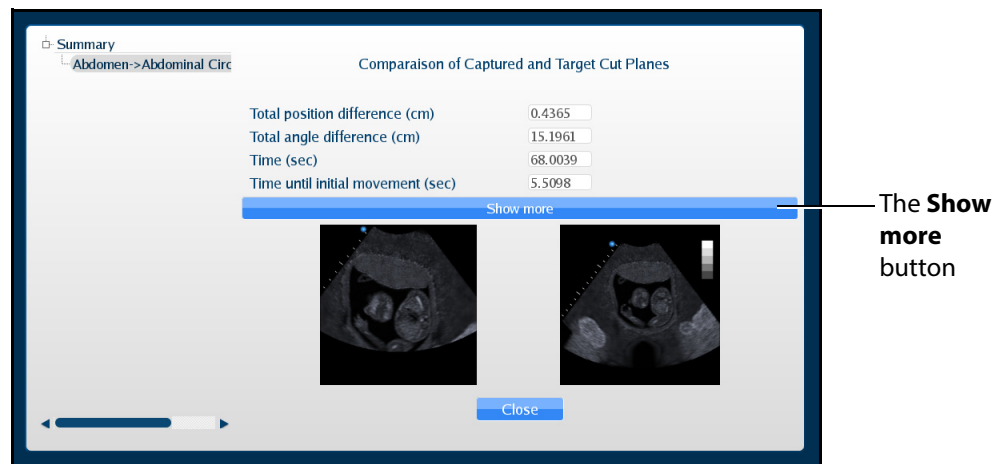
## Stopping Metrics

To stop the timer during a TCP metrics session, click the **Stop Metrics** button located in the **Target Cut Planes** panel or press the **Enter** key on the keyboard.



**The Target Cut Planes Panel**

The Metrics Summary window appears.



**The Metrics Summary Window**

This window displays the completed target cut planes, a summary of the basics metrics and a comparison of the capture and target cut planes. Users can choose to see additional parameters by clicking the **Show more** button in the Metrics Summary window.

An expanded list of metrics appears.

Summary  
Abdomen->Abdominal Circ

Comparison of Captured and Target Cut Planes

Total position difference (cm)	0.4365
Total angle difference (cm)	15.1961
Time (sec)	68.0039
Time until initial movement (sec)	5.5098
Total distance travelled (cm)	79.3835
Total angular movement (degree)	5419.5757
Number of acceleration from Rest	13
Lateral(x) Position difference (cm)	0.3719
Longitudinal(y) position difference (cm)	0.2141
Anteroposterior(z) position difference (cm)	0.0798
Roll difference (degree)	-161.7953
Pitch difference (degree)	-7.8122
Yaw difference (degree)	161.4731
Beam depth of field difference (cm)	6.0000
Beam angle difference(degree)	0.0000

Show less

Close

**The Metrics Summary Window**

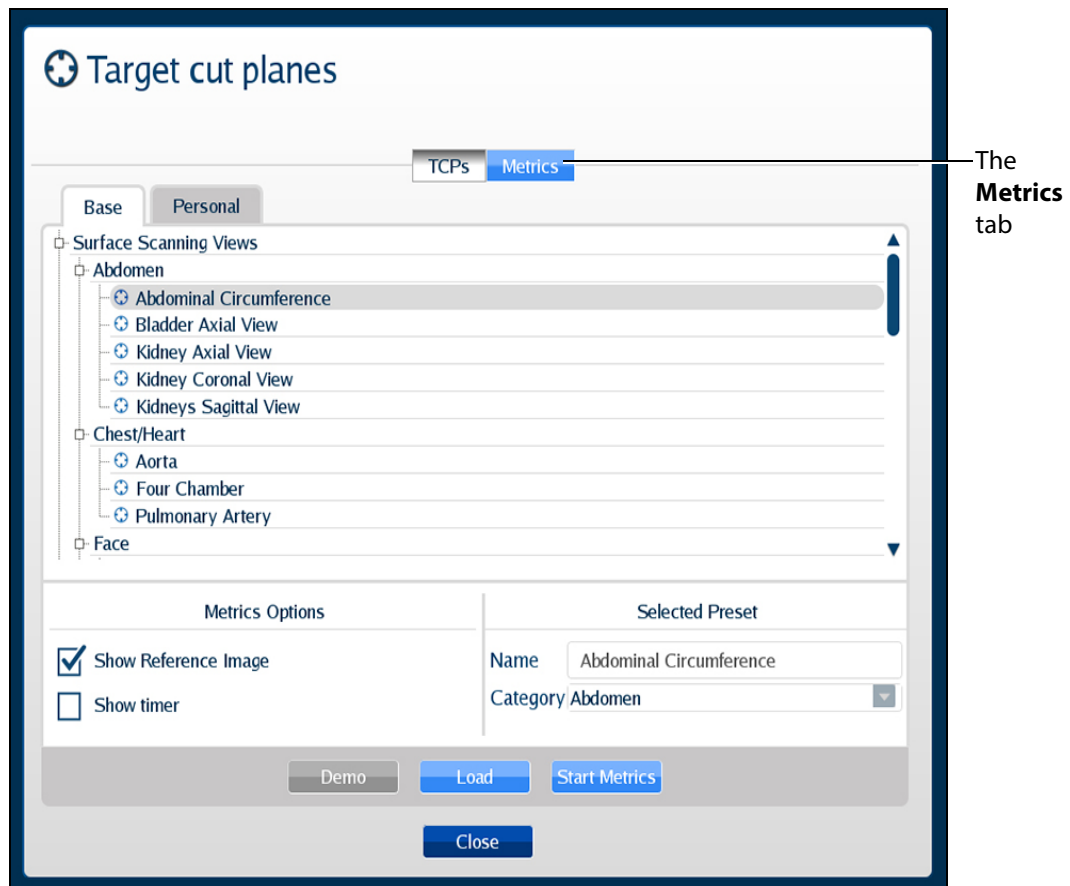


## Reviewing Metrics

Users can review the last probe position and the images that were last displayed during a metrics session by using the metrics review feature.

To review the metrics:

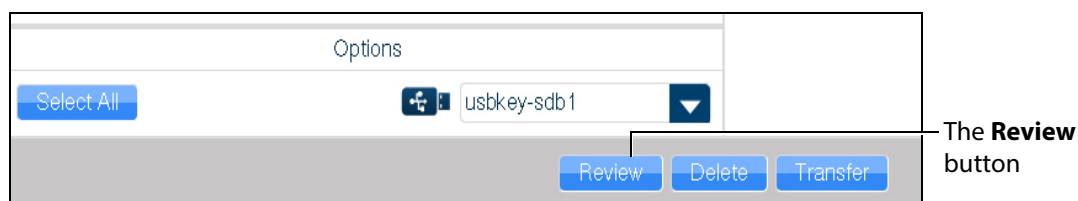
1. Click the **TCP and Metrics menu** button located in the **Target Cut Planes** panel. The Target cut planes window appears.



**The Target Cut Planes Window**

2. Click on the **Metrics** tab.  
The Metrics list displays.
3. Select the desired metrics from the list to review.

4. Click the **Review** button.



**The Metrics Tab**

The interface shows the last image recorded during the metrics session in the reference ultrasound image display.

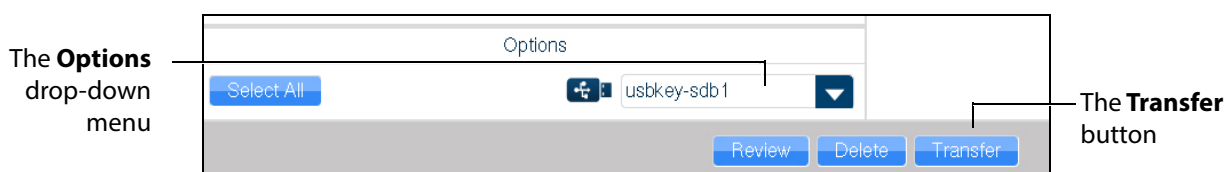
The AR and Ultrasound displays show the view from the current probe position. The mannequin placement display shows last probe's position and orientation during the metrics sessions in comparison to current probe's position and orientation.

## Exporting Metrics

All the captured metrics can be exported using a USB storage device.

To transfer the metrics to a USB storage device:

1. Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Metrics** tab.
2. From the Available metrics list, select the metrics session to be exported or click the **Select All** button to select all metrics sessions.
3. Click the **Transfer** button.

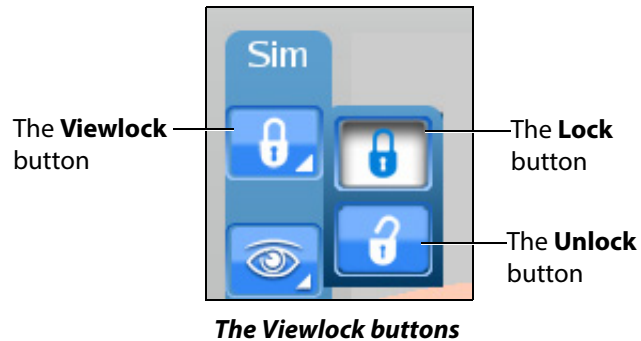


**The Metrics Tab**

**IMPORTANT:** Once metrics are transferred to a USB storage device, the sessions are **deleted** from the Vimedix simulator and **cannot** be recovered.

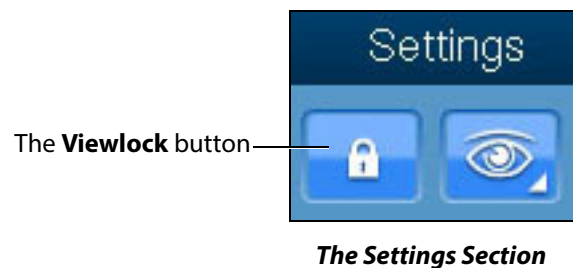
## Using the View Lock Feature

Click the **Viewlock** button, located in the Simulation panel to lock or unlock the view. The view lock is activated by default.



**NOTE:** When using the expanded toolbar view, click the **Viewlock** button one time to deactivate/ unlock the viewlock.

Settings section of the **Simulation** panel to activate or deactivate the view lock feature.



When the view lock is activated, the AR and Ultrasound displays are always synchronized.

When view lock is deactivated, the AR display can be manipulated by using the mouse. In this case, the Ultrasound and AR displays provide different perspectives of the structures.

## Modifying the Structures Visibility

Users can hide structures from view during a training by modifying the checkboxes in the Structures Visibility window.

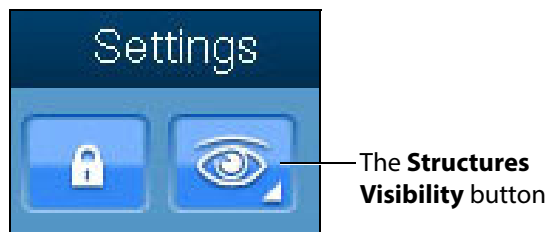
To modify structures visibility:

1. Click on the **Structures Visibility** button located in the **Simulation** panel.



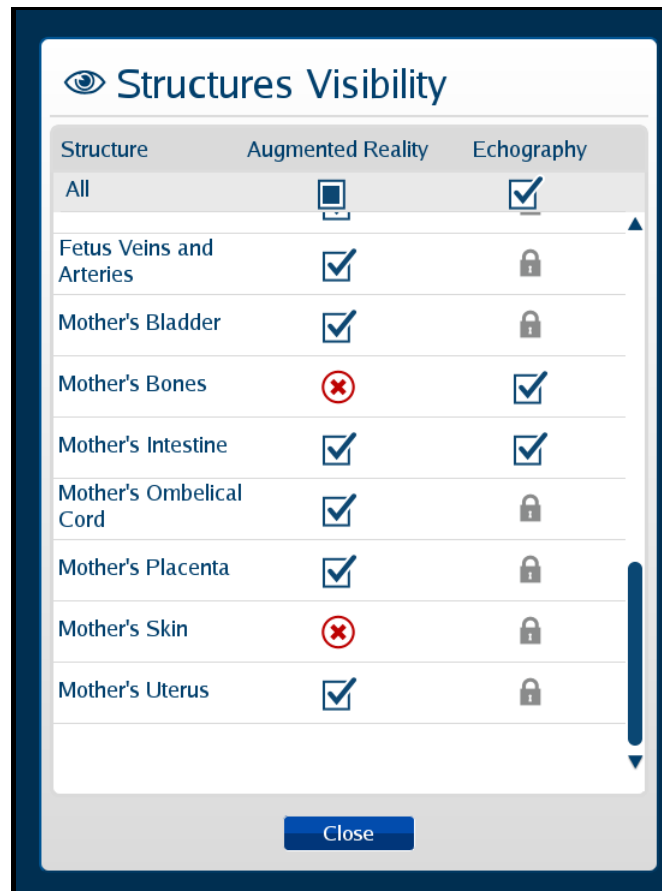
*The Structures Visibility Button*

**NOTE:** When using the expanded toolbar view, click the Structures Visibility button located in the Settings section of the Simulation panel.



*The Settings Section*

The Structures Visibility window appears.



***The Structures Visibility Window***

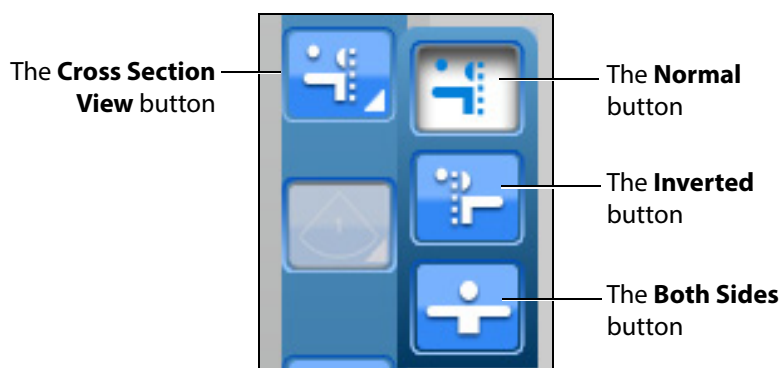
2. Uncheck the boxes in the left column to remove structures from the AR display.
3. Uncheck the boxes in the right column to remove artifacts from the Ultrasound display.

**NOTE:** Some structures cannot be removed from the Ultrasound display. These structures are denoted by a lock symbol.

4. Click the **Close** button to apply the changes and exit the Structures Visibility window.

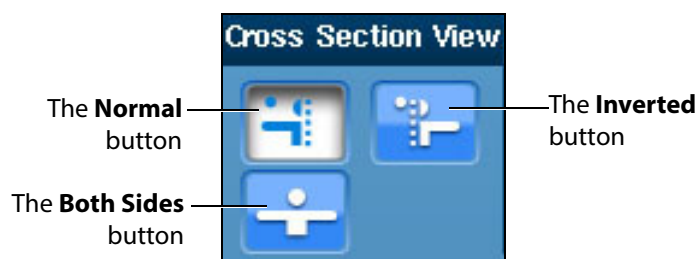
## Selecting a Cross Section View

Using the **Cross Section View** button, users can select the desired cross section view from the available options.



*The Cross Section View Options*

**NOTE:** When using the expanded toolbar view, click the desired cross section button located in the Cross Section View section of the Simulation panel.



*The Cross Section View Section*

The **Normal** button enables the Normal cut plane view. By default, the cross section view is set to Normal upon simulator startup.



*The Normal Cross Section Button*

The **Inverted** button enables the Inverted cross section view.



*The Inverted Cross Section Button*

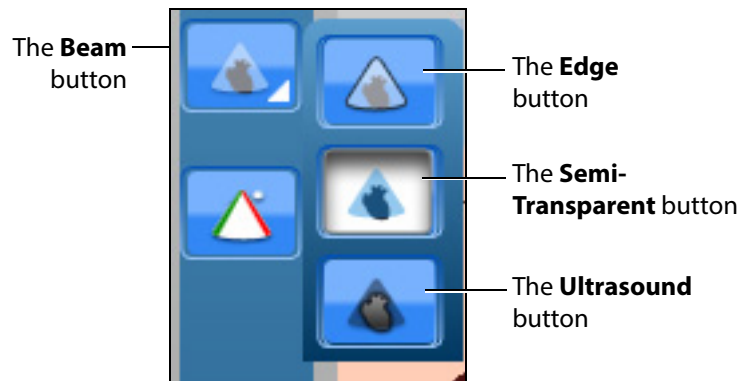
The **Both Sides** button disables the cross section view in the AR display.



*The Both Sides Cross Button*

## Selecting the Beam Type

Using the **Beam** button, users can choose from three available beam options. The selected beam determines how the ultrasound beam appears on the AR display. Click on the desired beam button to select the beam type.



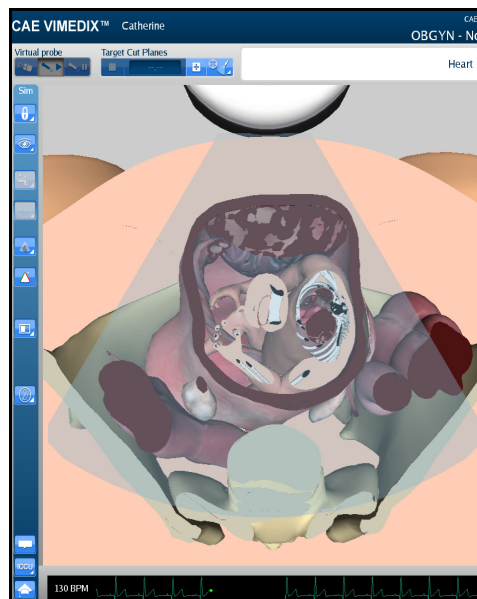
*The Beam Type Options*

**NOTE:** When using the expanded toolbar view, click on the appropriate beam button in the **Beam** section, located in the **Simulation** panel.



**The Beam Section**

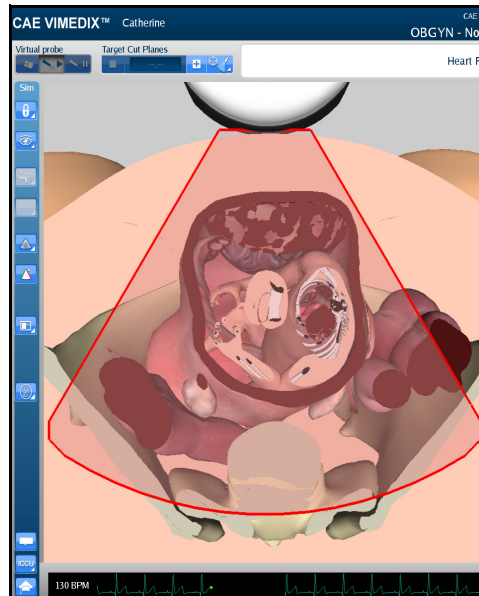
The default AR beam is **Semi-Transparent**.



**A Semi-Transparent AR Beam**

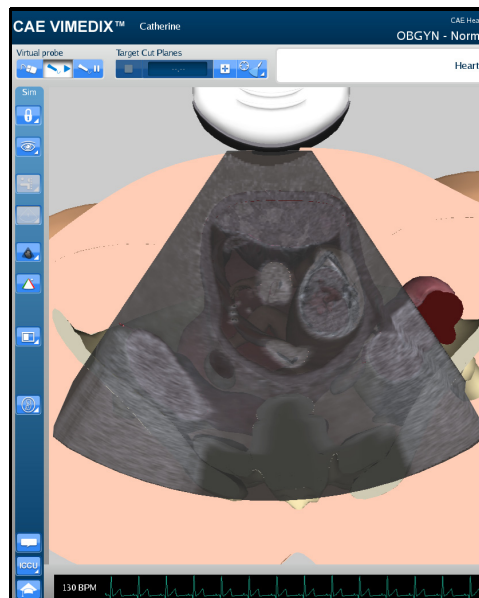


The Edge AR beam is similar to the Semi-Transparent AR beam, but includes a red line around the edge of the ultrasound beam.



*An Edge AR Beam*

The **Ultrasound** AR beam displays the structures within the ultrasound beam using an ultrasound view.

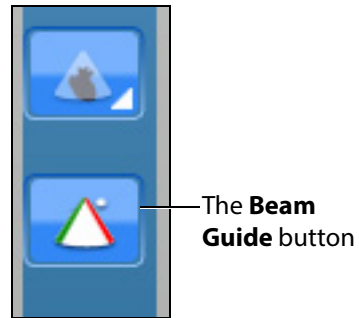


*An Ultrasound AR Beam*

## Using the Beam Guide

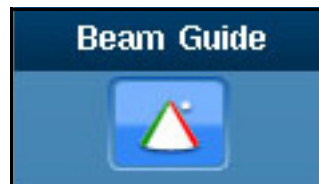
The beam guide allows users to identify the orientation of the beam using red and green lateral borders.

To activate the cut plane guide, click the **Beam Guide** button located in the **Simulation** panel



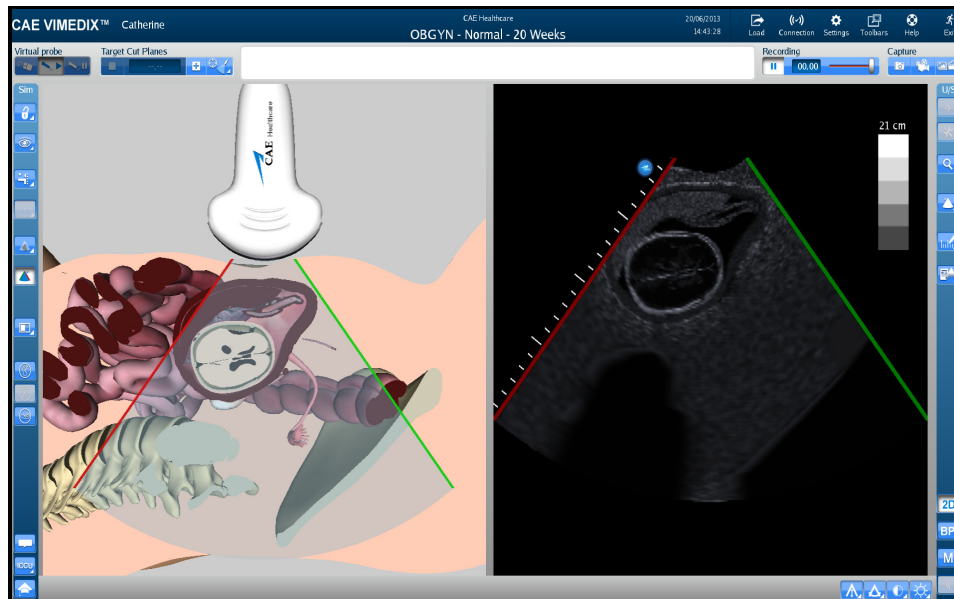
*The Beam Guide Button*

**NOTE:** When using the expanded toolbar view, click on the appropriate beam button in the **Beam Guide** section, located in the **Simulation** panel.



*The Beam Guide Section*

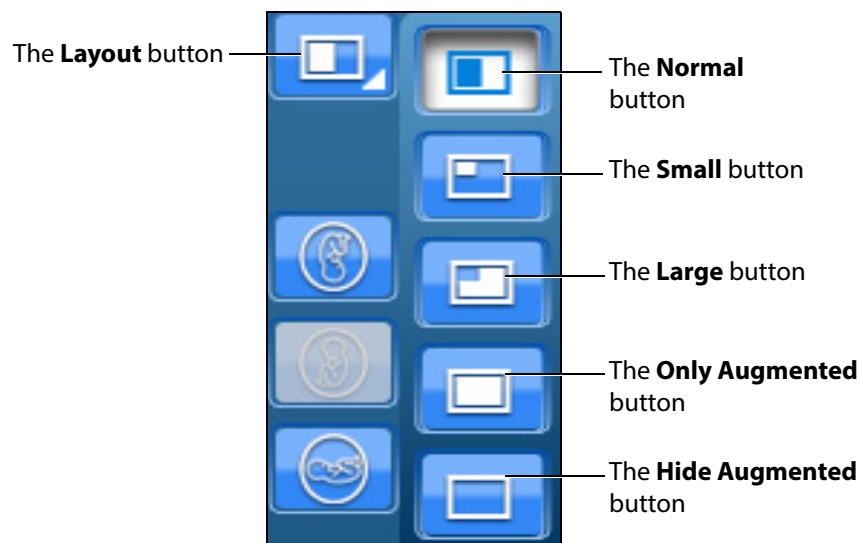
The green and red borders appear to show the user the orientation of the beam.



*The Activated Beam Guide*

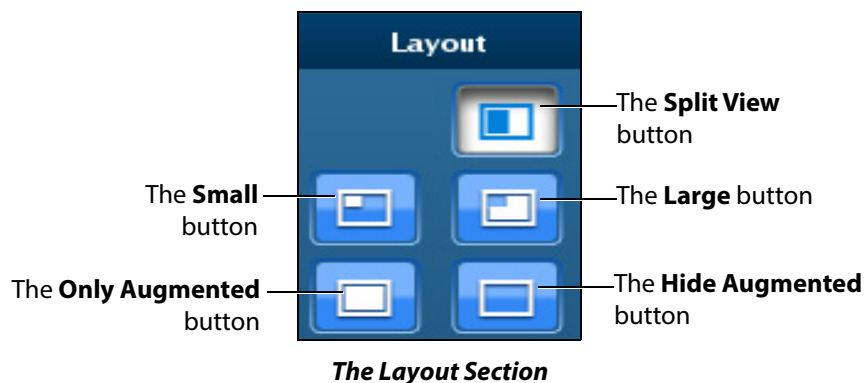
## Changing the Display Layout

Using the **Layout** button, users can select the desired display layout from the available options.

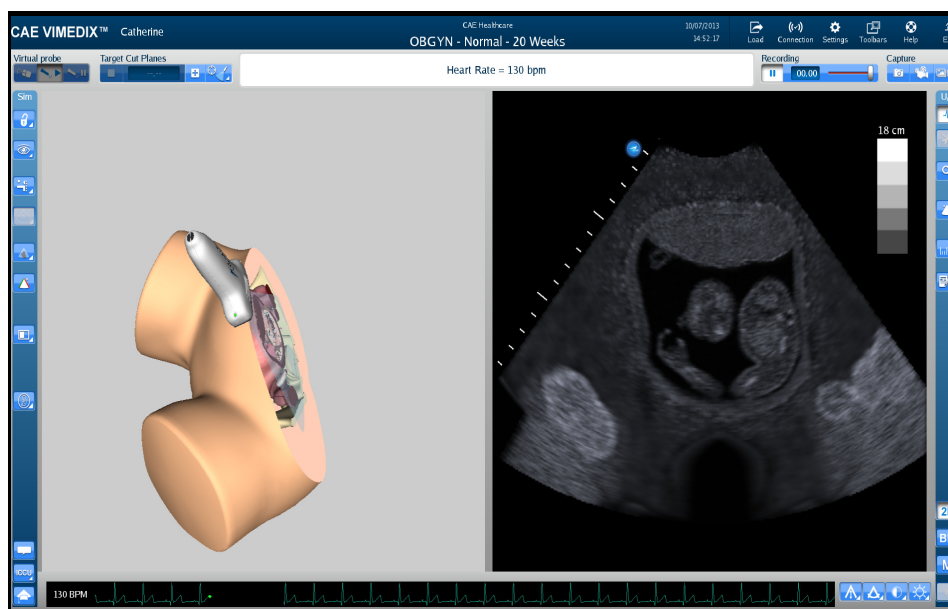


*The Layout Options*

**NOTE:** When using the expanded toolbar view, click the desired layout button located in the Layout section of the Simulation panel.



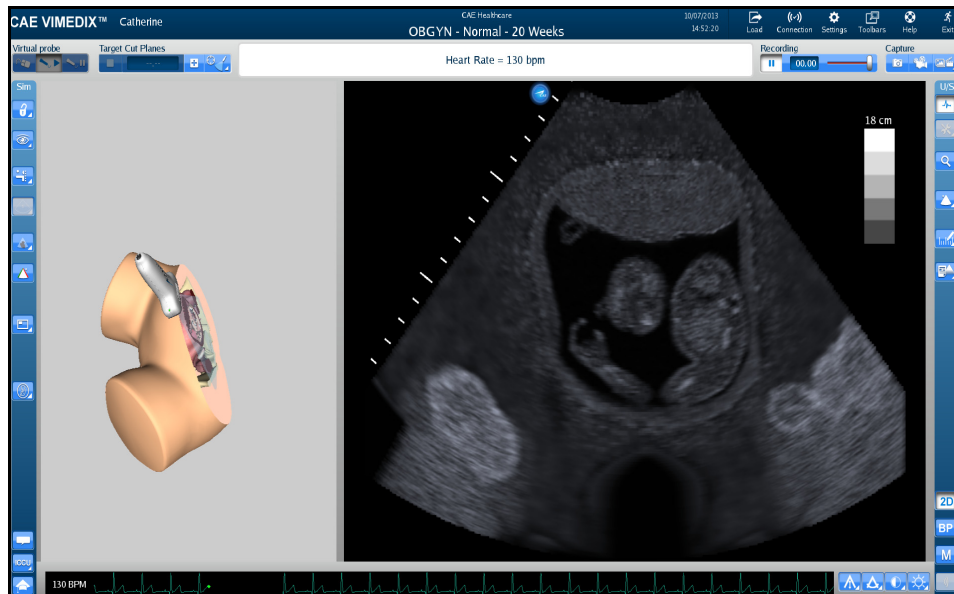
The Split View button adjusts the interface to show the both AR and Ultrasound displays evenly.



**The Split View Display Mode**

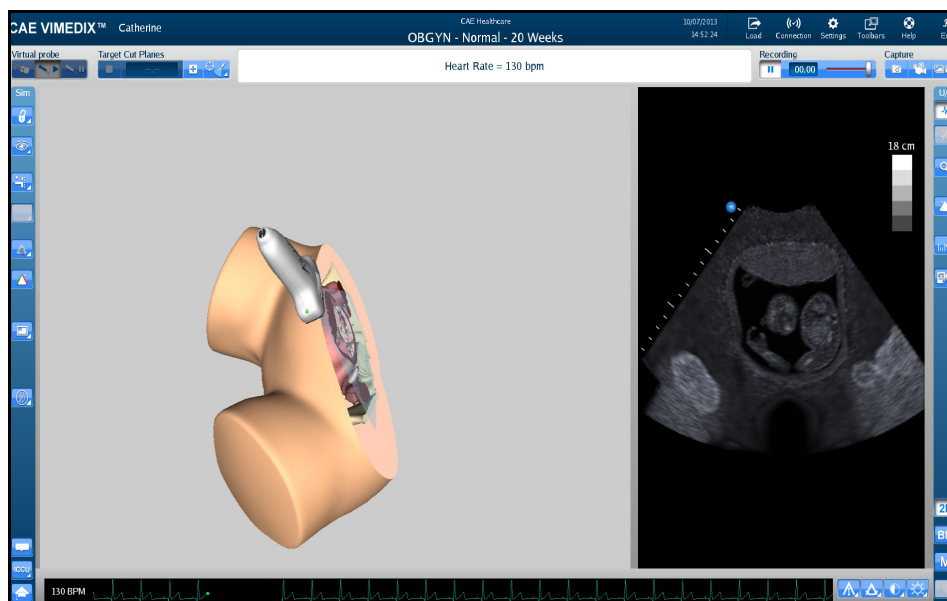
By default, the interface is in Split View upon simulator startup. The default view on startup can be changed in the simulator settings.

The **Small** button adjusts the interface to a smaller AR display and a larger Ultrasound display.



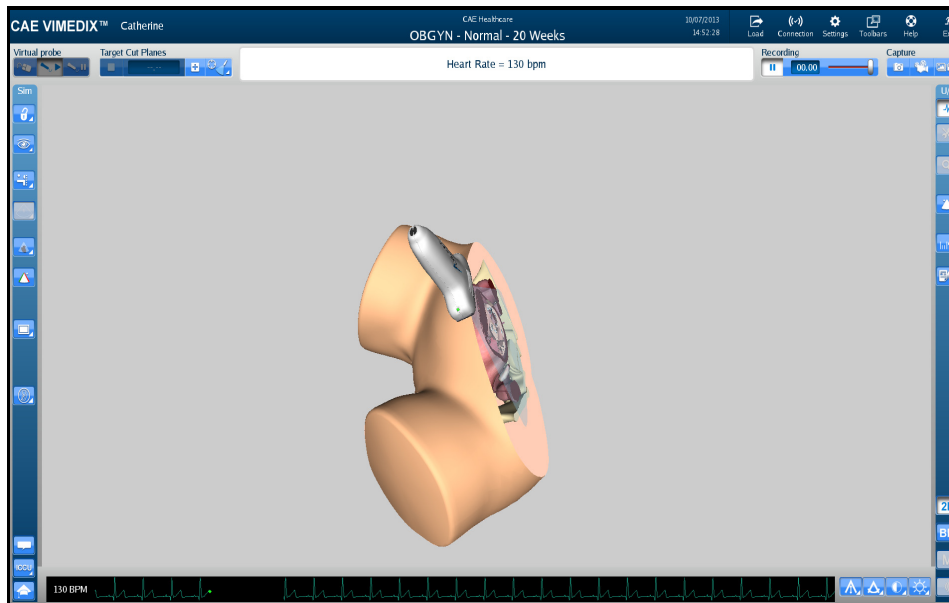
**The Small Display Mode**

The **Large** button displays a larger AR display and a smaller Ultrasound display.



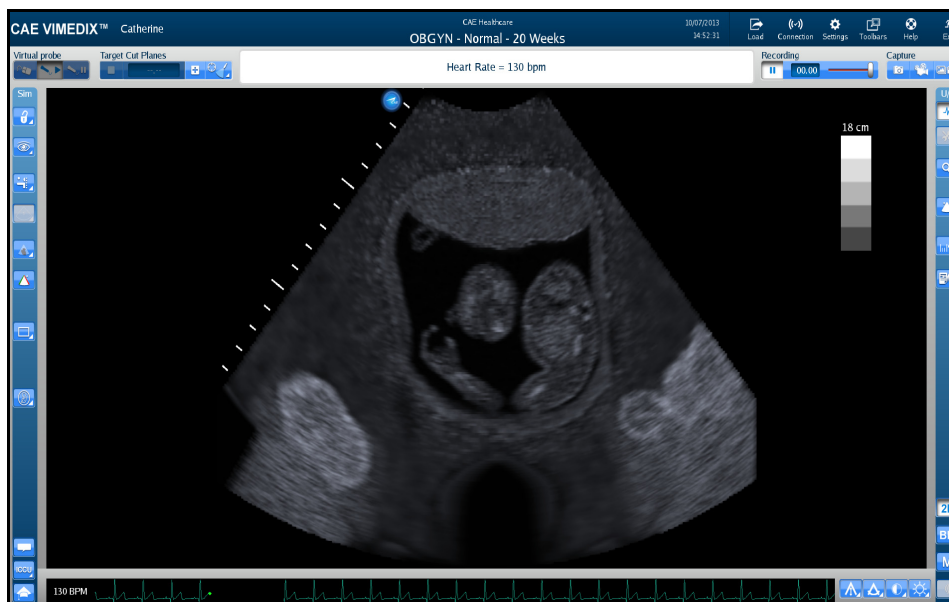
**The Large Display Mode**

The **Only augmented** button expands the AR display and removes the Ultrasound display.



*The Only Augmented Display Mode*

The **Hide augmented** button expands the Ultrasound display and removes the AR display.

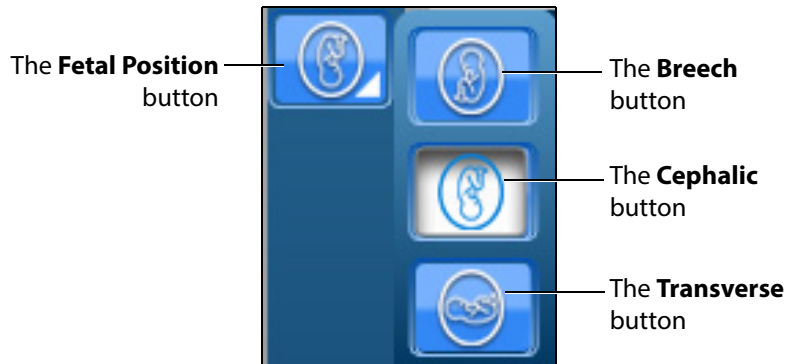


*The Hide Augmented Display Mode*

## Changing the Fetal Position

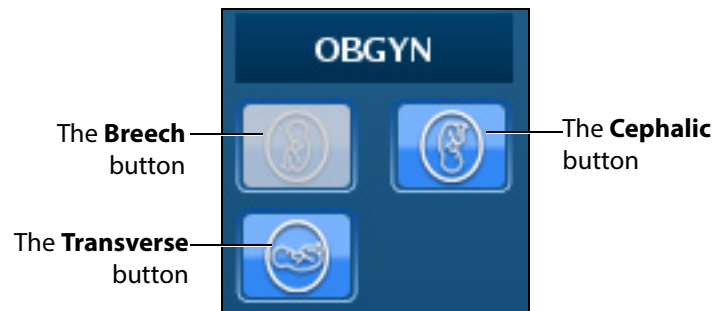
Using the buttons in the **OBGYN** section of the **Simulation** panel, users can modify the fetal position in the AR and Ultrasound displays.

The **Fetal Position** button adjusts the position of the fetus in the both the AR and Ultrasound displays.



**The Fetal Position Buttons**

**NOTE:** When using the expanded toolbar view, click the desired fetal position button located in the OBGYN section of the Simulation panel.



**The OBGYN Section**

## Using the Tutorial Feature

The tutorial feature helps users identify anatomical structures on the AR display.

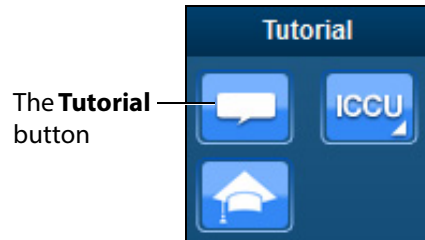
To use the tutorial feature:

1. Obtain a view of the AR display using the probe.  
**NOTE:** To freeze the view while using the tutorial mode, click the **Probe pause** button located in the **Virtual Probe** panel or press the spacebar on the keyboard.
2. Click the **Tutorial** button on the left side of the screen at the bottom of the **Simulation** panel.





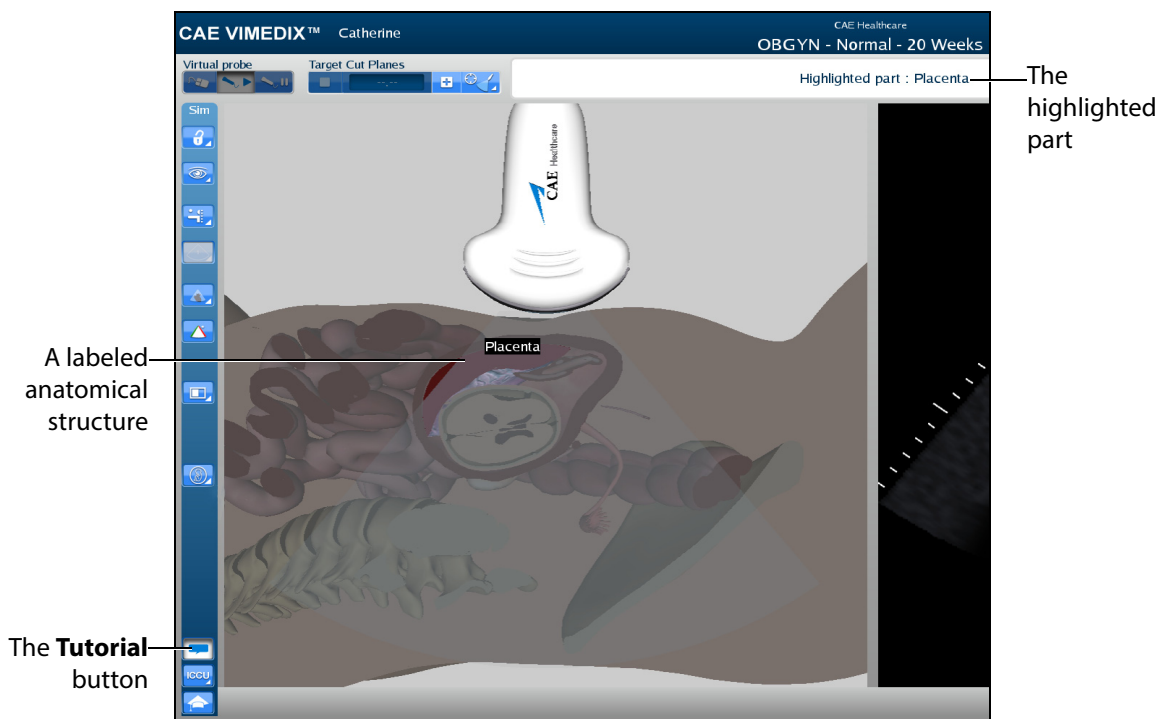
**NOTE:** When using the expanded toolbar, the **Tutorial** button is located in the Tutorial section of the **Simulation** panel.



**The Tutorial Section**

3. Hover over the anatomical structures on the AR display using the mouse.

As the mouse scrolls over each structure, the name of the structure appears near the top of the screen.



**The AR Display**

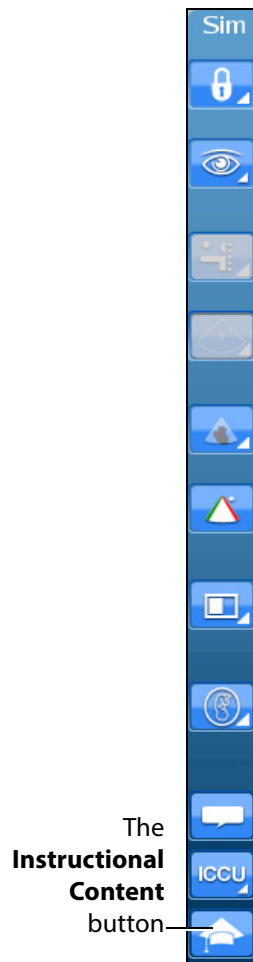
4. To exit the tutorial mode, click the **Tutorial** button again.

## Using the Instructional Content Feature

The Instructional Content feature allows users to engage in self-directed learning on the simulator through a range of tasks covering several disciplines and skill areas. Tasks include probe manipulation, obtaining standard views, optimizing image settings, and performing measures. Task results are provided when all tasks are completed.

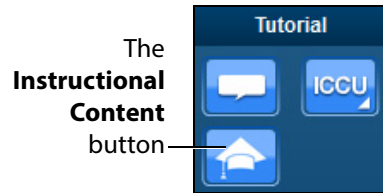
To use the instructional content feature:

1. Click the **Instructional Content** button



*The Simulation Panel*

**NOTE:** When using the expanded toolbar, the **Instructional Content** button is located in the Tutorial section of the **Simulation** panel.



**The Tutorial Section**

The Instructional Content menu window opens.



**The Instructional Content Menu Window**

- Under the Domain column, select the desired applicable discipline.
- Under the Type column, select the desired type.

**TIP:** Additional information about the selected exercise Type is shown under the Trainings column.

- Click Next.

The Task menu window appears.



**The Instructional Content Task Menu Window**

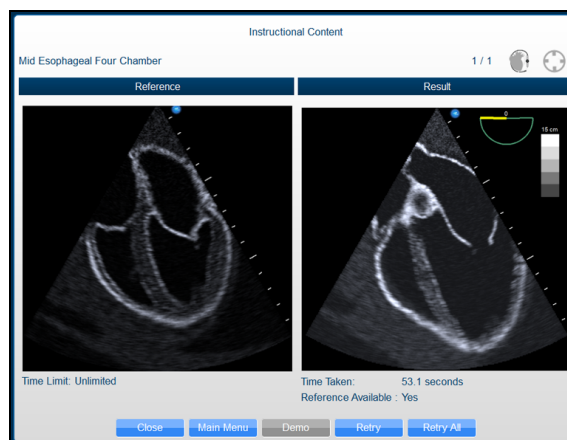
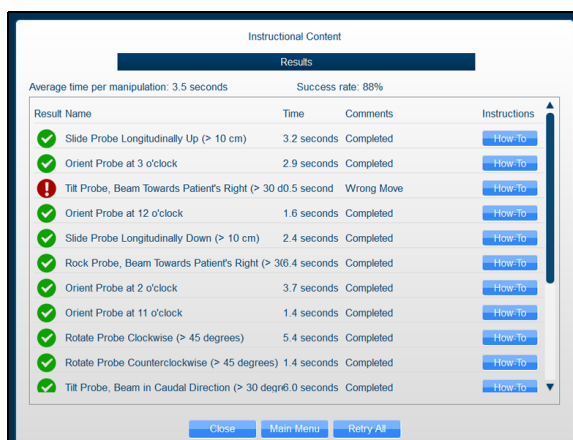
By default, all tasks are checked. Check or uncheck desired tasks.

Click **Instructions** for additional task descriptions.

Adjust additional parameters under **Options** as desired.

5. When ready, click **Start**.
6. Follow the on-screen instructions to complete the task. Instructions are also located near the top of the screen where the heart rate is usually located.

When all tasks are completed, the Results window appears. (Clicking the Instructional Content button or pressing the Enter key will also end the tasks and display the results.)



**The Results Window Samples**

Depending on the type of task, the Results window allows you to view a Demo, How-To instructions, Retry, return to Main Menu, or Close and exit tasks.

## Adjusting the Heart Rate

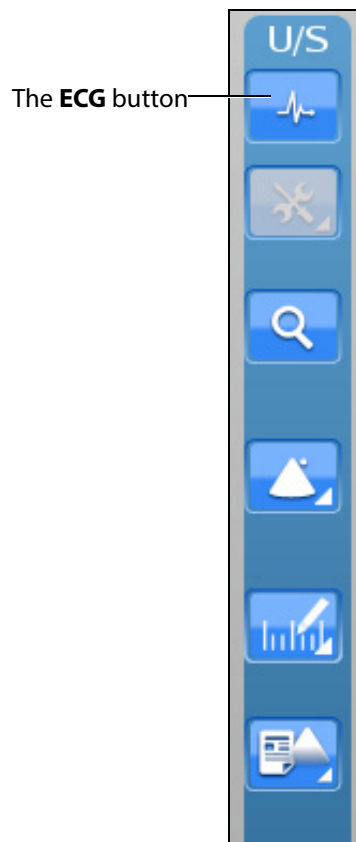
Users can adjust the Heart Rate in different cases to the appropriate rate for a training session. The default Heart Rate during Normal Heart is set to 90 beats per minute (bpm). The default for a tamponade case is 120 bpm.

To adjust the Heart Rate:

- Click the **Page Up** key on the keyboard to increase the Heart Rate by increments of 5 beats per minute
- Click the **Page Down** key on the keyboard to decrease the Heart Rate by increments of 5 beats per minute

## Using the ECG Tracing

The **ECG** button is used to enable or disable the ECG tracing on the bottom of the screen. ECG tracing is enabled by default upon startup.



*The Ultrasound Panel*

The featured ECG is a normal ECG and it will be disabled in some non-applicable cases.

**NOTE:** When the expanded toolbar is activated, the ECG button appears in the Settings section of the Ultrasound panel.



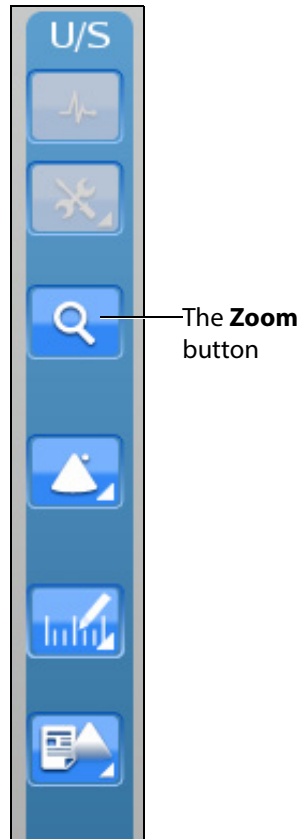
***The ECG Button***

## Using the Zoom Feature

The Zoom button allows the user to zoom in on a specific area of the Ultrasound image.

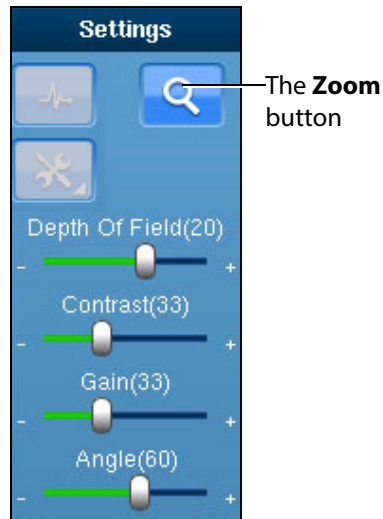
To zoom in on an Ultrasound image:

1. Click the **Zoom** button located in the **Ultrasound** panel.



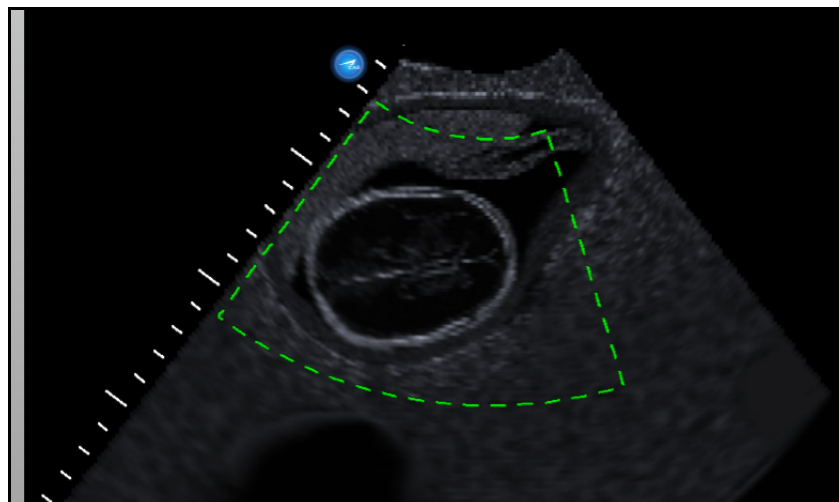
***The Zoom Button***

**NOTE:** When using the expanded toolbar, the **Zoom** button is located in the Settings section of the Ultrasound panel.



***The Settings Section***

2. Center the mouse in the desired zoom area on the Ultrasound display.
3. Click and hold the left mouse button.
4. Drag the mouse to span the desired area with the green frame.

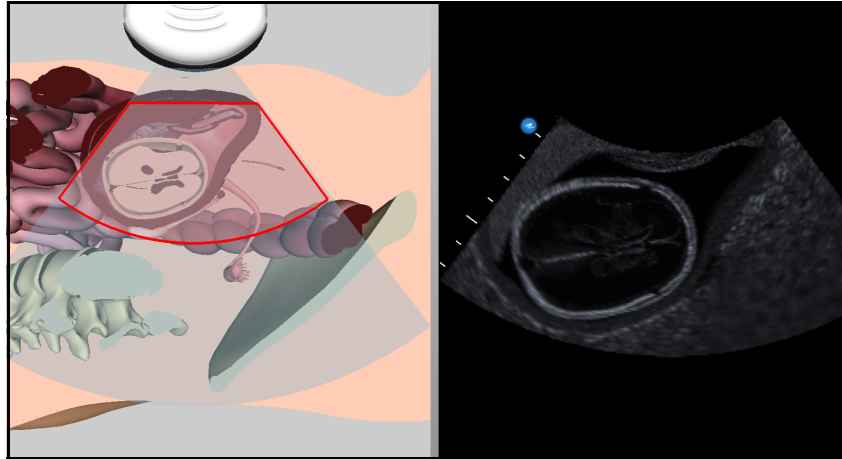


***The Selected Zoom Area***

5. Once the area is identified using the green frame, release the mouse button.
6. Click the left mouse button once in the Ultrasound display.



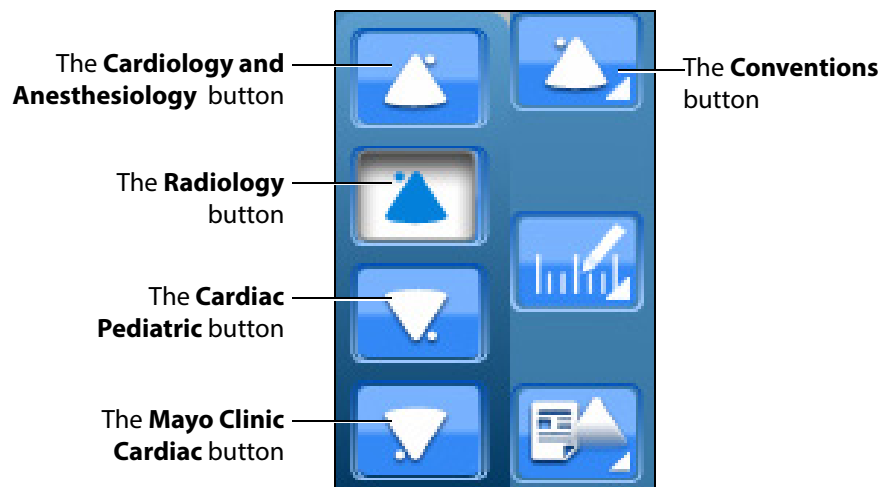
The zoom area is enlarged in the Ultrasound display and a red outline denotes the zoomed area in the AR Display.



*A Zoomed Area*

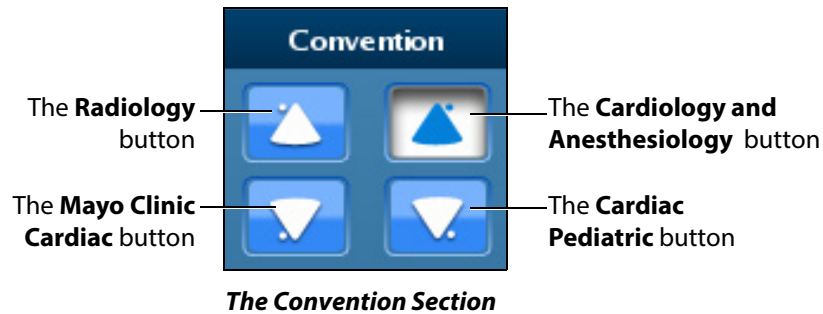
## Selecting a Convention

The Vimedix simulator contains four different conventions options: Cardiology and Anesthesiology convention, Radiology convention, Cardiac Pediatric convention and Mayo Clinic Cardiac convention.



*The Convention Options*

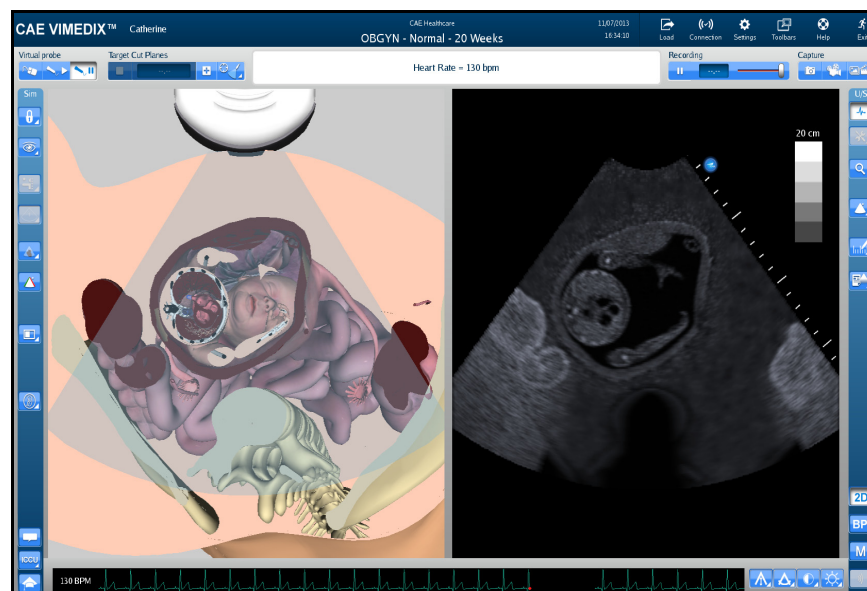
**NOTE:** When using the expanded toolbar view, click the desired convention button located in the Convention section of the Ultrasound panel.



For the cardiac modules, the cardiology and anesthesiology convention is selected by default. For the Vimedix Ob/Gyn ultrasound simulator, the radiology convention is selected by default.

## Cardiology and Anesthesiology Convention

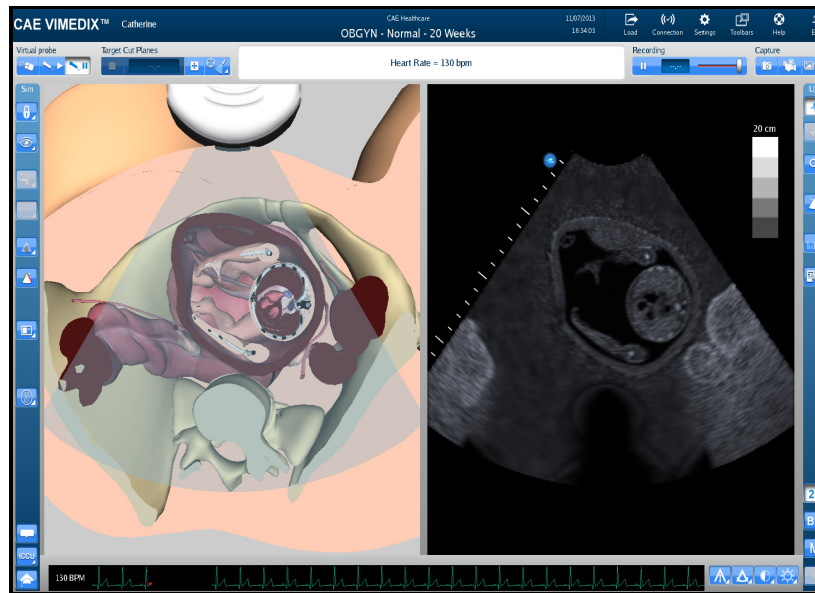
Click the **Cardiology and Anesthesiology Convention** button with the circle in the upper-right corner to select the cardiology and anesthesiology convention.



**The Cardiology and Anesthesiology Convention**

## Radiology Convention

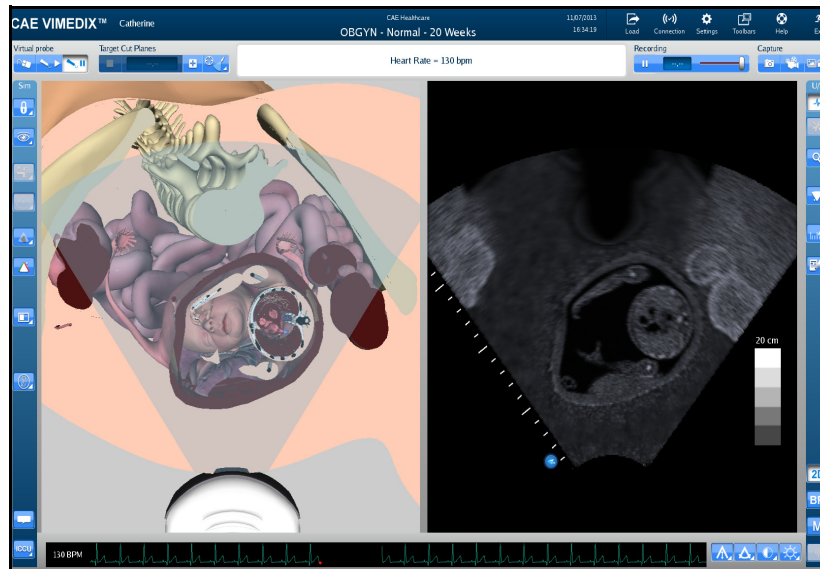
Click the **Radiology Convention** button with the circle in the upper-left corner to select the radiology convention. This convention is selected by default when the curvilinear probe is connected to the simulator.



*The Radiology Convention*

## Mayo Clinic Cardiac Convention

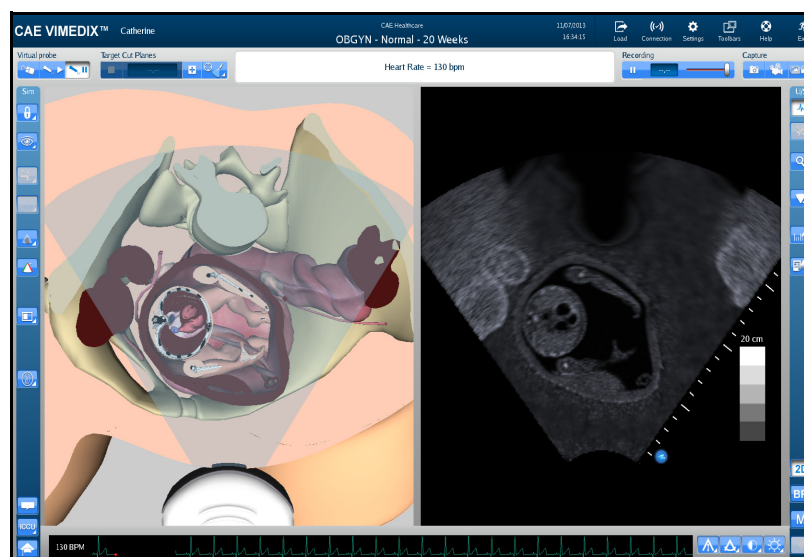
Click the **Mayo Clinic Cardiac** button with the circle in the lower-left corner to select the Mayo Clinic cardiac convention.



*The Mayo Clinic Cardiac Convention*

## Cardiac Pediatric Convention

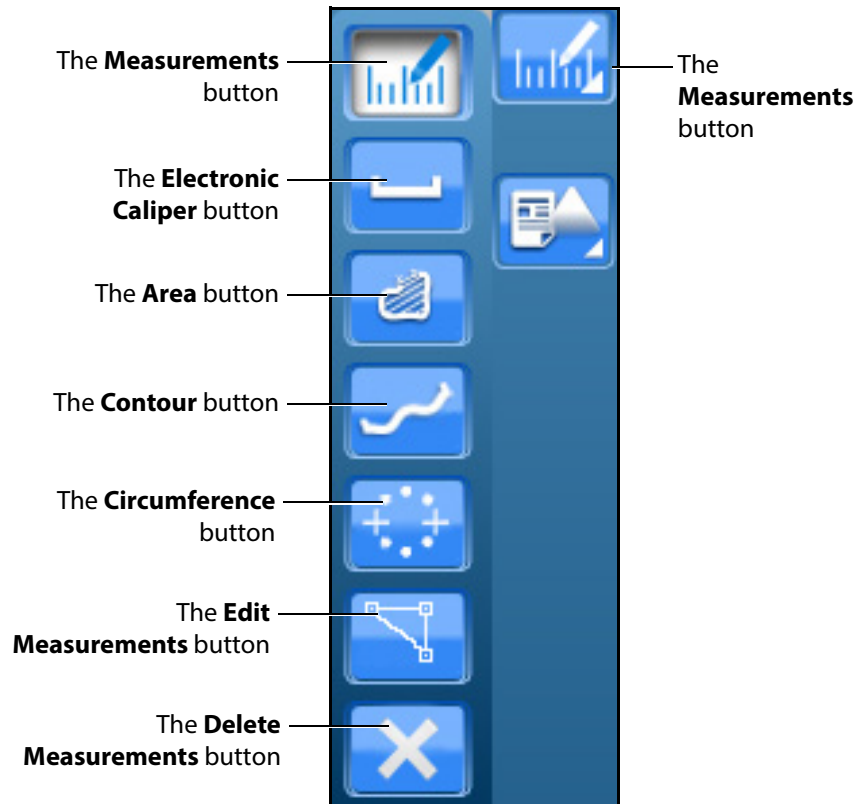
Click the **Cardiac Pediatric Convention** button with the circle in the lower-right corner to select the cardiac pediatric convention.



*The Cardiac Pediatric Convention*

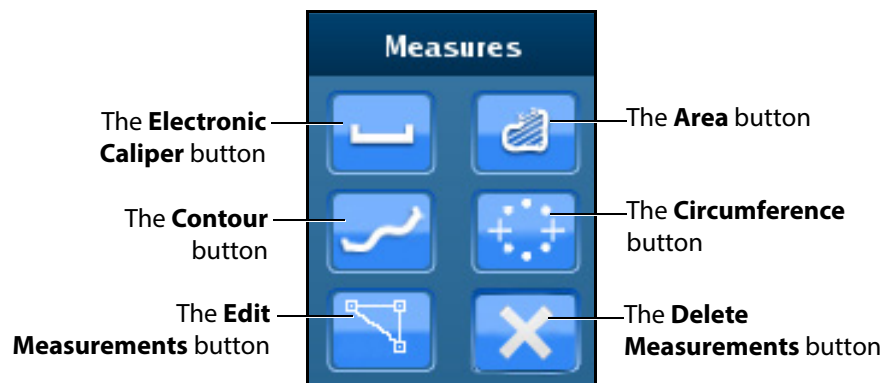
## Using the Measurement Features

Users can access and utilize several measurement tools to record the length, area, circumference and shape of the simulated anatomical structures.



*The Measurements Options*

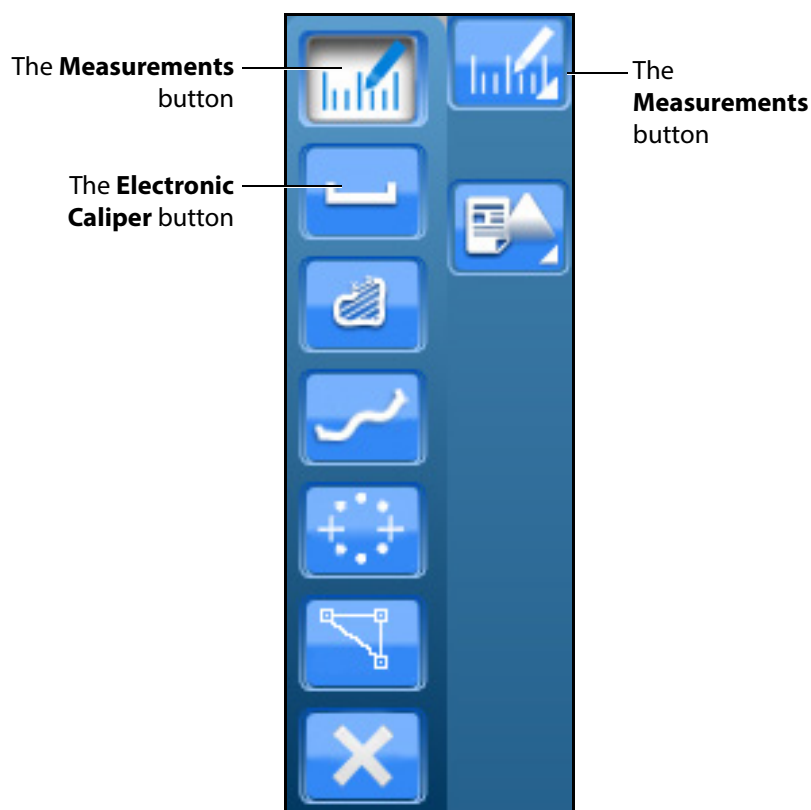
**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.



*The Measures Section*

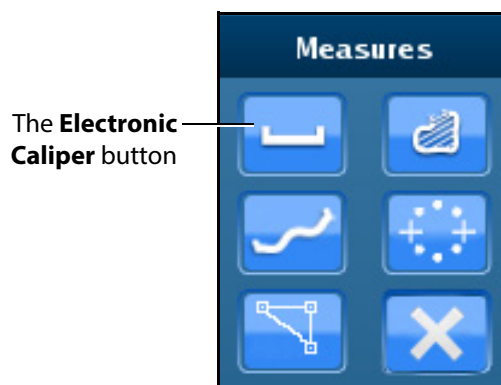
## Using the Electronic Caliper

The electronic caliper is used to measure length or distance on the Ultrasound display. To access the button, click the **Measurements** button and select the **Electronic Caliper** button from the drop-down options.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the **Electronic Caliper** button located in the Measures section of the Ultrasound panel.

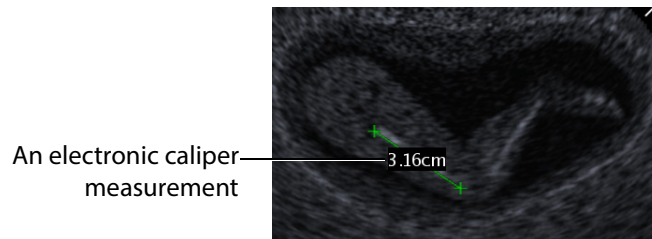


*The Measures Section*

To use the electronic caliper:

1. Select the caliper by clicking the **Electronic Caliper** button.
2. On the Ultrasound display, left-click the mouse at one extremity of the structure to be measured.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Left-click the mouse again at the opposite extremity of the structure to be measured.

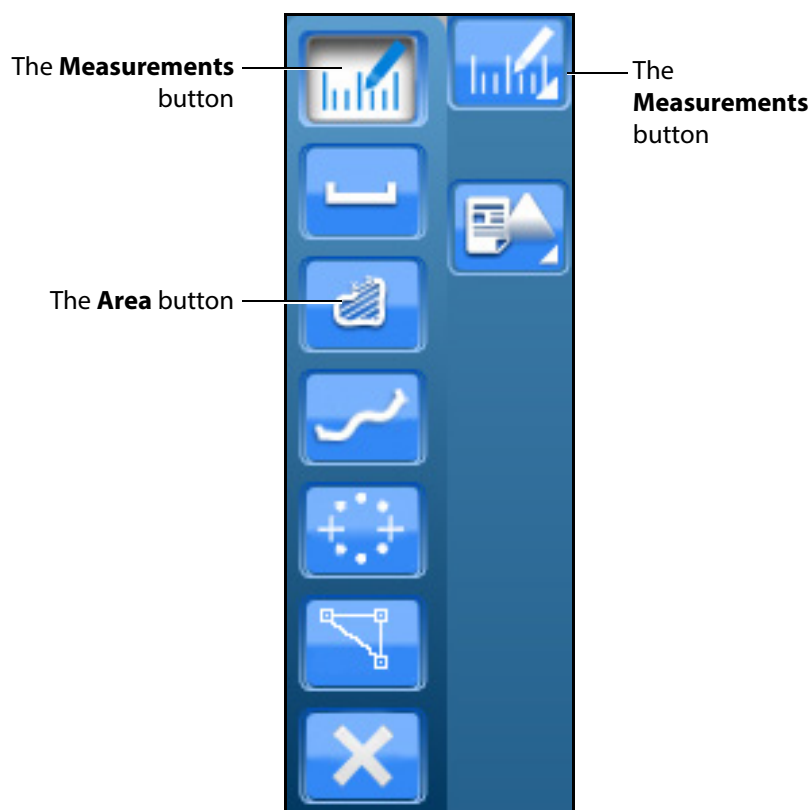
Another + marker appears on the Ultrasound display in the place where the mouse is clicked and the measurement appears between the two markers.



***The Ultrasound Display***

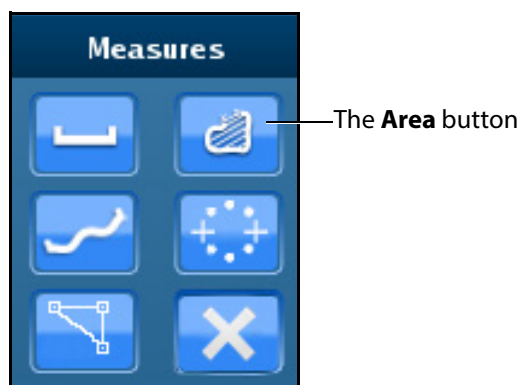
## Using the Area Measurement Tool

The area measurement tool is used to measure the surface of a traced area on the Ultrasound display. To access the button, click the **Measurements** button and select the **Area** button from the drop-down options.



**The Measurements Options**

**NOTE:** When using the expanded toolbar view, click the **Area** button located in the Measures section of the Ultrasound panel.



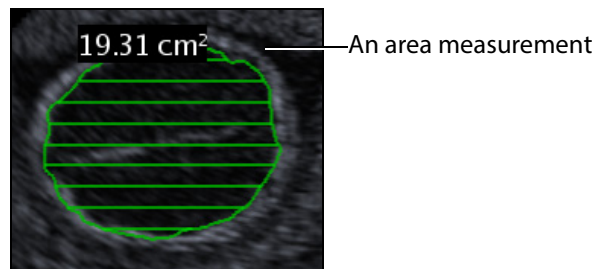
**The Measures Section**



To use the area measurement tool:

1. Select the tool by clicking the **Area Measurement** button.
2. On the Ultrasound display, left-click the mouse at any point on the periphery of the area to be measured.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Using the mouse, trace the periphery of the area to be measured, returning to the starting point where the + marker appears.
4. After tracing all the way back to the starting point, left-click the mouse.

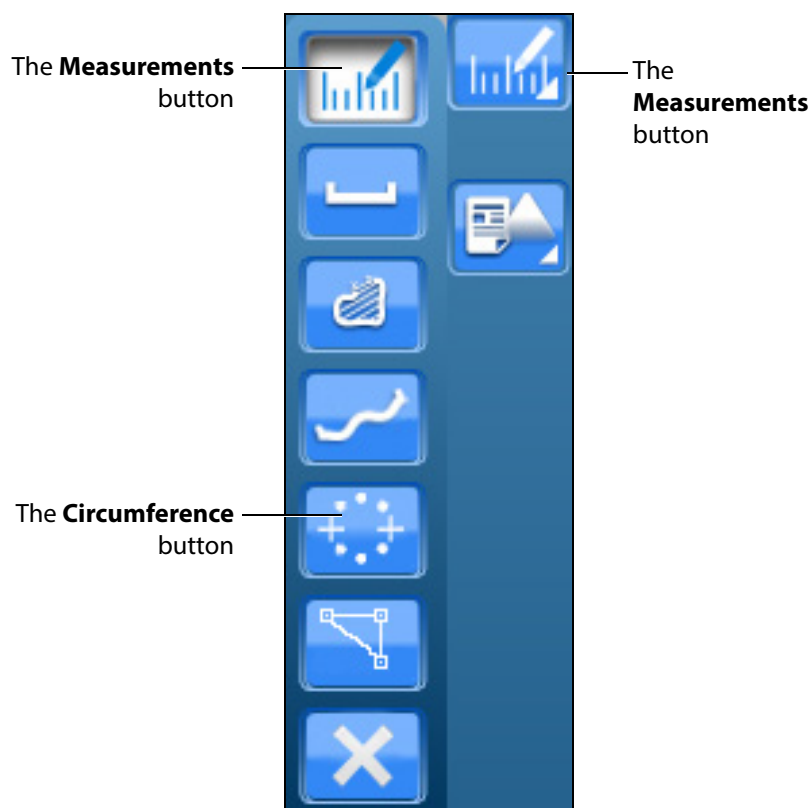
The traced area is selected and the measurement is displayed in  $\text{cm}^2$ .



*The Ultrasound Display*

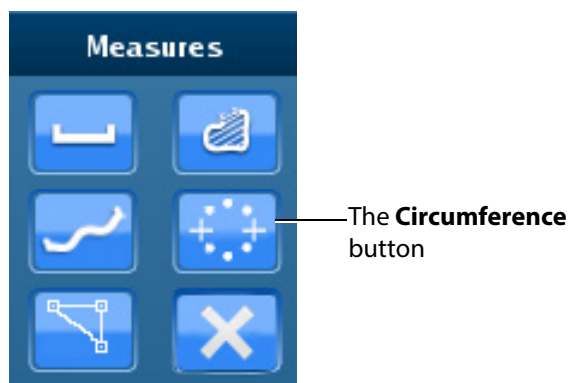
## Using the Circumference Measurement Tool

The circumference measurement tool is used to measure the length of an anatomical structure's circumference. To access the button, click the **Measurements** button and select the **Circumference** button from the drop-down options.



*The Measurements Options*

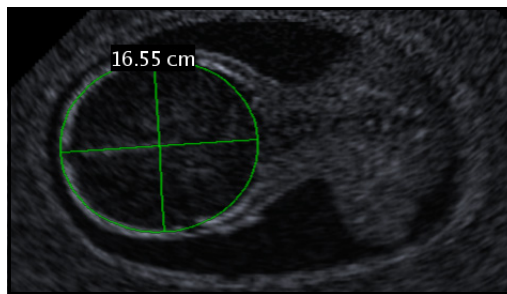
**NOTE:** When using the expanded toolbar view, click the **Circumference** button located in the Measures section of the Ultrasound panel.



*The Measures Section*

To use the circumference measurement tool:

1. From the **Measures** section of the **Ultrasound** panel, click on the **Circumference** button.
2. On the Ultrasound display, left-click the mouse at any point to begin measuring.  
A + marker appears on the Ultrasound display in the place where the mouse is clicked.
3. Left-click the mouse to mark the beginning point of the diameter.
4. Move the mouse to expand the circumference to the desired area and left-click the mouse to hold the circumference measurement.

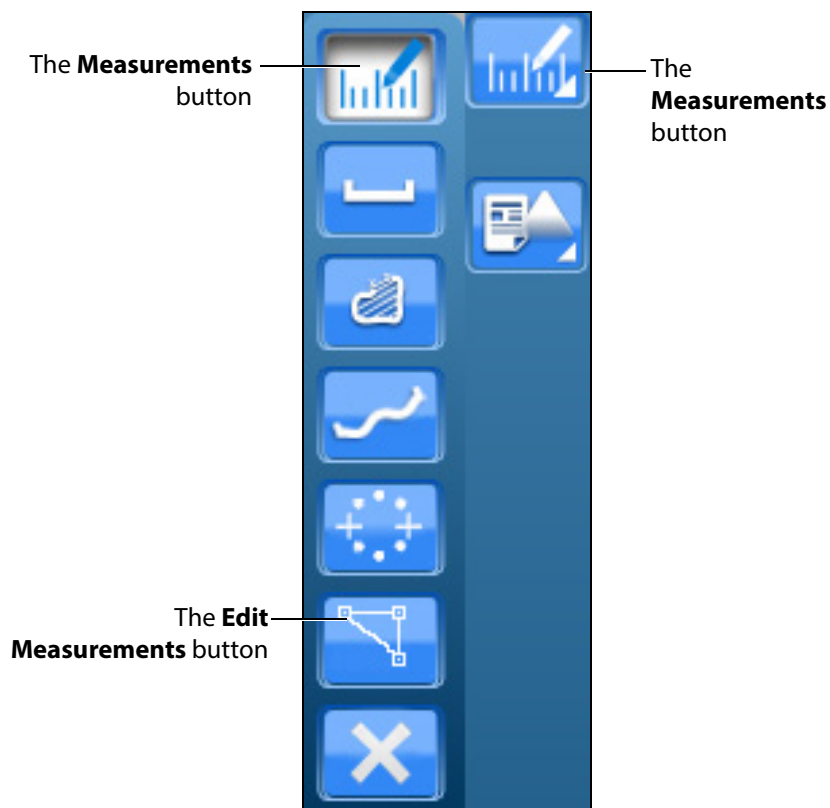


*The Ultrasound Display*

The measurement is displayed in centimeters.

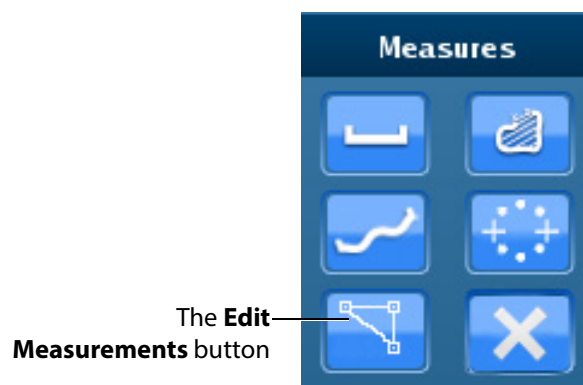
## Editing a Measurement

Users are able to edit measurements which are taken incorrectly or need to be adjusted for accuracy. This feature is only available for the electronic caliper and circumference measurement tools.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.



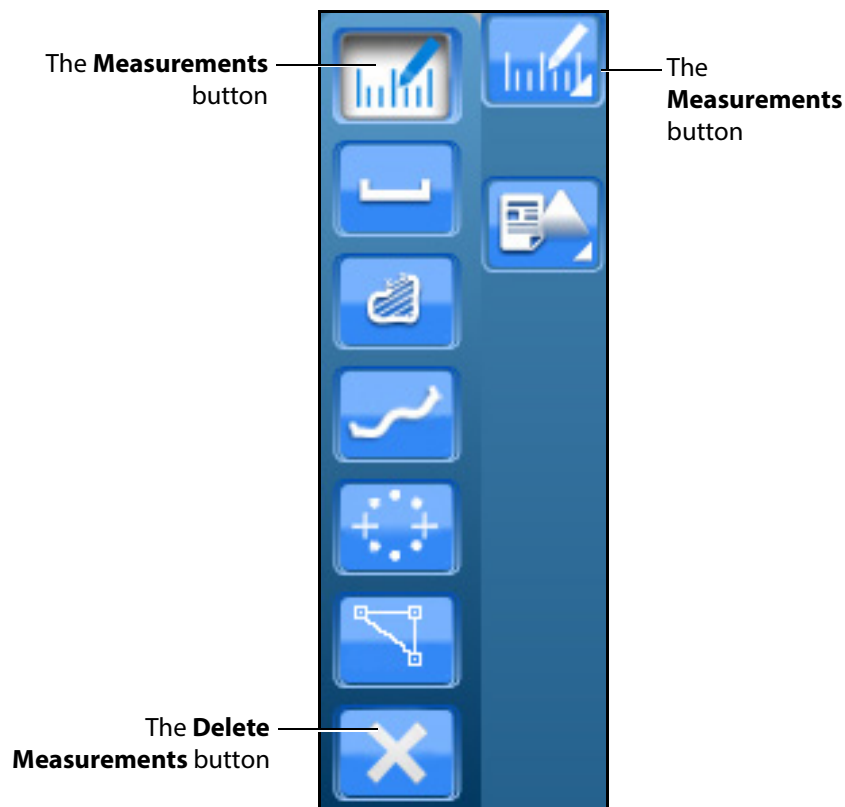
*The Measures Section*

To edit a measurement on the Ultrasound display:

1. Click the **Edit Measurements** button.  
The measurement points become squares, indicating that users can move the points as desired.
2. Upon finishing the measurement point adjustment, click the **Measurements** button or the selected measurement tool button to save the adjustment.

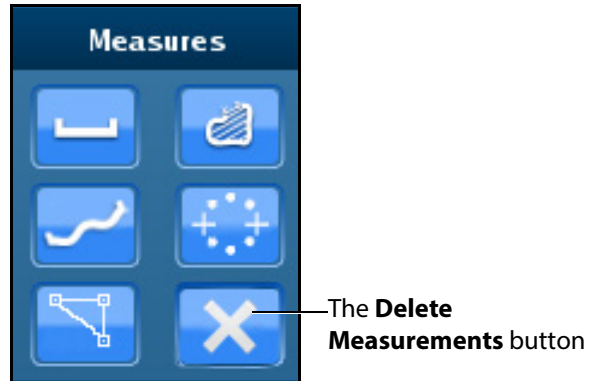
## Deleting a Measurement

Users are able to delete measurements which are taken incorrectly or no longer relevant to the pathology.



*The Measurements Options*

**NOTE:** When using the expanded toolbar view, click the desired measurement button located in the Measures section of the Ultrasound panel.



*The Measures Section*

To delete the last measurement on the Ultrasound display, press the **Backspace** key on the keyboard or click the **Delete Measurements** button.

To delete all measurements, double-click the **Delete Measurements** button.

## Using Reports

The Reports features can be used to create obstetrics reports.



**The Ultrasound Panel**

**NOTE:** When using the expanded toolbar view, click the **Reports** button located in the Echo Reports section of the Ultrasound panel.

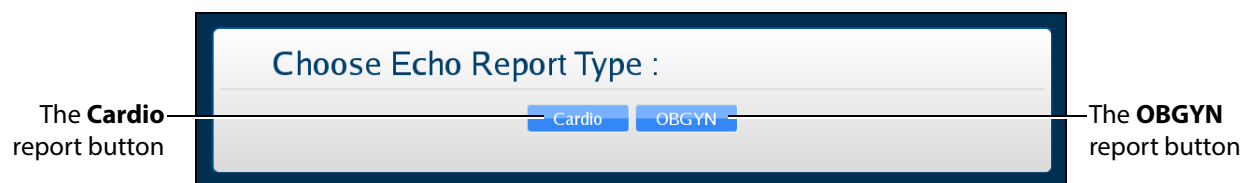


**The Reports Button**

## Creating a Report

To create a report, click the **Reports** button.

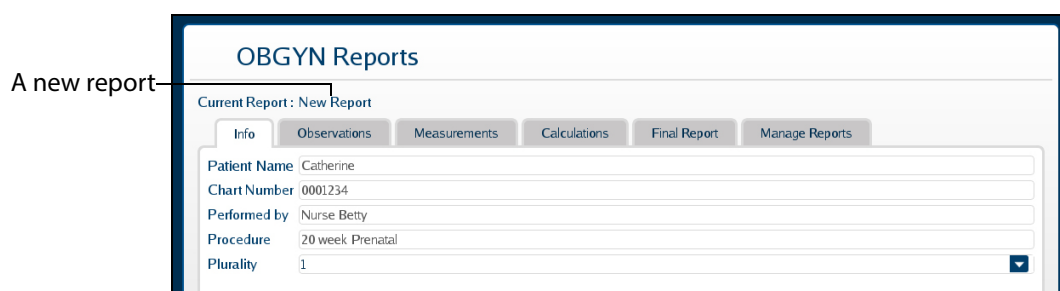
The Choose Echo Report Type window appears.



**The Choose Echo Report Type Window**

For the women’s health module using the Catherine mannequin, select **OBGYN**.

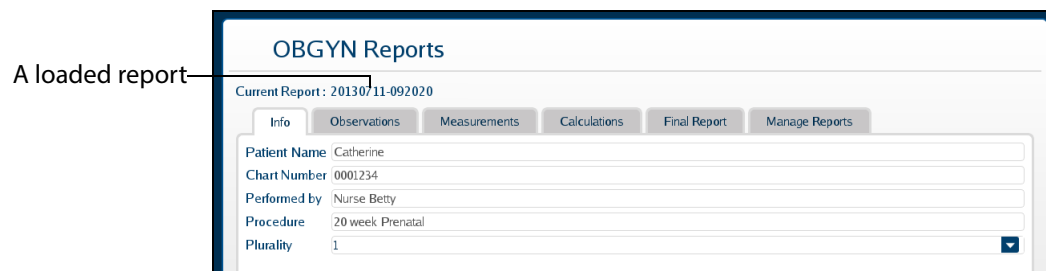
The OBGYN Reports window appears.



**The OBGYN Reports Window**

If a report has not already been saved or loaded during the current session, the upper left of the OBGYN Reports window indicates a new report.

**NOTE:** If a report has already been saved or loaded during the current session, the report name appears in the upper left of the OBGYN Reports window.

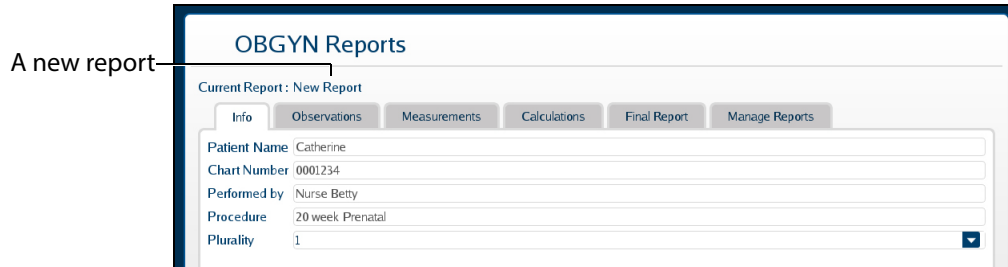


**The OBGYN Reports Window**



## Entering Report Information

Report information can be entered from the OBGYN Reports window.



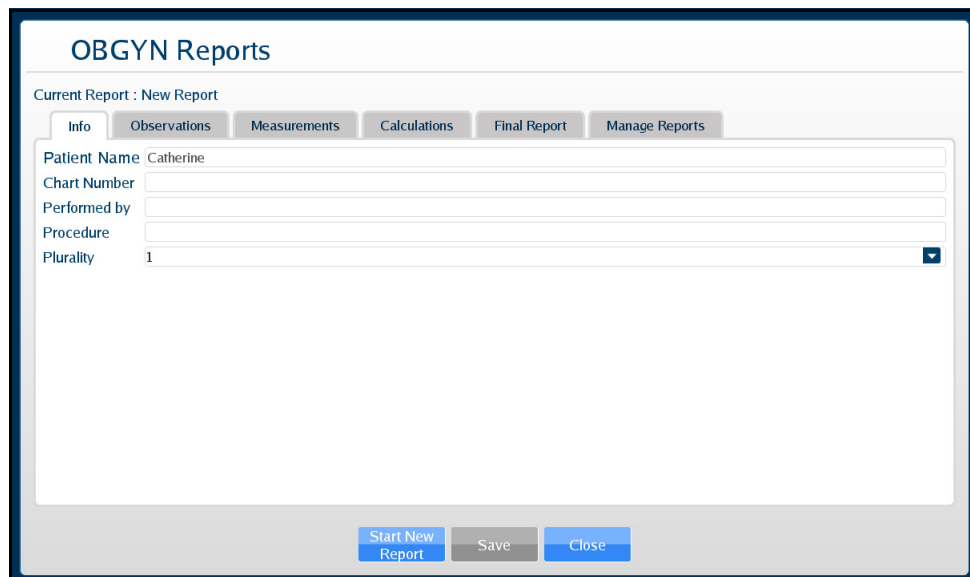
**The OBGYN Reports Window**

The window is pre-loaded with a new report or an existing report, depending on whether a report has already been created during the current session.

The Echo Reports window has six tabs for entering and viewing report information: the **Info** tab, the **Observations** tab, the **Measurements** tab, the **Calculations** tab, the **Final Report** tab and the **Manage Reports** tab.

### The Info Tab

The **Info** tab is used to enter the basic information including chart number, professional performing the exam, type of procedure, and plurality of pregnancy.



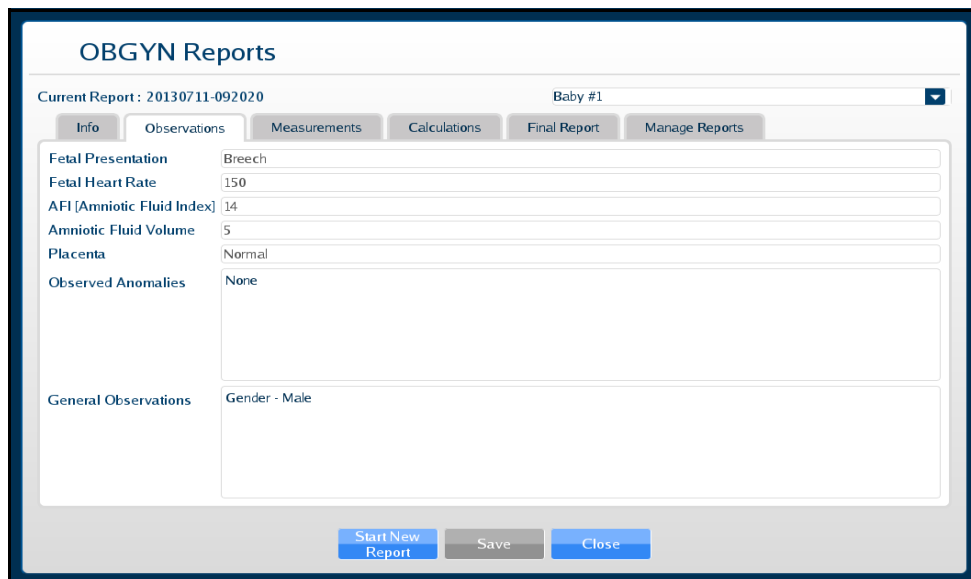
**The Info Tab**

## The Observations Tab

The **Observations** tab is used to note any remarkable observations during the examination.

To enter a measurement:

1. In the Echo Reports window on the **Observations** tab, click on the line item to be modified.



**The Observations Tab**

2. Click **Save** to save the information.
3. Navigate to the next tab or click **Close** to exit the Echo Reports Window.

## The Measurements Tab

The **Measurements** tab is used for physiological measurements.

The Default measurements group is expanded to display the most common measurements. Click on individual measurement groups (e.g., Fetal Biometry, Fetal Long Bones, etc.) to expand the list and view the measurements.

To enter a measurement:

1. In the OBGYN Reports window on the **Measurements** tab, double-click on the item to be measured or modified.

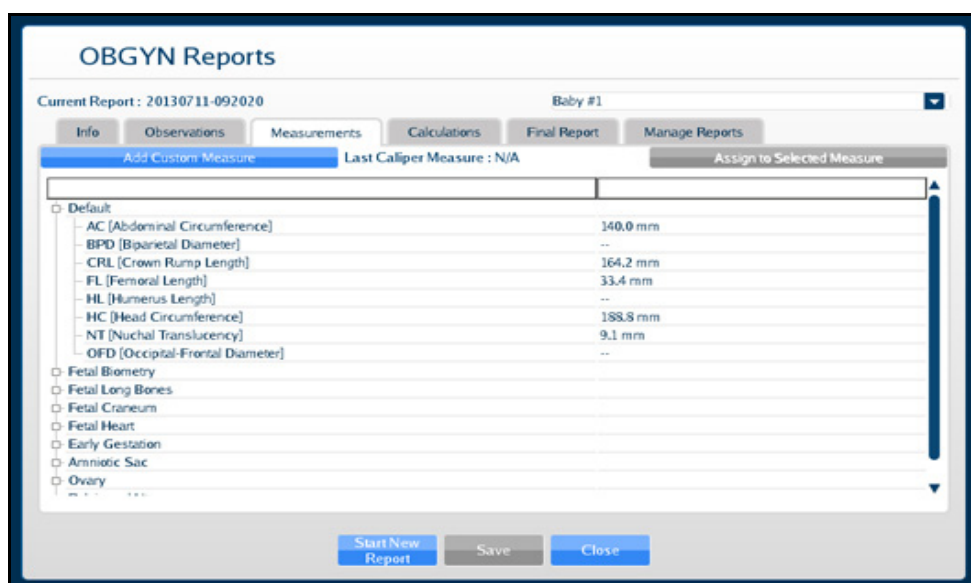


***The Measurements Tab***

The OBGYN Reports window closes.

2. Using the measurement tools, obtain the selected measurement from the Ultrasound display.

The OBGYN Reports window appears showing the measurement.



*The Measurements Tab*

### Adding a Custom Measurement

To add a custom measurement:

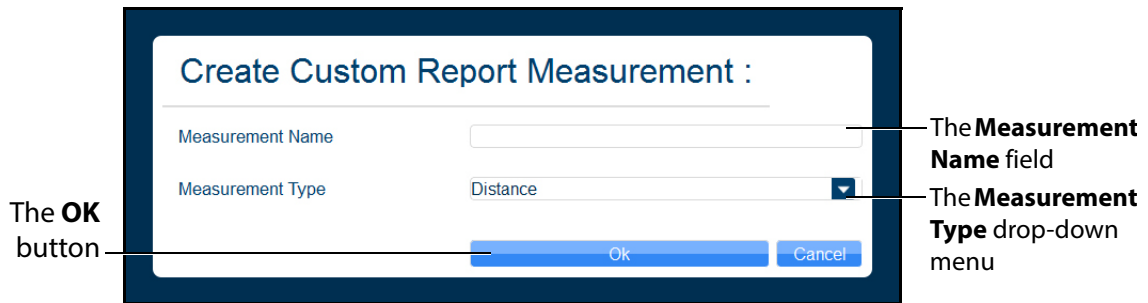
1. From the Measurements tab, click the **Add Custom Measure** button.

The **Add Custom Measure** button



*The Measurements Tab*

The Custom Measure window appears.



*The Create Custom Report Measurement Window*

2. Enter the desired measurement name in the **Measurement Name** field.
3. Select the measurement type from the **Measurement Type** drop-down menu.
4. Click **OK**.

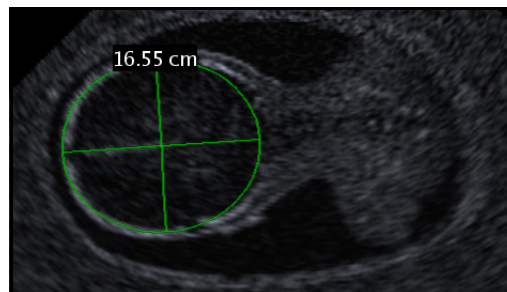
The custom measurement line appears on the Measurements tab.

### Assigning a Measurement

Users can take a measurement using any measurement tool and assign the measurement to an applicable, existing field in the Measurement tab.

To assign a recent measurement to an existing measurement field:

1. From the Ultrasound display, select a measurement tool.
2. Using the selected tool, perform the measurement.



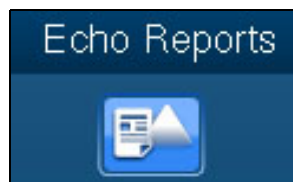
*A Circumference Measurement*

3. From the Ultrasound Panel, click the **Reports** button.



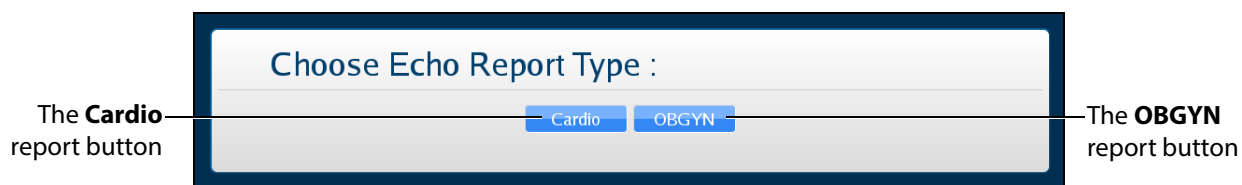
**The Ultrasound Panel**

**NOTE:** When using the expanded toolbar view, click the **Reports** button located in the Echo Reports section of the Ultrasound panel.



**The Reports Button**

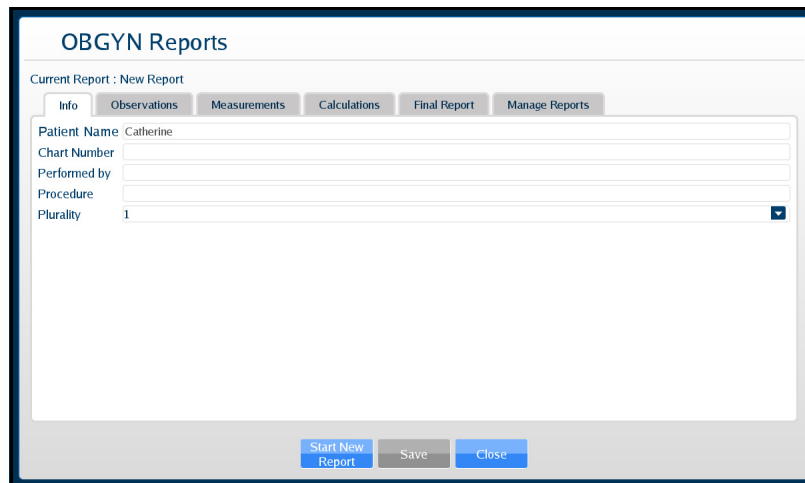
The Choose Echo Report Type window appears.



**The Choose Echo Report Type Window**

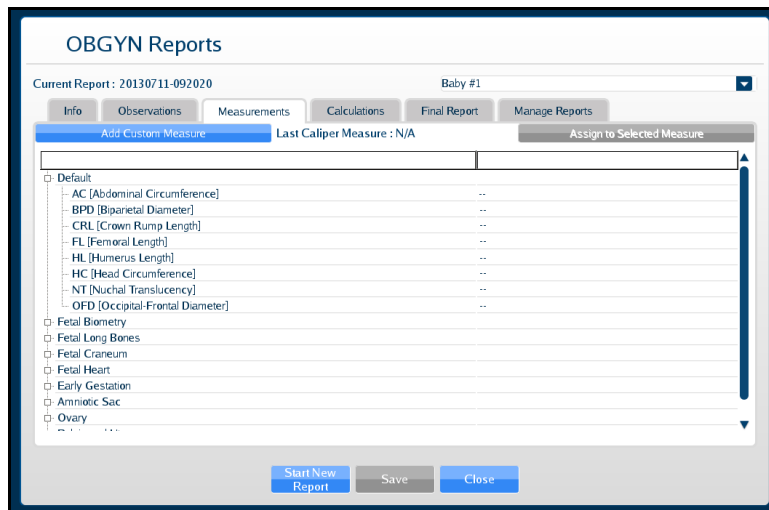
4. Select the **OBGYN** report button.

The OBGYN Reports window appears.



**The Info Tab**

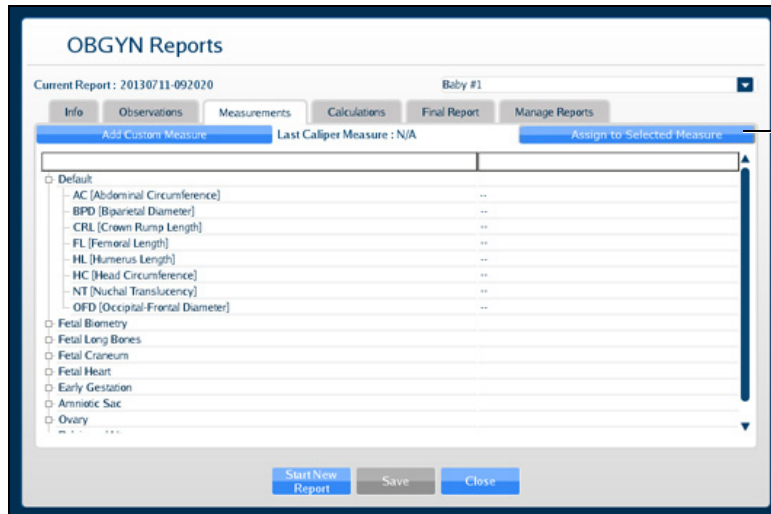
5. Select the **Measurements** tab.



**The Measurements Tab**

6. Select the applicable measurement field.

The **Assign to Selected Measure** button is activated (appears blue).

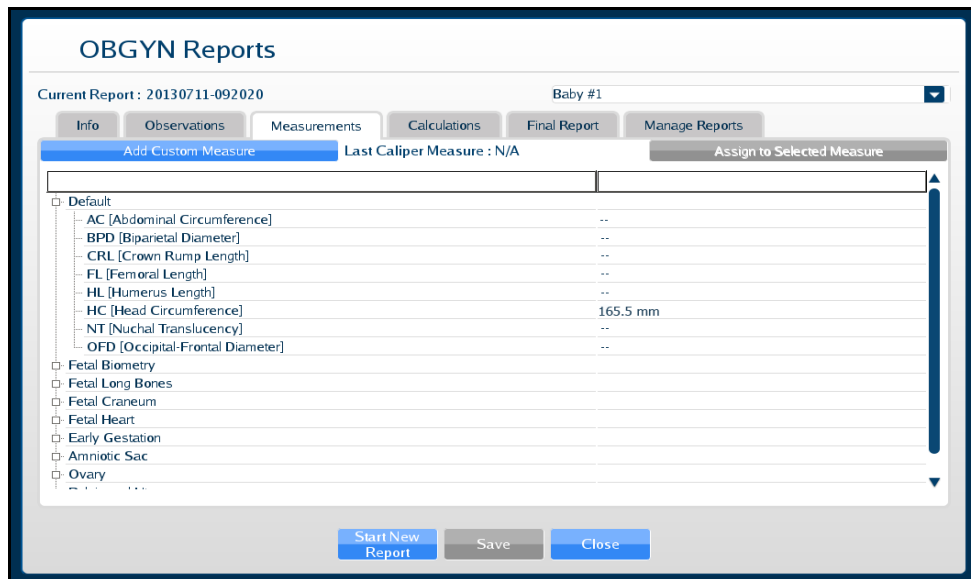


The **Assign to Selected Measure** button

*The Measurements Tab*

7. Click the **Assign to Selected Measure** button.

The measurement populates the selected measurement field.



*The Measurements Tab*



## The Calculations Tab

The **Calculations** tab presents estimations of different fetal attributes based on the measurements recorded on the **Measurements** tab using proven formulas.

Click on the **Calculations** tab to view the estimations.



**The Calculations Tab**

The Default calculations group is expanded to display the most common calculations. Click on individual calculation groups (e.g., Fetal Weight, Gestation Age, etc.) to expand the list and view the calculations.

## The Final Report Tab

The **Final Report** tab displays the report information entered on the **Info**, **Observations**, **Measurements** and **Calculations** tabs as it will be exported.

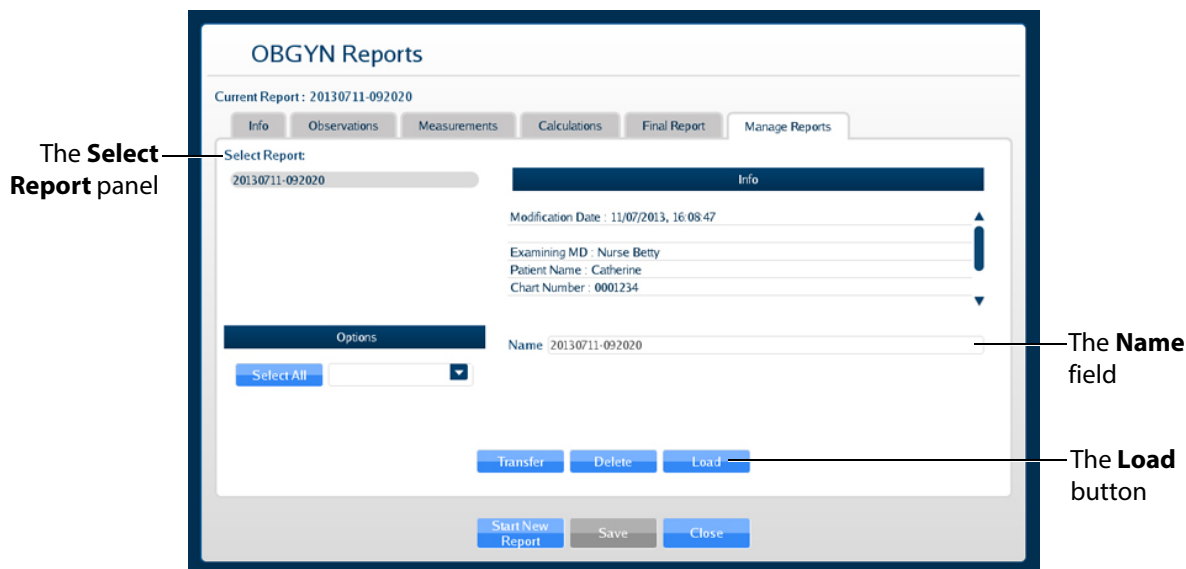
Once the desired report information has been entered, click the **Save** button at the bottom of the **Final Report** tab to save the report.

## Viewing an OBGYN Report

Reports can be loaded from the **Manage Reports** tab in the OBGYN Reports window.

To load a report:

1. Click the **Reports** button.  
The Choose Echo Report Type window appears.  
Select **OBGYN**.  
The OBGYN Reports window appears.
2. From the OBGYN Reports window, select the **Manage Reports** tab.  
The Manage Reports tab appears.



**The Manage Reports Tab**

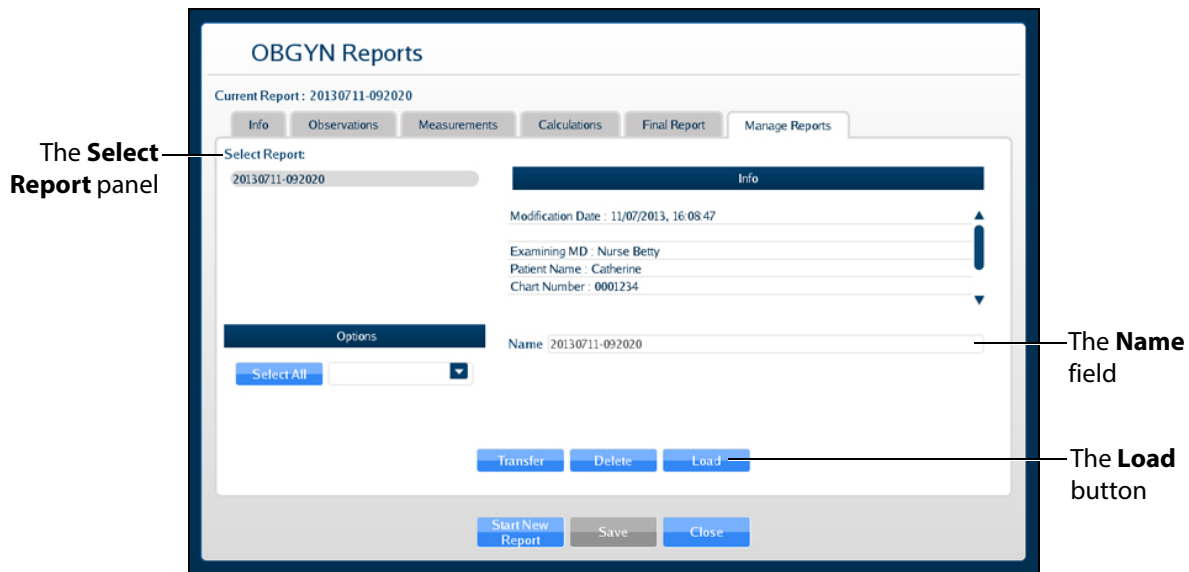
3. Select a report from the **Select Report** panel.  
The report name appears in the Name field.
4. Click **Load**.  
The report is loaded.
5. View the report information by clicking the desired tabs.

## Modifying a Report

To modify a report:

1. From the OBGYN Reports window, select the **Manage Reports** tab.

The Manage Reports tab appears.



**The Manage Reports Tab**

2. Select the desired report from the **Select Report** panel to modify.
3. Click **Load**.
4. Click the **Info**, **Observations**, **Measurements**, **Calculations**, and **Final Report** tabs and make the desired modifications.
5. Click **Save** at the bottom of the OBGYN Reports window.

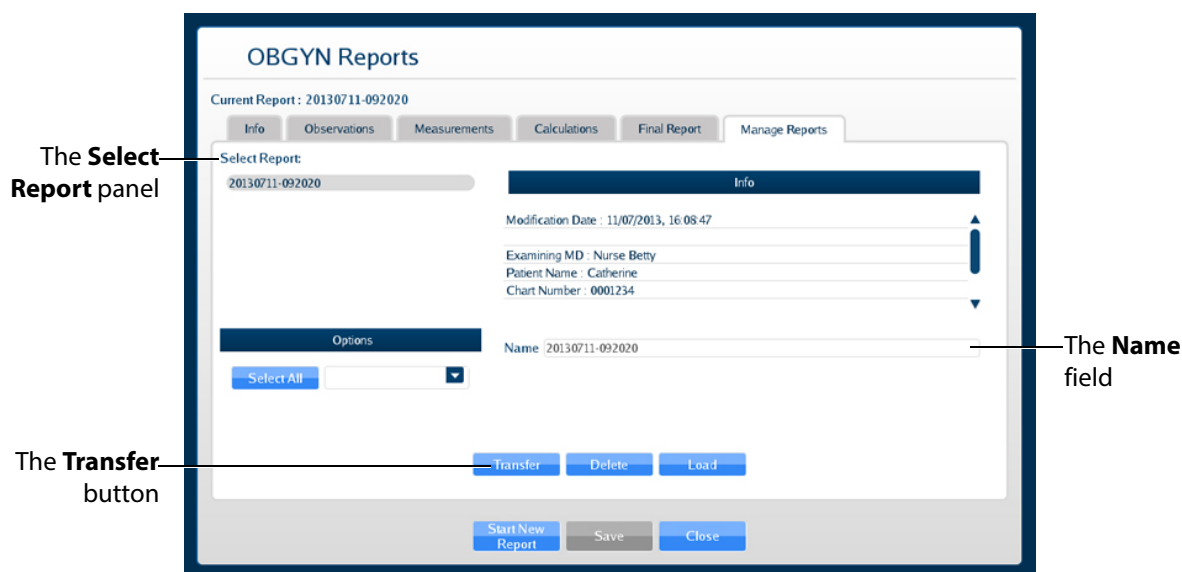
The modifications are saved.

## Transferring Reports

To transfer a report:

1. From the OBGYN Reports window, select the **Manage Reports** tab.

The **Manage Reports** tab appears.



**The Manage Reports Tab**

2. Select a report from the **Select Report** panel.
3. Select a single report by left-clicking it with the mouse. Select additional reports by holding down the **Control** key on the keyboard and left-clicking the reports with the mouse.

All reports can be selected by clicking the **Select All** key.

The report name appears in the **Name** field.

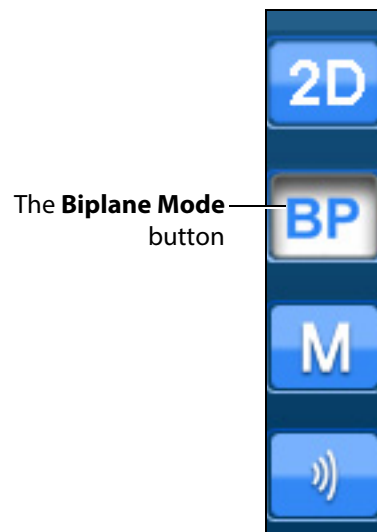
4. When multiple reports are selected, the **Info** panel says a multiple selection has been made and indicates the number of reports selected.
5. Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Manage Reports** tab.
6. Click **Transfer**.

The Transfer Status bar appears. When the Transfer Status bar reads 100%, the transfer is complete.

## Using the Biplane Mode

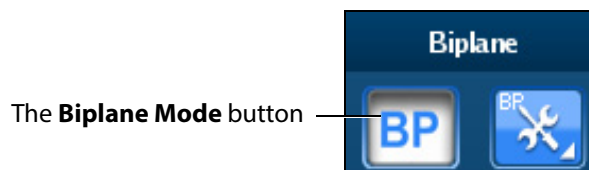
The Vimedix simulator is set to display images in standard 2D by default. Activating the Biplane Mode allows users to obtain two cross sections from one probe position. By default, the secondary beam is perpendicular; however, the position relative to the primary beam can be adjusted using the sweep, tilt and rotation settings in the Biplane Mode settings.

To activate the Biplane Mode, click the **Biplane Mode** button located in the Ultrasound panel.



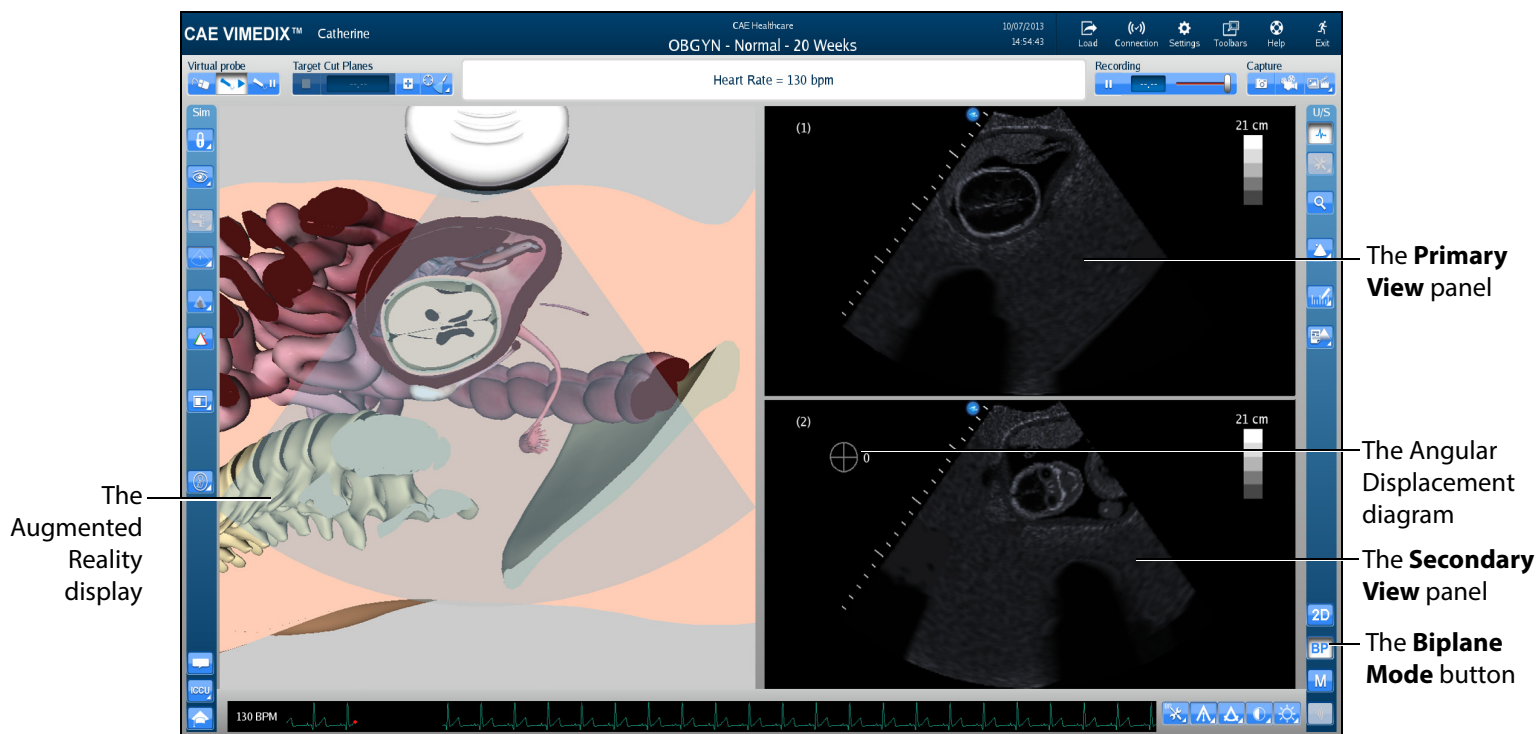
*The Ultrasound Panel - Mode Buttons*

**NOTE:** When using the expanded toolbar view, click the **Biplane Mode** button located in the Biplane section of the Ultrasound panel.



*The Biplane Section*

The interface changes to a biplane view.



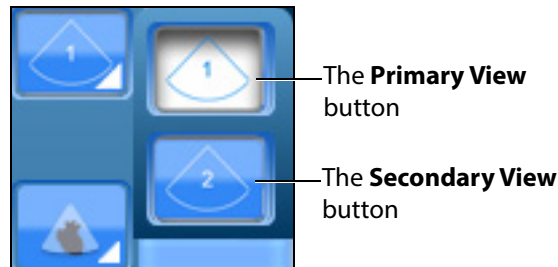
**A Biplane View**

Located in the Simulation panel, the **Biplane View** button allows users to switch the live probe view from View 1 to View 2 on the Augmented Reality display.



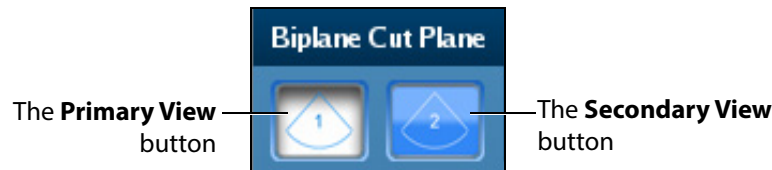
**The Biplane View Button**

Click the **Biplane View** button to access the drop-down menu and toggle between Primary View and Secondary View in the Augmented Reality display.



*The Biplane View Options*

**NOTE:** When using the expanded toolbar view, click the **Primary View** button or the **Secondary View** button located in the Biplane Cut Plane section of the Simulation panel.



*The Biplane Cut Plane Section*

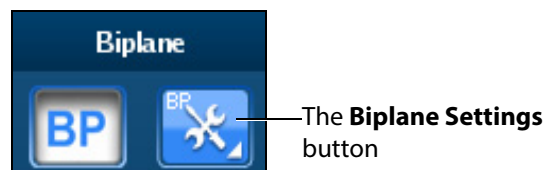
## Adjusting the Biplane Settings

When the Biplane Mode is activated, the **Biplane Settings** button appears in the Settings panel located near the bottom of the screen.



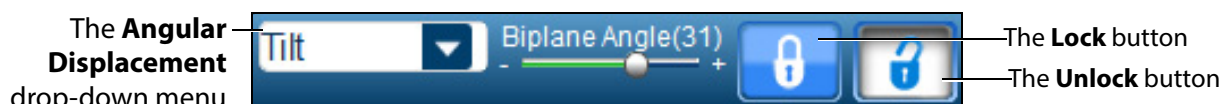
*The Settings Panel*

**NOTE:** When using the expanded toolbar view, click the **Biplane Settings** button located in the Biplane section of the Ultrasound panel.



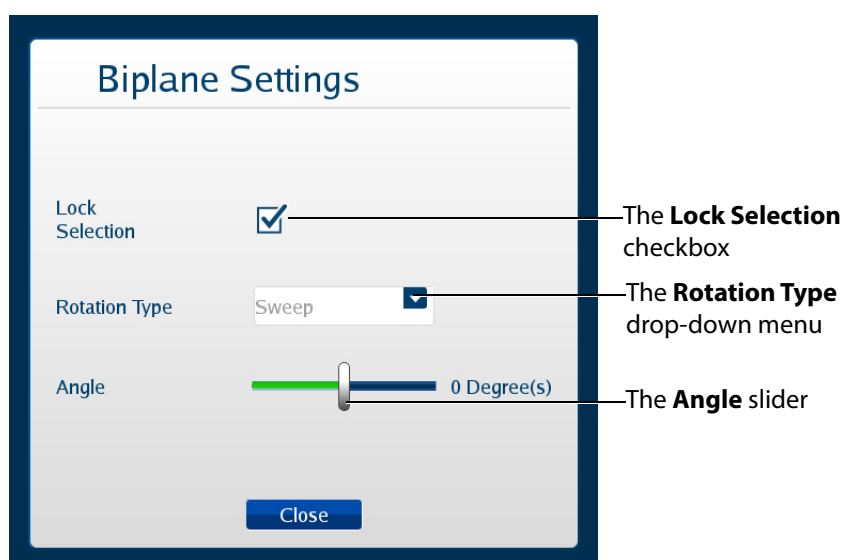
*The Biplane Section*

The Biplane Settings pop-up window appears.



**The Biplane Settings Window**

**NOTE:** When using the expanded toolbar view, the Biplane Settings pop-up window appears differently but the settings are the same.



**The Biplane Settings Window**

The **Lock Selection** option allows users to lock or unlock the primary and secondary views. When unlocked, the zoom feature can be used independently on each view. When the lock feature is activated, the zoom on the views will be equivalent.

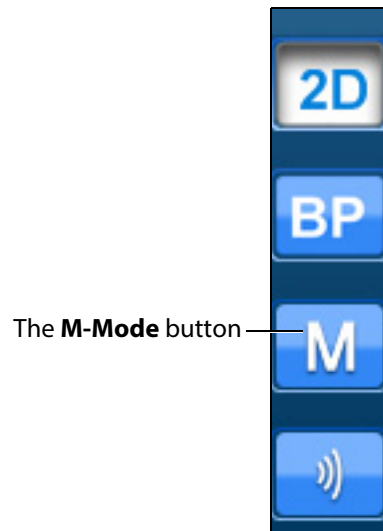
The **Rotation Type** allows users to choose from three options how to rotate the second beam.

The **Angle** slider adjusts the angle of the secondary beam in the axis specified by the Rotation Type.



## Using M-Mode

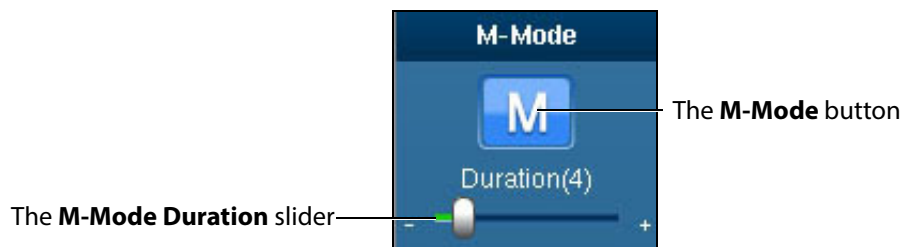
The M-mode is used to measure and evaluate the fine movements of the cardiac structures.



*The Ultrasound Panel - Mode Buttons*

To use M-Mode:

1. Activate M-mode by clicking the **M-mode** button.

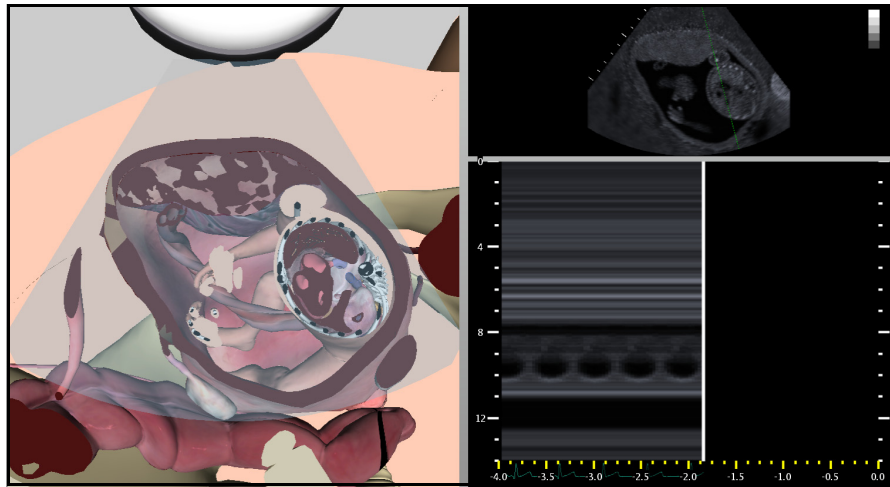


*The M-Mode Button*

Once M-mode is activated, a green line appears when the mouse is moved over the Ultrasound display. The line begins at the location of the ultrasound probe and moves left or right based on mouse position.

2. Obtain M-mode tracing by left-clicking on the Ultrasound display in the desired location.

The M-mode tracing appears.



**M-mode Tracing**

The M-mode display can be frozen by clicking the **Pause** button or pressing the space bar on the keyboard. Dimensions can be assessed within the M-mode tracing using the electronic caliper.

## Adjusting the M-Mode Settings

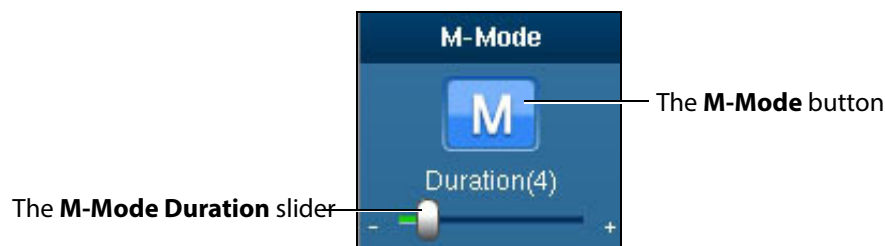
When the M-Mode is activated, the **M-Mode Settings** button appears in the Settings panel located near the bottom of the screen.



**The Settings Panel**

Click the **M-Mode Settings** button to access the duration slider.

**NOTE:** When using the expanded toolbar view, click the **M-Mode Duration slider** button located in the M-Mode section of the Ultrasound panel.



**The M-Mode Button**

Use the **Duration** slider to modify the sweep speed of the M-mode display.

## Adjusting the Depth of Field

Users can control the depth of the ultrasound beam by changing the depth of field settings. Depth of Field can be modified by scrolling the mouse wheel or from the **Settings** panel, click the **Depth of Field** button to access the **Depth of Field** slider.



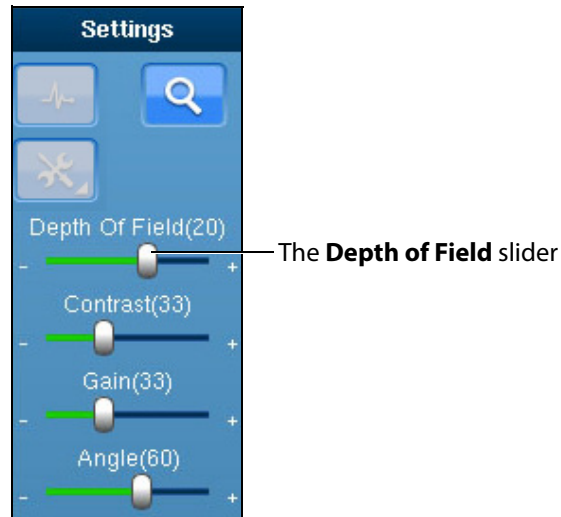
*The Settings Panel*

Users can also adjust settings by using the plus or minus buttons on each side.



*The Depth of Field Slider*

**NOTE:** When using the expanded toolbar view, adjust the depth of field by clicking on the **Depth of Field** slider located in the Settings section of the Ultrasound panel.



*The Settings Section*

## Adjusting the Angle

From the **Settings** panel, click the **Angle** button to access the **Angle** slider.



*The Settings Panel*

To increase the angle of the ultrasound beam, move the slider to the right. To decrease the angle of the ultrasound beam, move the slider to the left. Users can also adjust settings by using the plus or minus buttons on each side.



*The Angle Slider*

**NOTE:** When using the expanded toolbar view, adjust the depth of field by clicking on the **Angle** slider located in the Settings section of the Ultrasound panel.



The **Angle** slider

*The Settings Section*

## Adjusting the Contrast

From the **Settings** panel, click the **Contrast** button to access the **Contrast** slider.



*The Settings Panel*

To increase or decrease the contrast on the Ultrasound display, move the **Contrast** slider to the left or right. Using the plus or minus buttons on each side also increases and decreases the contrast.



*The Contrast Slider*

**NOTE:** When using the expanded toolbar view, adjust the contrast by clicking on the **Contrast** slider located in the Settings section of the Ultrasound panel.



*The Settings Section*

## Adjusting the Gain

From the **Settings** panel, click the **Gain** button to access the **Gain** slider.



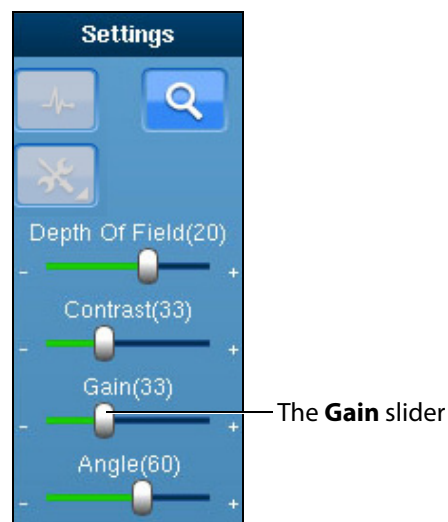
**The Settings Panel**

To increase or decrease the gain of the Ultrasound display, move the **Gain** slider to the left or right. Users can also adjust settings by using the plus or minus buttons on each side.



**The Gain Slider**

**NOTE:** When using the expanded toolbar view, adjust the gain by clicking on the **Gain** slider located in the Settings section of the Ultrasound panel.



**The Settings Section**

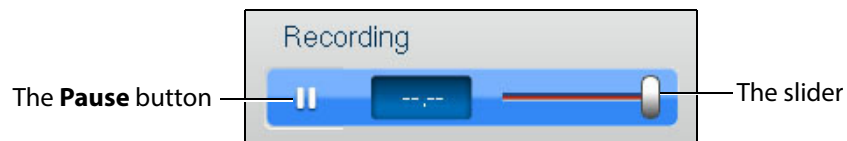
**NOTE:** The depth of field, contrast and gain startup values can be modified in the Simulation Settings window.

## Using the Recording Controls

The current session can be paused and reviewed using the controls under the **Recording** panel on the upper-right side of the screen.

To pause the session, click the **Pause** button. To resume, click the **Pause** button again.

To review the session, use the slider to scroll back up to 12 seconds.



*The Recording Controls*

## Using Capture Controls

The Vimedix software is capable of capturing screen images and recording video clips of simulator activity.

### Capturing Images

To capture an image of the VIMEDIX interface, click the **Screen Capture** button or press the **Print Screen** key on the keyboard.

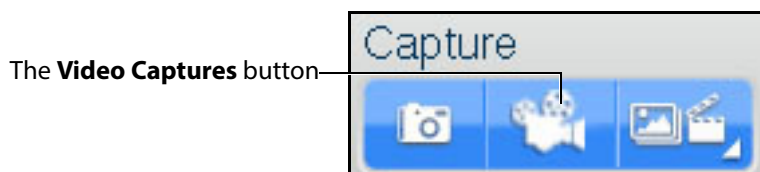


*The Capture Panel*

A capture of the current screen is taken and can be accessed by clicking the **Captures Menu** button.

## Recording Video

To record a video of simulator activity, click the **Video Captures** button.



*The Capture Panel*

The simulator activity is recorded for the length of time specified in the video capture settings. In addition to specifying the length of time for videos, users can specify whether to record the entire interface, the Ultrasound display only or the AR display only.

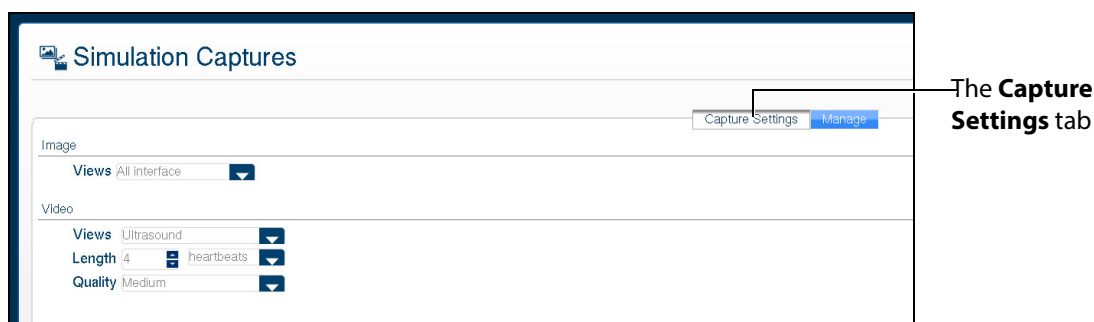
## Modifying Image and Video Capture Settings

To modify image or video capture settings, click the **Captures Menu** button.



*The Capture Panel*

The Simulation Captures window appears and the **Capture Settings** tab is selected.



*The Capture Settings Tab*



## Viewing Image Captures

Image captures can be reviewed from the VIMEDIX software.

To view an image capture:

1. On the upper-right side of the screen, click the **Captures Menu** button.

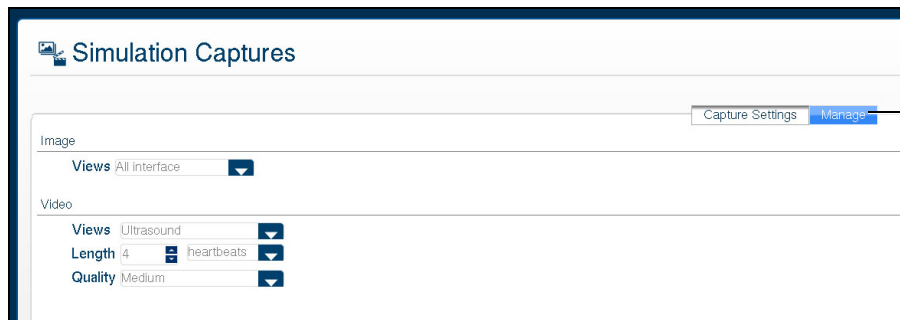


The **Captures Menu** button

*The Capture Panel*

The Simulation Captures window appears and the **Capture Settings** tab is selected.

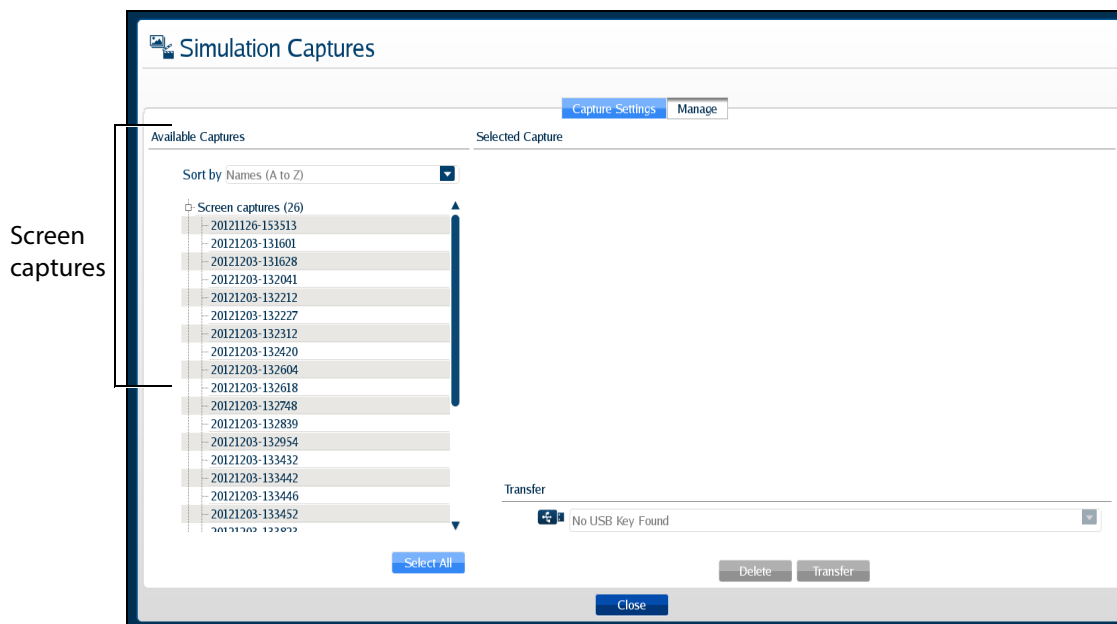
2. Select the **Manage** tab.



The **Manage** tab

*The Simulation Captures Window*

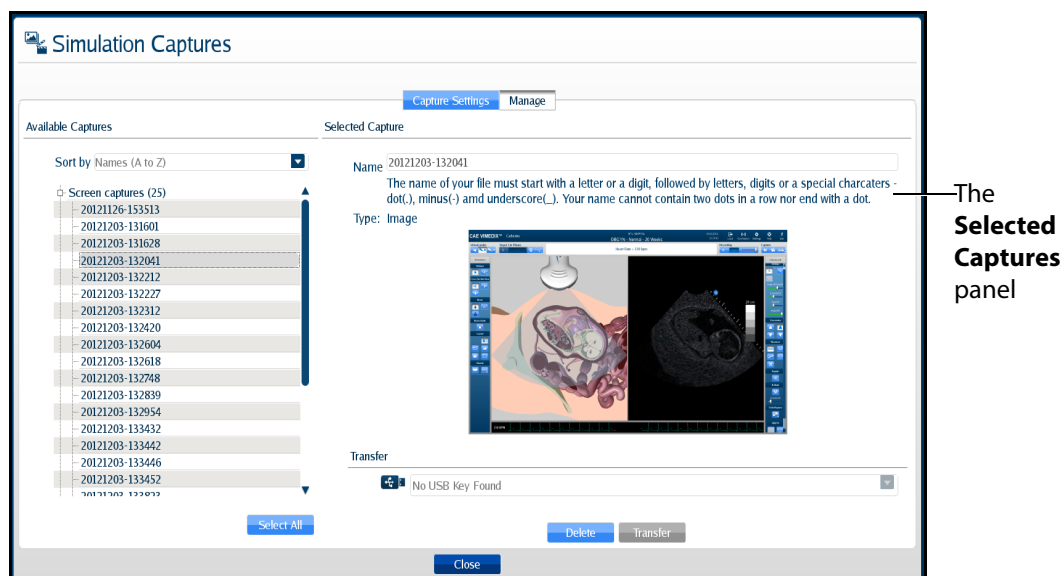
The Manage tab appears, showing all the videos and image captures currently stored on the system.



**The Manage Tab**

3. On the **Manage** tab, from the Available Captures panel, select an image capture to view.

The image appears in the Selected Capture panel.



**The Simulation Captures Window**

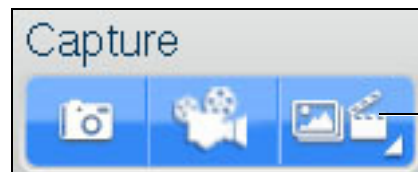
## Transferring Image Captures and Videos

Image captures and videos can be transferred to a USB storage device.

**IMPORTANT:** Once transferred to a USB storage device, image captures and videos are **deleted** from the Vimedix system and **cannot** be recovered.

To transfer image captures and videos:

1. Insert a USB storage device in one of the USB ports on the front of the Vimedix computer.
2. From the **Capture** panel, click the **Captures Menu** button.

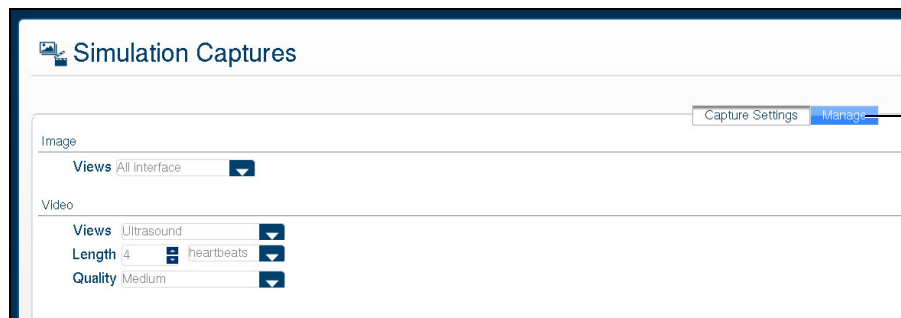


The **Captures Menu** button

**The Capture Panel**

The Simulation Captures window appears and the **Capture Settings** tab is selected.

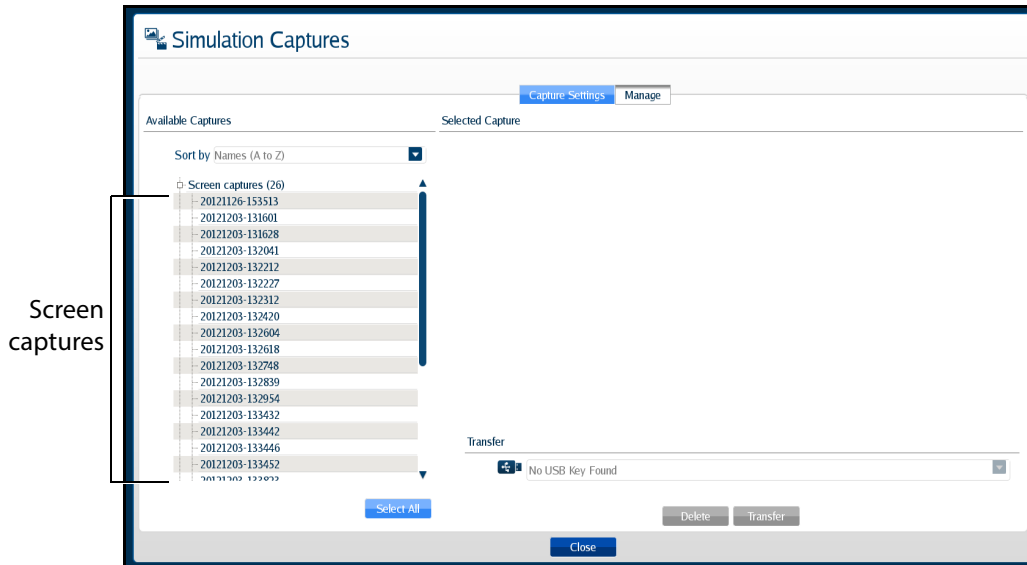
3. Select the **Manage** tab.



The **Manage** tab

**The Simulation Captures Screen**

The **Manage** tab appears, showing all the videos and image captures currently stored on the system.



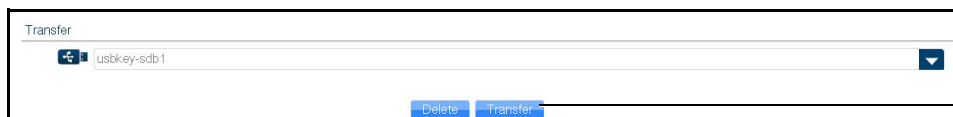
Screen captures

**The Manage Tab**

- On the **Manage** tab, from the Available Captures panel, select the videos and image captures to export.

To select multiple image captures or videos, hold the **Ctrl** key on the keyboard while using the mouse to select the files to export, or click **Select All** to select all available image captures and videos.

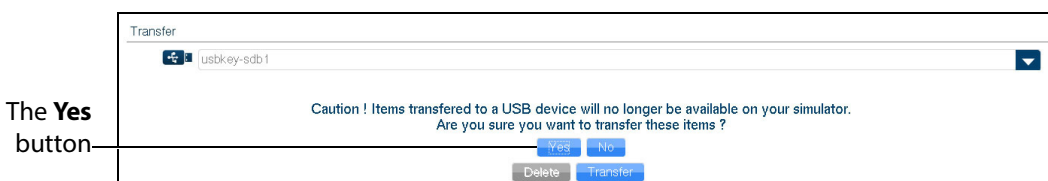
- Insert a USB storage device in one of the USB ports on the front of the computer. When the USB is recognized, it appears in the **Options** drop-down menu on the **Manage** tab.
- Click **Transfer** to transfer the image captures and videos to the USB storage device.



The **Transfer** button

**The Simulation Captures Window**

A warning message appears asking if you are sure you want to transfer the items.



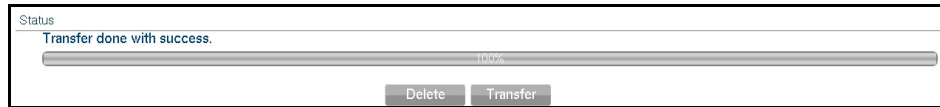
The **Yes** button

**The Simulation Captures Window**

7. Click **Yes**.

The images are transferred. The transfer progress is indicated by a progress bar near the bottom of the Simulation Captures window.

Once the transfer is complete, the transfer success message appears.



**The Transfer Success Message**

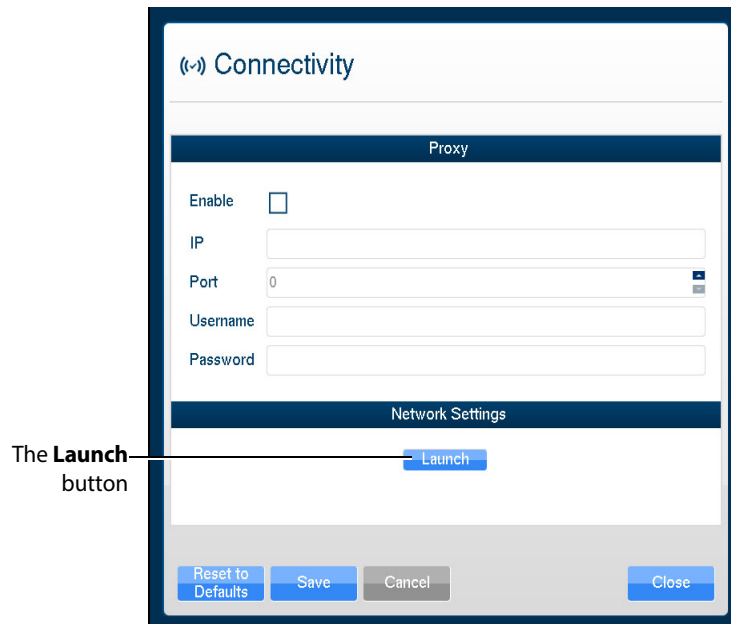
## Managing Network Settings

Network settings can be managed from the Connectivity window. To access the Connectivity window, click the **Connection** icon.



**The Connection Icon**

The Connectivity window appears.



**The Connectivity Window**

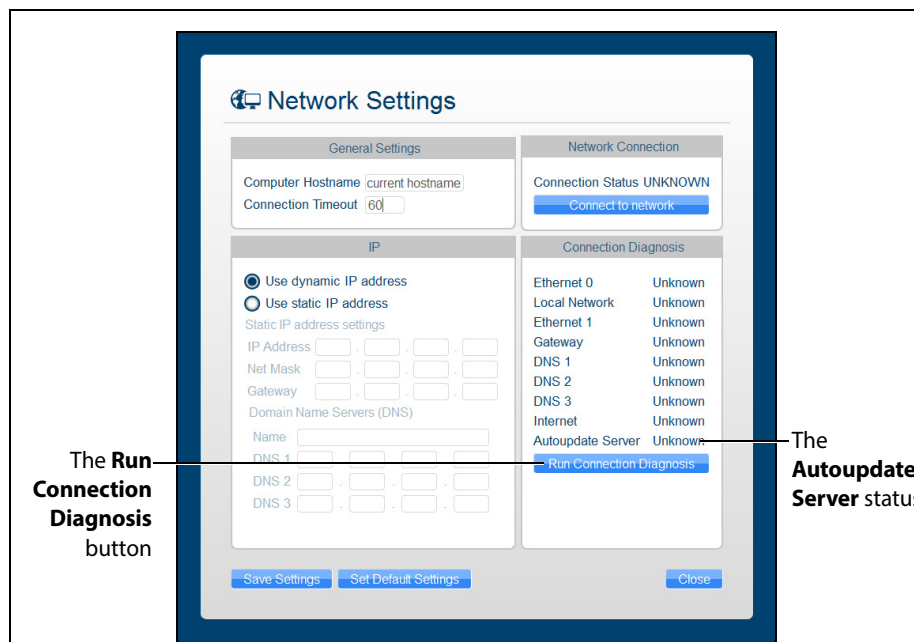
1. To ensure Vimedix is configured to access updates, click the **Launch** button. You may need to scroll down to view the Launch button.

The **Network Settings** window appears.

- In the right-hand column, click the **Run Connection Diagnosis** button.

**Autoupdate Server** should show *Online* status.

If Autoupdate Server does not show *Online* status, contact your IT department to allow access to **Port 3690, IP 67.228.7.120**.



**The Network Settings Window**

## Configuring Proxy Settings

Some networks may require the configuration of a proxy server to allow the Vimedix system access to the Internet. Note that this is not always the case. Please contact your IT department to determine if a proxy server needs to be used on your network.

To manually enable proxy connection:

- In the Connectivity window, under the **Proxy** heading, click the **Enable** checkbox.
- In the **IP** field, enter the IP address of the Proxy server as provided by your IT department.

3. In the **Port** field, enter the port specified by your IT department.



**The Connectivity Window**

4. If applicable, enter the **Username** and **Password** specified by your IT department.
5. At the bottom of the Connectivity window, click **Save**.

## Configuring Custom Network Settings

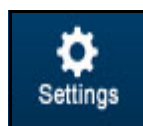
To configure other network settings, under the **Network Settings** heading, click the **Launch** button. The Network Settings window appears, containing custom settings options.

Contact your Network Administrator or IT professional for help with configuring custom network settings, if necessary.

**NOTE:** If customized connection settings are required for the network, leave the OWL and Proxy server information in the Connectivity window blank.

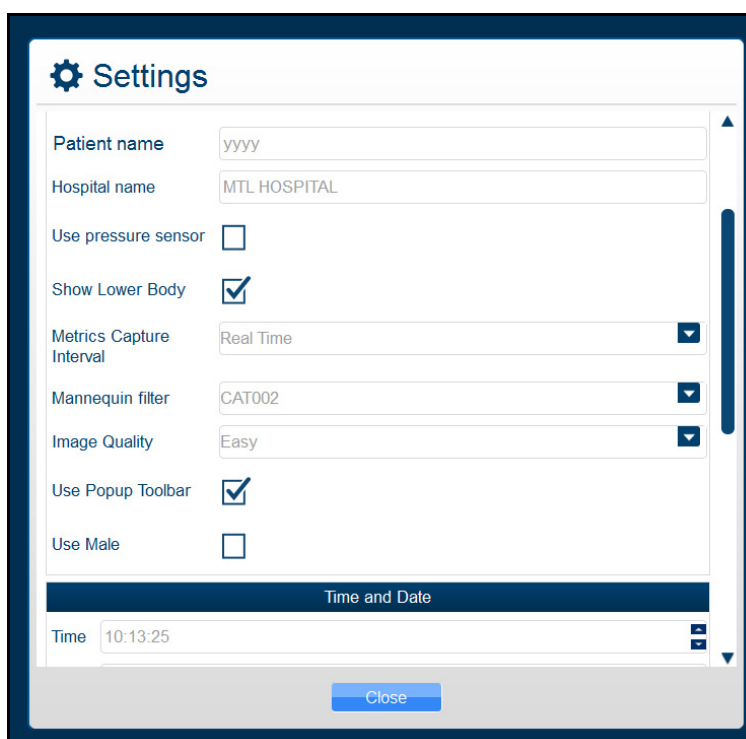
## Modifying Simulator Settings

Simulator settings can be modified from the Settings window. To access the Settings window, click the **Settings** icon.



**The Settings Icon**

The Settings window appears.



*The Settings Window*

## Language

To modify the simulator language, from the Settings window, select the desired language from the **Language** drop-down and click **Close**.

**NOTE:** Some languages not fully supported.

## Patient Name

The patient name, which is determined prior to shipping by the type of mannequin, appears at the top of the Vimedix screen and on simulator-generated reports. Bob is the default patient name for the male mannequin and Catherine is the default patient name for the female mannequin. Users can change the patient name at their discretion and that manually assigned name will remain the same for future use until it is changed.

**NOTE:** The patient name as indicated in the Settings window automatically appears on echo reports by default.

## Hospital Name

The hospital name, which is chosen prior to shipment, appears at the top of the VIMEDIX interface and on simulator-generated reports.



## Use Pressure Sensor

The pressure sensor can be turned on or off. When the pressure sensor is turned on, the probe must be in contact with the mannequin to obtain an ultrasound image. When the sensor is turned off, an image can be obtained by placing the probe close to the mannequin.

The pressure sensor is turned on by default. To turn the pressure sensor off, from the Settings window, uncheck the **Use pressure sensor** box, then click **Close** to exit the simulator settings.

## Metrics Capture Interval

The **Metrics Capture Interval** setting determines how often the movement of the probe is captured for metrics reports. CAE Healthcare recommends leaving **Realtime** selected.

## Image Quality

The **Image Quality** setting can be used to change the level of noise on the ultrasound view. The default setting is **Easy**. To increase the noise, change the setting to **Difficult**.

## Use Popup Toolbar

The popup toolbar displays a condensed version of the CAE VIMEDIX interface and the options are available in a drop-down menu format. This format is intended to simulate the monitor display on a real ultrasound machine.

The popup toolbar mode is activated by default. To activate the expanded view from the Settings window, uncheck the **Use Popup Toolbar** box, then click **Close** to exit the simulator settings.

## Use Male

When certain pathologies are loaded, the fetus gender can be changed to male.

The male fetus is not activated by default and is only presented as an available option for pathologies that offer an interchangeable gender option. To activate the male fetus from the Settings window, check the **Use Male** checkbox, then click **Close** to exit the simulator settings.

## Time and Date

Users can customize the system time and date in the **Time and Date** section of the Settings window.

## Layout on start-up

The default screen layout on startup can be modified. To modify the default layout, in the Settings window, from the **Layout on Start-up** drop-down menu, select the desired layout.

## Probe Type

The probe type can be selected from the **Probe Type** menu in the Settings window. By default, the connected probe type is automatically selected.

## Override Default Startup Values

The **Override Default Startup Values** checkbox can be used to enable modification of the gain, contrast and depth of field values used upon simulator startup.

### Gain, Contrast Depth of Field and Angle

To modify the gain, contrast and depth of field and angle settings used upon simulator startup:

1. In the Settings window, check the **Override Default Startup Values** box.
2. Use the arrows next to the **Gain, Contrast, Depth of Field** and **Angle** fields to change the settings.

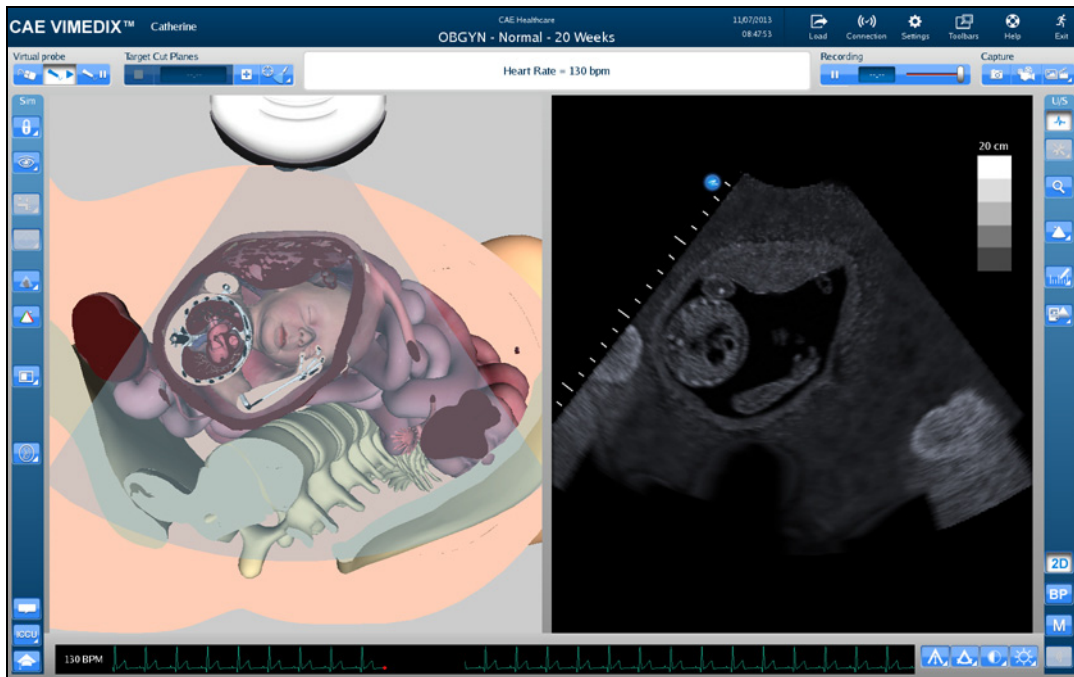
The selected settings are applied to the Ultrasound and AR displays each time the simulator is started.

**NOTE:** The gain, contrast, depth of field and angle can be modified at any time from the **Ultrasound** panel under the **Settings** section using the **Depth of Field, Contrast, Gain** and **Angle** sliders. However, each time the simulator is restarted, the gain, contrast, depth of field and angle revert to the default settings or the settings specified in the Settings window.

## Hiding the Toolbars

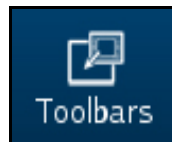
The Vimedix interface appears with a toolbar on each side of the screen that contains all of the available functions for the AR and Ultrasound displays.

Users can hide the toolbars to increase the size of the AR and Ultrasound displays.



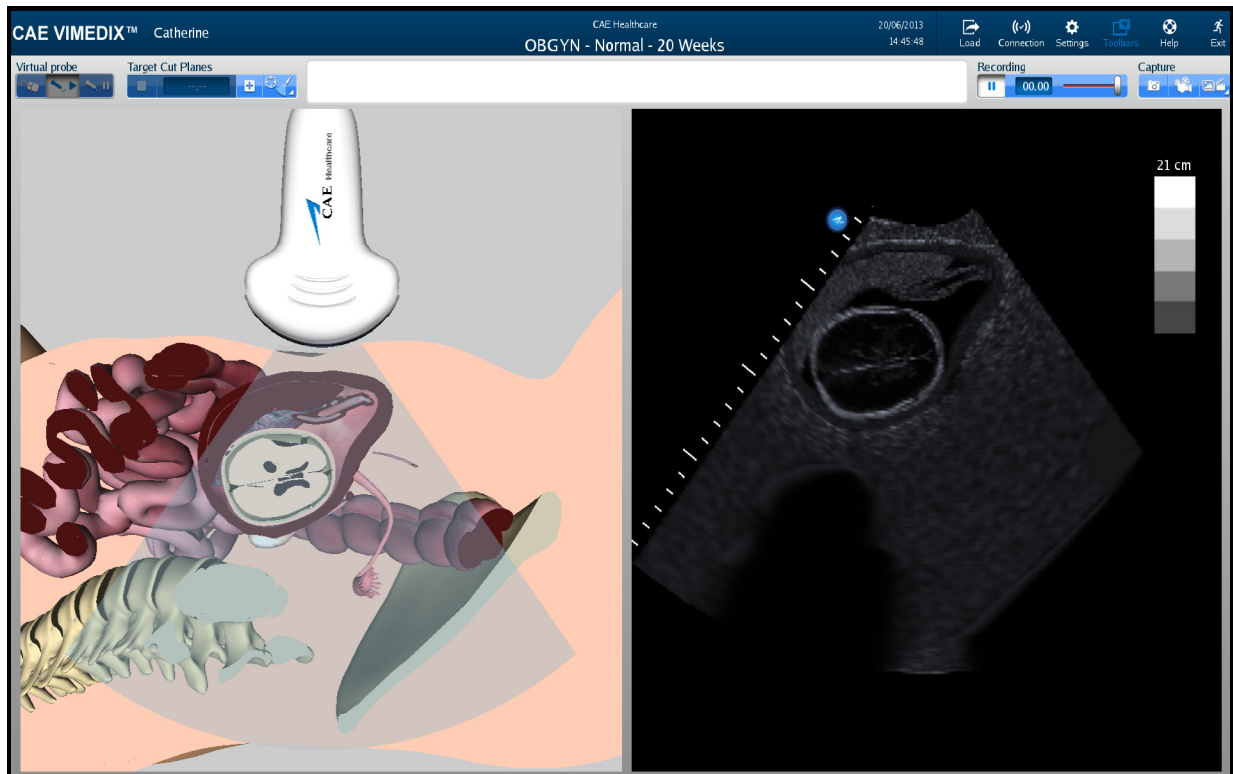
*The VIMEDIX Simulator Interface*

To hide the toolbars, click the **Toolbars** icon.



*The Toolbars Icon*

The toolbars are now hidden from view.



*The Hidden Toolbars Mode*

## Accessing the Help Menu

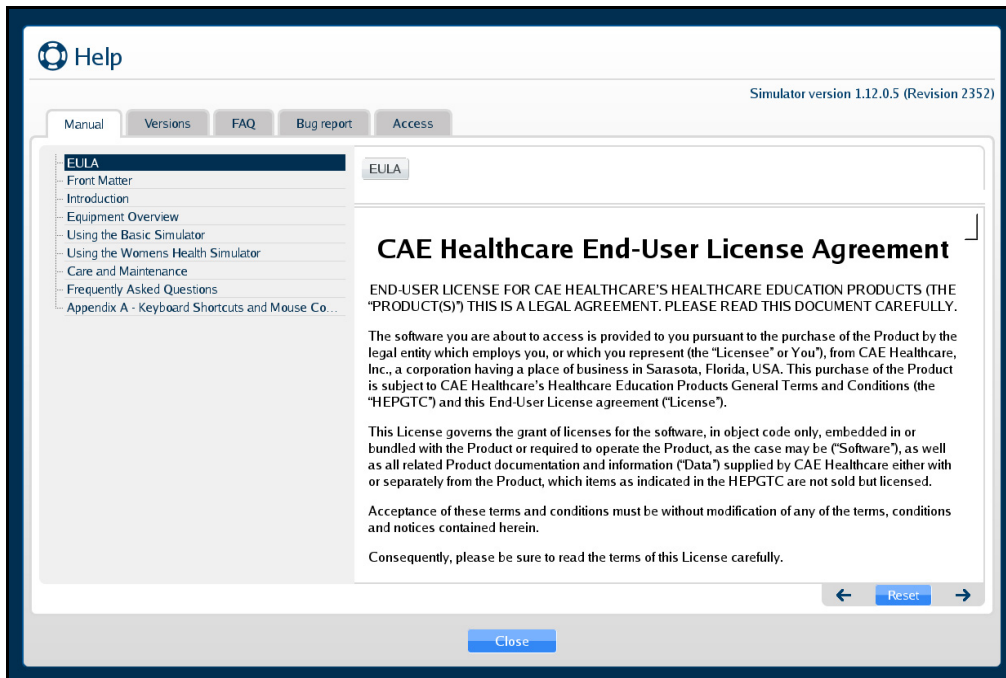
From the help menu, users can access the Vimedix User Guide, review simulator version updates, browse Frequently Asked Questions and submit bug reports.

To access the Help window, click the **Help** icon in the upper-right corner of the screen.



*The Help Icon*

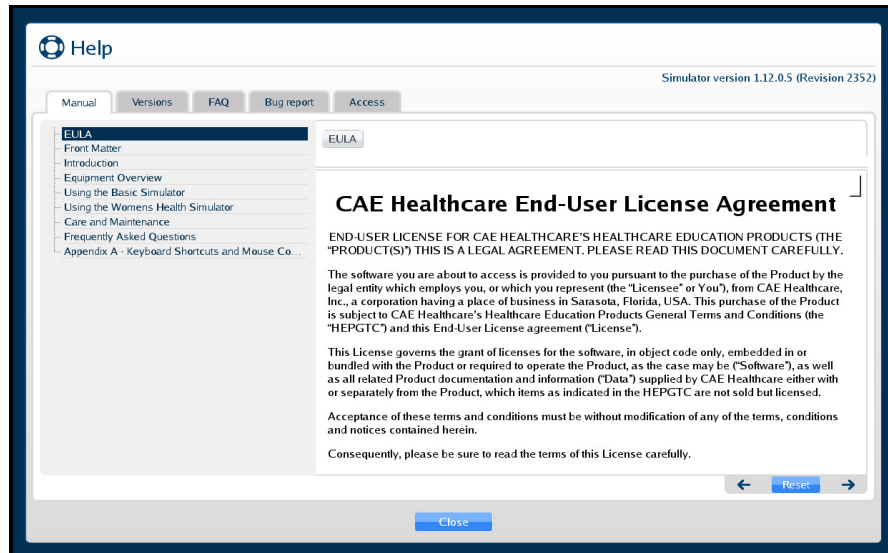
The Help window appears.



*The Help Window*

## Manual

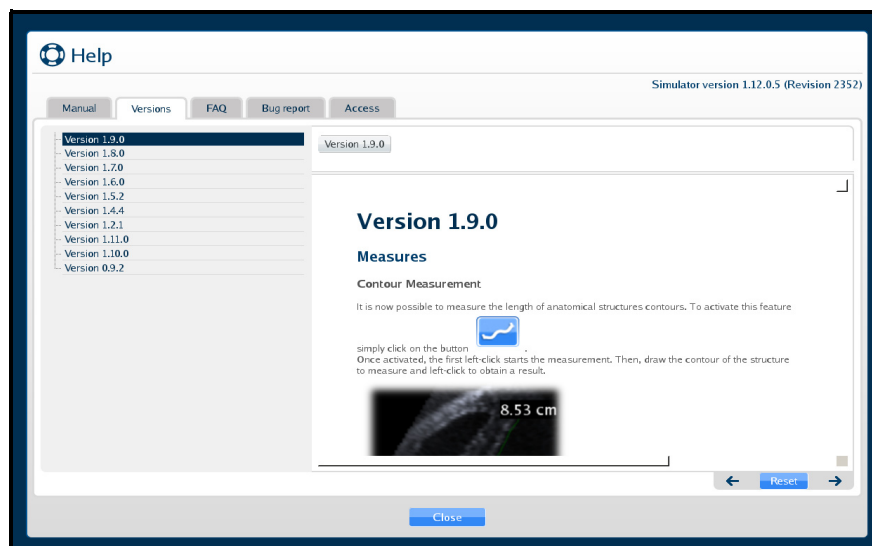
The **Manual** tab is selected by default and displays an electronic version of the user guide.



The Manual Tab

## Versions

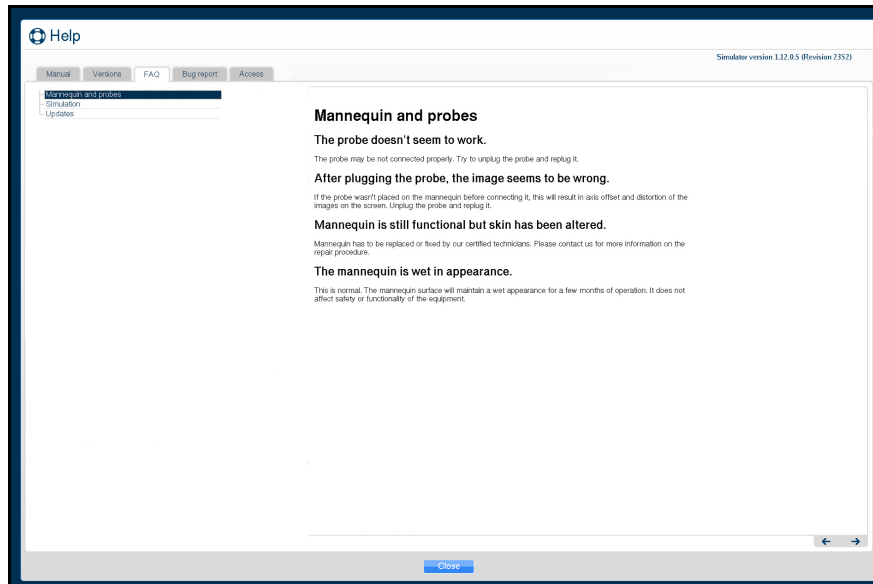
Click on the **Versions** tab to view the latest features associated with software updates.



The Versions Tab

## FAQ

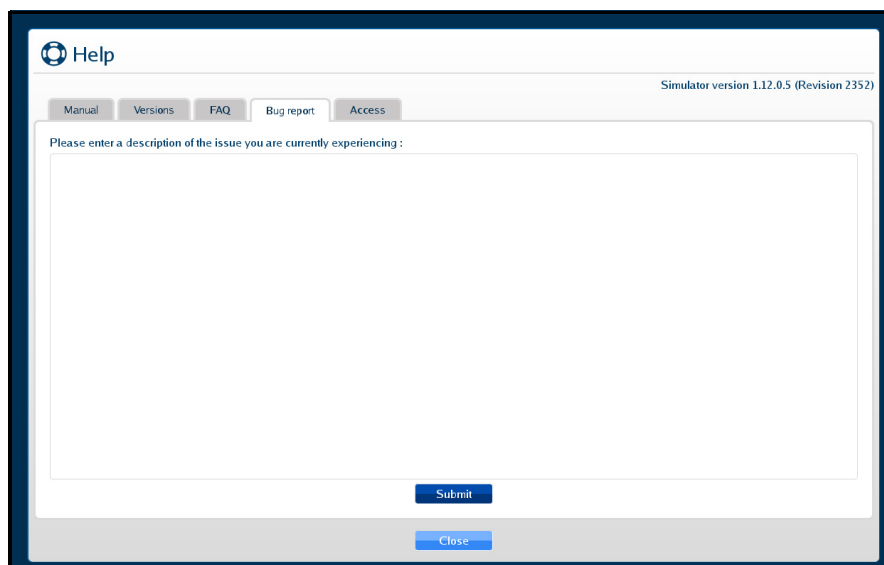
Click on the **FAQ** tab to view the troubleshooting tips for frequently asked questions.



*The FAQ Tab*

## Bug Report

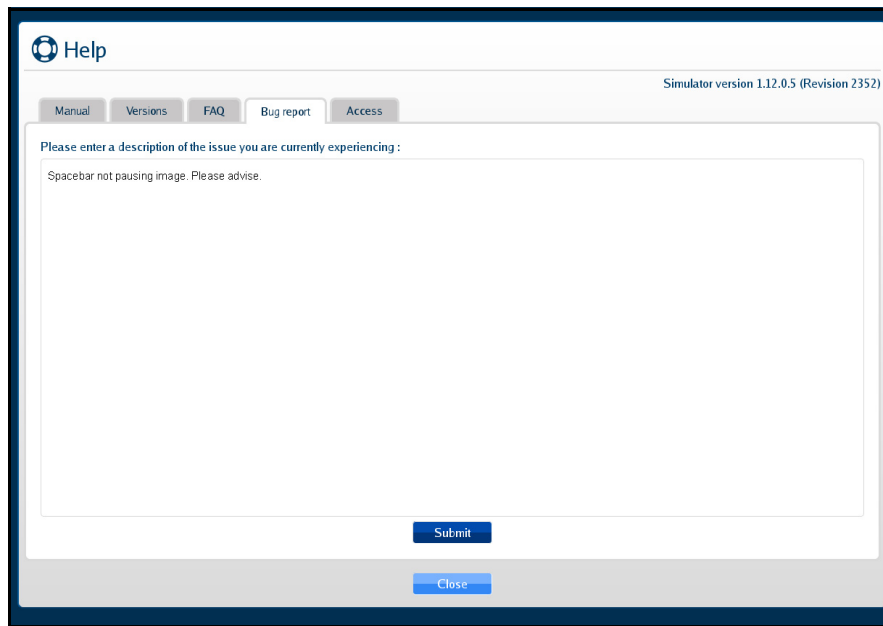
Click on the **Bug report** tab to report an issue with the software.



*The Bug Report Tab*

To submit a bug report:

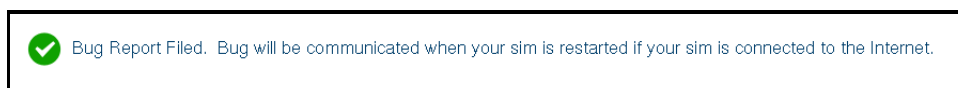
1. Click in the Bug Report text box and describe the nature of the problem in the text box provided.
2. Click **Submit** when finished.



The screenshot shows a help window titled "Help" with a sub-header "Simulator version 1.12.0.5 (Revision 2352)". Below the header are navigation tabs: "Manual", "Versions", "FAQ", "Bug report", and "Access". The "Bug report" tab is selected. The main content area contains a text input field with the placeholder text "Please enter a description of the issue you are currently experiencing :". Below the input field is a "Submit" button. At the bottom of the window is a "Close" button.

***The Bug Report Tab***

The confirmation message will appear when the Bug Report is successfully filed.

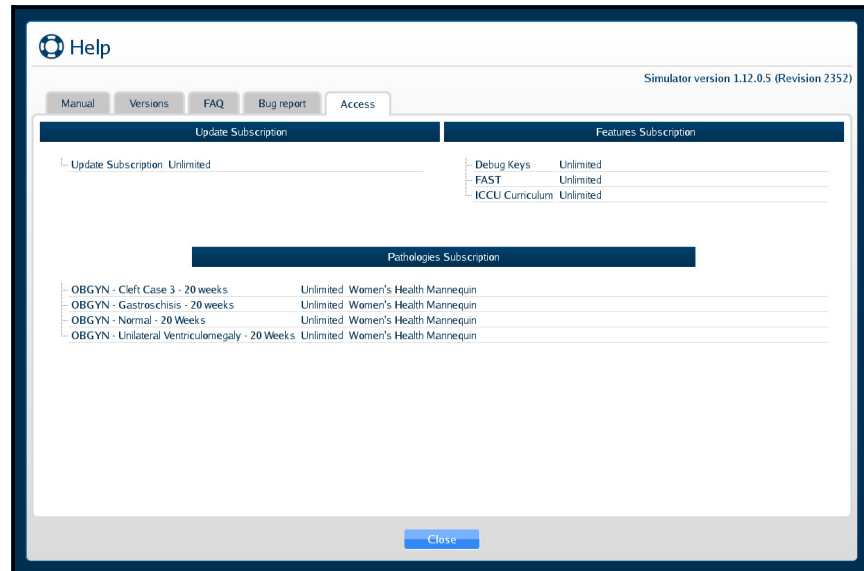


***The Confirmation Message***



## Access

Click on the **Access** tab to confirm which packages and the types of subscriptions that were purchased for your Vimedix simulator.

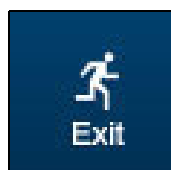


*The Access Tab*

## Shutting Down

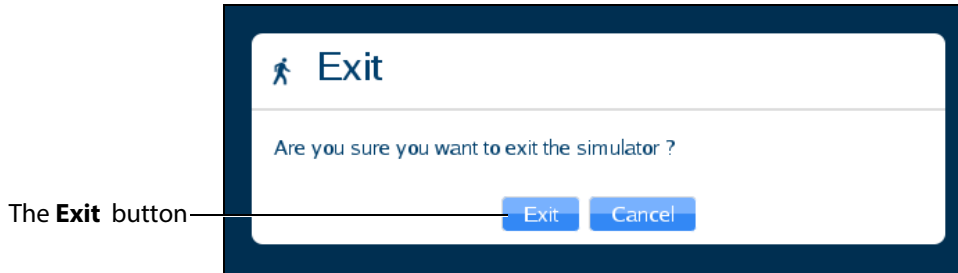
To shut down the simulator:

1. Click the **Exit** icon in the upper-right corner of the screen.



*The Exit Icon*

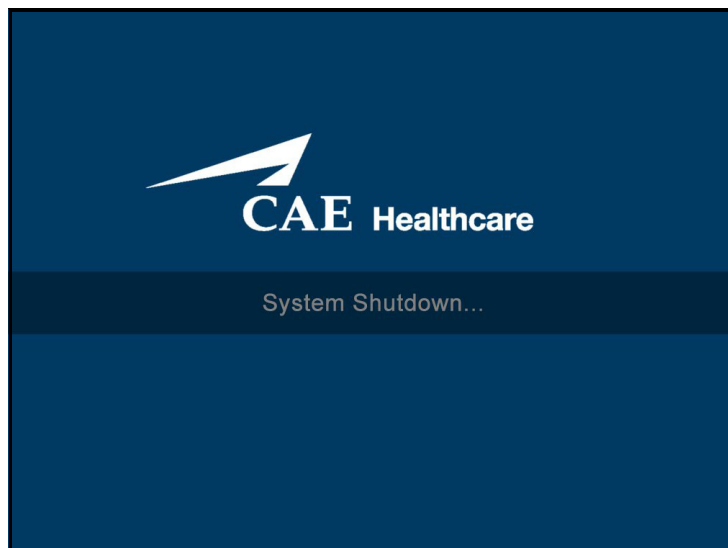
The Exit window appears and contains a message asking if you are sure you want to exit the simulator.



***The Exit Window***

2. In the Exit window, click **Exit**.

The system shut down screen appears.



***The System Shut Down Screen***

When the monitor screen appears black, the simulator is shut down.

# USING HALO LENSE

The Vimedix simulator is designed to give learners an exploratory environment to practice using an ultrasound machine. The Bob 1.3 male mannequin is required to use the HaloLens with the Vimedix Augmented Reality (AR) module.



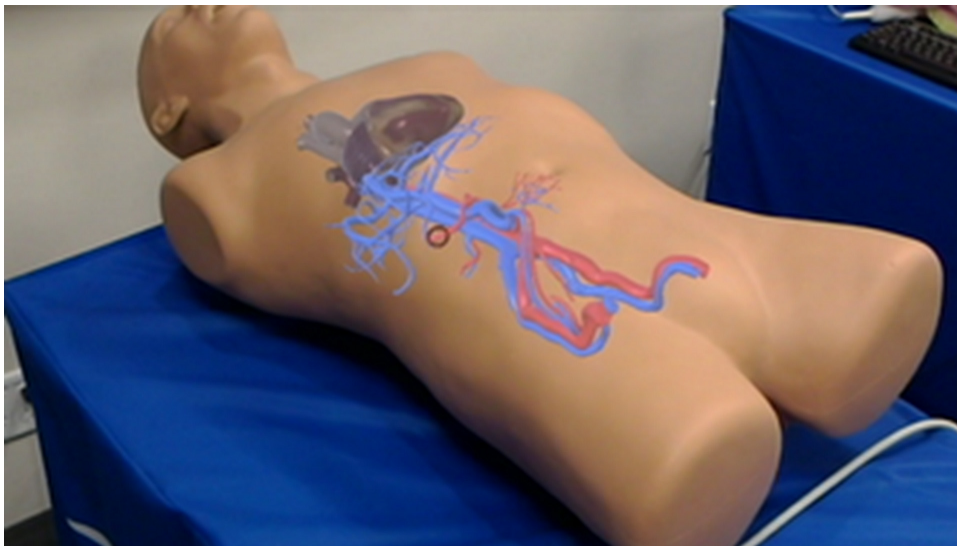
*Bob 1.3 Mannequin*



*HaloLens*

## Interface Overview

The HaloLens interface works in conjunction with the Augmented Reality (AR) display. The HaloLens display adds multiple features that allow the user to view i3D holographic images overlaid on the Bob 1.3 mannequin.



*The HaloLens Interface*

3D AR anatomical are expanded above the mannequin by issuing the vocal **Show Layers** command.



*Expanded Layers*

**Note: the following hardware descriptions and instructions have been referenced from the manufacturer's site: <https://www.microsoft.com/microsoft-hololens/en-us>**

## Powering the HaloLens on and off

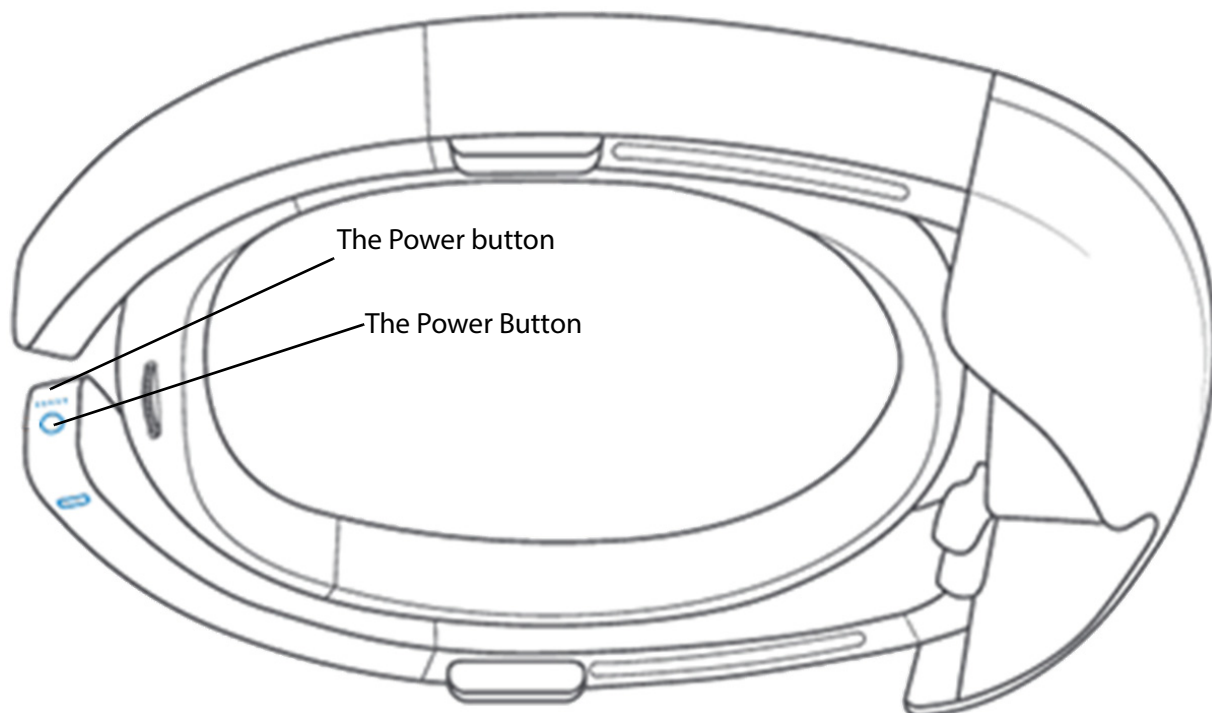
The first time the HaloLens is powered on it needs to be awakened from sleep mode.

To wake the HaloLens from Sleep Mode:

- Hold the **Power** button down for 3 seconds  
After the first time turn on the HaloLens by pressing the **Power** button.  
**TIP:** LED lights near the power button indicate the current battery level.

To power off the HaloLens:

- Hold the **Power** button until the display and all LEDs turn off  
**TIP:** Put the HaloLens in sleep mode by briefly pressing the **Power** button.



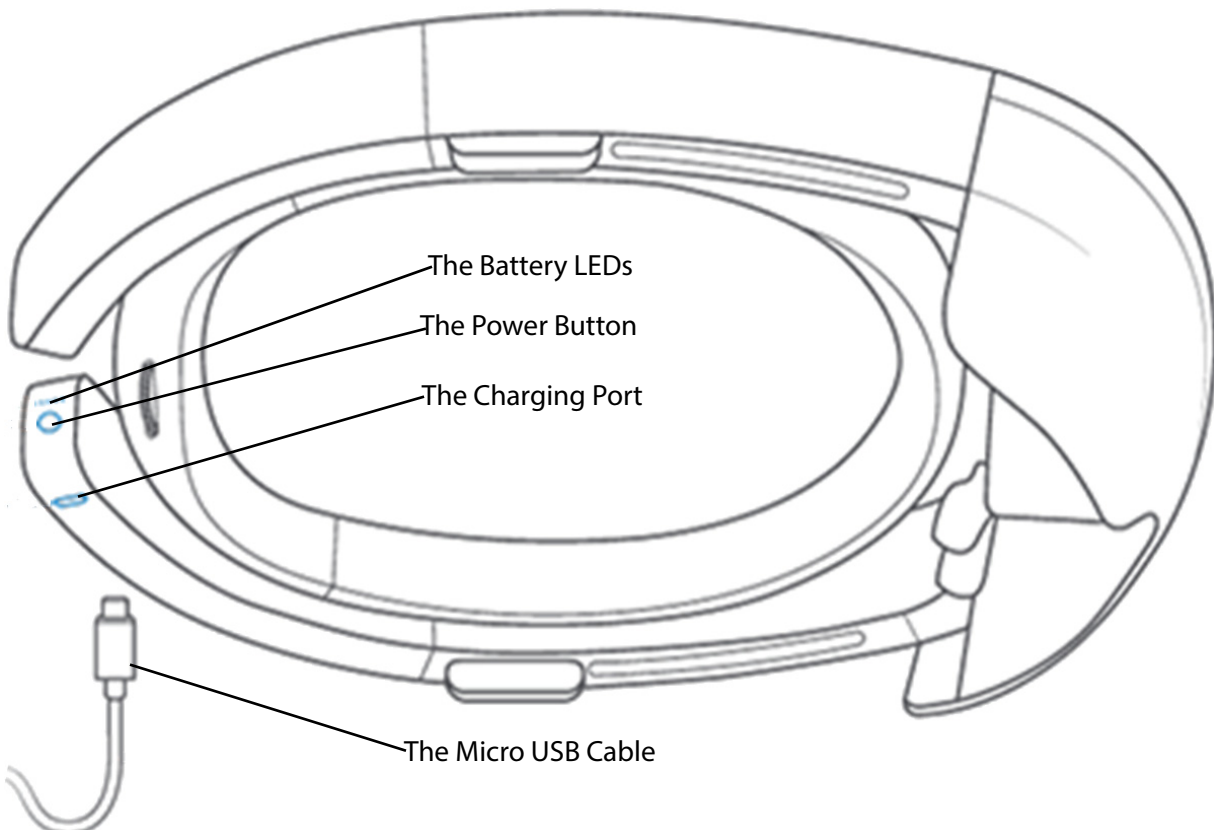
**The Power Button**

## Charging the HaloLens

Connect the power supply to the charging port using the included Micro USB cable. Then plug the power supply into a power outlet to charge the HaloLens. When the device is charging, the battery indicator lights up in a wave pattern.

**TIP:** Put the HaloLens in sleep mode by briefly pressing the **Power** button.

The battery indicator shows the battery level in increments when the HaloLens is on. When only one of the five lights is on, the battery level is below 20 percent. If the battery level is critically low and you try to turn on the device, one light will blink briefly, then go out.



## Battery LEDs

**Table 1: Battery LEDs**

LED Actions	Indication
Scrolling Center outward	HoloLens is starting up
All On	HoloLens is on and ready to use. Battery life is shown in 20% increments.
Scrolling Lighted - Scrolling - Lighted	HoloLens is on and charging. Battery life is shown in 20% increments.
Turning off one at a time	HoloLens is shutting down.
All turn off at once	HoloLens is going into standby.
All lighted - one blinking - all lighted	Battery is critically low. HoloLens needs to charge.
All scroll - one blinks - all scroll	Battery is critically low. HoloLens is charging.

## Using Hand Gestures

Getting around HoloLens is a bit different from using Windows on other devices. Instead of moving the cursor with a mouse, you use your gaze. Instead of clicking or tapping, hand gestures, or voice

### The Gesture Frame

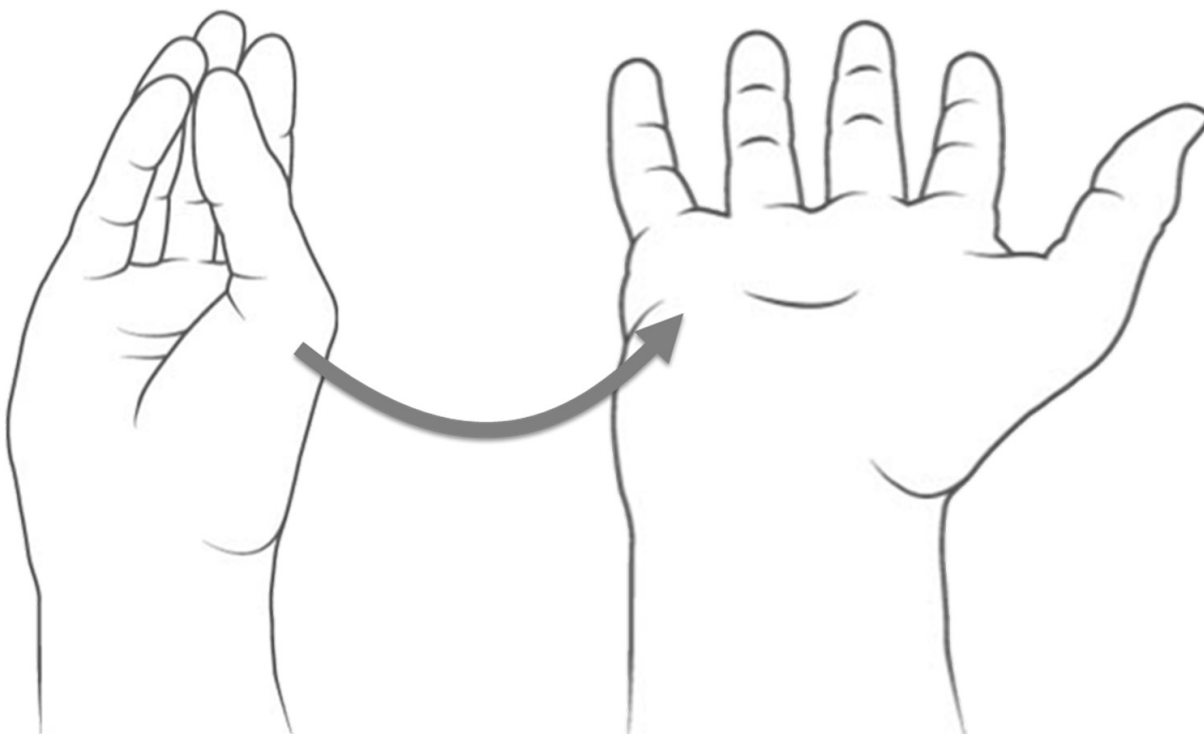
HoloLens has sensors that can see a few feet to either side of the user. When gestures are used, they must be kept inside that frame for HoloLens to detect them. As the user moves around, the frame moves with them. When the user's hand is inside the frame, the cursor will look like a ring. When HoloLens cannot see the user's hand the cursor changes to a dot.

### Bloom

Blooming opens the Start menu. Most of the time, bloom is only needed once to get to Start, but sometimes the user will need to bloom twice. If a user is uncertain what to do, blooming is a good way to get reoriented. Bloom may also be used to hide the Start menu.

To bloom:

- Hold out your hand with your palm up and fingertips together.
- Then open your hand.



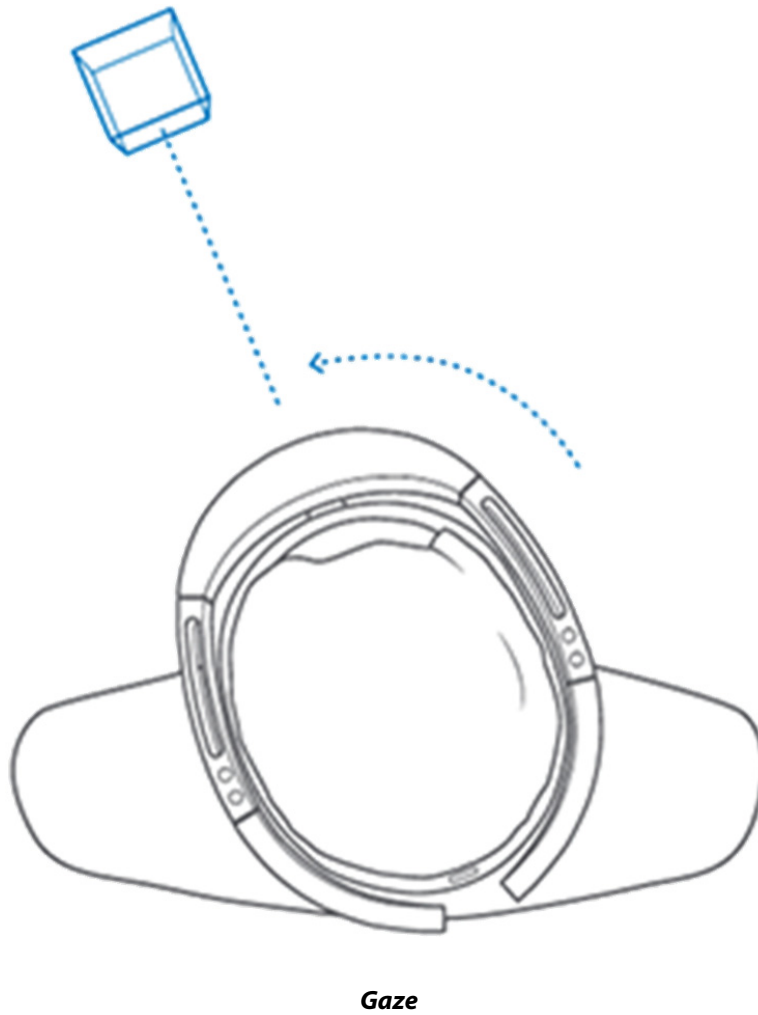
***Bloom***

## **Gaze**

A gaze can be used to move the cursor and highlight apps and other holograms for selection. The cursor follows whole head movements as opposed to simple movement of the eyes.

Holograms are highlighted when they are available to be selected.





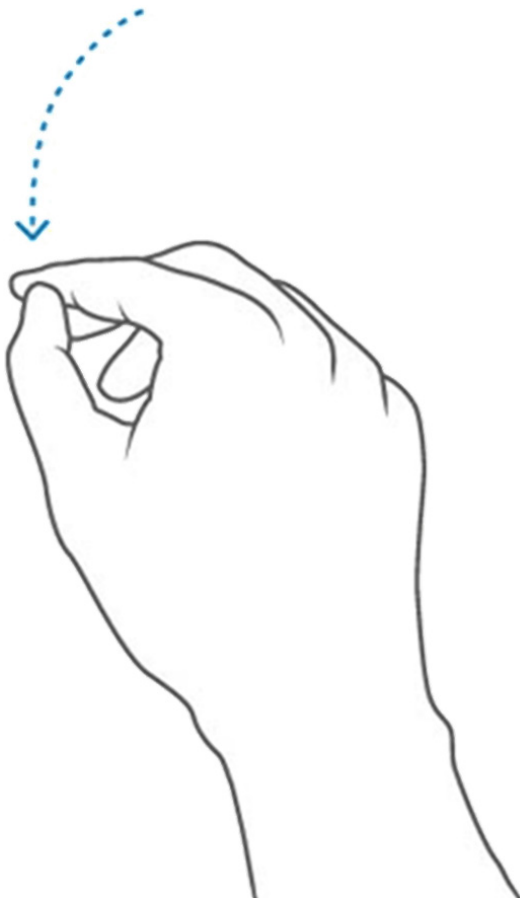
## Air Tap

Use air tap, along with gaze, to select apps and other holograms.

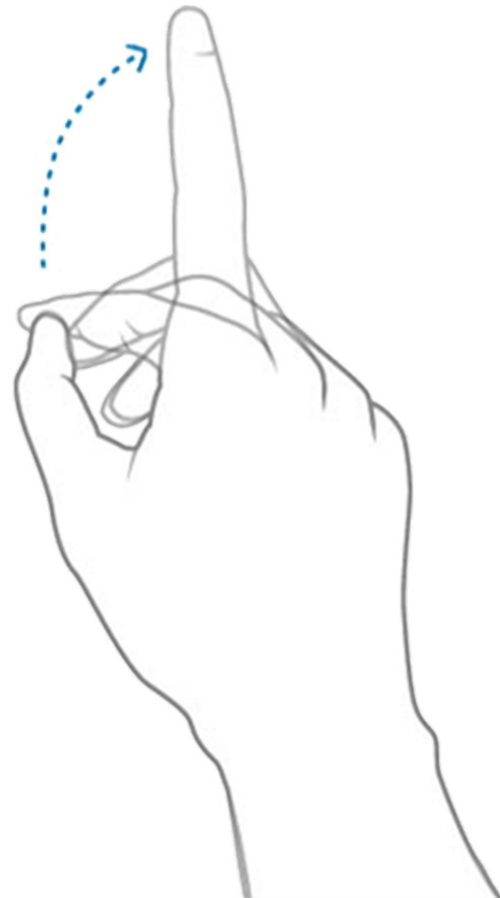
To Use Air Tap:

1. Gaze at a hologram

2. Hold your hand straight out in front of you in a loose fist, then point your index finger straight up toward the ceiling.
3. Keep your elbow low and comfortable.
4. Tap your finger down, then quickly raise it back up again.



*Air Tap - Down*



*Air Tap - Up*

## Tap and Hold

To tap and hold, start with an air tap, but keep your finger down instead of raising it back up.

Use tap and hold to:

- **Scroll.** On the app bar, select **Scroll Tool**. Tap and hold until the tool appears, then slowly move your hand up and down or side to side. To scroll faster, move your hand farther from the center of the tool.
- **Drag.** On the app bar, select **Drag Tool**. Tap and hold until the tool appears, then slowly move your hand up and down or side to side.
- **Zoom.** On the app bar, select **Zoom Tool**, then tap and hold until the tool appears. Slide your hand up to zoom in and down to zoom out.
- **Pin, unpin, or uninstall an app.** Tap and hold an app tile on Start or in the All apps list, then select one of the menu choices.
- **Resize an app.** On the app bar, select **Adjust**. Tap and hold one of the blue squares in the corners of the app window, then move your hand to resize.
- **Move an app.** On the app bar, select **Adjust**. Continue gazing at the app window, then move your hand to position the app.

## Know Your Surroundings

Getting around HaloLens is a bit different from using Windows on other devices. Instead of moving the cursor with a mouse, you use your gaze. Instead of clicking or tapping, hand gestures, or voice

### Use in Safe Surroundings

When using the HaloLens you will move your body and walk around the mannequin to change your field of view and viewing angle. Be sure to use the HaloLens in a place that is free of obstructions and tripping. Clear the area of any tripping hazards and provide enough clear space to move freely.

### About Your Environment

- Use HaloLens in a room with adequate light and plenty of space. Avoid dark spaces and rooms with a lot of dark, shiny, or translucent surfaces.
- Avoid spaces with a lot of motion, as this may cause distraction and interfere with HaloLens calibration.

### Be physically capable of your intended use

Make sure your balance and physical abilities are sufficient for any movements while using HaloLens. Take breaks periodically and stop and rest if you get tired, sore, or experience any discomfort.

## Stay Comfortable

Some people may experience discomfort such as nausea, motion sickness, dizziness, disorientation, headache, fatigue, eye strain, or dry eyes when using mixed or virtual reality, particularly as they adjust to using it. Typically, motion sickness and related symptoms occur when there is a mismatch between what you see and what your body perceives. If you are prone to motion sickness in other situations, are afraid of heights, get migraine headaches, have an inner ear disorder, or other health conditions, you may be at increased risk of discomfort.

### Certain Situations can Increase Your Risk of Discomfort.

For example:

- Being a new user - symptoms tend to decrease as your vision system adapts.
- Display not calibrated, or headset not oriented correctly on your head. Make sure HaloLens is properly calibrated and that it is properly aligned by using the Calibration application.
- Certain types of content, particularly games or movies that make you feel as if you are moving through space or looking down from high, or interactions that involve tracking moving objects.
- Using HaloLens for extended periods without a break.
- Using HaloLens in a completely dark environment that keeps you from seeing visual cues with your peripheral vision.

### Consider Keeping Your First Sessions Brief

Start slowly and look around to get a feel for how the virtual objects and the outside world interact. For most people discomfort should decrease as you get more practice over your first few sessions.

### Take Periodic

Take breaks periodically and stop and rest if you experience any discomfort. The timing and length of breaks may depend on the individual user and what you are doing with HaloLens.

### If You Experience Discomfort

If you experience discomfort, stop using HaloLens and rest until you feel better. Sitting still in a well-lit environment can help speed recovery from disorientation. If you feel disoriented, avoid activities that require balance, coordination, or other capabilities until you recover. Be sure the display is properly calibrated. Take note of the type of content you were viewing and other aspects of the situation in which the discomfort occurred so you can adjust or ease into the situation next time. People differ in the time they take to adapt. Consider taking more frequent or longer breaks.

If symptoms are severe or persist, consult your doctor. Viewing 3D or Mixed Reality is not known to harm vision development or cause binocular vision disorders. If you are not able to

view the 3-D effect clearly and comfortably, consider consulting an eye doctor, as you may have an undiagnosed binocular vision disorder.

# SAFETY AND WARNINGS

## AC adapter Safety

Failure to take the following precautions can result in serious injury or death from electric shock or fire or in damage to the device. To select an appropriate power source for your HaloLens:

- Use only the power supply unit and AC power cord that came with your HaloLens
- Do not use non-standard power sources, such as generators or inverters, even if the voltage and frequency appear acceptable. Only use AC power provided by a standard wall outlet.
- Do not overload your wall outlet, extension cord, power strip, or other electrical receptacle. Confirm that they are rated to handle the total current (in amps [A]) drawn by the HaloLens (indicated on the power supply unit) and any other devices that are on the same circuit.

On devices where the AC prongs may be folded for storage, before plugging the AC adapter into a power outlet, make sure its prongs are fully extended. On devices where the AC prongs are removable and where the power supply uses a universal adapter, before plugging the AC adapter into a power outlet, make sure the prong assembly is of the proper configuration for the power outlet and fully seated into the adapter.

## Battery Safety

The HaloLens contains a built-in battery, improper use of which may result in explosion. Do not heat, open, puncture, mutilate, or dispose of the product in fire. Do not leave the HaloLens in direct sunlight for an extended period of time, which could cause melting or battery damage. The battery in the HaloLens is not user replaceable.

## Potentially Explosive Atmospheres

Areas with potentially explosive atmospheres are often, but not always, posted and can include fueling areas, such as below decks on boats, fuel or chemical transfer or storage facilities, or areas where the air contains chemicals or particles, such as grain dust, or metal powders. When you are in such an area, turn off your HaloLens, and do not remove or install battery chargers, AC adapters, or any other accessory. In such areas, sparks can occur and cause an explosion or fire.

## Personal Medical Devices

Radio-frequency emissions from electronic equipment can negatively affect the operation of other electronic equipment, causing them to malfunction. Although HaloLens is designed, tested, and manufactured to comply with regulations governing radio frequency emission in countries such as the

United States and Canada, the wireless transmitters and electrical circuits in the device may cause interference in other electronic equipment.

Therefore, please take the following precautions:

**Pacemakers:** The Health Industry Manufacturers Association recommends that a minimum separation of 15 cm (6 inches) be maintained between a wireless device and a pacemaker to avoid potential interference with the pacemaker.

Persons with pacemakers:

- Should always keep the device more than 15 cm (6 inches) from the pacemaker when the wireless device is turned on.
- If you have any reason to suspect that interference is taking place, turn the device off immediately.

## Heat Related Concerns

The HaloLens may become very warm during normal use. HaloLens complies with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950-1).

To reduce heat related concerns, follow these guidelines:

- Allow for adequate air circulation under and around the device.
- Use caution when operating your device with a pillow, blanket, hat or other soft material contacting the device, because the material can block the airflow which may result in the device overheating.
- If your device gets uncomfortably warm, remove it and take a break.

## Photo Sensitive Seizures

A very small percentage of people may experience a seizure when exposed to certain visual images, including flashing lights or patterns that may appear in video games. Even people who have no history of seizures or epilepsy may have an undiagnosed condition that can cause these “photosensitive epileptic seizures” while watching video games.

These seizures may have a variety of symptoms, including lightheadedness, altered vision, eye or face twitching, jerking or shaking of arms or legs, disorientation, confusion, or momentary loss of awareness. Seizures may also cause loss of consciousness or convulsions that can lead to injury from falling down or striking nearby objects.

Immediately stop using the HaloLens and consult a doctor if you experience any of these symptoms.

The risk of photosensitive epileptic seizures may be reduced by taking the following precautions:

- Using HaloLens in a well-lit room.
- Do not use HaloLens when you are drowsy or fatigued.
- If you or any of your relatives have a history of seizures or epilepsy, consult a doctor before using HaloLens.

## Skin Irritation

The HaloLens is made of materials commonly used in wearable consumer electronic devices. However, certain people may develop skin irritation due to allergies or sensitivities.

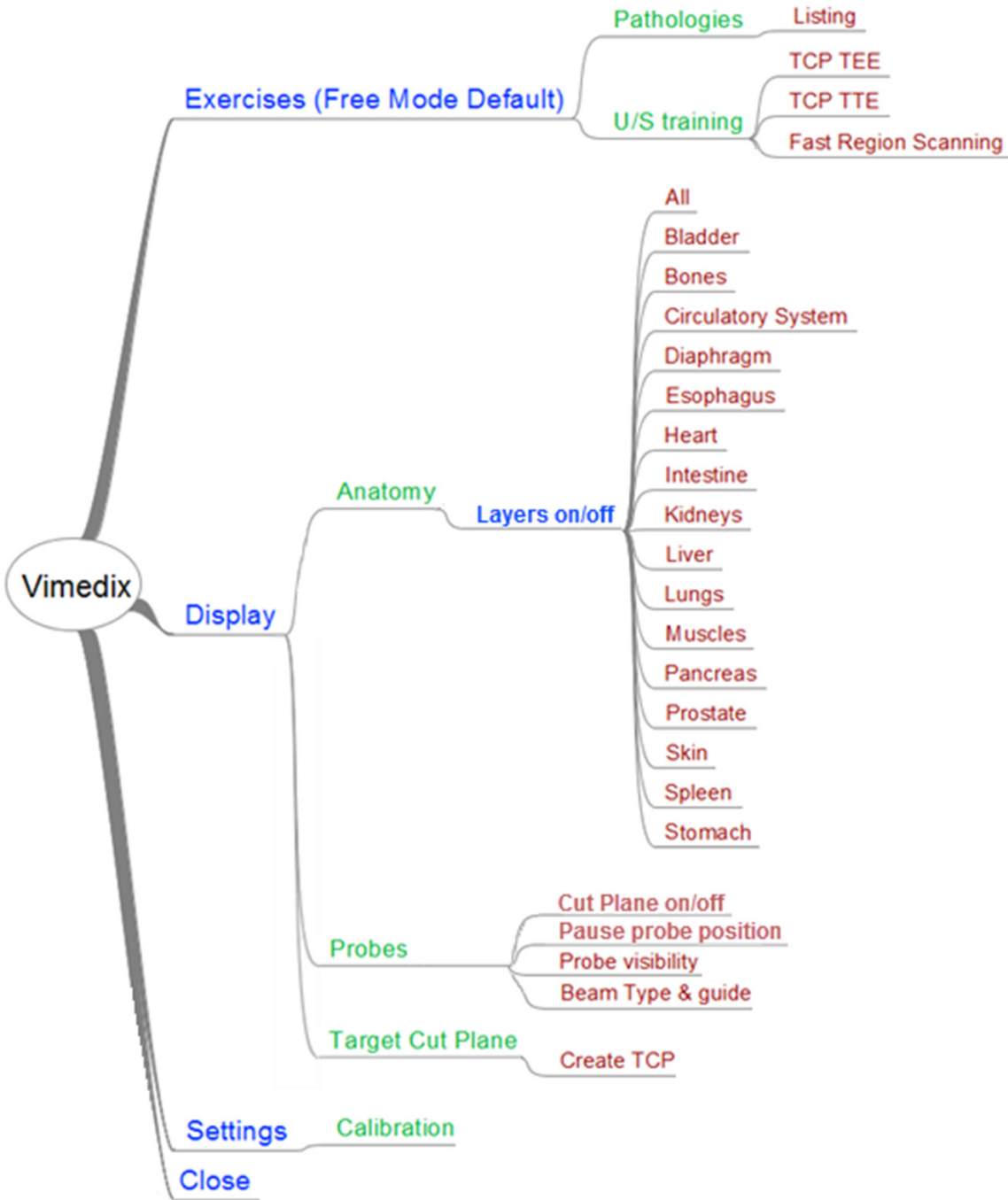
To reduce the risk of skin irritation:

- Wipe your device dry with a cloth if it gets wet.
- Avoid using lotions or other products under the portions of HaloLens that contact your head.
- Do not wear over injured skin.
- Adjust the headband only until snug – avoid tightening the headband uncomfortably.

If your skin becomes irritated, stop using HaloLens. If symptoms are severe or persist, consult your physician.

## Menu Hierarchy

The Vimedix AR menu hierarchy is as follows:



Vimedix AR Menu Hierarchy



# CARE AND MAINTENANCE

Maintaining the simulator requires careful treatment of the electronic and mechanical components. Each time the simulator is assembled or disassembled, make sure all components are properly handled and correctly removed or placed into storage.

**NOTE:** No hardware components within the simulator are user serviceable. Consult CAE Healthcare Customer Service to address any hardware maintenance concerns.

## Time and Materials

For those systems not under a support and maintenance plan, service will be provided as required on a Time and Materials basis:

The principal period of on-site support (customer's local time) is:

- Monday through Friday, 8:00 AM to 5:00 PM (customer's time zone)
- Holiday and non-business days excluded
- Support outside principal period is billed at the premium rate (hourly rate x 1.5)

A minimum of 48 hours notice is required for scheduling an on-site support call. Urgent on-site support with less than 48 hours notice will be charged at the premium hourly rate.

On-site time is described as the time period commencing from arrival at customer site through departure from customer site.

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## How to Contact Customer Service

For customer service, please contact CAE Healthcare.

### **CAE Healthcare Customer Service Headquarters - United States and Latin America**

Monday - Friday from 7:00 a.m. to 6:00 p.m. ET

Toll Free:+1 (866) 462-7920

24-hour Hotline:+1 (941) 342-5605

Fax:+1 (941) 342-5600

Email:customerservice@caehealthcare.com

Website: www.caehealthcare.com

### **CAE Healthcare Customer Service - Canada**

Monday - Friday from 8:00 a.m. to 5:00 p.m. ET

Toll Free:+1 (877) 223-6273

Email:can.service@caehealthcare.com

### **CAE Healthcare Customer Service - Europe, Middle East and Africa**

Monday - Friday from 8:00 a.m. to 5:00 p.m. CET

Phone:+49-(0) 6131 4950354

Fax:+49 (0) 6131 4950351

Email:international.service@caehealthcare.com

### **CAE Healthcare Customer Service - United Kingdom and Ireland**

Monday - Friday from 9:00 a.m. to 5:00 p.m. GMT

Phone:+44(0)800-917-1851

Email:uk.service@caehealthcare.com

Principal hours of operation exclude holidays and non-business days.

**IMPORTANT:** Effective January 1, 2014, technical and clinical phone support are available **ONLY** for products with active support and maintenance plans.

## Cleaning

Cleaning should be performed after every training session.

**WARNING:** Do not use hydrocarbon solvents on the mannequin, as they will dissolve the mannequin's skin.

**WARNING:** Do not immerse the mannequin or peripherals in liquid or use abundant liquid to wash the mannequin.

**IMPORTANT:** Do not use lubrication or other liquids with the TEE Probe.

To clean the mannequin:

1. Clean the surface of the mannequin and probe with a non-abrasive cloth dampened with a soft soap and water solution.
2. Use a soft, dry cloth to dry the mannequin and probe.
3. Applying a light amount of talcum powder (unscented baby powder) will alleviate the mannequin stickiness.

Standard cleaning procedures should be observed for the computer, monitor and peripherals.

To remove excessive lubricant from the vaginal insert on the Catherine mannequin:

1. Place a damp non-abrasive cloth placed over the tip of the endovaginal probe.
2. Insert the probe with the cloth over it into the vaginal insert.

**NOTE:** Do not use excessive force or push the probe too far to avoid damaging the insert.

## Storage

Prior to storing the simulator, clean the mannequin and inspect for damage or puncture marks. If damage is found, contact CAE Healthcare Customer Service immediately for repair.

**IMPORTANT:** Any damage to the mannequin's skin should be reported to CAE Healthcare immediately. Prompt repair will prevent expansion of the damaged area.

**IMPORTANT:** Do not attempt to open or repair any simulator components. Doing so may void the warranty.

Store the mannequin indoors, away from direct sunlight. The mannequin should be stored on its back on a flat, level surface. CAE Healthcare recommends purchasing a carrying case for storing the mannequin. The temperature in the storage room should stay between 5°C and 35°C (41°F-95°F).

**IMPORTANT:** Ensure no objects are left on or near the mannequin when storing the simulator, as they may damage the surface of the mannequin.

The probe, computer, monitor, mouse and keyboard should be stored in a dry room and protected from dust.

**NOTE:** Prior to using the mannequin after storage, allow the mannequin enough time to reach ambient temperature.

# FREQUENTLY ASKED QUESTIONS

CAE Healthcare Customer Service is available to help with Vimedix simulator as needed. However, some problems can be resolved without the assistance of customer service using the following tips.

## Probe and Display

The following table outlines some of the frequently asked questions about the probe and display.

Question	Answer
<p>Why is the probe not working?</p>	<ol style="list-style-type: none"> <li>1. The probe may not be connected properly. Disconnect the probe from the computer, place it on the mannequin’s abdomen and reconnect it to the <b>Sensor 1</b> port.</li> <li>2. Verify that your mannequin is well connected in the Source port. If you need to reconnect the mannequin, make sure to reboot the simulator afterwards.</li> </ol>
<p>Why does my image look funny or inaccurate?</p>	<ol style="list-style-type: none"> <li>1. Ensure the probe has been calibrated correctly. If the probe was not calibrated properly, the axis is offset and the image is distorted. Disconnect the probe from the computer, place it on the mannequin’s abdomen and reconnect it to the <b>Sensor 1</b> port.</li> <li>2. Ensure there is no metal near the simulator. Common sources of interference include metal surfaces, hospital beds and filing cabinets near the mannequin. The Vimedix simulator may also be too close to the mannequin.</li> <li>3. Ensure there is not another Vimedix mannequin nearby. A minimum of six feet is required between mannequins. Unless you have bought the simulators at the same time, they are programmed to not interfere.</li> <li>4. Reboot the simulator.</li> </ol>
<p>Why is the TEE probe difficult to insert?</p>	<ol style="list-style-type: none"> <li>1. Ensure the mannequin’s head is correctly aligned with the body.</li> <li>2. Remove the mannequin’s head and lubricate the airway with silicone spray.</li> </ol>

## Startup

The following table outlines some of the frequently asked questions about starting up the simulator.

Question	Answer
Why is the simulator taking longer than normal to start?	It is normal for the simulator to take a few minutes longer than usual to start on occasion. Once every 23 times the simulator is started, the simulator goes through a diagnostic process that takes additional time.

## Updates

The following table outlines some of the frequently asked questions about updates.

Question	Answer
How do I get the most current updates for the simulator?	Ensure the simulator is connected to the Internet and your Network Administrator or IT professional has granted access to the Vimedix update server. See <i>Managing Network Settings</i> for more information. Also be sure to accept the auto-update when prompted upon simulator startup.
Why is my simulator not receiving an auto-update, even though it seems to be connected to the Internet?	Ensure your Network Administrator or IT professional has granted access to the Vimedix update server. See <i>Managing Network Settings</i> for Vimedix update server information. Also, make sure that you have a valid maintenance and support agreement. Contact CAE Healthcare Customer Service if your agreement has expired.
What should I do if the simulator auto-update is taking a long time?	This is normal. Updates can take up to several hours to complete, depending on the update size and the Internet connection.

# KEYBOARD SHORTCUTS AND MOUSE CONTROLS

The keyboard shortcuts and mouse controls provided in the following tables can be used for quick navigation of the Vimedix interface.

## Keyboard Shortcuts

Shortcut Key	Action
Shift + Esc	<i>Exit</i> - Shuts down the simulator
Esc	<i>Close Menu</i> - Closes any open menu
Tab	<i>List Pathologies</i> - Opens the Pathology menu to load pathologies
F1	<i>Help</i> - Opens the Help menu
PrtScn or Print Screen	<i>Screen Capture</i> - Takes a screen capture. For more information about screen captures, see <i>Using Capture Controls</i> .
Home	<i>Target Cut Planes</i> - Opens the Target Cut Plane menu
Space bar	<i>Pause/Unpause</i> - Freezes or unfreezes the display image
Enter	<i>Stop Metrics</i> - Stops current metrics session
↑	<i>Increase Contrast</i> - Increases contrast on the Ultrasound display
↓	<i>Decrease Contrast</i> - Decreases contrast on the Ultrasound display
→	<i>Increase Gain</i> - Increases gain on the Ultrasound display
←	<i>Decrease Gain</i> - Decreases gain on the Ultrasound display
Backspace	<i>Delete Measurement</i> - Deletes the last measurement taken
Page Up	<i>Increase Heart Rate</i> - Increases heart rate by 5 beats per minute (bpm)
Page Down	<i>Decrease Heart Rate</i> - Decreases heart rate by 5 beats per minute (bpm)
Insert	<i>Create Target Cut Plane</i> - Creates a custom target cut plane
+ and/or -	<i>Depth of Field</i> - Increases or decreases the depth of field

Shortcut Key	Action
A	<i>Area Measurement</i> - Activates or deactivates the area measurement feature
B	<i>M-mode Settings</i> - Allows the user to adjust M-mode settings from the Physio menu
C	<i>Electronic Caliper</i> - Activates or deactivates the electronic caliper
D	<i>Color Doppler</i> - Activates or deactivates color Doppler
E	<i>Convention</i> - Changes the ultrasound imaging convention (marker position). By default, the cardiology and anesthesiology convention is used
F	<i>Record Video</i> - Records video of the current display. For more information about recording video, see <i>Using Capture Controls</i> .
G	<i>Zoom</i> - Activates or deactivates the zoom feature. When zoom is active, use the mouse to adjust the position of the region of interest, then click the left mouse button to select the region of interest to enlarge.
I	<i>Toggle Probe Control</i> - Toggles between mouse and probe control of the ultrasound image.
K	<i>ECG</i> - Displays or hides ECG tracing
L	<i>Circumference Measurement</i> - Activates or deactivates the circumference measurement feature.
M	<i>M-mode</i> - Activates or deactivates M-mode
O	<i>Structures Visibility</i> - Opens the Structures Visibility menu
P	<i>Cut Plane</i> - Changes the cut plane direction in the AR view. This function is relevant when view lock is disabled
Q	<i>Captures Menu</i> - Opens the Simulation Captures window, from which screen and video captures can be viewed and managed
R	<i>Echo Reports Window</i> - Opens the Echo Reports window
T	<i>Tutorial</i> - Activates or deactivates tutorial mode
V	<i>Size</i> - Toggles through the layout options for the AR and Ultrasound displays
X	<i>View Lock</i> - Activates or deactivates view lock
Y	<i>Beam Type</i> - Toggles between beam types
Z	<i>Settings</i> - Opens the Settings window, from which system settings can be modified
8	<i>Increase Doppler Range</i> - Increases Doppler range
2	<i>Decrease Doppler Range</i> - Decreases Doppler range
9	<i>Increase Doppler Offset</i> - Increases Doppler offset
3	<i>Decrease Doppler Offset</i> - Decreases Doppler offset



## Mouse Controls

Action	Mouse Control
Zoom in or out	Click and hold the mouse wheel, then move the mouse while still holding the wheel
Adjust depth of field	Roll the mouse wheel backward or forward
Move the organs	Press and hold the left mouse button and move the mouse to drag the organs. The ultrasound beam does not move, but the ultrasound image changes because the organs move within the scanning plane.
Move the probe	With view lock turned off, press and hold the left mouse button in the AR display and move the mouse. The ultrasound image changes because the scanning plane moves. (For more information about view lock, see <i>Locking the View</i> .)
Move the organs and probe	With view lock turned off, simultaneously press and hold the left and right mouse buttons in the AR display and move the mouse. The ultrasound image does not change, because the probe and beam do not move in relation to the body. (For more information about view lock, see <i>Locking the View</i> .)

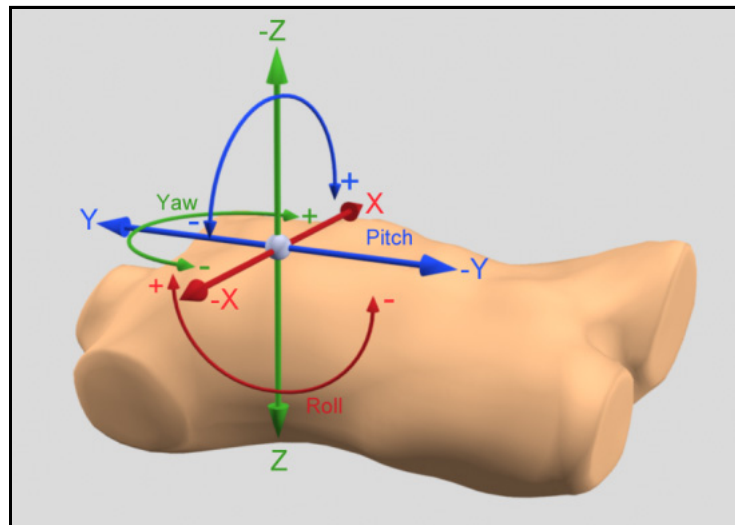


# METRICS PARAMETERS

The metrics feature records the actions performed by the user during a metrics exercise to determine areas of existing skill and areas of improvement when attempting to capture a particular view.

## Coordinate System Details

The diagram identifies the coordinate system of the VIMEDIX simulator positional tracking system.



***The Vimedix Metrics Coordinate System Diagram***

For the male mannequin, the X, Y, Z coordinate system origin is located in proximity to the mannequin's heart.

For the female mannequin, the X, Y, Z coordinate system origin is located just superior to the mannequin's heart.

The X-axis is aligned with the medial-lateral body orientation. The Positive X direction is towards the mannequin's lateral left.

The Y-axis is aligned with the cranial-caudal body orientation. The Positive Y direction is towards the mannequin's cranium.

The Z-axis is aligned with the anterior-posterior body orientation. The Positive Z direction is towards the mannequin's posterior.

### Roll, Pitch and Yaw

Roll is a rotation about the X-axis.

Pitch is a rotation about the Y-axis.

Yaw is a rotation about the Z-axis.

**NOTE:** Roll, pitch, and yaw positive rotation directions are established by the right hand rule (i.e. grasp axis with right hand with thumb oriented in positive direction, fingers will then curl in direction of positive rotation for that axis).

Absolute pitch and roll values are 0 when the ultrasound beam is parallel to the xy plane.

Absolute yaw value is 0 when the beam centerline coincides with the positive x-axis.

The positional sensor is located in the tip of all the simulator ultrasound probe types.

For the TEE probe, the omniplane rotation and flexion metrics are not captured separately but are factored into the final position and orientation of the sensor tip.

The roll, pitch, and yaw coordinates will always fall between [-180, +180].

# Metrics Exportable Details Parameter Definitions

The exportable metrics files (.CSV file) contain a range of a parameters detailing probe movement during target cut plane capture and a comparison between the final captured and target positions.

## Summary

Term	Definition
Total Time for Cut Plane Capture (seconds)	Time elapsed between when the “Start Metrics” button was pressed and the “Stop Metrics” button was pressed.
Total Distance Traveled for Cut Plane Capture (cm)	Total probe distance travelled between when the “Start Metrics” button was pressed and the “Stop Metrics” button was pressed (see detailed section for calculation details).
Total Angular Movement for Cut Plane Capture (degrees)	Total probe angular movement between when the “Start Metrics” button was pressed and the “Stop Metrics” button was pressed see detailed section for calculation details).
Number of Probe Accelerations from Rest	A count of the amount of times the probe transitions from a speed of 0.05 cm/s to a speed greater than 0.05 cm/s (including the initial movement).
Time for Initial Probe Movement	The time elapsed between “start metrics” is pressed and the probe acceleration count is 1.

## Target Cut Plane vs. Captured Cut Plane Comparison

**NOTE:** Captured cut plane position refers to the position of the probe when the “Stop Metrics” button is pressed.

Term	Definition
Target Cut Plane Probe Position	The absolute X, Y, Z coordinates of the target cut plane ultrasound probe position relative to the coordinate system origin.
Captured Cut Plane Probe Position	The absolute X, Y, Z coordinates of the captured cut plane probe position relative to the coordinate system origin.
Position Difference	The X,Y,Z positional differences between the ultrasound probe in the target cut plane position and captured cut plane position.
Total Positional Difference	The total distance between the ultrasound probe target cut plane and captured cut plane positions is calculated as $\sqrt{(X2-X1)^2+(Y2-Y1)^2+(Z2-Z1)^2}$ .
Target Cut Plane Probe Orientation	The absolute roll, pitch, yaw orientations of the target cut plane ultrasound probe position relative to the coordinate system origin.
Captured Cut Plane Probe Orientation	The absolute roll, pitch, yaw orientations of the captured cut plane ultrasound probe position relative to the coordinate system origin.
Orientation Difference	The roll, pitch, yaw orientation differences between the ultrasound probe in the target cut plane position and captured cut plane position.
Total Orientation Difference	The rotation required to align the captured cut plane with the target cut plane. It is calculated as the quaternion angle combining the contributions of roll, pitch, and yaw into the single and most direct rotation which takes place around a newly created vector in space.
Target Cut Plane Depth of Field	Beam depth of field of the target cut plane
Captured Cut Plane Depth of Field	Beam depth of field of the captured cut plane
Depth of Field Difference	Difference in beam depth of field between the target and captured cut planes
Target Cut Plane Angle	Beam angle of the target cut plane
Captured Cut Plane Angle	Beam angle of the captured cut plane
Angle Difference	Difference in beam angles between the target and captured cut planes

## Detailed Metrics Results

Term	Definition
Time	Time stamp at which the metrics data was captured. Time starts upon clicking the "Start Metrics" button and stops upon clicking the "Stop Metrics" button. The interval between time stamps can be specified in the "Metrics Capture Interval" field of the settings menu and the options are: real time, 1 second, and 3 seconds. The default setting is real time and has time stamp intervals of a fraction of a second which are variable depending on available processing capability.
Probe X Position (cm)	The absolute x-axis position of the ultrasound probe relative to the coordinate system origin.
Probe Y Position (cm)	The absolute y-axis position of the ultrasound probe relative to the coordinate system origin.
Probe Z Position (cm)	The absolute z-axis position of the ultrasound probe relative to the coordinate system origin.
Probe Distance Traveled (cm)	The sum of the distances travelled by the ultrasound probe during each time step since time = 0. The distance travelled during a time step between start position 1 and end position 2 is calculated as $\sqrt{(X2-X1)^2+(Y2-Y1)^2+(Z2-Z1)^2}$ .
X Position Difference Target (cm)	The relative x-axis positional difference between the ultrasound probe and the target cut plane ultrasound probe position.
Y Position Difference Target (cm)	The relative y-axis positional difference between the ultrasound probe and the target cut plane ultrasound probe position.
Z Position Difference Target (cm)	The relative z-axis positional difference between the ultrasound probe and the target cut plane ultrasound probe position.
Total Position Difference Target (cm)	The total distance between the current ultrasound probe position 1 and the target cut plane ultrasound probe position 2 is calculated as $\sqrt{(X2-X1)^2+(Y2-Y1)^2+(Z2-Z1)^2}$ .
Probe Roll (degrees)	The absolute roll orientation of the ultrasound probe relative to the coordinate system origin.
Probe Pitch (degrees)	The absolute pitch orientation of the ultrasound probe relative to the coordinate system origin.
Probe Yaw (degrees)	The absolute yaw orientation of the ultrasound probe relative to the coordinate system origin.

Term	Definition
Probe Angular Movement (degrees)	The sum of angular orientation movements by the ultrasound probe during each time step since time = 0. The orientation angular movement during a time step between start position 1 and end position 2 is calculated as the quaternion angle combining the contributions of roll, pitch, and yaw into the single and most direct rotation which takes place around a newly created vector in space.
Roll Difference Target (degrees)	The relative roll orientation difference between the ultrasound probe and the target cut plane ultrasound probe position.
Pitch Difference Target (degrees)	The relative pitch orientation difference between the ultrasound probe and the target cut plane ultrasound probe position.
Yaw Difference Target (degrees)	The relative yaw orientation difference between the ultrasound probe and the target cut plane ultrasound probe position.
Total Orientation Difference Target (degrees)	The total angular orientation difference between the current ultrasound probe position 1 and the target cut plane ultrasound probe position 2. It is calculated as the quaternion angle combining the contributions of roll, pitch, and yaw into the single and most direct rotation between the points which takes place around a newly created vector in space.
Beam Depth of Field (cm)	The beam depth of field setting
Beam Angle (degrees)	The beam angle setting



# VIMEDIX PATHOLOGY CODES

Pathologies can be loaded in Stealth mode so the pathology names are not visible to learners. Pathologies codes are used to load pathologies in Stealth mode.

The available pathology codes are listed in the tables below.

For more information on stealth mode and how to use pathology codes, see *Loading Pathologies* section of the Vimedix User Guide.

## TTE or TEE Cardiac Modules

Pathology	Code
Dilated Cardiomyopathy - Severe Biventricular Systolic Dysfunction	D2
Hyperdynamic Left Ventricular Systolic Function	A4
Normal	A3
Normal, Patient 2 (Montreal Heart Institute heart template, enhanced lung)	A32
Normal, Patient 3 (Montreal Heart Institute heart template, enhanced lung, enhanced abdomen)	A33
Recent Anterior Myocardial Infarction with Pericardial Effusion	C3

## Cardiac Package 1

Pathology	Code
Anterior Myocardial Infarction in a COPD Patient	C2
Biologic Prosthetic Valve in Aortic Position	J1
Dilated Cardiomyopathy – Very Severe Left Ventricular Systolic Dysfunction in a COPD Patient	B1
Dilated Cardiomyopathy – Mild Left Ventricular Systolic Dysfunction	D5
Left Pleural Effusion	H4
Left Ventricular Apical Aneurysm with Thrombus	C4
Normal Heart in a COPD Patient	A2
Mechanical Prosthetic Valve (Bileaflet) in Aortic and Mitral Position	J2
Mechanical Prosthetic Valve (Bileaflet) in Mitral Position	J3
Tamponade	T2

## Cardiac Package 2

Pathology	Code
Acute Anterior Myocardial Infarction	A6
Acute Lateral Myocardial Infarction in a COPD Patient	C1
Aortic Valve Infective Endocarditis	AIE
Asystole	A5
Coarse Ventricular Fibrillation	C5
Dilated Cardiomyopathy – Mild Left Ventricular Systolic Dysfunction in a COPD Patient	D6
Dilated Cardiomyopathy – Very Severe Left Ventricular Systolic Dysfunction	V15
Fine Ventricular Fibrillation	K11
Pulmonary Hypertension	P1
Pulmonary Hypertension in a COPD Patient	D1

## Cardiac Package 3

Pathology	Code
Acute Inferior Myocardial Infarction	A7
Acute Lateral Myocardial Infarction	A11
Acute Right Ventricular Myocardial Infarction	A8
Aortic Dissection – Type B	A9
Aortic Stenosis – Valvular	A10
Billowing Mitral valve - Two leaflets	B3
Bicuspid Aortic Valve	B2
Dilated Cardiomyopathy - Severe Left Ventricular Systolic Dysfunction	D3
Myxoma	M1
Right Pleural Effusion	R1

## Cardiac Package 4

<b>Pathology</b>	<b>Code</b>
Acute Inferior and Right Ventricular Myocardial Infarction with Ventricular Septal Defect	A17
Acute Inferior Myocardial Infarction with Right Ventricular Myocardial Infarction	A12
Aortic Insufficiency	A13
Atrial Septal Defect - Small	A18
Billowing Mitral Valve	B4
Cardiac Arrest Standstill in a COPD patient	C6
Coronary Artery Disease - Wall Motion Abnormalities in the 3 Coronary Territories	C7
Dilated Cardiomyopathy – Moderate Biventricular Systolic Dysfunction	D4
Left Atrial Appendage Thrombus	L1
Thrombus in Transit Patent Foramen Ovale	T1

## Emergency Physicians Mix & Match Package 1

<b>Pathology</b>	<b>Code</b>
Acute Lateral Myocardial Infarction	A11
Anterior Myocardial Infarction in a COPD Patient	C2
Aortic Stenosis – Valvular	A10
Right Pleural Effusion	R1
Dilated Cardiomyopathy – Moderate Biventricular Systolic Dysfunction	D4
Fine Ventricular Fibrillation	K11
Mechanical Prosthetic Valve (Bileaflet) in Aortic and Mitral Position	J2
Myxoma	M1
Pulmonary Hypertension	P1
Tamponade	T2

## Montreal Heart Institute (MHI)

Pathology	Code
Montreal Heart Institute - Amyloidosis	MHI1
Montreal Heart Institute - CMP – Dilated	MHI2
Montreal Heart Institute - CMP - Hypertrophic	MHI3
Montreal Heart Institute - Ebstein's Anomaly - ASD	MHI4
Montreal Heart Institute - LV Apical Thrombus	MHI5
Montreal Heart Institute - Mitral Valve Prolapse	MHI6
Montreal Heart Institute - Mitral Valve - Rheumatic Disease	MHI7
Montreal Heart Institute - Myxoma	MHI8
Montreal Heart Institute - Takotsubo	MHI9
Montreal Heart Institute - VSD (CIV) Post-Infarct	MHI10

## Montreal Heart Institute (MHI) Acute Complex Pathology<sup>+</sup>

Pathology	Code
Abdominal Compartment Syndrome	MHI11
Dynamic Right Ventricular Outflow Tract Obstruction	MHI14
Floating Pulmonary Embolism	MHI17
Full Stomach	MHI23
Inferior Vena Cava Stenosis	MHI22
Isolated Left Atrial Tamponade	MHI19
Isolated Right Atrial Tamponade	MHI18
Left Ventricular Outflow Tract Obstruction	MHI15
Mechanical Right Ventricular Outflow Tract Obstruction	MHI16
Reduced Mean Systemic Pressure (reduced preload) from Liver Abscess	MHI21
Reduced Mean Systemic Pressure (respiratory variation of superior vena cava)	MHI13
Right Pneumothorax and Right Heart Collapse	MHI20
Right-Sided Carbon Dioxide or Air Embolism	MHI12

## Emergency Ultrasound Package

Pathology	Code
Right Atrium Tamponade	TEER1
Severe Hypovolemia	TEER2
LVOT Obstruction LVH Post AVR	TEER3
Acute RV Failure	TEER4
Air Embolism	TEER5
Extensive Myocardial Ischemia	TEER6
Aortic Dissection	TEER7
Large Cardiac Mass	TEER8
Acute MR Post AVR	TEER9
Prosthesis Dysfunction Post MVR	TEER10

## Abdominal Base Module

Pathology	Code
Normal	A3
Normal, Patient 2	A32
Normal, Patient 3	A33
Free Fluid - Hepato-Renal Reflection (Morrison's Pouch - Small)	F1
Free Fluid - Retro-Vesical Reflection (Large)	F3
Free Fluid - Spleno-Renal Reflection (Medium)	F2
Hydatid Cyst of the Liver	H5
Liver Hepatocellular Carcinoma Hypoechoic	L5
Multilocular Intra-Abdominal Abscess	M2

## Abdominal Package 1

Pathology	Code
Acute Cholecystitis	C1
Angiomyolipoma	A19
Bacterian Hepatic Abscess	B5
Cholecystitis with Gallstone	C10
Choledocolithiasis	C13
Exophytic Renal Cyst	E1
Hepatomegaly	L3
Kidney Stones	K12
Pancreatic Pseudocyst	P2
Splenomegaly	S4

## Abdominal Package 2

Pathology	Code
Chronic Pancreatitis	C9
Gallbladder Polyp	G1
Hepatic Haemangioma	H2
Hepatic Heterogeneous Metastases	H7
Hepatic Homogeneous Metastases	H8
Hepatic Steatosis	H6
Large Gallbladder Polyp	L2
Renal Cyst	R2
Splenic Cyst	S3
Splenic Haemangioma	S2

## Abdominal Package 3

<b>Pathology</b>	<b>Code</b>
Bochdalek Hernia - Left Side	B6
Cholelithiasis	C14
Gallstones	G2
Hepatic Cirrhosis with Portal Hypertension	H13
Liver Hepatoma Heterogeneous Lesion	L7
Pancreatitis	P3
Pyelonephritis	P4
Renal Abscess	R3
Renal Cyst Rupture	R4
Sclerosing Cholangitis	S5

## Abdominal Package 4

<b>Pathology</b>	<b>Code</b>
Adenocarcinoma of the Gallbladder	A20
Bochdalek Hernia	B7
Calcified Granulomas	C12
Focal Nodular Hyperplasia	F12
Hepatic Cirrhosis	H12
Hepatic Cirrhosis with Ascites	H10
Left Hydronephrosis	H11
Liver Adenoma	L4
Liver Hepatocellular Carcinoma Hyperechoic	L6
Liver Hepatoma Hypoechoic Lesion (Large)	L8

## Abdominal Aortic Aneurysm (AAA) Pathology<sup>+</sup>

Pathology	Code
Medium Suprarenal	AAA1
Small Renal	AAA2
Medium Renal	AAA3
Left Iliac Artery Aneurysm	AAA4

**NOTE:** When using AAA pathology codes with **Modality Modifiers**, refer to the following codes, where \*\*\*\*\* indicates the code for Modality Modifiers that are turned ON or OFF. The dash (-) must be used and all five numeric spaces, after the pathology code, must have either a 0 or 1.

Pathology	Code
AAA - Medium Suprarenal	AAA1-*****
AAA - Small Renal	AAA2-*****
AAA - Medium Renal	AAA3-*****
Left Iliac Artery Aneurysm	AAA4-*****

Modality Modifier	Code
*Digestive system gas	0 = OFF 1 = ON
*Dissection	0 = OFF 1 = ON
*Free Fluid	0 = OFF 1 = ON
*Mural Thrombus	0 = OFF 1 = ON
*Pericardial Fluid	0 = OFF 1 = ON

Examples:

**AAA2** = Small Renal

**AAA2-10100** = Small Renal with Digestive system gas ON + Free Fluid ON



## FAST Package 1

Pathology	Code
Free Fluid - Retro-Vesical Reflection (Small)	F9
Free Fluid - Retro-Vesical Reflection (Medium)	F8
Free Fluid - Splenal-Renal Reflection (Small)	F5
Free Fluid - Supra-Splenal	F11
Free Fluid - Above the Spleen with Hemothorax	F13
Free Fluid - Hepato-Renal Reflection (Morrison's Pouch - Large)	F6
Free Fluid - Bilateral Renal Pouch (Small)	F10
Left Lateral Trauma	H14
Spleen Rupture	S6
Small Pericardial Effusion	S7

## FAST Mix & Match Package 1

Pathology	Code
Abdominal Aortic Aneurysm	A14
Abdominal Aortic Dissection	A16
Aortic Dissection – Type B	A9
Free Fluid - Hepato-Renal Reflection (Morrison's Pouch – Medium)	F7
Free Fluid - Retro-Vesicular Reflection (Medium)	F8
Free Fluid - Splenal-Renal Reflection (Large)	F2
Free Fluid - Splenal-Renal Reflection (Small)	F5
Left Pleural Effusion	H4
Right Pleural Effusion	R1
Tamponade	T2

## Pleural Pathology Package

Pathology	Code
Bilateral Diaphragmatic Dysfunction	PL2
Bilateral Pulmonary Edema	PL4
Central Pneumonia	PL3
Complete Pleural Effusion	PL6
Empyema	PL5
Normal, Enhanced Heart and Lungs	A32
Pneumonia	PL7
Pneumothorax	PL8
Small Pleural Effusion	PL1
Unilateral Diaphragmatic Dysfunction	PL9

# VIMEDIX OB/GYN ULTRASOUND SIMULATOR PATHOLOGY CODES

Pathologies codes are used to load pathologies in Stealth mode, so the pathology names are not visible to learners. The available pathology codes are listed in the tables below.

For more information on stealth mode and how to use pathology codes, see *Loading Pathologies* section of the VIMEDIX User Guide.

## Ob/Gyn Standard Endovaginal Module

The following pathologies are installed standard for the Endovaginal Module on the VIMEDIX Ob/Gyn ultrasound simulator.

Pathology	Code
Normal Fetus- 8 weeks	8weeks01

## Additional 8-Week Pathologies

The following are additional pathologies available for purchase for the Endovaginal Module on the VIMEDIX Ob/Gyn ultrasound simulator.

Individual Pathology	Code
Bicornuate- 8 weeks	8weeks02
Blighted Ovum - 8 weeks	8weeks03
Cesarean Scar - 8 weeks	8weeks11
Dermoid - 8 weeks	8weeks12
Ectopic Pregnancy - 8 weeks	8weeks15
Enlarged Corpus Luteum Cyst - 8 weeks	8weeks13
Fetal demise - 8 weeks	8weeks04
Fetus Younger Than Expected - 8 weeks	8weeks09
Intrauterine Device - 8 weeks	8weeks10
Molar Pregnancy - 8 weeks	8weeks07
Subchorionic Hematoma - 8 weeks	8weeks06
Twins Dichorionic-Diamniotic - 8 weeks	8weeks05
Twins Monochorionic-Diamniotic - 8 weeks	8weeks08
Twins Monochorionic-Monoamniotic - 8 weeks	8weeks14

## Additional 12-Week Pathologies

The following are additional pathologies available for purchase for the Endovaginal module on the VIMEDIX Ob/Gyn ultrasound simulator.

Individual Pathology	Code
Amniotic Band Syndrome - 12 weeks	12weeks10
Anencephaly - 12 weeks	12weeks11
Cephalocele 1 - 12 weeks	12weeks08
Cephalocele 2 - 12 weeks	12weeks09
Megacystis - 12 weeks	12weeks12
Normal Fetus - 12 weeks	12weeks01
Nuchal Translucency 2.8mm - 12 weeks	12weeks02
Nuchal Translucency 3.2mm - 12 weeks	12weeks03
Nuchal Translucency 4.7mm - 12 weeks	12weeks05
Nuchal Translucency 5.5mm Hygroma - 12 weeks	12weeks04
Nuchal Translucency 9.5mm Hygroma - 12 weeks	12weeks06
Omphalocele - 12 weeks	12weeks07

## Ob/Gyn 20-Week Fetus Module

(for use with Curvilinear Probe only)

The following second trimester pathologies are installed standard for the 20-week module on the VIMEDIX Ob/Gyn ultrasound simulator.

Pathology	Code
Cleft Lip - 20 weeks	OB010
Gastrochisis - 20 weeks	OB009
Normal - 20 weeks	OB001
Unilateral Ventriculomegaly - 20 weeks	OB004

## Additional 20-Week Pathologies

(for use with Curvilinear Probe only)

The following additional pathologies available for purchase for the 20-week module on the VIMEDIX Ob/Gyn ultrasound simulator.

Individual Pathology	Code
Bilateral Club Foot	OB012
Choroid Plexus Cyst - Large	OB002
Choroid Plexus Cyst - Small	OB021
Cleft Lip and Palate	OB029
Cleft Palate	OB025
Cloacal Bladder Extrophy	OB011
Dandy Walker Syndrome	OB022
Esophageal Atresia	OB018
Fetal Growth Retardation - Shortened Femur	OB007
Left Renal Agenesis	OB006
Mega-Cisterna Magna	OB023
Multicystic Renal Dysplasia	OB005
Nasal Bone Absence	OB003
Nasal Hypoplasia	OB016
Oligohydramnios	OB027
Omaphalocele	OB008
Polyhydramnios	OB026
Renal Pelvis Dilation	OB017
Right Renal Agensis	OB020
Unilateral Club Foot	OB013



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