Infant Virtual I.V.
Directions for Use

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Infant Virtual I.V.
Directions for Use

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Introduction

INTRODUCTION

The Infant Virtual I.V.™ Self-Directed Learning System is designed to provide both the novice student and advanced practitioner the opportunity to learn and practice the psychomotor skills of intravenous catheterization on a range of pediatric cases, ranging from premature infants to infants 15 months of age.

The simulator offers both an introduction to I.V. insertion, serving as a part-task trainer, and as a tiered, progressive path to build the competence required for advanced practice.

The Infant Virtual I.V.™ Self Directed Learning System is designed to meet the training needs of those responsible for placing peripheral intravenous catheters in the infant population. The simulator encompasses an extensive spectrum of infant patient models, case scenarios tailored to specific learning objectives, pathophysiologic reactions, and complications. By combining realistic 3D visual effects and haptic effects that allow you to feel the patient with whom you are working, a completely immersive and authentic environment is created to optimize the learning process.

At the heart of the learning process is the comprehensive assessment of performance, competency review mechanisms, and a complete competency training curriculum.

Novices will find that with every simulation, they will learn from their mistakes and complications, learn from the automated assessment, remember critical steps and be able to improve their performance; while more expert practitioners will be surprised by the scope and realism of the simulation, and its ability to accurately reproduce important training elements of the procedure.

This Learner Manual is to be used only as a reference for using the system, as the simulator provides a 'System Tutorial' video, a 'Procedure' video and 'Help' screens that can stand on their own for tutoring the student in how best to use the simulator.

This Manual includes:

- The Learning Objectives for this product, to serve as a guide for instructors and students to make the best use of the training benefits offered by the Infant Virtual I.V.™ Self-Directed Learning System.

- A feature list that summarizes the extensive list of product attributes that comprise the most detailed learning system ever developed for training the skills required for effective intravenous needle insertion in difficult pediatric cases.

- Directions for setting up the system, including the equipment that comes with the product, and the maintenance of the haptic device. This section includes the Quick Start Set-Up guide, which is also incorporated as a fold-out with the product packaging.

- The Quick Start Reference guide, which provides the learner with rapid directions for use of the Infant Virtual I.V.™ simulator.

- An instructional manual for using the Infant Virtual I.V. ™ simulator, providing the various options for the instructor and learner of the learning system.

- Simple overview of the debriefing and testing functions of the Infant Virtual I.V. ™ product.

- A Frequently Asked Questions (FAQ) help guide for answering some of the commonly asked questions regarding the system.

Benefits, learning objectives and features

Benefits, learning objectives and features

BENEFITS, LEARNING OBJECTIVES AND FEATURES

The Infant Virtual I.V.™ Self-Directed Learning System provides a comprehensive training environment for the placement of intravenous catheters in infants. Infants can be difficult to catheterize, because of their small size and fragile veins. This simulator trains a broad range of cognitive and psychomotor skills in I.V. insertion, based on a wide range of pediatric patient case scenarios.

The Infant Virtual I.V.™ Self-Directed Learning System provides an educational tool to customers that will take learners through the complexity of the pediatric needle insertion 'skill space'. By providing intermediate and advanced skill level learners with the opportunity to practice procedures in the presence of realistic complications, the product provides the opportunity to practice techniques and refine the necessary decision-making skills needed to successfully complete complex venous access tasks in the infant population.

Learning Objectives

The Infant Virtual I.V.™ Self-Directed Learning System provides the learner with the ability to:

- Overcome initial discomfort and fear associated with performing the I.V. procedure on actual infants.

- Perform differential diagnosis of patient cases, related to placement of a peripheral I.V. in different regions of the arm, hand, foot and scalp of a variety of pediatric cases.

- Select proper equipment, including needle gauge, from an inventory.

- Perform appropriate cleansing and site preparation.

- Learn the proper 'feel' of the procedure; from palpation, to needle insertion and feeling the 'pop', to threading the catheter, to skin stretch.

- Train the hand position for performing the procedure on a variety of relevant body parts specific to the pediatric case being presented.

- Perform appropriate orientation and angle of I.V. needle insertion.

- Secure and finish the procedure of I.V. catheterization, including site dressing and fluid administration as appropriate to the patient case scenario.

- Be presented with automated debriefing, including identification of critical and non-critical errors, and video and animation depicting ideal performance.

- Progress through a tiered hierarchy of ever more difficult patient cases, ranging from beginning student through advanced practitioner.

Benefits for the Instructor

- Track learner history, including test results. Record student performance and compare results using easy-to-understand ratings and recognized standards.

- Metrics-based debriefing of student performance to facilitate effective feedback and guidance to students.

- Instructor mode, for configuration of the simulator options and tracking the performance of students.

- Improved Instructor control, to configure many items that tailor the product to either the Pre-Hospital or In-Hospital environment as well as allowing the instructor to configure the product to their local requirements.

- Simplify training and skills sustainment in an engaging training environment.

- Present the student with a customized training experience adjusted to their needs and performance level.

- Identify student deficiencies and remediate using a range of case scenarios and basic science tutorials.

Student Benefits

- *Learn and practice needle procedures through interaction with life-like patient anatomy in real-world scenarios.*

- *Test your skill against other learners and experts in the context of ever-increasing challenges. Track your progress as you progress through the levels. Compare performance with national rankings.*

- *Select "Practice Cases" mode for quick play or "Competency Training" for more structured procedural simulations and performance tracking.*

- *Learn and review proper I.V. insertion procedures, anatomy and physiology with dynamic simulations and tutorials.*

- *Full integration with the Laerdal Competence Management System Version 1.7.1 or above allows students to remotely review progress and understand problem areas.*

Feature List

1. The Infant Virtual I.V.™ incorporates the use of developmentally appropriate skills and considers the specific needs of infants to promote a complete understanding of IV catheterization in the infant.

2. Over 170 unique case scenarios (85 in each career):

    a. There are over 20 case scenario specific and site specific simulation variables that add huge depth and variability to the product, spanning the range of infant physiology and pathophysiology.
    b. Each case scenario debriefing is driven by the corresponding procedure, providing a very accurate instructional environment for each case.
    c. Each case scenario focuses on specific learning objectives defined in the curriculum provided with the application.

3. There are 19 different infant models, ranging in skin color, weight, and age (from preterm to 15 months). Each model presents different challenges and characteristics in the context of IV catheterization.

4. There are 15 possible cannulation sites for each model, each with individualized debriefing criteria. Site availability and assessment is driven by the particular details of each case scenario. That is over 19 times 15 (285) different insertion site models, not to mention the variability that comes from the different case scenarios.

5. The Competency Review allows you to:

    a. View individual case scenarios and cognitive test assessments.
    b. View a learning curve for your entire competency training.
    c. Focus in on the last 10, 25, or 50 cases to understand your current problems and overall progress.
    d. Identify specific skill weaknesses.

6. Pre-existing conditions including in-place equipment; finding alternatives to the desirable insertion sites; IV infiltrates; and other complications add a sense of urgency to the procedure and provide the user with an accurate portrayal of real life situations.

Benefits, learning objectives and features

7. The Infant Virtual I.V.™ Haptic Device provides realistic feel in terms of skin stretch, palpation, size, and insertion forces that are specific to the child. It also allows the user to perform a two-finger skin stretch technique that is appropriate to the procedure.

8. The system supports arterial palpation at both temporal scalp sites and the arm, allowing the pulse to be felt by the user, defining artery location. The pulse depends on the heart rate of the patient.

9. Practice Mode Patient Selector: This feature allows the learner to define which patient and medical condition they want for the practice case scenario by choosing the age, weight, skin tone, and case type.

10. Many patient complications based specifically on infant physiology and issues that arise during infant IV catheterization:

    a. Accidental arterial punctures and how to deal with this error. Punctured arteries will bleed from the site until pressure is applied. Correct recovery from accidental arterial puncture is assessed in the debriefing module.
    b. If the needle is larger than the vein, the vein will blow. This adds significant realism to the simulation since the size of the vein becomes critical to correctly performing the procedure. Also, many veins that are visible are not sufficiently large enough to be cannulated.
    c. If the C-band or occluding finger is left on the site while flushing, the vein will blow.

11. Equipment items and procedure steps add depth, understanding, and a sense of immersion to the simulation experience:
    a. Trans-illuminator; a concentrated light source for improved vein visualization.
    b. Hand washing is included for proper training.
    c. Syringe flushes that behave differently depending on whether you are inside or outside a vein.
    d. Holder hands to help stabilize the patient.
    e. Availability of arm boards for joint/site stabilization.
    f. Different 3D sized needles
        i.   2 different lengths (one inch and one half and inch)
        ii. Different gauges (26 GA needles appear very small on the screen, while 20 GA needles appear much larger)
    g. Bio-Hazard Container
    h. T-connector (Lock w/extension tubing)
    i. Rubber Band, to substitute for a C-band as used for premature and newborn infants.
    j. Different pumps for Pre-Hospital and In-Hospital careers.
    k. Manual fluid delivery of a bolus is available for Pre-Hospital cases.
    l. Saline Wipe for removing cleansing agents after disinfection.
    m. Different equipment availability for the Pre-Hospital and In-Hospital careers.

12. Usability

    a. Navigation. The user can easily go to different sites, gather equipment, and even view the case scenario, all while performing the procedure.

    b. Procedure Screen Improvements
        i. Easily understood and labeled icons.
        ii. Haptic Device Interact icon that tells you when to interact with the haptic device during the procedure.
        iii. Sound when the needle is successfully engaged in the haptic device.
        iv. Easy model orientation.
        v. Precise targeting for optimal needle positioning.

13. Procedure Simulation

    a. Medically correct flushing and extension tubing application.

    b. Extension tubing and locks are automatically flushed prior to application and come with the flush attached. This allows for proper line setup and fluid administration.

    c. C-band can be removed while the needle is inserted in the site, as may be the standard for some practitioners.

14. Anatomical Viewer

    a. Complete body anatomical viewer of relevant structures with stage loading to reduce wait times.

15. Debriefing

    a. Debriefing ensures the learner performs the procedure correctly, or is negatively assessed.

    b. Assessment of equipment usage, complications and procedure tasks.

16. Instructor Configurability; many configurable items tailor the product to either the Pre-Hospital or In-Hospital environment as well as allowing the instructor to configure the product to meet their local requirements.

17. Improved Case Scenario presentation with patient image and vital signs.

18. Cognitive questions that follow training guidelines for novice to expert users.

19. Fully integrated with the Laerdal Competence Management System.

Setting up the system

SETTING UP THE SYSTEM

⚠️ **WARNING**
Precautions when using the haptic device

- *The haptic device is a precise and sensitive instrument. To ensure proper working order, please handle with care.*

- *Dropping the haptic device, bending the needle or catheter, or other abuse may render the device inoperable.*

- *To ensure proper functionality, calibrate the haptic device as required.*

- *Although the needle and catheter are blunt, they can still cause injury if used in an improper manner. Be careful and always replace them in the needle holder after use.*

- *The catheter is tethered to protect against catheter misplacement. The tether can be removed to optimize use of the device.*

- *Before starting the procedure, make sure that the needle is completely removed from the device and that the catheter is completely attached to the needle. Here is a schematic of the needle / catheter configuration:*
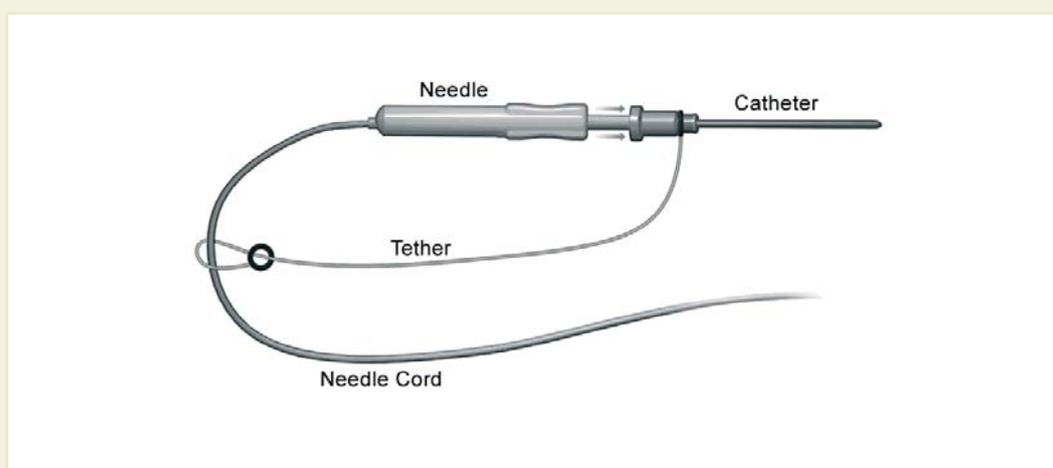
- *After completing procedure, remove the catheter from the device CAREFULLY and SLOWLY*

Setting up the System

> **⚠ WARNING**
> **Precautions when using the haptic device**
>
> - *The Infant Virtual I.V.™ Self-Directed Learning System has been designed to work on the computer supplied with the product. The computer is an integral part of the system. It will not work on other computer platforms, because of its requirements for very specific, high speed graphics capabilities. Do not attempt to install and run this software on any other computer other than that which has been provided by the manufacturer.*
>
> - *No software should be installed on the computer supplied with the Infant Virtual I.V.™ Self-Directed Learning System, except for those products supplied by the manufacturer of the software.*
>
> - *Running any program, such as anti-virus software, on the computer supplied with the simulator, may cause the Infant Virtual I.V.™ Self-Directed Learning System to crash or slow the simulation to an unstable condition. This is a dedicated computer and should not be used for other purposes, except those explicitly stated by the software manufacturer.*

Setting up the System

This diagram, also available as a fold-out set of instructions that is included in the Infant Virtual I.V.™ packaging, explains the order of unpacking and installation of the simulator. Special attention should be paid to unpacking the haptic device and plugging in the cables in the correct order and placement.

(1) Set-up and turn on the computer as indicated by the manufacturer:

(2) Plug in the power cord of the haptic device into the wall socket, but do not connect to haptic device:

Setting up the System

(3) Plug in the USB cord of the haptic device into the computer, but do not connect to haptic device:

WARNING
Do not discard your packing materials or shipping restraint.
You will need these to move/transport your device.

(4) Remove the haptic device and needle holder from the packaging:

*(5) Completely remove the restraining strap carefully from the haptic device:*

(3) Plug in the USB cord of the haptic device into the computer, but do not connect to haptic device:

(4) Remove the haptic device and needle holder from the packaging:

(5) Completely remove the restraining strap carefully from the haptic device:

ector at
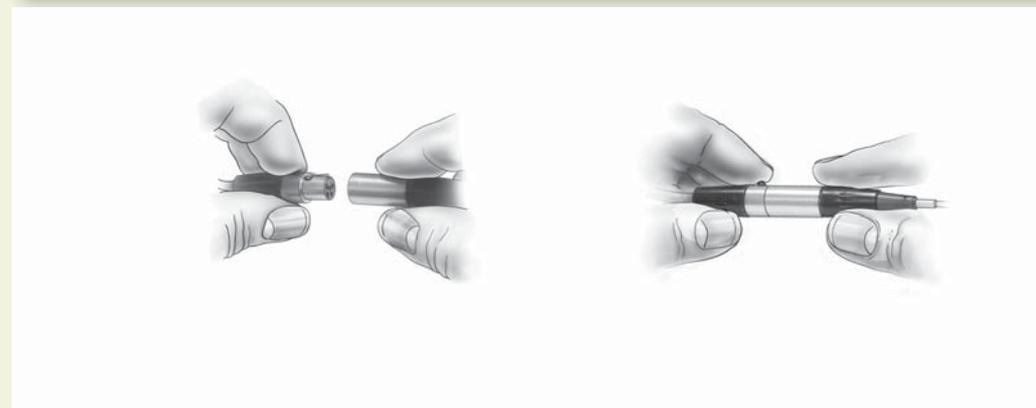
Setting up the System

Plug the (7) USB cord and (8) Power Cord into the back of the haptic device. (9) Plug the power cord from the wall socket into the power brick. The haptic device, which has been pre-calibrated by the manufacturer, is now ready to use with the simulator:
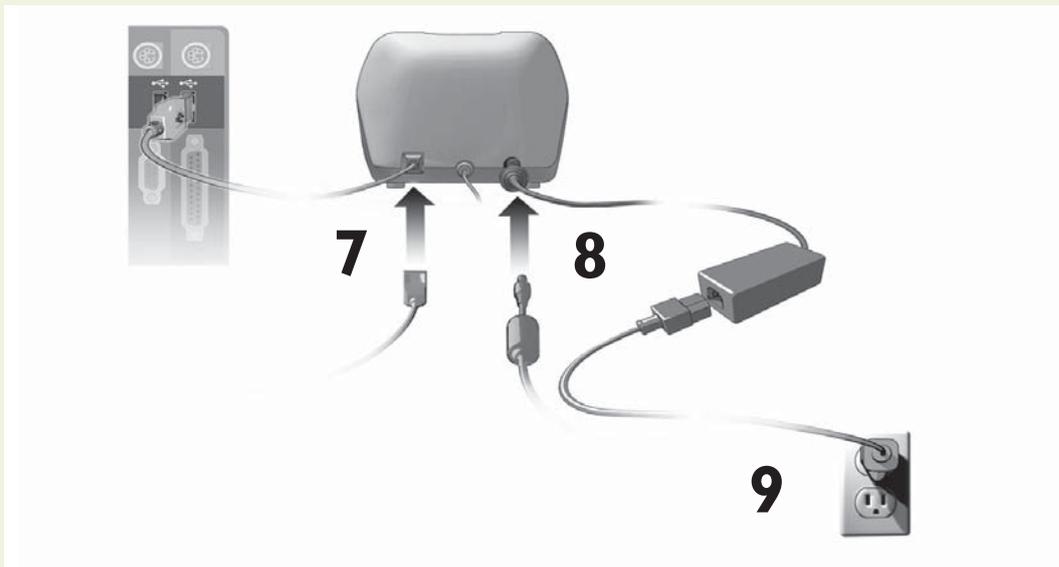
(10) The completed, set-up Infant Virtual I.V.™ Self-Directed Learning System. Note the location of the haptic device directly in front of the monitor.

(11) Before using the software, you will first need to obtain license keys for the modules you have purchased.

(11.1) Exit the Boot Screen

(11.2) Contact your Laerdal representative for customer service agent to obtain the license module key.
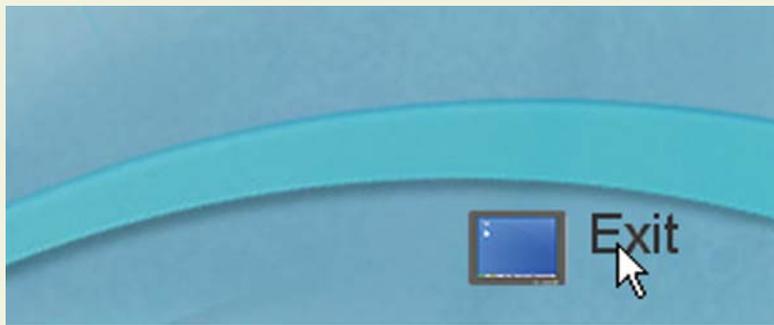
Quick start user guide

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QUICK START GUIDE

Turn on the computer. To start the application, click on the Infant Virtual I.V. section of the boot screen.:

Logging In

Once started, log onto the application with one of two default users:

Username: demouser1
Password: password

Username: demouser2
Password: password

Login as Administrator to access Instructor features and create accounts:

Username: Administrator
Password: <Provided on the information sheet inside your desktop computer, or by Laerdal Technical Service at 1 (800) 431-1055 EXT. 5596. This password will always work, even if you change the Administrator password.>

Read further instructions to learn how to create new user accounts.

Help

Three types of help are provided throughout the product to familiarize you with the system and assist you in the learning process. These include:

Tool-Tips or Hold-Over text

Tool-tips or Hold-Over text are provided on almost all of the interactive (and even some of the non-interactive) items on the screens. Hold the mouse cursor still on a particular button or icon on the screen and you will see a brief pop-up description or explanation.

Quick Start User Guide

Context-Specific Help

In the navigation icon at the bottom right of every screen is a question mark. Click the question mark to view help for that particular screen.

Guiding Messages

There are guiding messages at the bottom left of many screens that describe the required action. Guiding messages are provided on the Case Scenario, Site Selection, Equipment Selection and Simulation Screens.

The guiding messages at the bottom of the simulation screen change depending on your actions and what task you are trying to perform. If you are stuck or do not know how to proceed, these messages should guide you through using the system.

Note: The guiding messages are not designed to help you successfully complete the procedure; they are only designed to explain how to use the system.

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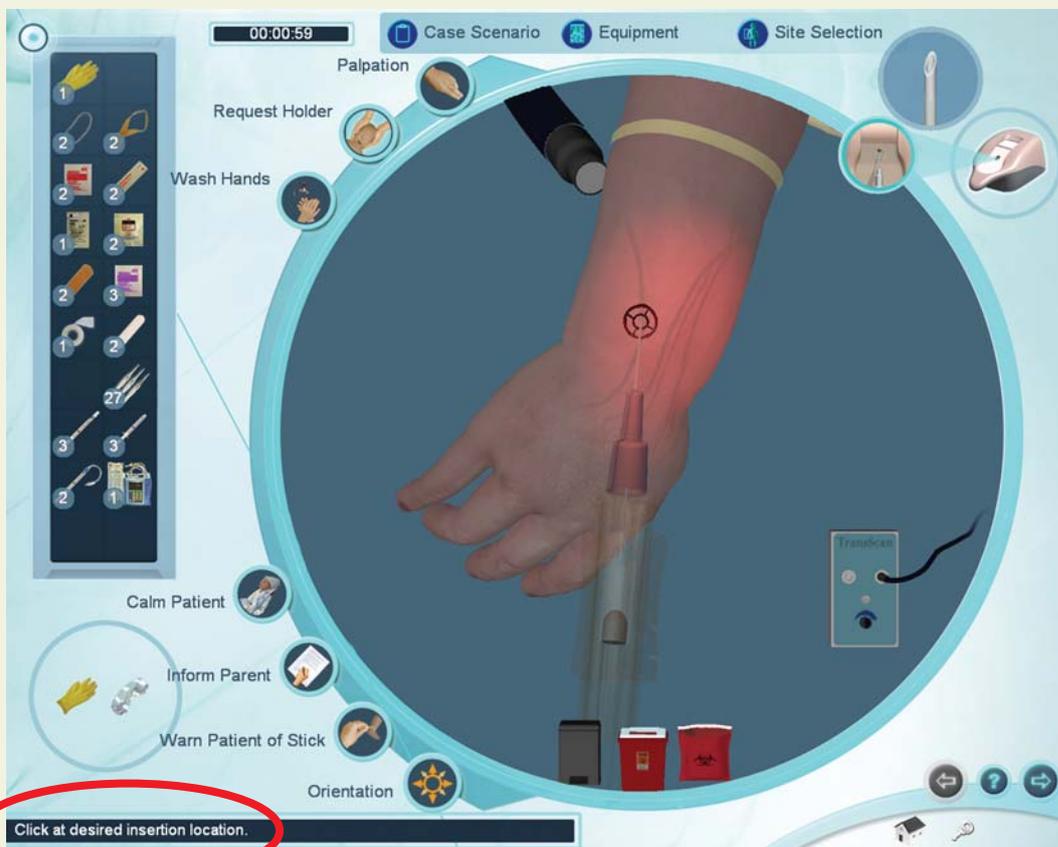
Navigation

At the bottom right of the screen is a navigation icon. The navigation icon allows you to advance to the next screen, return to the previous screen, go to the main menu, log-off, and access the help for that screen.

Note: Not all navigation functions are available on all screens.

Quick Start User Guide

Career Selection

Once logged in, you will need to select the relevant career. Click on the In-Hospital or Pre-Hospital buttons to define which configuration options, case scenarios, text, and screen images will be presented. Your instructor will define the appropriate career.

Main Menu

Note: If this is your first time using the Infant Virtual I.V., it is highly recommended that you view the System Tutorial video. To view the system tutorial, click on the System Tutorial button.

The main menu allows you to access the different training types, view a system tutorial, view a procedure training video, review your achieved competencies, and access the anatomical viewer.

Training Types

a. Practice Case Scenarios

The Practice Case Scenario screen allows you to select the infant on whom you will be performing the procedure and the specialty you would like to practice.

Select the infant age (preemie, full-term, 6 month or 15 month), the skin color (Fair, Dark), and the weight (Skinny, Normal, Chubby). Then, select the medical domain you would like to attempt (Trauma, Medical, or Surgical). Once the desired combination is selected, advance to the next screen to view the case scenario and begin the procedure.

Note: Results from practice case scenarios could be stored in the competency review by changing the configuration setting.

b.   Competency Training

Selecting competency training will step you through an entire curriculum of cases from Level 1 (Novice) through Level 4 (Expert) with increasing requirements for competency. The curriculum includes remediation cases that provide hints, as well as multiple choice cognitive tests.

Note: Results from competency training case scenarios are stored in the competency review.

Anatomical Viewer

The anatomical viewer allows you to identify structures and review relevant infant anatomy. Click on the relevant organ system at the right of the screen to selectively dissect away the anatomical structures. A display at the bottom of the screen shows the corresponding anatomical name of any structure that you move the mouse over.

Procedure Video

The Procedure Video screen presents a didactic training video on proper infant intravenous catheterization.

System Tutorial

The System Tutorial screen presents a training video on how to use the Infant Virtual I.V.™

Competency Review

The Competency Review screen presents your competency accomplishments in a concise and intuitive format.

a. Selecting the number of cases to review

Select the number of cases to display by clicking on one of the buttons under the "Show Cases" heading on the left of the screen.

b. Viewing average user scores and progress

There are different ways to review the user's general progress:

If the administrator has configured the Infant Virtual I.V. system to save practice cases, then additional filters will be presented to view competency training and practice cases independently, or together. Clicking on the "Level Averages" tab will display a graph of the cognitive test and skills (case scenario) averages at each level of difficulty.

Clicking on the "Average Skill Scores" tab will display a list of critical and non-critical assessment errors, the ratio of times you performed that category correctly, and a list of errors (and how often) a specific skill was performed in-correctly.

Clicking on the "Progress" graph tab will display a graph of the score on all of the selected cases and cognitive tests in a scatter plot.

c. Sorting

The case scenarios can be sorted by the column headings.

d. Viewing specific case scenario and cognitive test debriefings.

Click on the specific case scenario or cognitive test at the bottom of the screen to view the associated debriefing.

Once the specific case scenario is accessed, the learner is able to display the assessment in html format for printing by clicking on the print icon at the bottom of the case scenario pop-up.

Performing the Procedure

Whether you have selected practice case scenarios or competency training, you will need to perform the actual procedure.

Quick Start User Guide

Performing the procedure consists of 5 screens:

1. The Case Scenario screen presents the case scenario, the patient and the patient vital signs.

2. The Site Selection screen allows you to select a particular site for IV catheterization (Note: You can change the site later in the procedure).

3. The Equipment Selection screen allows you to select the necessary equipment for IV catheterization.

4. The Simulation screen allows you to perform the procedure by interacting with the software and the haptic device.

5. The Debriefing screen presents a complete assessment of your performance and allows you to review proper technique where errors have been made.

Case Scenario

The patient scenario contains information vital to the learner's successful performance of subsequent venous cannulation. Read and understand the case scenario, review the vital signs, and look at the yellow bulleted highlights below to ensure that you select the correct equipment and cannulation site for the case presented.

The case scenarios become more difficult as you progress in competency training mode from level (I) to level (IV). In levels (III) and (IV) yellow highlights are not provided.

Once you have read and understand the case scenario, advance to the next screen.

Site Selection

Click on an extremity or the head of the infant in the upper left corner of the screen.

Select the specific site for IV catheterization from the buttons at the top center of the screen.
(Note: You can perform an insertion only at the selected site. At any time, you can change sites by selecting Site Selection from within the Simulation screen.)

Once you have selected the site you would like to attempt, advance to the next screen.

Equipment Selection

Select the equipment you will need to perform the IV catheterization procedure on this patient.

Click on equipment in the supply tray on the right side of the screen to add equipment items to your equipment toolbar on the left side of the screen. Clicking on a piece of equipment multiple times will add multiple items to your toolbar.

Hold the mouse over a particular piece of equipment to identify it.

Note: The Sharps container and trash can WILL NOT appear in your toolbar, but will be available on the Simulation screen.

Remove unwanted equipment by clicking on the "x" at the upper right of the item in the supply tray. Once you have selected the required equipment, advance to the simulation screen.

Simulation (Procedure)

Overview

The equipment you have selected appears in the equipment toolbar at the left of the screen. You can use any of these pieces of equipment at any time by clicking on the corresponding icon.
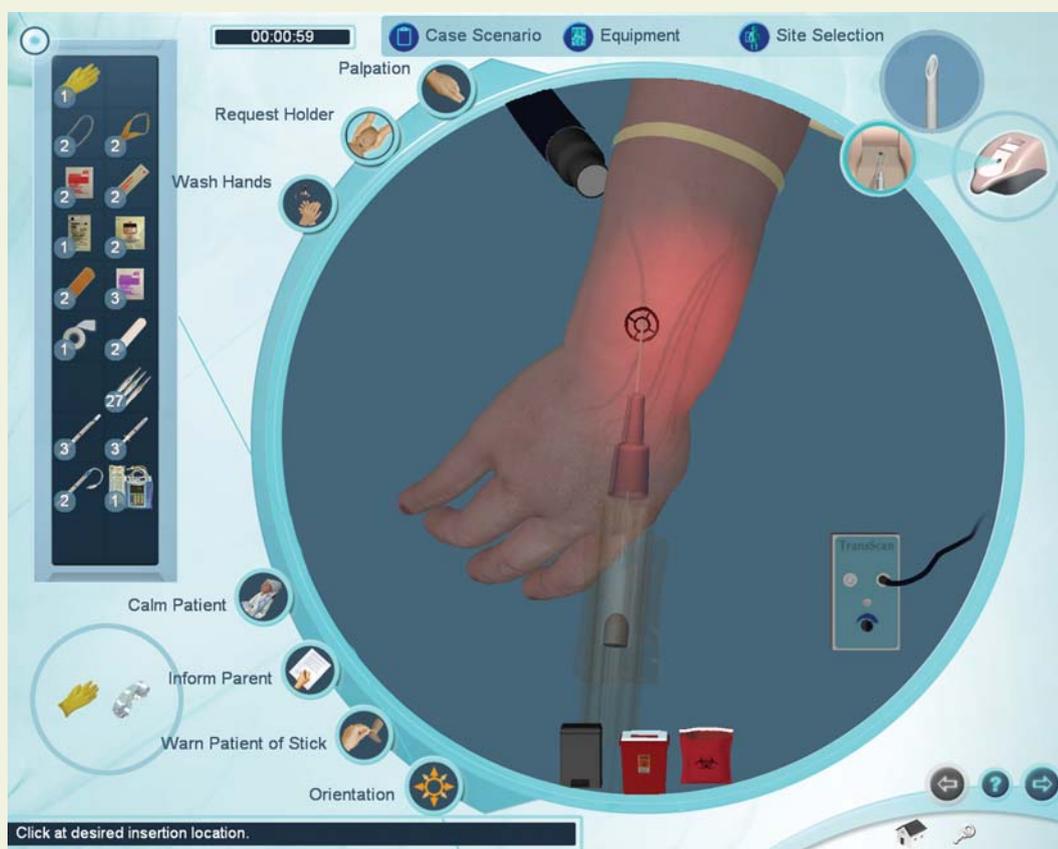
At the top of the screen are 3 buttons that allow you to review the case scenario (Case Scenario), select more equipment (Equipment), or select a different site for catheterization (Site Selection). You can select these throughout the procedure.

Certain procedural steps can be performed by clicking on the corresponding icons. These icons are located around the left periphery of the circular simulation window.

At the bottom of the simulation window are three disposal containers (trash can, sharps container and bio-hazard bag). Dispose of equipment into the appropriate receptacle once it has been used.

Quick Start User Guide

At the top right of the screen is a picture of the haptic device. This icon will tell you when it is appropriate (and how) to interact with the haptic device to perform the IV catheterization procedure.

A clock appears at the top left of the screen to show you how long you have been performing the procedure. When the clock turns red, you have exceeded the allowable amount of time for this case scenario. A second clock may appear (as this is configurable) that times Tourniquet placement. This clock turns red if you have exceeded the allowable amount of Tourniquet time.

Guiding messages appear at the bottom left of the screen that will help you use the system.

Once you have completed the procedure, advance to the next screen.

Model Orientation

Scroll the mouse wheel forwards and backwards to zoom in and out of the model. Click the middle mouse wheel, hold and move the mouse to rotate the model. An orientation icon is present on the simulation screen, should you need help during the procedure. Clicking on the Orientation button plays a movie describing how to orient the model using the mouse.

Equipment Use and Procedure Tasks: General

Click the help button on the navigation icon to learn how to use specific pieces of equipment or how to perform specific Procedure Tasks.

Only one piece of equipment can be used at a time. After a piece of equipment is chosen, it needs to be placed on the site or thrown into a disposal container. To use or apply a selected item to the site, click on the site. To throw an item away, click on it, move it to the trash bin, sharps container or biohazard bag and click.

Certain items that have been attached to the site can be removed by clicking on them inside the simulation window. These include the Tourniquet, Catheter, Lock, extension tubing, IV Infusion, Trans-Illuminator, Flush, Arm Board, and IV catheter.

Palpation and Requesting a Holder are turned on and off by clicking on the corresponding icon.

Washing hands, calming patient, informing the parent and warning the patient of stick are displayed as pop-up messages.

Using the Haptic Device

The haptic device simulates the basic elements of intravenous cannulation in the infant. It supports tasks such as palpation, occlusion, double-sided skin stretch and needle insertion. The next few pages show the basic ways to manipulate the haptic device in the performance of the procedure.

The following schematic depicts the various parts and functions of the haptic device, shown from above. The device should always be placed on a flat, level surface.


Needle Insertion

Palpation and Occlusion

Skin Stretch

Skin Stretch
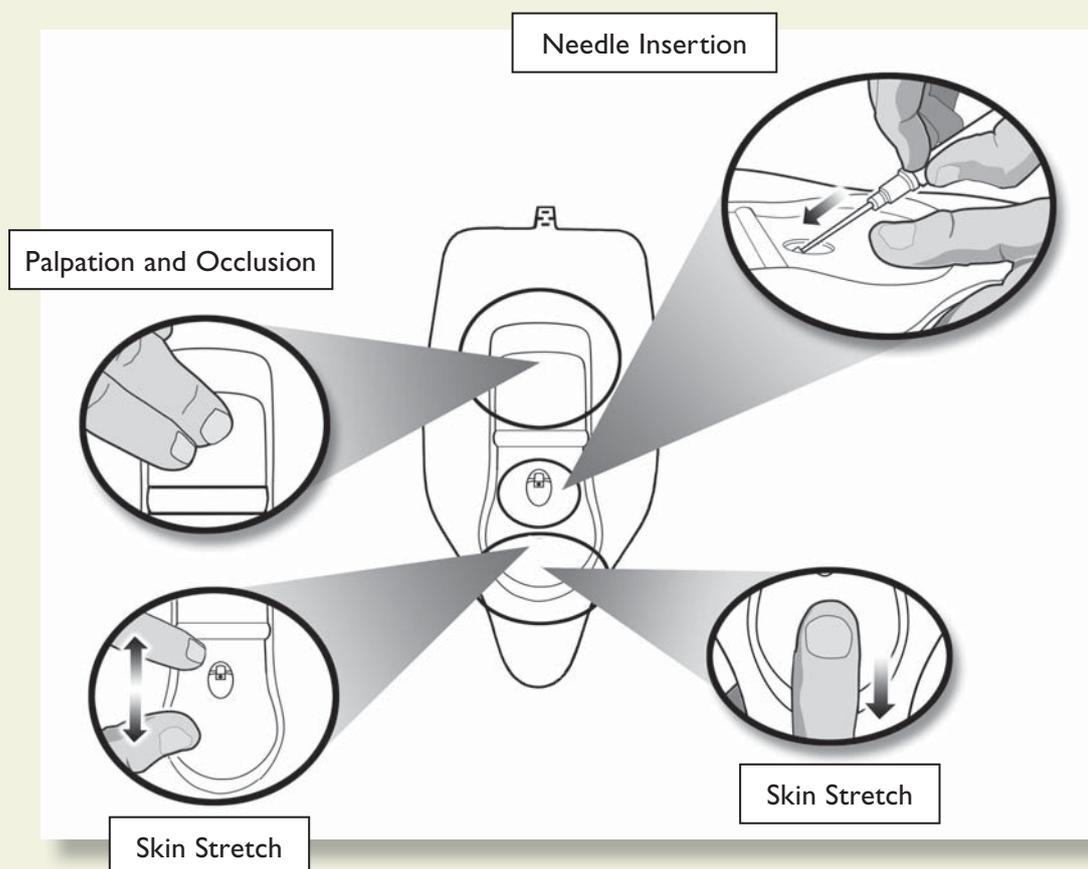
** Special Note: Under no circumstances should any needle or catheter other than those supplied with the Infant Virtual I.V. Self-Directed Learning System ever be used with the Haptic Device.

Quick Start User Guide

When it is time to insert the needle into the haptic device, this icon will appear:
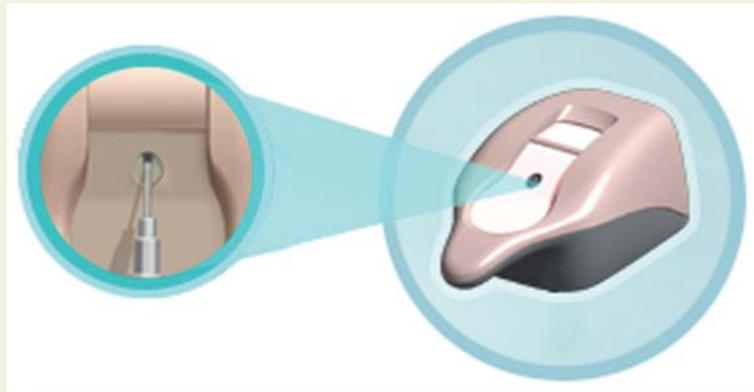
When it is time to palpate in the palpation area of the haptic device, this icon will appear:
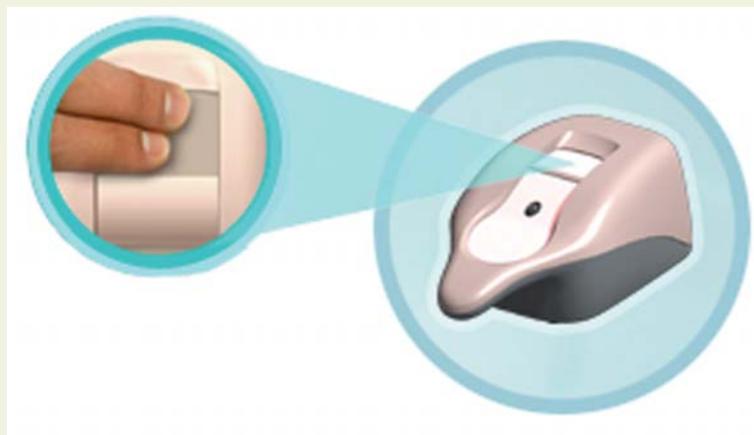
Needle Insertion and Skin Stretch

The device should be placed on the desktop, resting flat on the surface. The handle is gripped using the hand, and the thumb can be used to stretch the skin during the procedure. The needle and catheter are inserted into the receptacle. Initially, the learner will feel a slight tug as the device engages the needle.

Note: Once the needle engages the haptic device, the simulated needle on the screen will illuminate and you will hear a sound; this means you may proceed with needle insertion.

The force feedback provided to the learner depends on the patient being cannulated, the case scenario, the actual stick, and any complications. In some cases the learner will feel a stick through both skin and vein, in other cases the vein, or even the skin puncture may be more or less prominent. The forces associated with infant catheterization are subtle at times, and the force feedback device simulates these subtle cues and sensations.
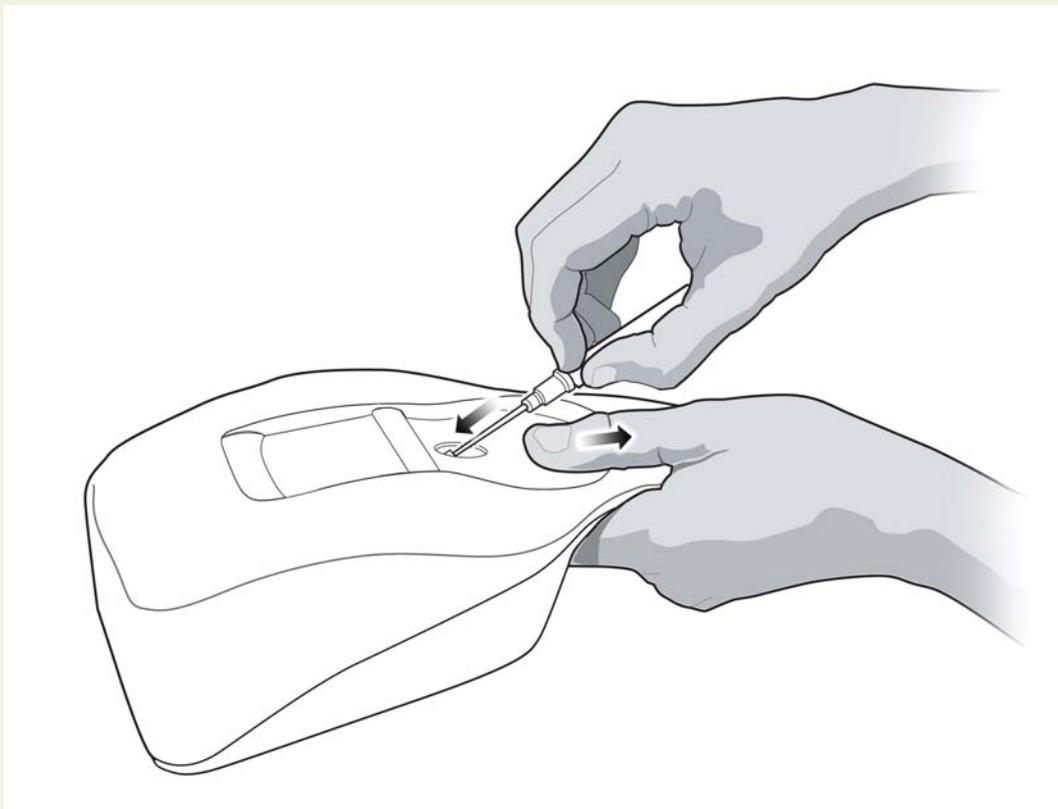
Debriefing

The top of the Debriefing screen shows your total score, the procedure and constricting band times, whether you have successfully completed the procedure, the case level, and other information.

The rest of the Debriefing screen displays the Cannulation Events, Critical Errors, and Non-Critical Errors.

Cannulation events present general subcutaneous animations of what occurred during your cannulation attempts. Click on the movie icon next to the cannulation event to view the animations.

Positive and Negative critical and non-critical assessment headings and specific assessment errors are displayed below the cannulation events.

Clicking on the movie icon next to a negative assessment heading will play a short vignette describing how to perform the relevant portion of the procedure correctly. Once you have reviewed your debriefing advance to the next screen.

Administration and Account Creation

ADMINISTRATION AND ACCOUNT CREATION

There are certain features only available to the instructor. These features are accessed by logging in as:

Username: Administrator
Password: <Provided on the information sheet inside your desktop computer, or by Laerdal Technical Service at 1 (800) 431-1055 EXT. 5596>

Administration and Account

Instructor Main Menu

Once logged in, you can:

(1) View an instructional video on Infant Virtual I.V. instructor functionality;
(2) Access a complete review of learner competency (Learner Competency Review):
(3) Manage user accounts (Account Management);
(4) Configure the simulation based on local protocols and preferences (Configuration);
(5) Calibrate the haptic device which occasionally requires calibration (Haptic Device Calibration);
(6) Change the Instructor password (Change Instructor Password). Note: The password originally provided on the information sheet inside your desktop computer, or by Laerdal Technical Support will always allow work, even if you change the Instructor password.

Learner Competency Review

Selecting a learner for review

Click on a learner at the top of the screen to review that learner's progress. Different learners can be selected for review at any time.

Selecting the number and type of cases for review

Select the number of cases to display by clicking on one of the buttons under the "Show Cases" heading on the left of the screen.

Selectively filter the competency training and practice cases for review. The information in the competency review will change accordingly. Remember that depending on the configuration setting, user practice cases may not be stored.

Viewing average user scores and progress

There are different ways to review the user's general progress:

- **Clicking on the "Level Averages" tab will display a graph of the cognitive test and skills (case scenario) averages at each level of difficulty.**

- **Clicking on the "Average Skill Scores" tab will display a list of critical and non-critical assessment errors, the ratio of times you performed that category correctly, a list of specific skills and how often those skills were performed in-correctly.**

- **Clicking on the "Progress Graph" tab will display a graph of the cognitive test and skill (case scenario) scores for the shown cases.**

Sorting

The learners and case scenarios can be sorted by the column headings.

Viewing specific case scenario and cognitive test assessments

Click on the specific case scenario or cognitive test at the bottom of the screen to view the associated assessment.

Once the specific case scenario is accessed, the instructor is able to display the assessments in html format for printing by clicking on the print icon at the bottom of the case scenario pop-up.
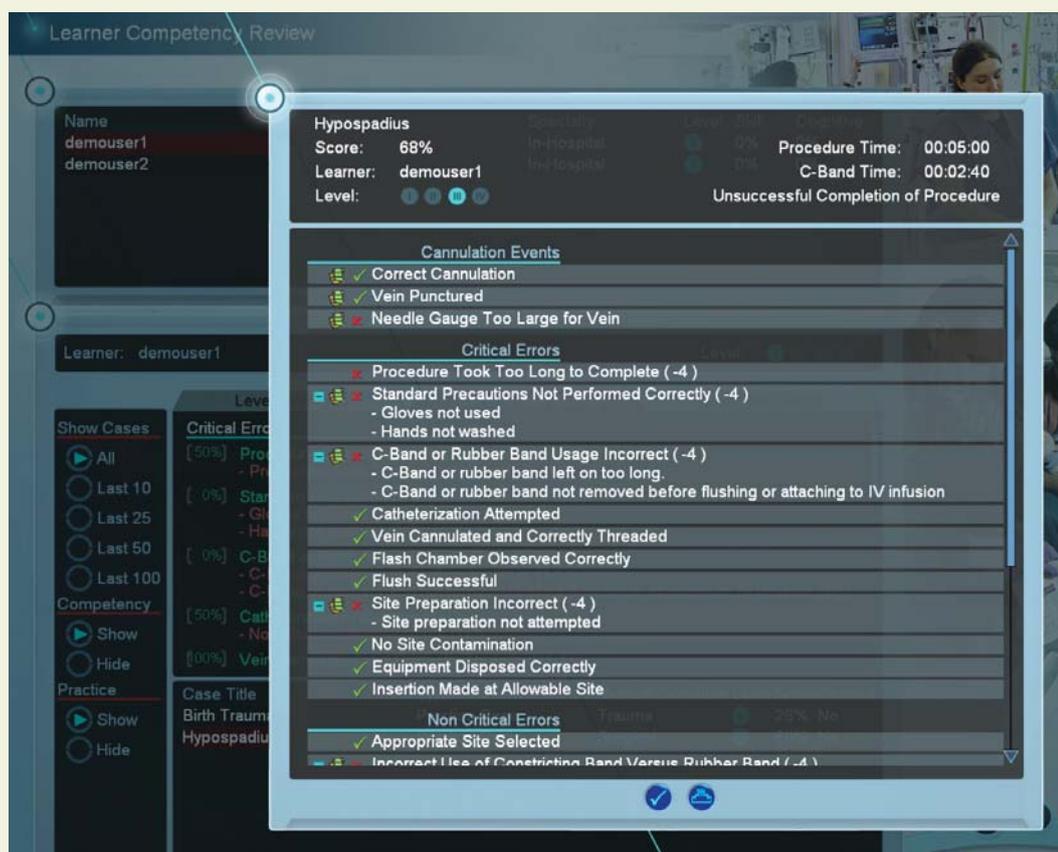
Account Management

Click on the column labels to sort the accounts by name, class, specialty, level, average skill score or average cognitive score.

If you will be using multiple Infant Virtual I.V. machines and would like to configure them in a connected Local Area Network, you will need to install Laerdal Competence Management System, Version 1.8.

This will allow students to long into any Infant Virtual I.V. machine and transfer their user histories between machines.

If you experience significantly long log-on times, we recommend installing a Laerdal Competency Management System.

Note: Do not use the Infant Virtual I.V. account management and Learner Competency Review functionality after installing a Laerdal Competence Management System.

Infant Virtual I.V.
Directions for Use

1.   *Click on create to add a new learner.*
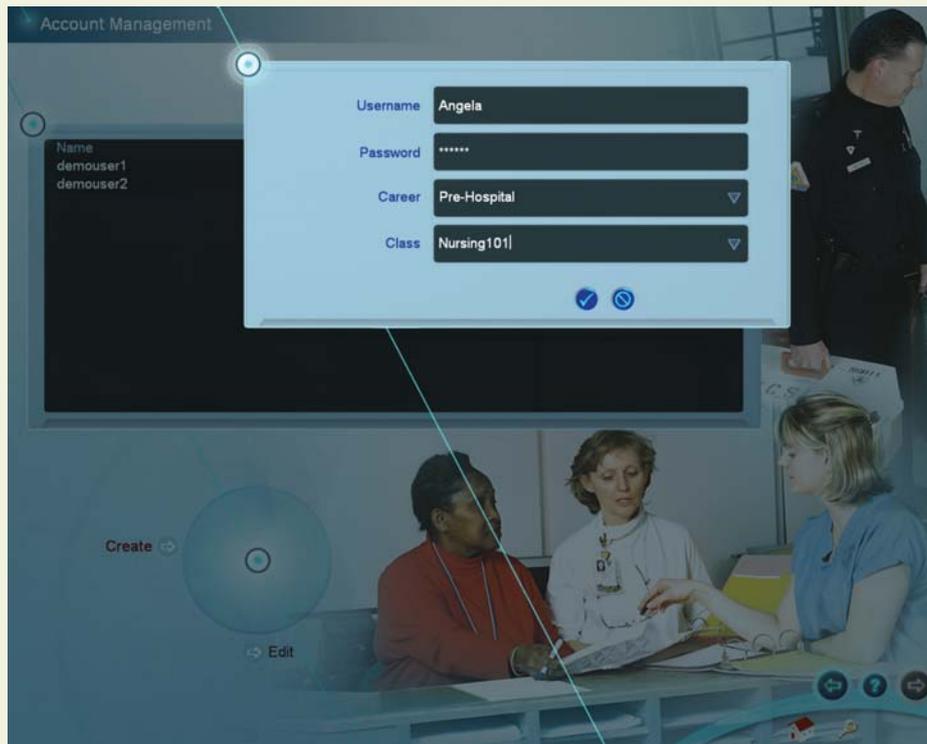
Administration and Account

2. *Select a learner and click edit to edit the learner's password, career and class.*
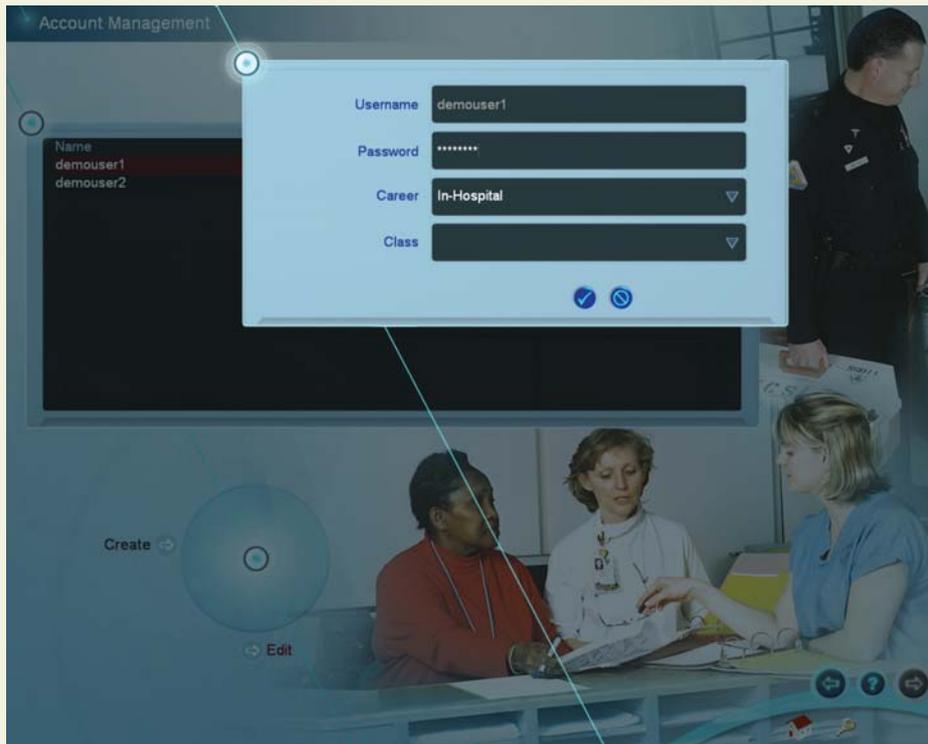
Configuration

Select from the Pre-Hospital or In-Hospital tabs to select configuration options for that career.

Click the "Reset to default settings" button to restore the original settings for all configuration options.

Calibration of the Haptic Device

When the haptic device requires calibration, a message will appear on the screen which looks like this:
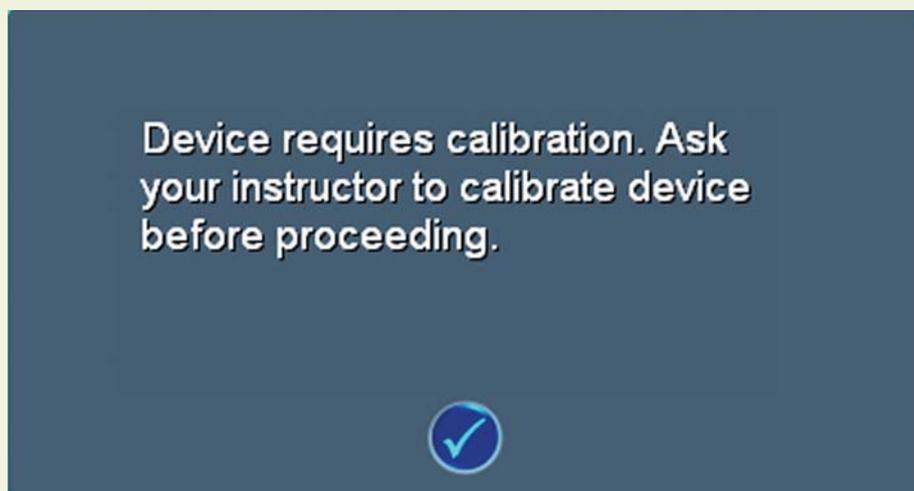
It is important to calibrate the device at regular intervals or as prompted by the system, or the system will "drift", potentially causing erroneous measurements.

Infant Virtual I.V.
Directions for Use

In cases where the haptic device is not connected or does not initialize properly, the following screen will appear. Make sure that the device is properly connected. Once properly connected, log off and then back on,, or simply go to the System Tutorial Screen and return to the main menu. Exiting the application and disconnecting and reconnecting the power cord to the device will usually fix this problem. The initialization screen is shown below:
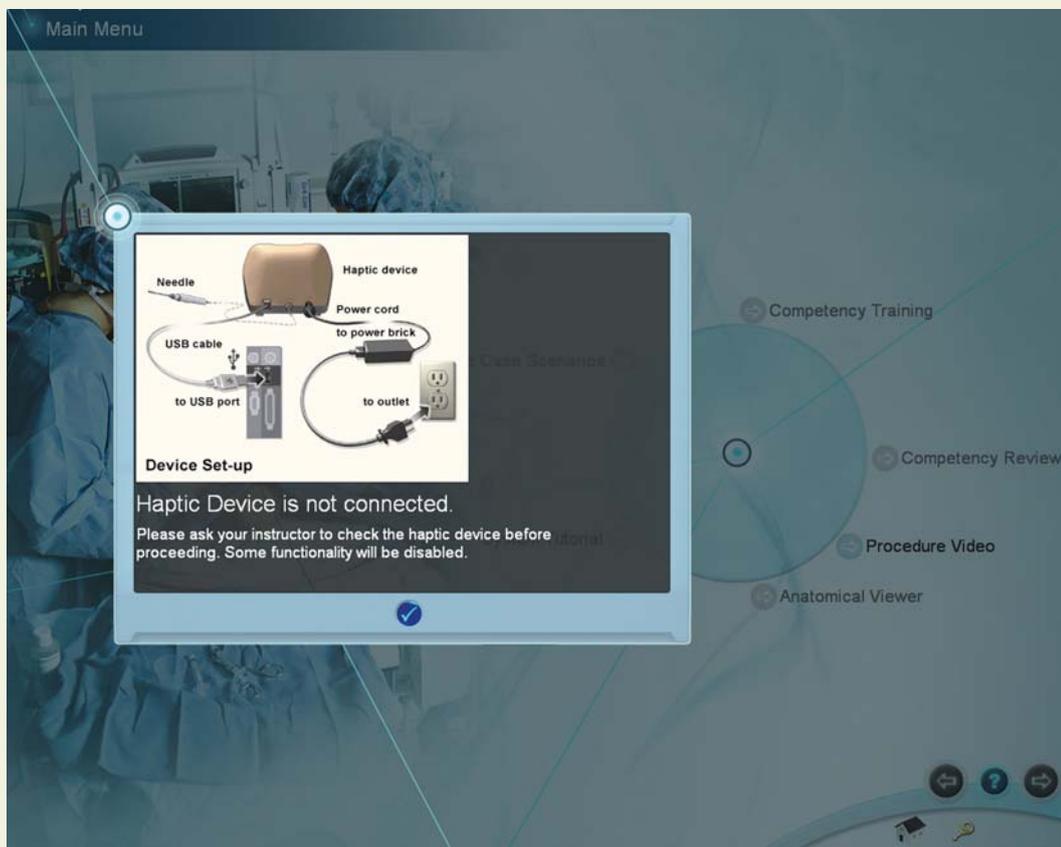
The following pages show the series of menu screens that will lead the instructor through the calibration process.

These menu screens show the steps of the calibration sub-routine. Follow instructions as prompted on the screens.
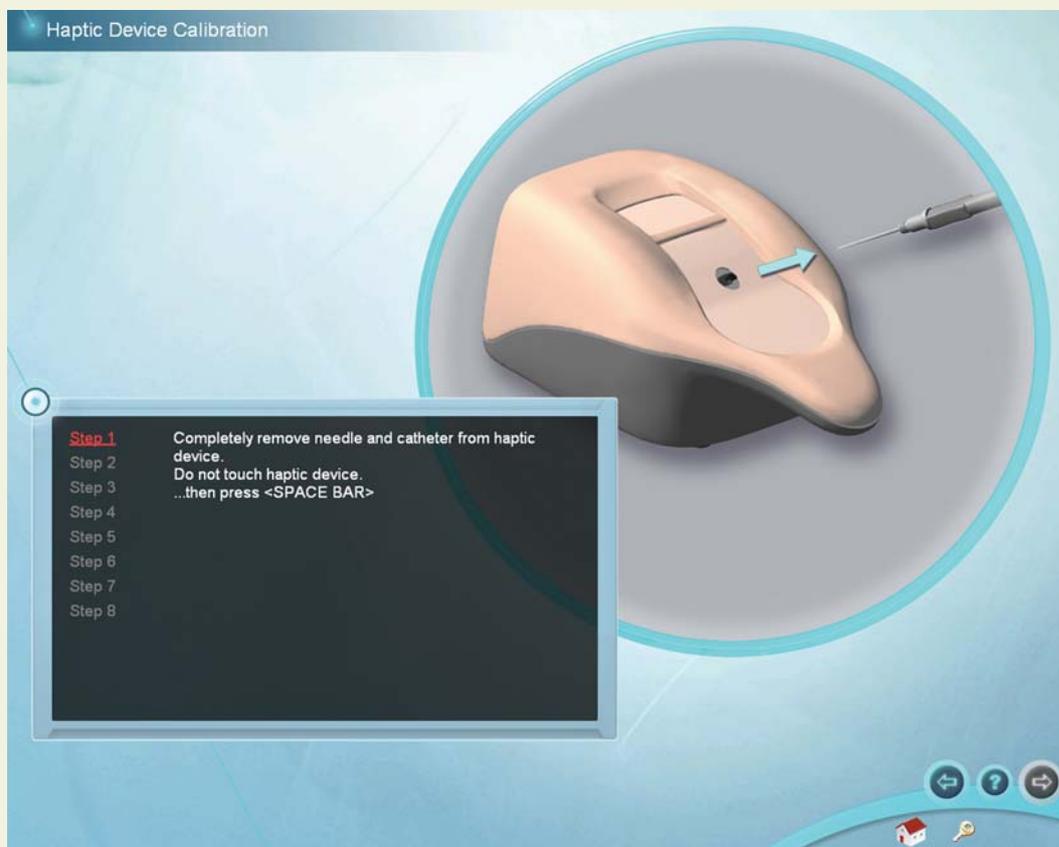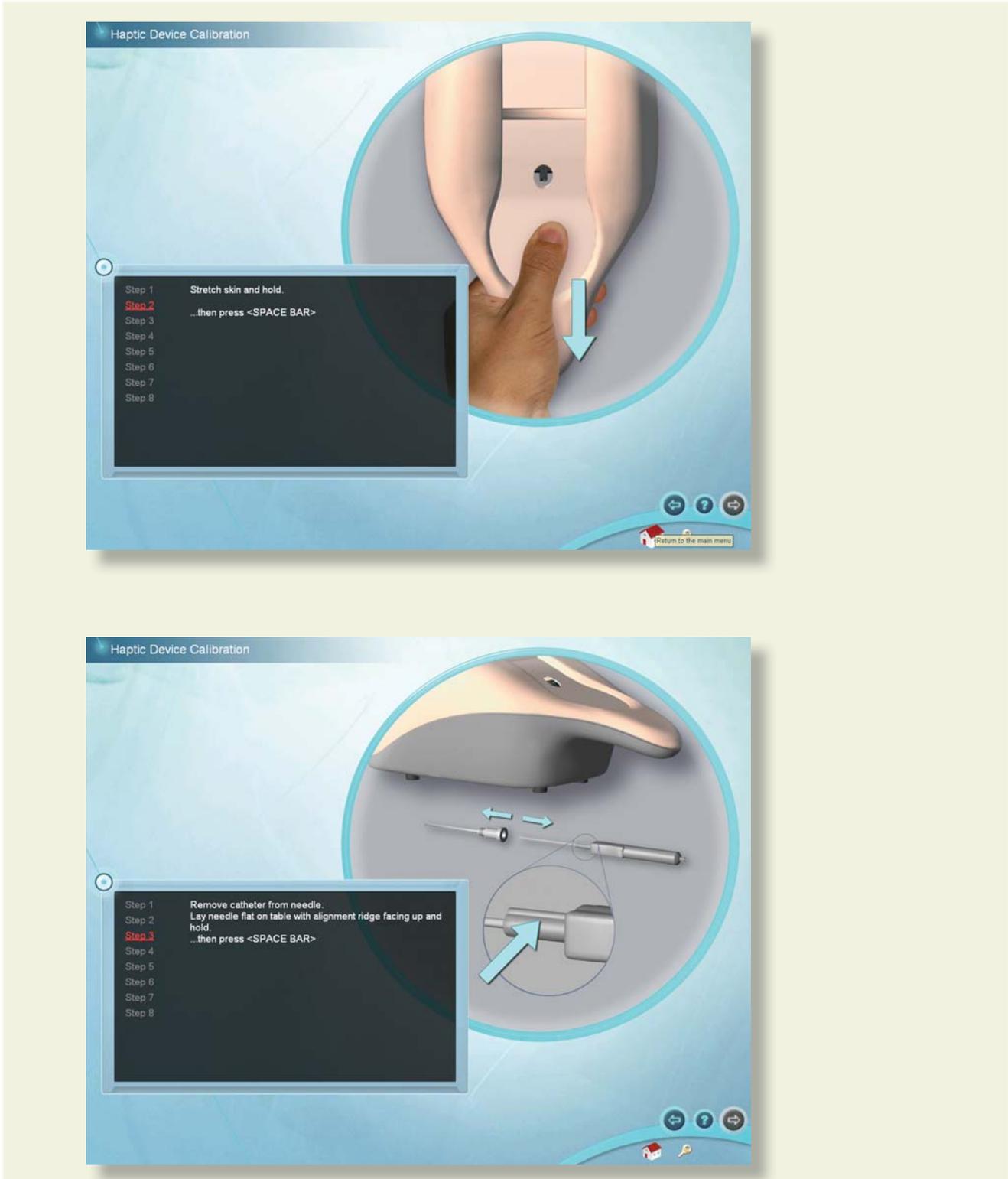
Administration and Account

Lateral calibration:
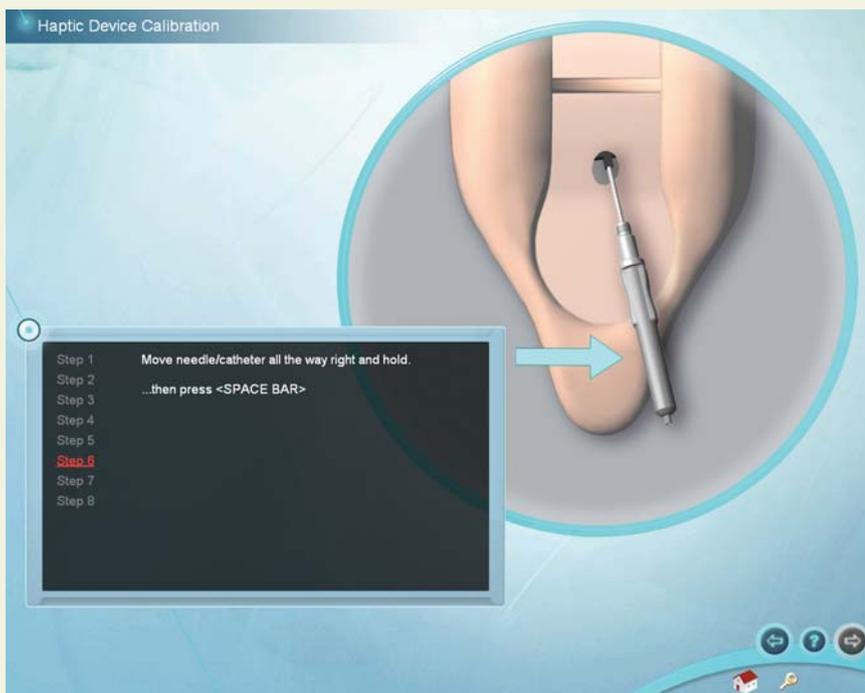
Vertical calibration:

Infant Virtual I.V.
Directions for Use
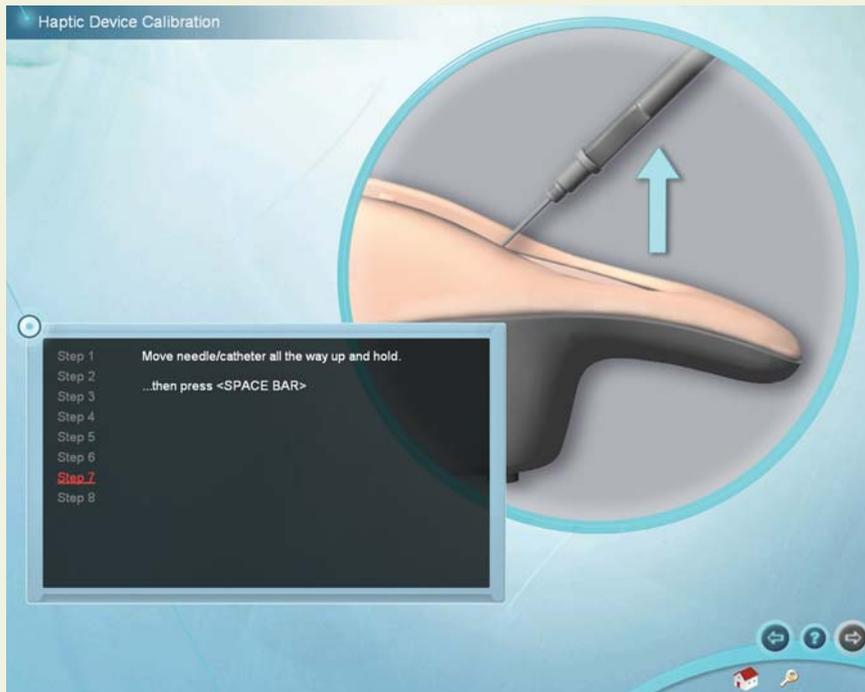
This screen indicates that the device has been successfully calibrated, and is ready for use.

The screen below indicates that the device has not been successfully calibrated, and the calibration routine should be performed again. If problems persist, click on the show calibration error button to determine at which step calibration failed and the corresponding error code. If calling Laerdal Technical Support, please provide the error code.
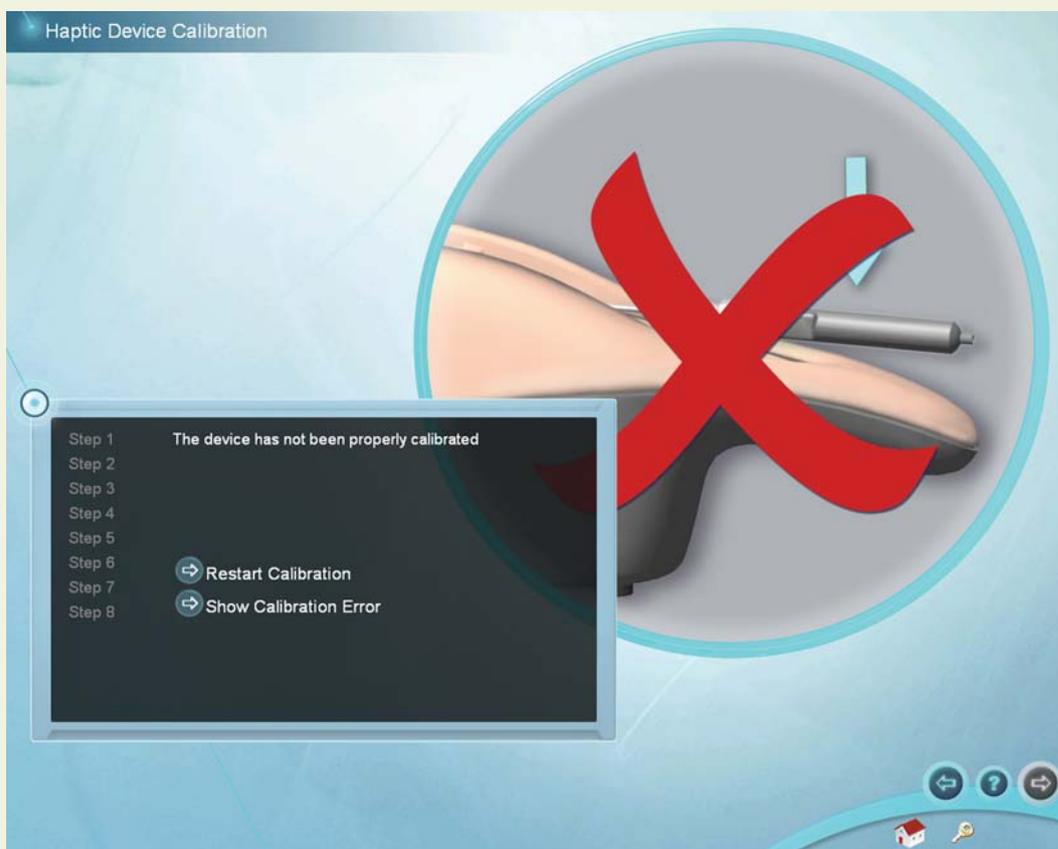
Network Configuration

Connect multiple Infant Virtual I.V.™ systems to a local or global area network by installing a Laerdal Competence Management System, version 1.8 and following the accompanying instructions. This will link multiple systems and allow students and instructors to access and review achieved competencies over the internet.

Change Instructor Password

Note: The password originally provided on the information sheet inside your desktop computer or by Laerdal Technical Service at 1 (800) 431-1055 EXT. 5596 will always allow work, even if you change the Instructor password.

System Overview

USING THE SYSTEM

The Infant Virtual I.V.™ Self-Directed Learning System software consists of two distinct parts:

(1) The basic menus screens, which present the case scenario, provide debriefing of performance, and support many other functions; and

(2) The simulation training sequence that enables interaction between the learner inserting the needle and the three-dimensional (3D) model of the infant.

The following section describes the Icons and Buttons, Basic menu screens, and the Training Sequence (also covered briefly in the **Quick Start Guide**).

⚠️ WARNING
Precautions when using the simulation software

• The Infant Virtual I.V. Self-Directed Learning System has been designed to work on the computer supplied with the product. The computer is an integral part of the system. It will not work on other computer platforms, because of its requirements for very specific, high speed graphics capabilities. Do not attempt to install and run this software on any other computer other than that which has been provided by the manufacturer.

• No software should be installed on the computer supplied with the Infant Virtual I.V. Self-Directed Learning System, except for those products supplied by the manufacturer of the software.

• Running any program, such as anti-virus software, on the computer supplied with the simulator, may cause the Infant Virtual I.V. Self-Directed Learning System to crash or slow the simulation to an unstable condition. This is a dedicated computer and should not be used for other purposes, except those explicitly stated by the software manufacturer.

System Icons

There are a number of navigation icons that are usually found on the corners of the screen. The icon will change color when activated by a mouse click. In other cases, icons will become transparent if they are not usable. See the 'System Tutorial' video within the application for more detailed information.

Examples of these icons and their definitions are shown on the pages below.

System Overview

Navigation Icons

and		Right arrow: Proceed to the next screen Back arrow: Return to Previous screen
or Help		Help for Current Screen
		Inactive Icon: Icons that appear grey are not available.
Exit		Exit the application to the virtual products boot screen
		Return to the Main Menu
		Log Off the current user or Instructor
		Information about Infant Virtual I.V.

Interface Icons

		Yes, Accept, Save
		No, cancel
		Make Active / Inactive

Infant Virtual I.V.
Directions for Use

Simulation and Debriefing Icons

	Haptic Device Available
	Haptic Device is Not Available
	Insert Needle into Haptic Device Indicator
	Palpate Haptic Device Indicator
	View case scenario
	Select equipment
	Change site for insertion
	Wash Hands
	Request Holder
	Inform Parent
	Palpate Site

System Overview

   Warn of Stick

   Calm Patient

   Learn how to orient the site

   Case scenario level indicator

   Movie available. Click to play movie.

Basic Menu Screens

To start the application, click on the Infant Virtual I.V. section of the boot screen.

This will initially bring up a loading screen, immediately followed by the Login Screen (see below) and prompt the learner to enter their user name and password. Please note that these need to be created by the System Administrator (usually the Instructor – see section called 'Administration' below).

Introductory screen

This provides the initial introduction to the application.

Logging In

This screen prompts the learner to enter user name and password. Click the check button to move to log on, or the null button to remove the Login pop-up screen. Press "Exit" to quit the application, "About" to view the license agreement and version number, or "Help" to view help.
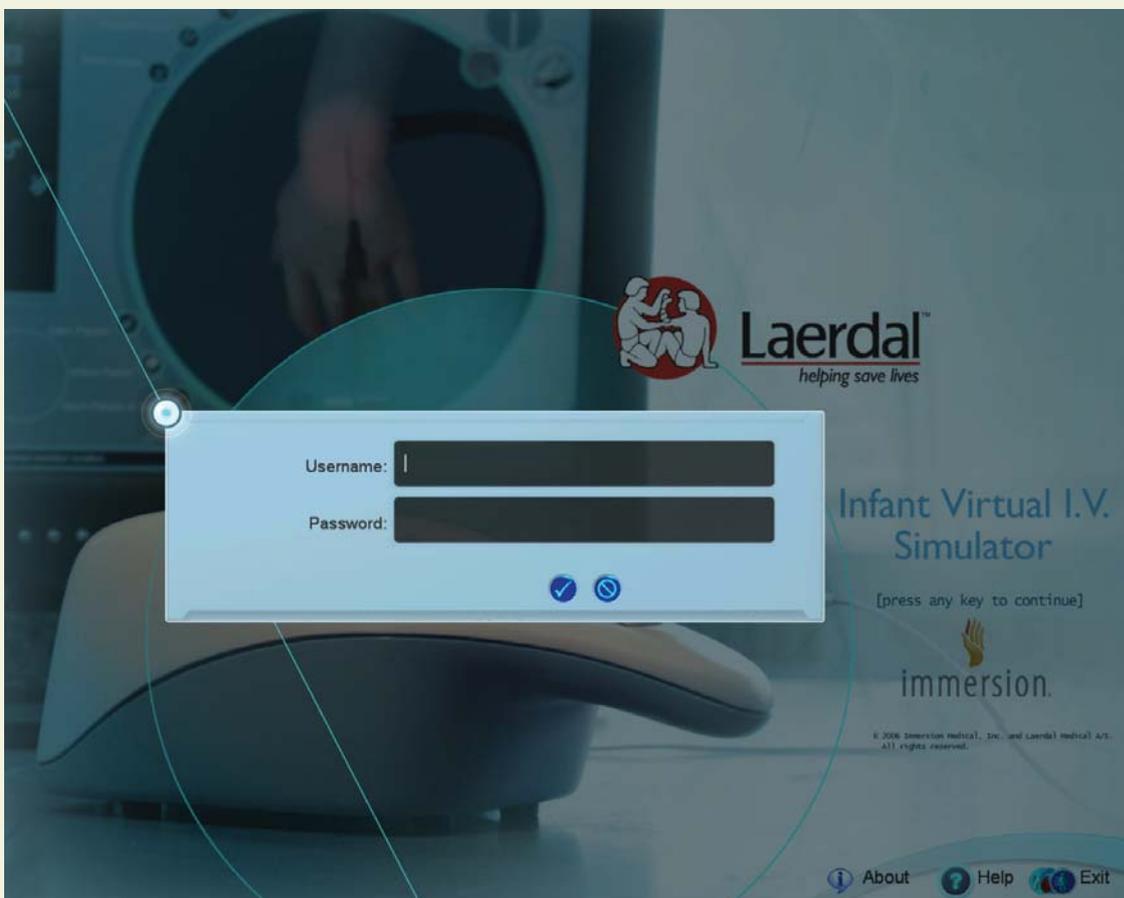
About Infant Virtual I.V.™

The about button will bring up the version number of Infant Virtual I.V.™ as well as the Laerdal license agreement.
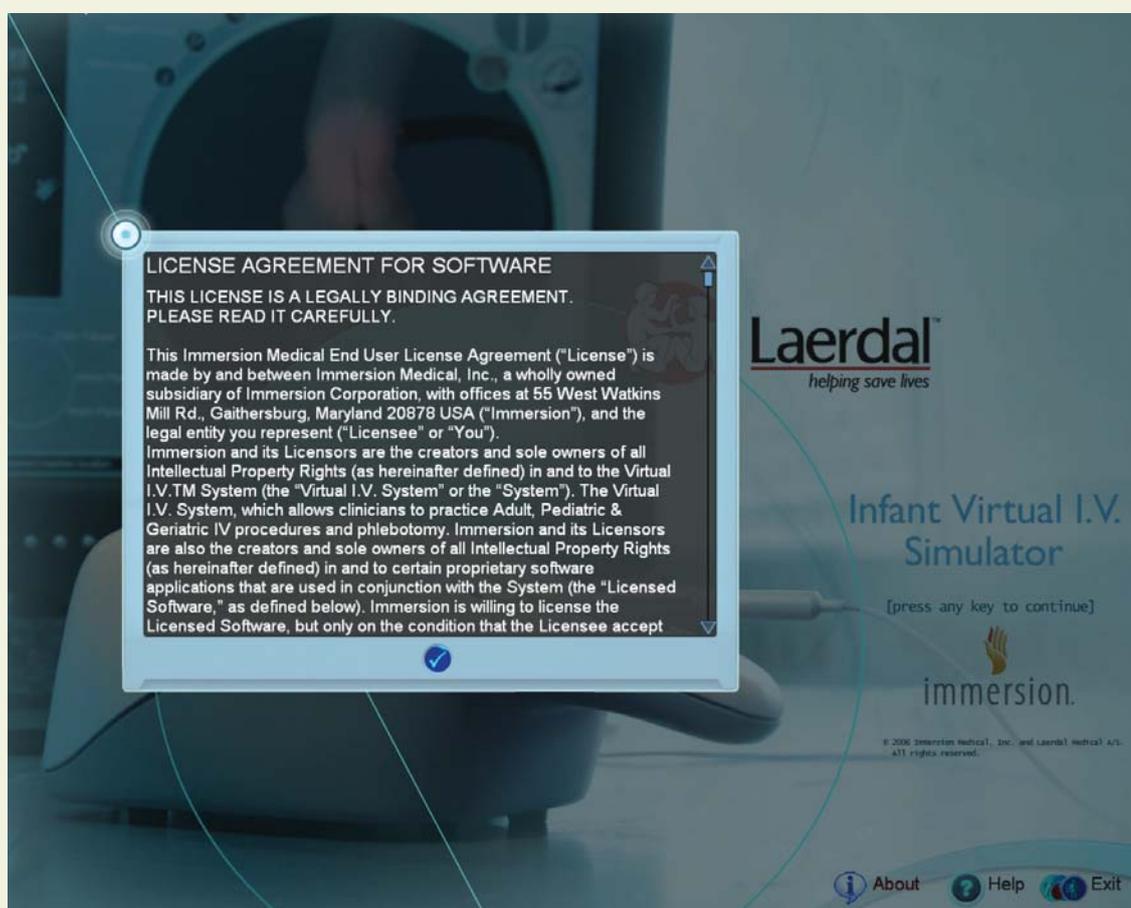
Career Selection

This screen provides the learner a choice of which career path to follow; In-Hospital or Pre-Hospital. Move the mouse over the different career choices to identify the career chosen for you by your instructor. Click on the chosen module to begin learning.

Main Menu

This screen provides the learner with a menu of options.

- <u>Competency Training</u>: A progressive, tiered hierarchy of case studies and required skills that ranges from beginner, Level 1, to expert, Level 4.
- <u>Practice Case Scenarios</u>: Individual cases can be tried from all of the levels, for practicing skills with or without recording assessment.
- <u>Anatomical Viewer</u>: This module presents a three-dimensional (3D) model of the infant that can be used to identify structures and learn anatomy.
- <u>Procedure Video</u>: This video introduces the beginning student to the techniques and skills required for intravenous access.
- <u>System Tutorial</u>: This video shows the learner how to use the Infant Virtual I.V.™ simulator system.
- <u>Competency Review</u>: This module shows the learner's record of performance.

For the beginning learner, it is important to view both the Procedure Video and System Tutorial video prior to using the software.

System Tutorial video

This screen presents the System Overview video which is divided into chapters for direct viewing of specific content. Click on the corresponding chapter to start the video.

There is also a slider on the video player, allowing the learner to choose a specific place in the video to review. There are "Play" (also pause when playing) and "Stop" buttons.

The navigation bar at the lower right of the screen allows the learner to return to the previous screen, or log off. The "?" button activates a help screen that explains all of the elements of the screen.

Procedure Training video

This screen presents a procedural video demonstrating proper IV catheterization in the infant.

This video is divided into chapters, allowing the learner to select the section they wish to view by clicking on the appropriate section. There is also a video slider, allowing the learner to choose a specific place in the video for review.

It is highly recommend that the beginning student watch the video in its entirety before attempting the simulation.


There are play (pause when playing) and stop buttons in the video player.

Anatomical Viewer

The Anatomical Viewer allows the learner to view and identify anatomical structures in the infant. The infant can be positioned by clicking the mouse scroll wheel and holding, then moving the mouse. Click the orientation icon to view a descriptive video on how to orient the infant. To zoom in and out of the infant model, scroll the middle mouse wheel.

Structures can be revealed through the selection and de-selection of different tissues using the Anatomical Filters at the right of the screen. Selecting a structure causes it to appear, while deselecting a structure causes it to fade.

For identification, move the mouse cursor over the anatomic structure and its name will appear in the text box at the lower left of the screen.

Practice Case Scenario screen

The Practice Case Scenario screen allows you to select a specific case scenario to practice. Practice cases will be recorded in your competency review if the administrator has configured the Infant Virtual I.V. system to record practice case scenario's.

Select your patient by clicking on the patient age (Preemie, Full Term, 6 months, 15 months), skin tone (Dark, Fair), and weight (Skinny, Normal, Chubby). Select the medical condition by clicking on the Medical, Trauma, or surgical buttons. Once you have selected the case scenario you want to attempt, advance to the next screen by clicking the right arrow.

Competency Review

The Competency Review screen presents your competency accomplishments in a concise and intuitive format.

Selecting the number of cases to review

Select the number of cases to display by clicking on one of the buttons under the "Show Cases" heading on the left of the screen.

Viewing average user scores and progress

There are different ways to review the user's general progress:

Clicking on the "Level Averages" tab will display a graph of the cognitive test and skills (case scenario) averages at each level of difficulty.

Clicking on the "Average Skill Scores" tab will display a list of critical and non-critical assessment errors, the ratio of the times you performed that category correctly, and a list of specific skill errors and how frequently they were performed in-correctly.

Clicking on the "Progress" graph tab will display a graph of the score on all of the selected cases and cognitive tests in a scatter plot.

Viewing specific case scenario and cognitive test debriefings
Click on the specific case scenario or cognitive test at the bottom of the screen to view the associated debriefing. Once the specific case scenario is accessed, the learner is able to display the assessment in html format for printing by clicking on the print icon at the bottom of the case scenario pop-up.

Sorting
The case scenarios and cognitive tests can be sorted by clicking the column headings.

Procedure Simulation and Debriefing Screens

The procedure simulation and debriefing screens allow you to perform the intravenous catheterization procedure and assess your performance.

Whether you have selected practice case scenarios or competency training, you will need to perform the actual procedure.

Performing the procedure consists of 5 screens:

1. The Case Scenario screen presents the case scenario, the patient and the patient vital signs.

2. The Site Selection screen allows you to select a particular site for IV catheterization (Note: You can change the site later in the procedure).

3. The Equipment Selection screen allows you to select the necessary equipment for IV catheterization.

4. The Simulation screen allows you to perform the procedure by interacting with the software and the haptic device.

5. The Debriefing screen presents a complete assessment of your performance and allows you to review proper technique were errors have been made.

Examples of these screens are depicted on the following pages.

Case Scenario screen

The patient scenario contains information vital to the learner's successful performance of the subsequent venous cannulation.

Read the case scenario thoroughly and advance to the next screen by clicking on the right arrow. From the case scenario screen, you can return to the main menu. However, if you advance from the case scenario screen, you will be required to complete the procedure.

At levels I and II, you will be presented with highlights of the case scenario. The highlights describe the more important facts of the case and appear in yellow.

During competency training, you may be presented with a remediation case scenario if you fail a specific case scenario two times. The hints on the remediation case scenario present specific procedure steps that need to be performed for successful completion of the case and appear in red.

Site Selection screen

The site selection screen allows you to select a site for I.V. catheterization. Select the site and advance to the next screen by clicking the right arrow.

To select a site, click on an extremity or the head of the infant at the upper left of the screen. This will bring up a list of 2 to 4 sites available for that body portion. Select the specific site by clicking on the button next to the site name.

Depending on the specific case scenario, some sites might not be available for I.V. catheterization.

Select the specific site for IV catheterization from the buttons at the top center of the screen.

Note: You can only perform the I.V. catheterization procedure at the currently selected site. If you want to perform the I.V. catheterization outside the currently selected site, then you must select a different site.

Once you have selected the site you would like to attempt, advance to the next screen.

Equipment Selection

Based on the information provided in the Case Scenario, select as many pieces of equipment as you need to complete the procedure.

Select the equipment you will need during the procedure and click the Right arrow to advance to the procedure.

Selecting too many pieces of equipment may cause you to be negatively assessed for the procedure.

Click on equipment in the equipment tray to add it to the tool bar on the left. Equipment that appears in the tool bar will be available to you during the procedure.

Hold the mouse still on items in the equipment tray to see a brief description of that piece of equipment.

Click on a piece of equipment multiple times to select more than one. The number of selected items will appear both in the toolbar at the left and in the equipment tray.

To remove a piece of equipment from your toolbar, click the x in the equipment tray that corresponds to that piece of equipment.

Note: The Sharps container and trash can WILL NOT appear in your toolbar, but will be available on the Simulation screen.

Remove unwanted equipment by clicking on the "x" at the upper right of the item in the supply tray. Once you have selected the required equipment, advance to the simulation screen.

Simulation (Procedure) screen

Overview

The equipment you have selected appears in the equipment toolbar at the left of the screen. You can use any of these pieces of equipment at any time by clicking on the corresponding icon.
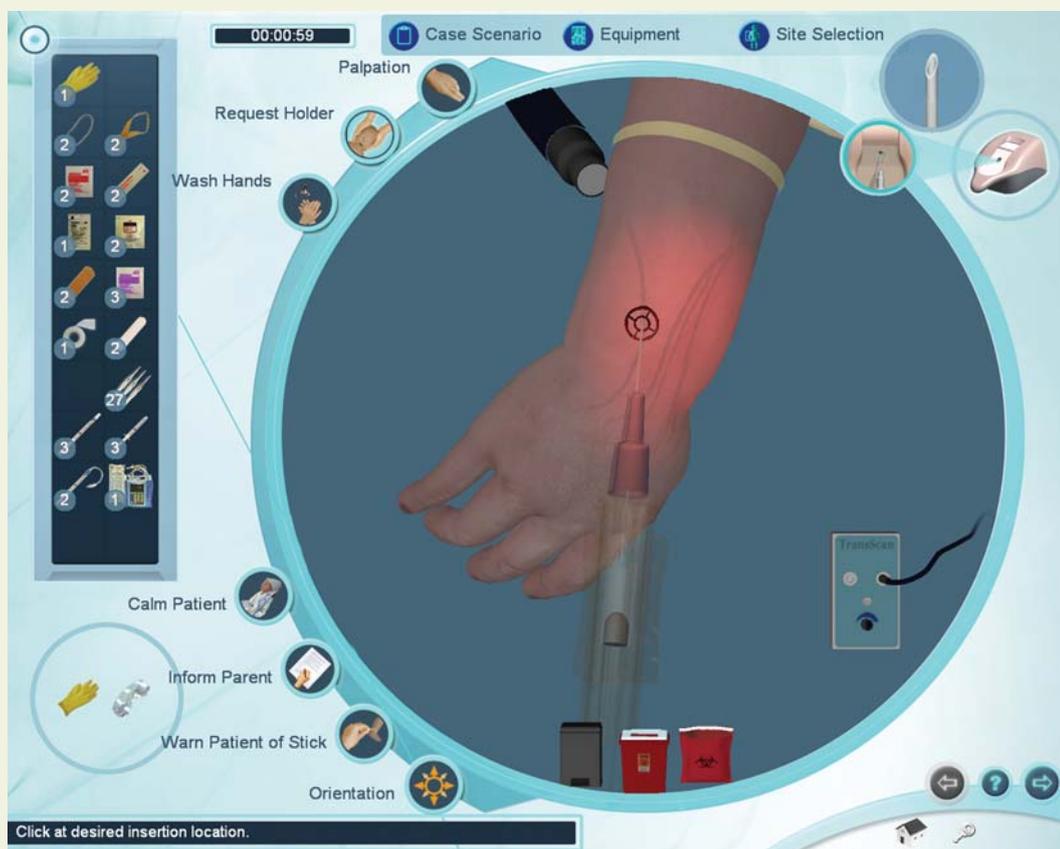
At the top of the screen are 3 buttons that allow you to review the case scenario (Case Scenario), select more equipment (Equipment), or select a different site for catheterization (Site Selection). You can select these throughout the procedure.

Certain procedural steps can be performed by clicking on the corresponding procedure icons. These icons are located around the left periphery of the circular simulation window and include palpation, requesting assistance with holding the infant, washing your hands, calming the patient, informing the parent of the procedure, warning the patient of the stick, and learning how to orient the infant within the simulation window.

At the bottom of the simulation window are three disposal containers (trash can, sharps container and bio-hazard bag). Dispose of equipment into the appropriate receptacle once it has been used.

At the top right of the screen is a picture of the haptic device. This icon will tell you when it is appropriate (and how) to interact with the haptic device to perform the IV catheterization procedure.

A clock appears at the top left of the screen to show you how long you have been performing the procedure. When the clock turns red, you have exceeded the allowable amount of time for this case scenario.

Guiding messages appear at the bottom left of the screen that will help you use the system.

Once you have completed the procedure, advance to the next screen.

Model Orientation

Scroll the mouse wheel forwards and backwards to zoom in and out of the model. Click the middle mouse wheel, hold and move the mouse to rotate the model.

Equipment Use and Procedure Tasks: General

Click the help button on the navigation icon to learn how to use specific pieces of equipment or how to perform specific Procedure Tasks.

Only one piece of equipment can be used at a time. After a piece of equipment is chosen, it needs to be placed on the site or thrown into a disposal container. To use or apply a selected item to the site, click on the site. To throw an item away, click on it, move it to the trash bin, sharps container or biohazard bag and click.

Certain items that have been attached to the site can be removed by clicking on them inside the simulation window. These include the Tourniquet, Catheter, Lock, extension tubing, IV Infusion, Trans-Illuminator, Flush, Arm Board, and IV catheter.

Palpation and Requesting a Holder are turned on and off by clicking on the corresponding icons.

Washing hands, calming patient, informing the parent and warning the patient of stick are displayed as pop-up messages.

Clicking on the Orientation button plays a movie describing how to orient the site using the mouse.

Using the Haptic Device

The haptic device simulates the basic elements of intravenous cannulation in the infant. It supports tasks such as palpation, occlusion, two finger skin stretch and needle insertion. The next few pages show the basic ways to manipulate the haptic device in the performance of the procedure.

The following schematic depicts the various parts and functions of the haptic device, shown from above. The device should always be placed on a flat, level surface.

Needle Insertion

Palpation and Occlusion

Skin Stretch

Skin Stretch
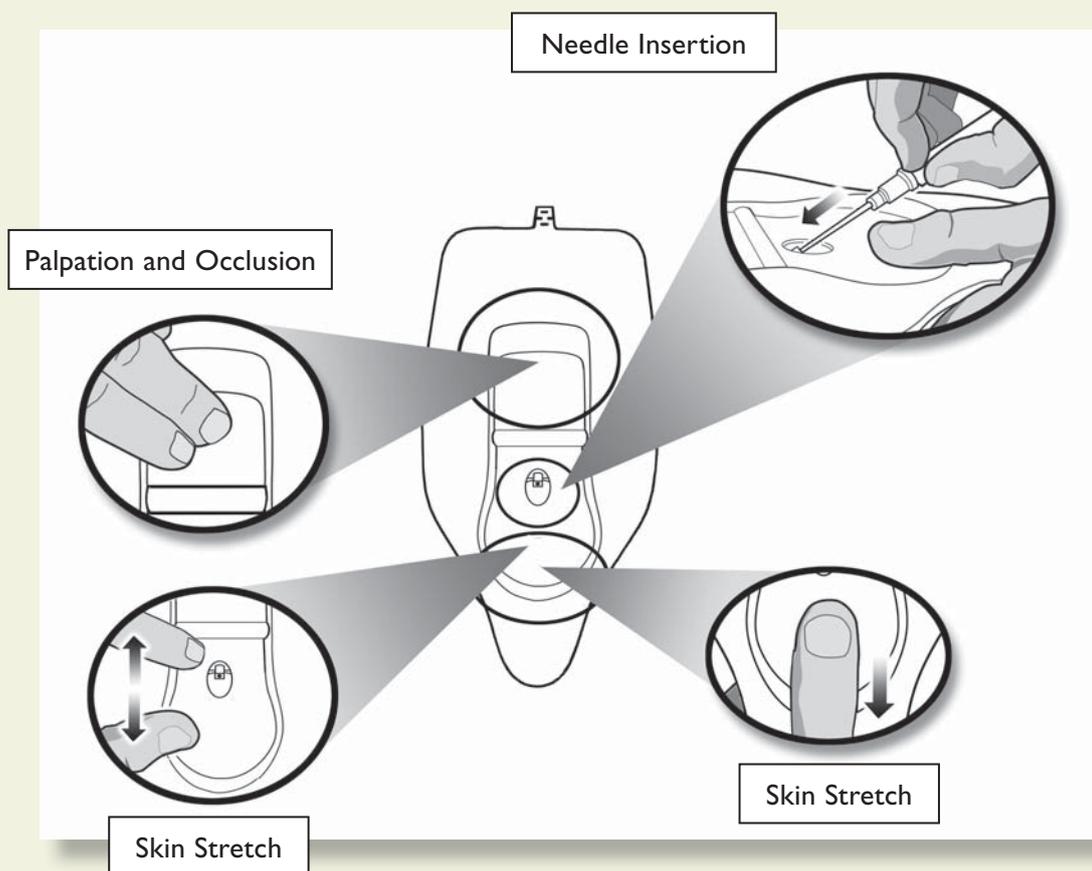
** **Special Note: Under no circumstances should an needle or catheter other than those supplied with the Infant Virtual I.V. Self-Directed Learning System ever be used with the Haptic Device.**

System Overview

When it is time to insert the needle into the haptic device, this icon will appear:
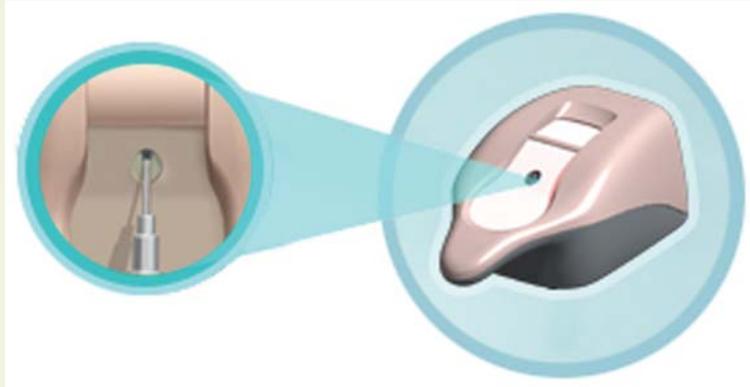
When it is time to palpate in the palpation area of the haptic device, this icon will appear:
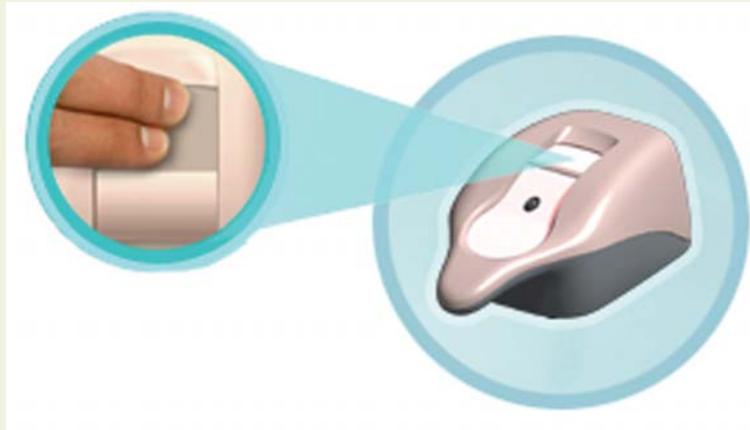
## Needle Insertion and Skin Stretch

The handle is gripped using the hand and the thumb can be used to stretch the skin during the procedure. The needle and catheter are inserted into the receptacle. Initially, the learner will feel a slight tug as the device engages the needle. Once the needle is engaged in the haptic device, the simulated needle on the screen will light up, and you will be ready to perform the needle insertion.

The force feedback provided to the learner depends on the patient being cannulated, the case scenario, the actual stick, and any complications. In some cases the learner will feel a stick through both skin and vein, in other cases the vein, or even the skin puncture may be more or less prominent. The forces associated with infant catheterization are subtle at times, and the force feedback device simulates these subtle cues and sensations.
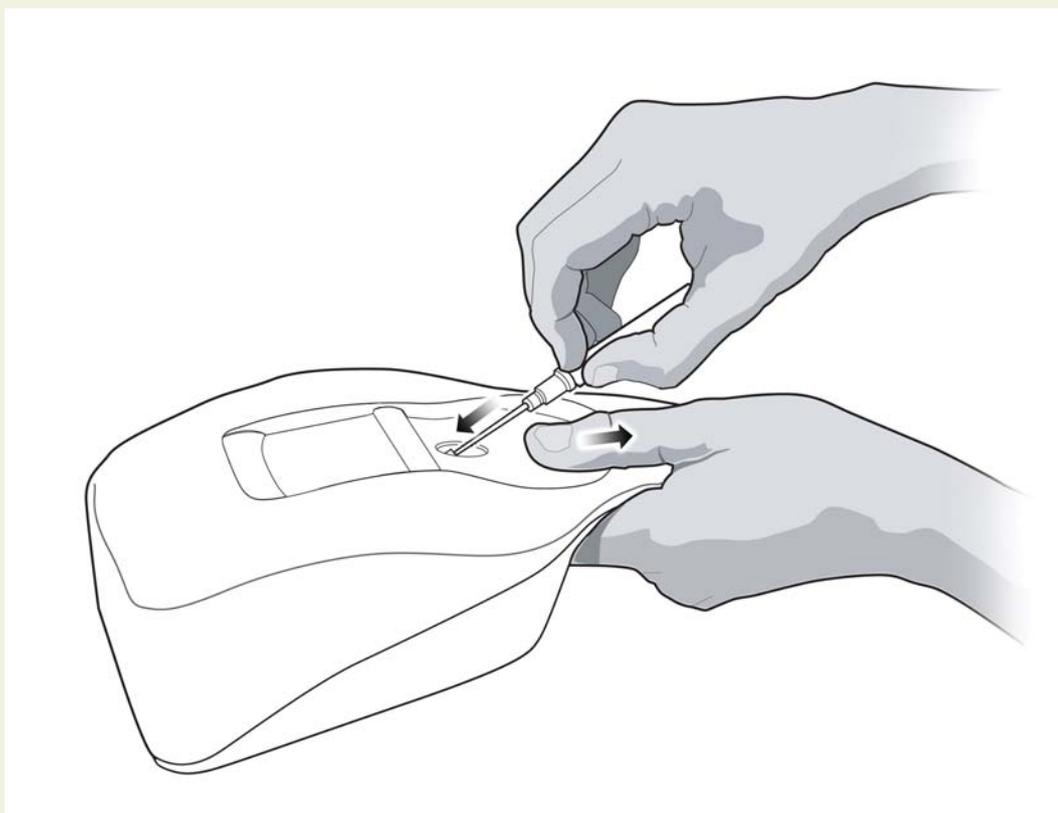
Equipment Use: Specific

<u>Catheter Lock and Lock with Extension Tubing</u>

Click on the 'catheter lock' or 'lock with extension tubing' icons, move cursor to the site and then click to apply.

<u>Needle Selection and Insertion Point Selection</u>

Click on the I.V. catheter icon in toolbar. A selection of 8 different length and gauge needles will appear. Select the appropriate gauge needle and move cursor over site. A target will appear. Click to locate needle insertion point. The bevel position will be displayed in a circular inset inside the simulation window.

<u>Gloves and Goggles</u>

To apply gloves and/or goggles, click on the Gloves and/or Goggles icon. To remove, click on the corresponding icon on the lower left side of the screen.

<u>*Tape and Dressings*</u>

To apply tape, gauze or dressings, click on the corresponding icon, move to site and click on desired location.

<u>*IV Infusion*</u>

To setup an IV Infusion click on the tubing, pump, and IV fluid icon.

<u>*Tourniquet or Rubber Band*</u>

To place the Tourniquet or Rubber Band, click on the corresponding tool bar icon, move the mouse over to the site and click on desired location.

<u>*Site Preparation*</u>

To use a cleansing solution, iodine, or sterile saline, click on the corresponding icon on the toolbar and move the mouse to the desired site. Once over the desired site, click, hold and move the mouse to cleanse site. Release mouse button when cleansing is complete.

Transilluminator

To use a transilluminator, click on the transilluminator icon in the toolbar, move the cursor to the site, and click to apply at the desired location.

Flush and Bolus

To use a flush or a bolus, click on the corresponding icon in the toolbar, move to the site and click to apply.

Debriefing

Following the procedure, the learner will be assessed as to how well he or she performed the procedure. To view the debriefing screen, push the advance button after performing the procedure.

The top of the Debriefing screen shows your total score, the procedure and C-band times, whether you have successfully completed the procedure, the case level, and other information.

The assessment screen presents Cannulation events, Critical Errors and Non-Critical Errors.

Cannulation events present general subcutaneous animations of what occurred during your cannulation attempts. For example, if the angle of insertion was too steep, the video will display the consequences of a steep insertion. Click on the movie icon next to the cannulation event to view the animation.

Positive and negative critical and non-critical assessment headings are displayed below the cannulation events. Critical errors are vital to proper performance of the procedure. Depending on the configu-

ration chosen by the administrator a quantitative score may be displayed. This Overall Rating may be high, but the learner will still fail the procedure if critical errors were made. The total time of the procedure, as well as the time the constricting band was placed on the site is timed.

For some critical and non-critical errors, a movie icon will appear next to the error. Clicking on the movie icon next to a negative assessment heading will play a short vignette describing how to perform the relevant portion of the procedure correctly. Once you have reviewed your debriefing, you can advance to the next screen, return to the main menu or log off from the application.
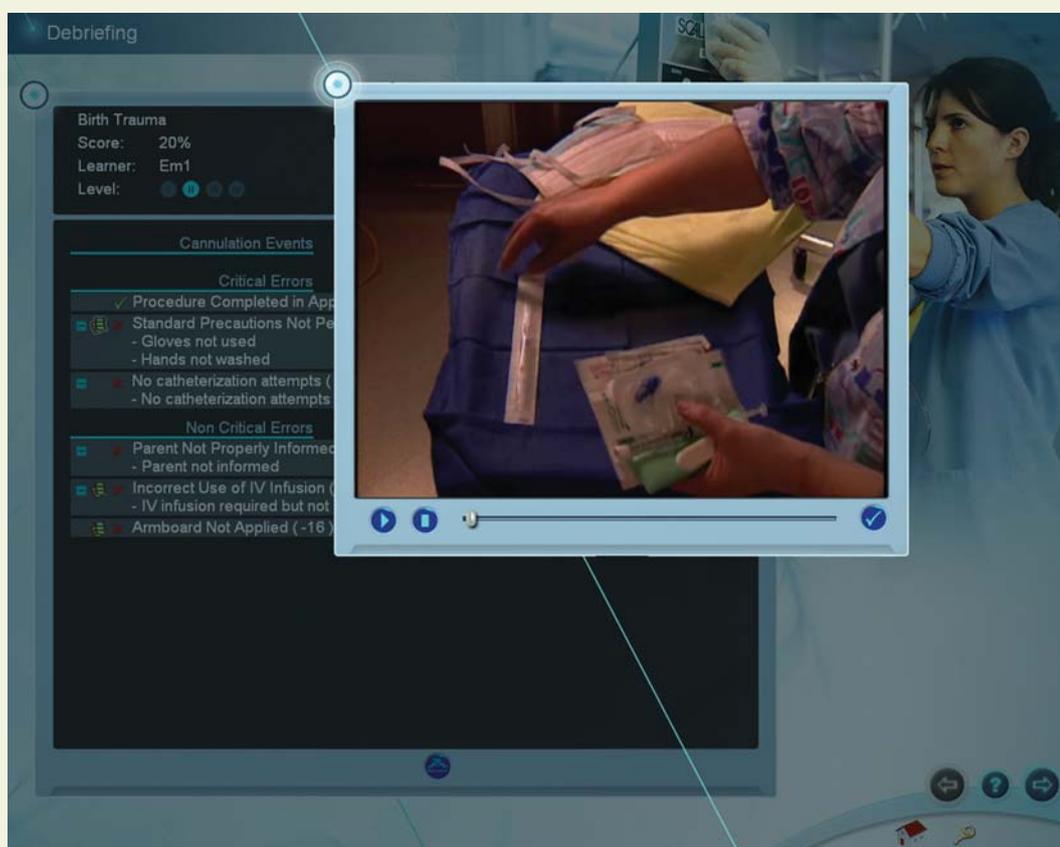
If the learner is in Career Mode and succeeds at the procedure, then the next case or a qualification test will be automatically presented when the learner advances to the next screen. If the learner fails the procedure, he or she may be presented with the same case scenario, a different case scenario, or a remediation case scenario with hints.

System Overview

If the haptic device malfunctioned during the procedure, the assessment will be discarded and you will receive the below error message.

Assessment will be discarded due to Haptic Device malfunction during procedure.

Packing up the system

9 PACKING UP THE SYSTEM

⚠️ WARNING
Precautions when packing and moving the haptic device

- The haptic device is a precise and sensitive instrument. To ensure proper working order, please handle and pack with care.

- Be certain to replace the shipping restraint before moving the device.

- Dropping the haptic device, bending the needle, or other abuse may render the device inoperable.

- To ensure proper functionality, calibrate the haptic device after moving.

- Although the needle is blunt, it can still cause injury if used in an improper manner. Be careful when handling.

This series of diagrams is also available as a fold-out set of instructions that were included in the Infant Virtual I.V.™ packaging. It explains the order of packing the simulator. Special attention should be paid to unplugging the cables and packing the haptic device.

*(1) Shut down the computer as indicated by the manufacturer:*

(2) Unplug the power cord of the haptic device from the wall socket:
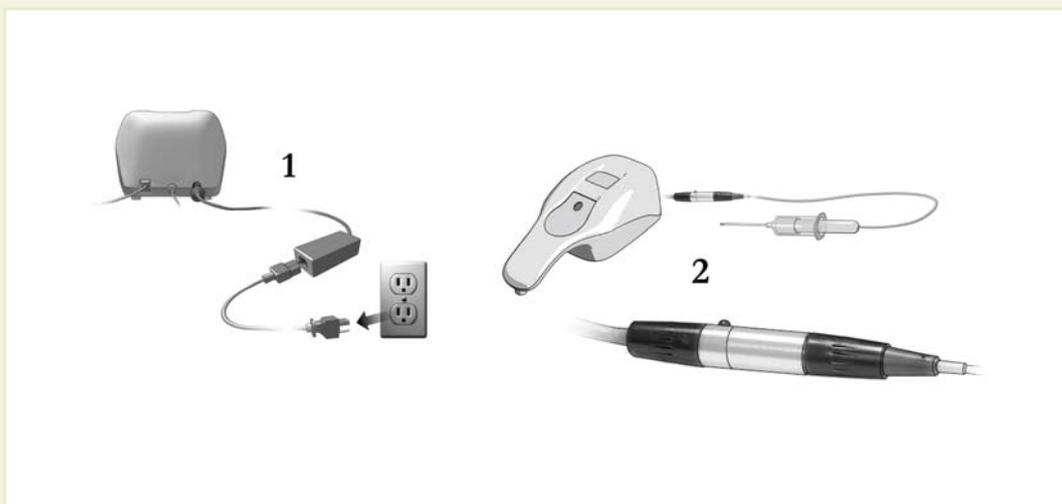
## Packing up the System

(3) Carefully unplug the needle from the haptic device:
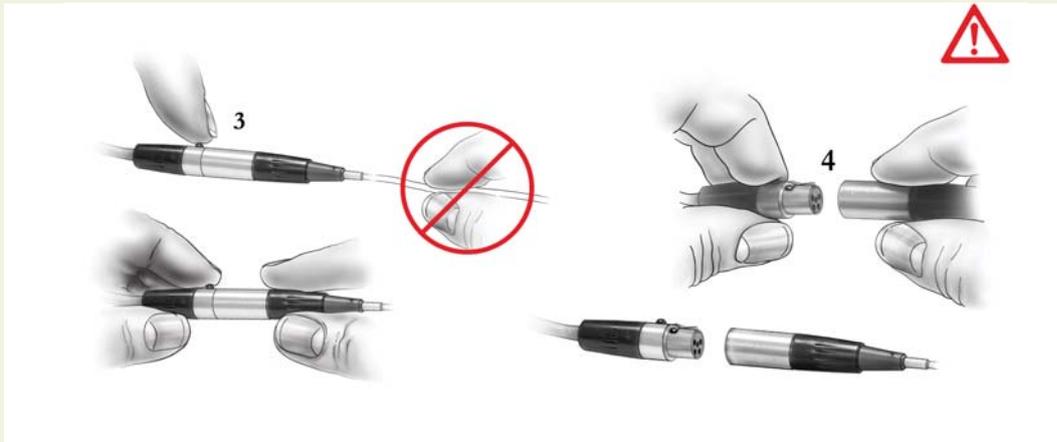
(4) Place the restraining strap on the haptic device:
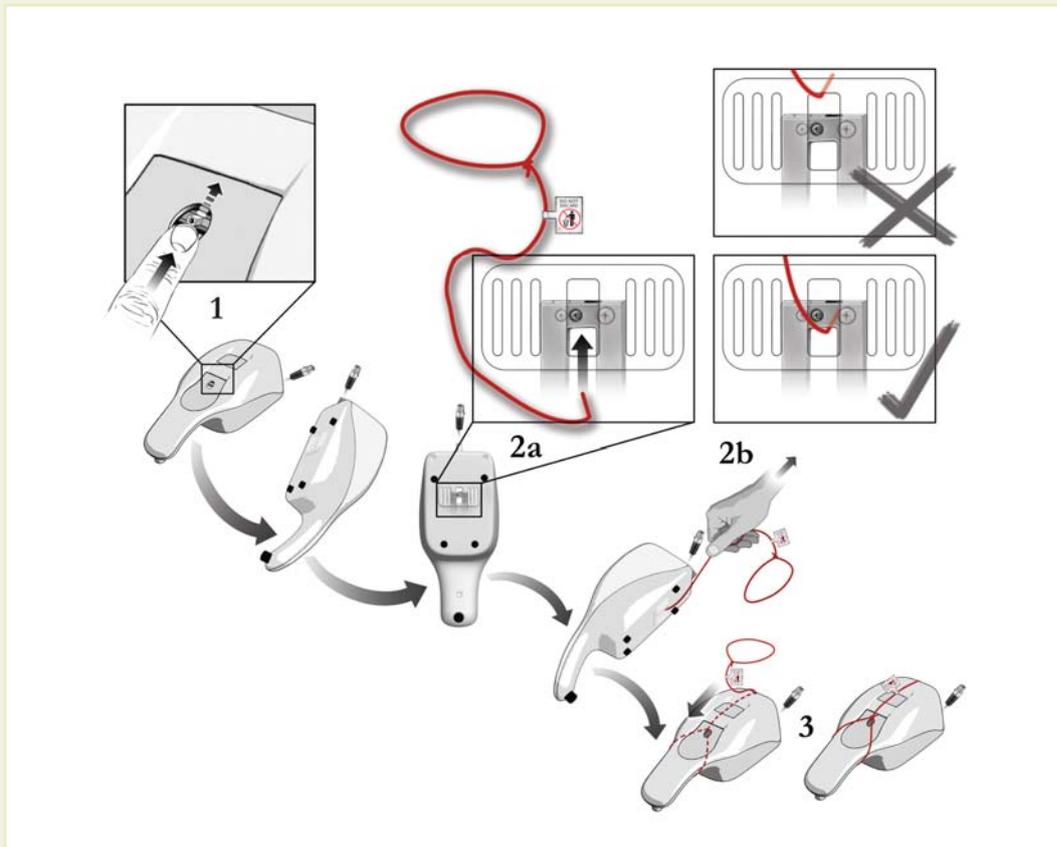
(5) Carefully place the haptic device and tools in the original packaging:
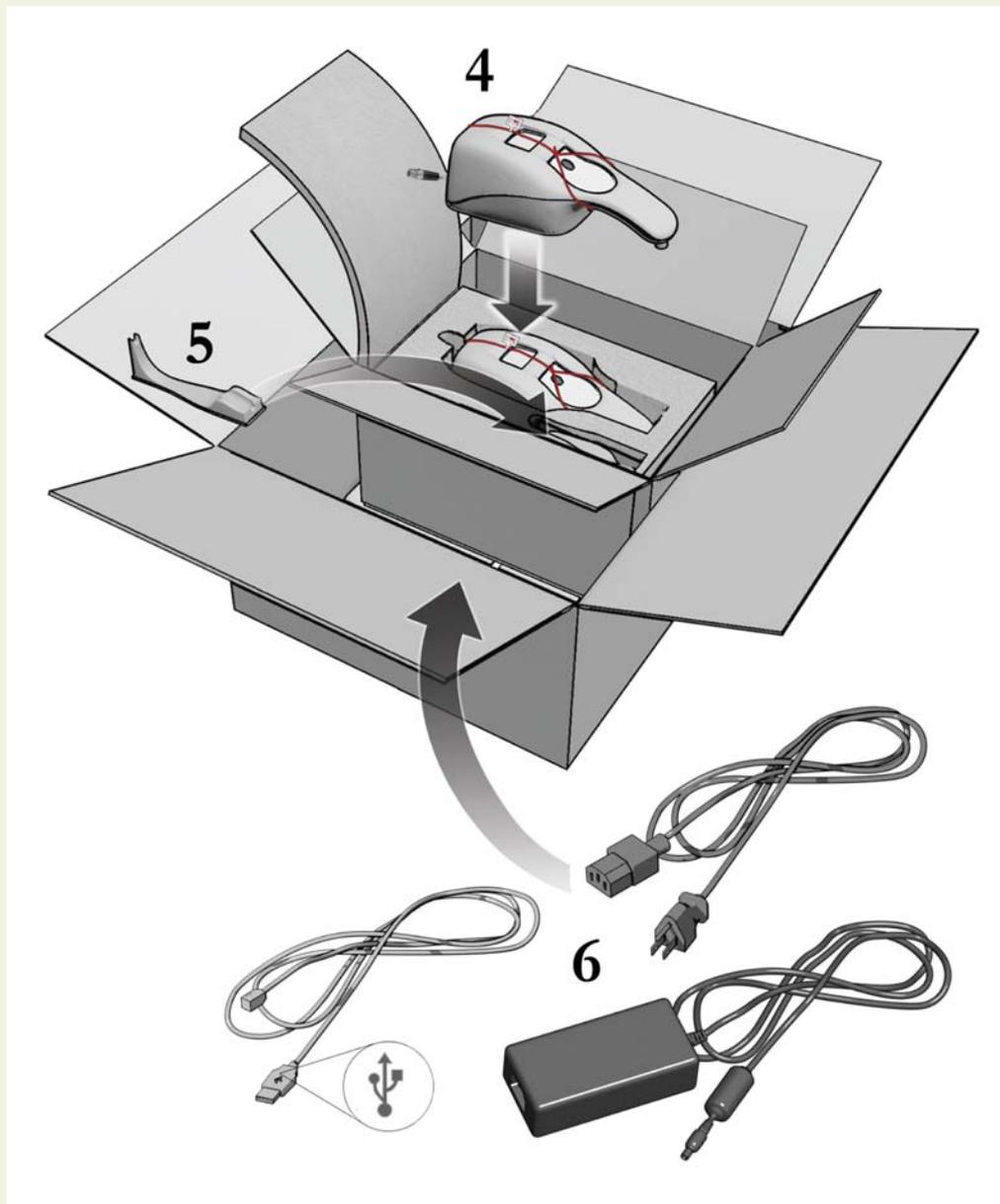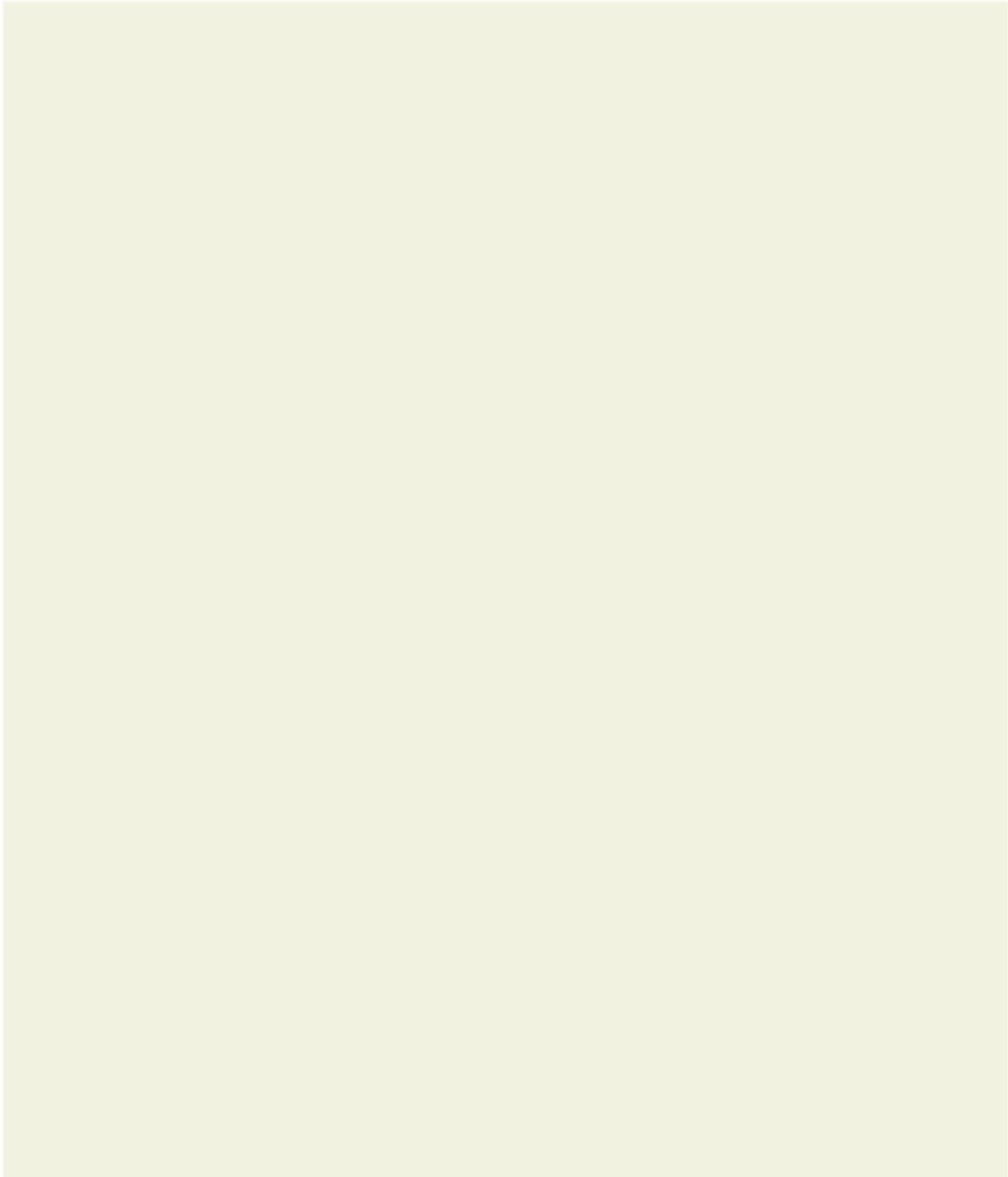
Frequently Asked Questions (FAQ)

Infant Virtual I.V.
Directions for Use

FREQUENTLY ASKED QUESTIONS (FAQ)

1. Is there some kind of an introduction that shows me how to use this product?

    The System Tutorial Video, accessible from the Main Menu Screen, will show you how to use the product, as well as the text in this user manual. To access the Main Menu login as:

    Username: demouser1 or demouser2
    Password: password

2. After selecting a body part and site, can I go back to select a different region?

    Yes, and it is not necessary to "go back". There is an icon for site selection directly above the circular simulation window on the simulation screen.

3. Can the instructor select specific supplies and configure the training standards?

    Yes, in the Instructor Module, supplies and assessment items are configurable and can be set to appropriate local protocols.

4. Our local standards of practice do not call for, or restrict the use of, certain items that are available on the equipment screen or are required for successful completion of the procedure, such as the use of goggles or application of iodine to the arm.

    Many options are configurable by the instructor using the Configuration section of the Instructor module. By turning specific assessment items on or off, it is possible to tailor the system to train to your local protocols.

5. Why can't I continue to palpate the vein as I'm inserting the needle?

    Proper I.V. insertion technique specifies simultaneous skin stretch and insertion. Thus, unless you have a helper, simultaneous skin stretch, palpation and insertion would require more then two hands. However, if you do palpate, you will palpate approximately ½" proximal to the insertion site.

6. Is there audio feedback… like the patient saying something or making a noise when I stick him?

    No, it was felt by the clinical design team that this could become annoying to the user over multiple uses, although in future versions of the product audio such as this may become a configurable option. Audio is provided during the training videos, and when the needle engages the haptic device.

Frequently Asked Questions

7. Will the cleansing agents wet and taint the skin?

    Yes, like in actual patients, there will be a time period in which topical agents will remain in a liquid state on the skin and then evaporate, depending on the nature of the solution applied to the arm.

8. Will blood drip out of the needle hub if the vein isn't occluded?

    Yes, under most conditions, if the procedure has been performed to elicit this problem, bleeding will occur.

9. Will a hematoma and/or ecchymosis form if I stick through or blow a vein?

    Yes, under most conditions, if the procedure has been performed to elicit these problems, a hematoma and/or ecchymosis will occur.

10. Why do I need to select a sharps container? There is one on the wall in every room where I work.

    An option can be configured in the Administrator module to make the sharps container always available. The goal is to reinforce the concept that sharps, contaminated gloves and other items must be disposed of in a prescribed fashion. The same is true for the biohazard container.

11. Is there some way to mark the selected needle entry point? I lose the spot when I prep the skin.

    As with an actual patient, there is no way to mark the point of insertion.

12. Is there a lateral transparent view so I can see my angle and depth of entry?

    No, currently there is no real-time display of angle and depth of entry. Future versions may feature this capability, but for training purposes, it was felt that, since this is not available while performing the procedure on an actual patient, it was not a preferred method of training the technique.

13. Will the debriefing tell me what I did correctly and give me more specific information about what I did wrong?

    Yes, the Debriefing screens have links to video, animations and textual information about errors and the way to achieve proper performance in the procedure.

14. Can the student print out the debriefing?

    Yes. Students and instructors can print out specific case scenario and cognitive test debriefings from two locations: the debriefing screen and the competency review screen when a specific debriefing is accessed. Installation of a Laerdal Competence Management system will allow you to print additional information.

15. Can the debriefing report be downloaded into a database?

    Yes. Installation of a Laerdal Competence Management System will allow you to download various reports into a database format..

16. Can I access the student performance database from my office computer over a network?

    Yes. Installation of the Laerdal Competence Management System will allow users to access student performance and competence from anywhere on the internet..

17. I keep getting the message "Put the catheter back on the device", even though I have already performed that function. What do I do?

    This may be an indication that the device requires calibration. If you do this 3 times, you will get a message asking you to automatically calibrate the sensor. Place the catheter completely on the needle, and click "Auto-Calibrate."

18. I have installed other software on the computer, and the simulator either slows down, there is an error with the haptic device communication, or the program crashes. What do I do?

    No software should be installed on the computer supplied with the Infant Virtual I.V.™ Self-Directed Learning System, except for those products supplied by the manufacturer of the software. Other software, such as anti-virus programs, may run on the machine in the background, severely limiting the performance of the simulator. The best solution is to never install such software in the first place, turn it off or delete it once it has been installed. An alternative solution, if you are required to run anti-virus software, is to increase the memory on your machine. Contact Laerdal Technical Service for further guidance.

19. The needle stays in the arm although it has been withdrawn from the device. What is going on?

    If you pull the needle out "too quickly" a magnet within the haptic device will un-latch. This is a limitation of the hardware and is un-avoidable. Thus, you should always remove the catheter from the haptic device in a slow manner. Jerking the catheter out of the patient is dangerous. Jerking the catheter out of the device may cause un-expected behavior or device failure. If the needle gets left inside the arm on the Simulation Screen, you can also throw away that needle and select a new needle; and the device will reset.

20. In the Simulation Screen, I inserted a needle through someone's finger, although the needle appears to completely penetrate the finger, the Haptic device   pushed the needle almost completely back out.

    It is possible to over-power the device. In some cases, you may hit a bone and the device will not respond correctly with forces required to penetrate it. This is a limitation of the system.

Support

SUPPORT

For Customer Service, contact Laerdal at: (800) 433-5539

For Technical Service, contact Laerdal at: (800) 431-1055 EXT. 5596

For additional module licenses and other issues, please contact your local Laerdal representative.

Please contact Dell for service and support of the computer and all software except the Infant Virtual I.V. software.