Gaumard®
Simulators for Health Care Education

NOELLE® S574/575/576 User Guide

Maternal and Neonatal Birthing Simulator

NOELLE is an interactive educational system developed to assist a certified instructor. It is not a substitute for a comprehensive understanding of the subject matter and not intended for clinical decision making.

User Guide N.12.3.2

www.Gaumard.com

Contents

CONTENTS **3**

END USER LICENSE AGREEMENT **7**

CARE AND CAUTIONS **9**

OVERALL WARNINGS 10
ELECTRICAL THERAPY 11

GETTING STARTED **12**

OVERVIEW 13
TERMINOLOGY 13

EQUIPMENT SET-UP **14**

Leg Assembly *15*
Tablet Computer *15*
Virtual Monitor *16*
Equipment installation 16
Wireless Ad-Hoc Connectivity 17
Gaumard Monitors 17

WORKING WITH GAUMARDUI **18**

INITIALIZING NOELLE 19
User profiles and operating modes *19*
Manual Mode 19
Automatic Mode 19
Creating a new profile 20
ENVIRONMENT 21
The Status Panel 21
Communication Indicator 23
Battery Indicator 23
Sound Volumes 23
Soft Power and Standby 24
Details *24*
Automatic Mode 28
Palette Items 35
Palette *36*
Lab *37*
Creating a Lab Template 37
Creating a Lab Report 40
Send to monitor 41
Scenarios *43*
Linear Scenarios 43
Scenario Controls 46
Factory Preset Scenarios 48
Scenario Quick Launch 51
Using Factory Preset Scenarios 52
Creating your own Scenarios 54
Branching Scenarios 57
Drugs (Automatic Mode Only) *63*
Administering medications 63
Fluid & Gas 66
Drug list manager 67
Drug Interaction Editor 71
Labor *77*
Save Labor 77
Load Labor 79
Time Information 79
Delivery Position 80
Labor Control 82

Dystocia....83
Contraction Response....84
Descent Curve....86
Time Line....87
Stages....88
Locking Mechanism....89
Labor Activity....90
Factory Preset Labor Scenarios....91
Speech....103
Prerecorded Sounds....103
Streaming Audio (If factory installed)....103
Log....105
Text Log....105
Provider Actions....106
Team Logging....108
Session Information....109
Evaluation....110
Evaluation Form....110
MENUS....117
File....117
Profile....117
New Session....117
Reset Session Clock....117
Save Report....117
Print Report....118
Import....118
Export....118
Exit....118
Setup....119
Calibration....119
Options....125
Remote Access via Network....129
Auto Responses....130
Set Med ID....131
Scan RF Channels....134
Modeling (Automatic Mode Only)....135
Modeling Patient....135
Reset Model....136
Import between Patients....136
Auto Log Setting....136
Monitors....137
Sensors....137
File Sharing....137
Custom Numbers....138
Configuration....139
CPR....140
Options....141
A/V....142
Setup A/V....142
Fetal Neo Link (Automatic Mode)....143
Help....144
Instruction Manual....144
About GUI....144
Check for Updates....144
Diagnostics....144

WORKING WITH NOELLE 145

AIRWAY 148
Nasal and Oral Intubation 148
Resuscitation 148
Teeth 148
Airway Sounds 148
BREATHING 148
Pulmonary Ventilation 148
Chest Rise 148
CPR 148
CARDIAC 149
Heart Sounds 149
ECG Monitoring and Electrical Therapy 149
CEPHALIC 149
Reactive Eyes 149
Seizures 149
CIRCULATION 150
Bilateral Pulses 150
Programmable Blood Pressure 150
Drug Recognition (option) 150
Bilateral IV arms 153
OBSTETRICS 154
Normal Labor and Delivery 154
Preparing for a delivery 154
Locking Mechanism 155
Loading a Labor Scenario 156
Starting the Labor 156
Completing a Delivery 156
Resetting the Delivery Mechanism 157
Vacuum-Assisted Delivery 157
Leopold Maneuver 158
Shoulder Dystocia 159
Cesarean Delivery 159
Prolapse of the Umbilical Cord 160
Placenta Previa 160
External Version 161
Breech Birth 161
Placenta Delivery 163
Postpartum Activity 163
Episiotomy Repair 164
SYSTEMIC 165
Oxygen Saturation 165
Intramuscular injection sites 165
Urinary Catheterization 165
OTHER 166
Post-Partum Hemorrhage 166
Vital Signs Monitor 166

APPENDIX 167

FACTORY PRESET LABOR SCENARIOS 168
Manual Mode Flowcharts 168
Quick start Scenarios 168
NOELLE Advanced 181
Automatic Mode Flowcharts 220
Quick Start NOELLE Modeling 220
Tips on Creating Scenarios 239
FILE STRUCTURE 240
TROUBLESHOOTING 241
General Troubleshooting Guide 241
Diagnostics 247
Microphone Boost for Streaming Audio 248
Connecting to the Gaumard Monitors 250
Configuring the Wireless ad-hoc Network 251
Connecting GaumardUI to the Gaumard Monitors software 252
Wireless Ad-hoc Connection Settings Windows® XP 254
SELECTED CONSUMABLES AND REPLACEMENTS PARTS 257
Selected Parts List 257
Replacing Common Consumable and Replacement Parts 259
Birth Canal 259
Replacing Common Consumables 260
WARRANTY 266
CONTACT US 267

End User License Agreement

This is a legal agreement between you, the end user, and Gaumard® Scientific Company, Inc. (“Gaumard”). This software is protected by copyright laws and remains the sole property of Gaumard. By installing the GaumardUI simulation (the "Software") media, you agree to be bound by the terms of this agreement. If you do not agree to the terms of this agreement, promptly return the uninstalled media and accompanying items to Gaumard at the address indicated below.

1. Grant of License. Gaumard hereby grants to you (an individual or institution) the right to install and activate the Software on one computer for use with one Code Blue III Interactive patient simulator system. The software may also be installed on any number of other computers at the same institution so that students may access the learning resources. One copy of the software may be made for backup purposes. You may not network this Software, or allow multiple users unless you purchased a multi-user workstation license. Sharing this Software with other individuals or allowing other individuals to view the contents of this Software is in violation of this license.

2. Copyright. The Software is owned by Gaumard and protected by United States copyright laws and international treaty provisions. Therefore, you must treat this Software like any other copyrighted material. You may not make this Software or copies thereof available in any manner or form or use, copy or transfer the Software, in whole or in part, except as provided herein.

3. Other Restrictions. You may not rent or lease this Software to any other party. You may not alter, merge, modify, adapt, reverse engineer, decompile or disassemble the software, or disclose the contents of this Software to any other party.

4. Electronic Transmission of Software. If you received the Software by electronic transmission or by Internet delivery, by installation of the Software, you acknowledge that you have read and understand this license agreement and agree to be bound by its terms and conditions.

5. Term of Agreement. The term of this Agreement and the license granted to you pursuant hereto shall commence upon installation of this Software. This Agreement and the license granted herein may otherwise be terminated by Gaumard in the event that you are in breach of any provision of this Agreement. In the event of termination, you agree to immediately return this Software, accompanying items, and any copies thereof to Gaumard.

6. LIMITED WARRANTY

(A) THE CD-ROM MEDIA (THE "MEDIA") WHICH CONTAINS THIS SOFTWARE IS WARRANTED, FOR A PERIOD OF 30 DAYS FROM THE DATE OF PURCHASE, TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP. ELECTRONIC TRANSMISSION IS WARRANTED TO BE FREE FROM DEFECTS AT THE MOMENT OF TRANSMISSION. YOUR SOLE AND EXCLUSIVE REMEDY, AND GAUMARD'S SOLE LIABILITY, IS TO REPLACE THE DEFECTIVE MEDIA OR TO REPEAT THE ELECTRONIC TRANSMISSION PROVIDED THAT YOU NOTIFY GAUMARD IN WRITING OF SUCH DEFECT OR DEFECTIVE TRANSMISSION AND RETURN THE DEFECTIVE MEDIA, IF ANY, DURING THE 30-DAY WARRANTY PERIOD.

(B) EXCEPT AND TO THE EXTENT EXPRESSLY PROVIDED IN PARAGRAPH (A), THE SOFTWARE AND ACCOMPANYING WRITTEN MATERIALS ARE PROVIDED ON AN "AS IS" BASIS, WITHOUT ANY WARRANTIES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY GAUMARD, ITS DEALERS, DISTRIBUTORS, AGENTS OR EMPLOYEES SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY, AND YOU MAY NOT RELY ON ANY SUCH INFORMATION OR ADVICE. GAUMARD DOES NOT WARRANT, GUARANTEE, OR MAKE ANY REPRESENTATIONS REGARDING THE USE OR THE RESULTS OF USE, OF THE SOFTWARE OR WRITTEN MATERIALS IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, CURRENTNESS, OR OTHERWISE, AND THE ENTIRE RISK AS TO THE RESULTS AND PERFORMANCE OF THE SOFTWARE IS ASSUMED BY YOU. IF THE SOFTWARE OR WRITTEN MATERIALS ARE DEFECTIVE, YOU AND NOT GAUMARD OR ITS DEALERS, DISTRIBUTORS, AGENTS, OR EMPLOYEES, ASSUME THE ENTIRE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION OTHER THAN EXPRESSLY DESCRIBED ABOVE.

(C) NEITHER GAUMARD NOR ANYONE ELSE WHO HAS BEEN INVOLVED IN THE CREATION, PRODUCTION OR DELIVERY OF THIS PRODUCT SHALL BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, AND THE LIKE) ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT OR RELATED TO THIS AGREEMENT EVEN IF GAUMARD HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. GAUMARD SHALL NOT BE LIABLE TO YOU FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR LOST PROFITS ARISING OUT OF OR RELATED TO THIS AGREEMENT OR YOUR USE OF THE SOFTWARE AND/OR THE RELATED DOCUMENTATION, EVEN IF GAUMARD HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL GAUMARD'S LIABILITY HERE UNDER, IF ANY, EXCEED THE PURCHASE PRICE PAID BY YOU FOR THE SOFTWARE.

ALL RIGHTS NOT EXPRESSLY GRANTED IN THIS LICENSE AGREEMENT ARE RESERVED BY GAUMARD.

ACKNOWLEDGMENT

BY INSTALLATION OF THIS SOFTWARE, YOU ACKNOWLEDGE THAT YOU HAVE READ AND UNDERSTAND THE FORE GOING AND THAT YOU AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. YOU ALSO AGREE THAT THIS AGREEMENT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF AGREEMENT BETWEEN THE PARTIES AND SUPERSEDES ALL PROPOSED OR PRIOR AGREEMENTS, ORAL OR WRITTEN, AND ANY OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE LICENSE DESCRIBED HEREIN.

Care and Cautions

Overall Warnings

Remember that damage caused by misuse is not covered by your warranty. It is critical to understand and comply with the following guidelines:

Procedures

Do not attempt to intubate without lubricating the airway adjunct with silicone lubricant (provided). Failure to do so will make intubation very difficult and is likely to result in damage.

When simulating drug administration via endotracheal tube, providers must use an empty syringe. Passing liquids into the trachea or esophagus may cause internal damage.

Talcum powder should be used sparingly on top of the lungs and ribs to eliminate any noise caused by rubbing of internal parts during breathing.

Mouth to mouth resuscitation without a barrier device is not recommended, as it will contaminate the airway. Treat NOELLE with the same precautions that would be used with a real patient.

Always adjust the motor arm prior to every delivery to prevent the power cable from wrapping around the mechanism. (Revision 1 motor)

Always keep clear of the birthing mechanism while the system is on.

Do not operate the birthing mechanism without the tummy cover in place.

IV arm

Vein tubing contains latex which may cause allergic reactions. Users allergic or sensitive to latex should avoid contact. Discontinue use of this product and seek medical attention if an allergic reaction occurs.

Only use Gaumard' s provided simulated blood. Any other simulated blood containing sugar or any additive may cause blockage and/or interruption of the vasculature system.

The use of needles larger than 22 gauge will reduce the lifetime of the lower arms' skin and veins.

When the arm veins require replacement, contact Gaumard to arrange for a lower arm exchange. For a small fee, we will deliver reconditioned and warrantied lower arm assemblies to your facility. After receiving the replacement arms, use the same box and the enclosed shipping label to return the old arms to Gaumard. For international and express service, additional fees may be charged. Refer to the Consumables and Replacement Parts section of this guide, and contact customer service for more information.

Storage

Store NOELLEin a cool, dry place. Extended storage above 85 degrees Fahrenheit (29 Celsius) will cause the simulator to soften and slowly warp. It is acceptable to *operate* NOELLEat an ambient temperature of 95 degrees Fahrenheit (35 Celsius).

Do not store the simulator with a discharged battery. It is good practice to re-charge the battery at the end of every simulation session. In addition, make sure the battery is re-charged at least once every 6 months even if the simulator is not being used; otherwise permanent loss of capacity might occur because of self-discharge.

Cleaning

NOELLE should be cleaned with a cloth dampened with diluted liquid dishwashing soap. If medical adhesives remain on the skin, clean with alcohol wipes. **DO NOT USE "GOO GONE"** as the citric acid in the formula will cause pitting of the various materials comprising your simulator.

NOELLE is "splash-proof" but not water-proof. Do not submerge or allow water to enter the interior of the simulator. Do not expose the tablet computer to water or excessive dust.

Set Up

NEVER disconnect the communications module while the GaumardUI software is running. The software will halt, and the module may be damaged.

Birth Canal Maintenance

Ball point pens, ink and markers permanently stain the birth canal insert.

Do not wrap this or any other Gaumard product in newsprint.

The birth canal insert can be cleaning by wiping with a mild solution of soap and water. After cleaning, dust with talcum powder.

Store the unit in a cool, dry place.

After exercise is completed, **DO NOT** leave birthing baby in contact with the birth canal.

Post-partum hemorrhage check list and Warnings

Use only Gaumard's provided simulated blood. Any other simulated blood brand containing sugar or any additive may cause blockage and/or interruption of the vasculature system.

At the end of every simulation, always flush the system with distilled water to prevent clogging.

Always position the simulator so post- partum hemorrhage fluid flows away from the birth canal and the simulator itself.

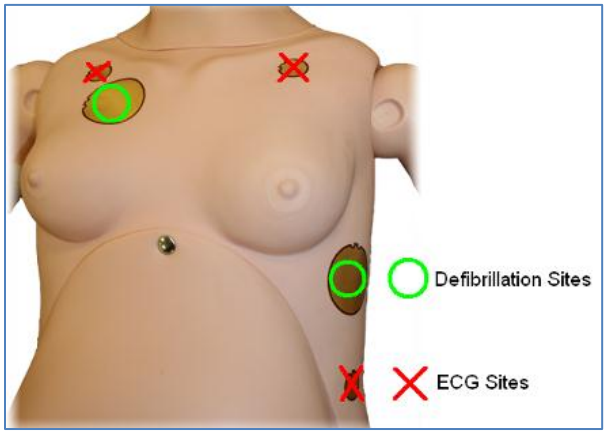
Do not allow PPH fluid to puddle beneath the simulator or reach the lower back.

To prevent staining or molding, always clean NOELLE using diluted soap and water. Remove the birth canal and clean thoroughly.

Electrical Therapy

There are inherent dangers in the use of some medical devices. For simulations that incorporate electrical therapy of any kind, always follow the guidelines below in addition to the electrical therapy equipment's safety guidelines.

ECG lead II, the monitoring lead, is the only ECG signal produced by the simulator. NOELLE has sites on her chest for up to four ECG electrodes to accommodate today's most common monitors. These sites are electrically tied together by an appropriate impedance, preventing "lead off" alarms from the monitor.



Defibrillation is allowed only on the large sternum and apex sites marked in **green** below. **NEVER** deliver a shock to ECG lead targets on the shoulders and waist. Doing so will neither create a fire hazard nor create a risk of shock to the provider, but major internal damage will result. **This situation is considered improper use and is NOT covered by the NOELLE warranty. The system will require repair at our facility.**

Electrical therapy checklist and warnings

- Only deliver electrical therapy when the simulator is fully assembled, dry, and undamaged.
- Make sure the defibrillation patches on the simulator are in good condition, including removing any and all gel residue on the defibrillation patches from previous use(s). It is a good practice to remove gel residues after every use. Failure to do so will leave behind a film of electrode gel that hardens causing arcing and pitting.
- Do not re-use the gel-adhesive pads. Do not leave them on for next day use.
- Use hard paddles or wet-gel pads preferably. Avoid using solid-gel pads since they present higher risk of burning the simulator's skin.
- Gel pads have a shelf life. Make sure they are not expired to avoid arcing.
- Make sure the simulator is not in contact with any electrically conductive surfaces.
- Use the simulator only in a well-ventilated area, free of all flammable gases.
- NEVER attempt to service or modify any of the electrical connections, especially those between conductive skin sites and the internal electronics. Discontinue use if any wires are found exposed with damaged insulation.
- Real medical products, especially electrodes, sometimes use powerful adhesives that can be difficult to remove. A gentle, degreasing cleanser may be needed. Refer to Care and Cautions for more information.
- Electrode gel on the skin between any two electrode targets can become a pathway for electrical current, just as in real life. If this occurs, NOELLE's skin can be burned.
- Do not allow defibrillation pads to overlap ECG sites. Doing so will may damage the simulator and cause arcing.
- Should dark traces appear on the conductive patches due to gel residue or previous arcing, use a pencil eraser to remove the traces and then clean with alcohol.
- **DO NOT SCRATCH** the patches with abrasive objects; doing so will cause irreversible damage to the conductive sites and subsequently cause arcing.

Getting Started

Overview

Your NOELLE S574-575-576 patient simulator is completely self-contained and tetherless, and includes the following features:

- Self-contained and mobile
- RF communications up to 150 feet in open space (50 meters)
- Powerful yet intuitive user interface software

Airway

- Oral and nasal intubation
- Use an ET tube or LMA
- Sensors detect depth of intubation

Breathing

- Spontaneous breathing with chest rise
- Independently programmable left and right lung sounds
- Upper airway sounds and pre-programmed speech
- Control rate and depth of respiration
- Ventilation is measured and logged

Circulation

- Bilateral carotid, radial and brachial pulses that vary in strength with blood pressure
- Blood pressure measured by palpation or auscultation
- Normal and abnormal heart sounds
- Conductive sites on skin accommodate real electrodes and monitoring with real equipment accommodates [full energy] Defibrillation/Cardioversion and anterior cardiac pacing
- Sensors detect electrical therapy, chest compression, ventilation, blood pressure cuff use, and depth of intubation
- Distal pulses individually disabled for simulation of arterial occlusion or rupture
- Programmable responses to electrical therapy

Control

- Proprietary communications module can be used simultaneously with the tablet computer's integrated wireless (IEEE 802.11b) networking device
- Bluetooth(r) technology in the tablet computer allows wireless printing to compatible printer and quick connections to other devices
- Touchscreen virtual vital signs monitor
- Optional Streaming audio

Simulator

- Birth mechanism with cardinal movements
- Articulating body

Venous Access

- Bilateral arm venous network in forearms
- Bilateral quadriceps and deltoid intramuscular injection sites

Other

- One year limited warranty, available extended warranty to three years
- Installation and training services available
- Technical support and onsite repair.

Terminology

Apply - In the context of a simulation, to apply settings is to send details of the patient's condition to the simulator itself. When settings are successfully applied, NOELLE's condition should match that shown on the Status panel.

GaumardUI - the Gaumard User Interface software application, used to control the simulator and evaluate care providers.

Facilitator - the person conducting the simulation; an instructor or lab staff member.

Palette Item - any full or partial set of physiological parameters that have been grouped and saved together under a single name.

Profile - a unique GaumardUI configuration, including custom palettes, scenarios, and options. Each profile acts as a separate program whereby changes made to one profile have no effect on the others.

Provider - a person participating in the simulation as a healthcare provider.

Scenario - a saved sequence of physiological states, which flow like a "play list." Scenarios provide a level of automation that unburdens the facilitator and allows standardized presentation of symptoms.

Scenario Item - a Palette Item that is part of a scenario. Scenario Items may also represent a fixed delay period ("Wait") or a pause ("Wait Indefinitely").

Stylus - a special pointing device for the tablet computer. The stylus is the fastest and easiest means of controlling the GaumardUI software. See the Equipment Set-up section of this guide for more information on working with the stylus.

Manual Mode - In this mode, vital signs and other responses are changed according to the specifications given by the instructor.

Automatic Mode - In this mode, vital signs respond automatically to caregiver participation, instructor specifications, and pharmacologic intervention. The model used in this operating mode was developed based on physiologic principles. Features unique to this mode include: a comprehensive list of drugs for easy administration, a drug profile editor for adding new drugs or editing existing ones, among other things.

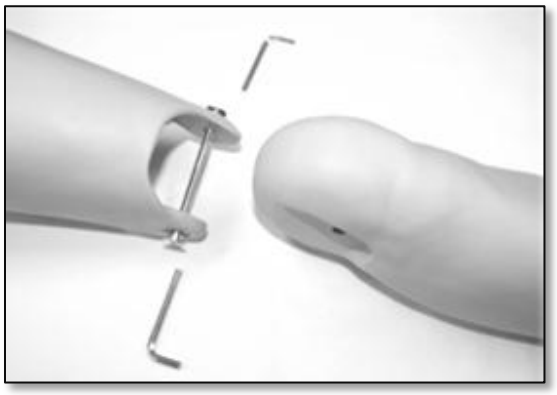
Equipment Set-up

Perform the following steps as part of the first install process.

Leg Assembly

Follow the steps below to install the lower legs. Remove the legs when transporting NOELLE inside the protective case.

1. Remove the fixed bolts from the knee joints using the hexagonal wrench included.



2. Position the lower legs and insert the bolts. Use the two provided hexagonal wrenches to secure the knee bolts. Do not over tighten.

Battery Power

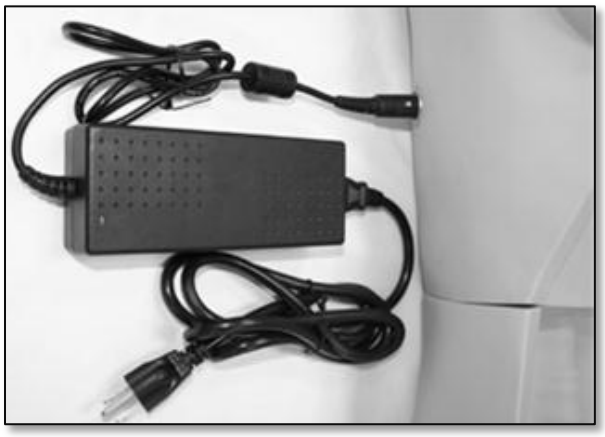
NOELLE will only turn on while the AC adapter is connected. Once NOELLE is **ON** and fully charged, the simulator can operate on internal battery for a maximum time **2hr 30min**. Battery operating time is dependent on factors such as number of deliveries, sounds and seizures.

Operating on battery power can accommodate labor scenarios during room to room transport.

If NOELLE is turned off while operating on battery, it will be necessary to re-connect the power adapter to restart the simulator.

NOELLE can be used while the power adapter is connected.

Connect the power adapter to the power input located on NOELLE's right side. The power adapter's LED indicator will display red while the battery is charging and green when fully charged.



The battery charge level is displayed on the GaumardUI status panel. To display a reading, the software must first establish a connection with the simulator.

For more information about the battery indicator, refer to page 23.

WARNING: Do not store the simulator with a discharged battery. It is good practice to re-charge the battery at the end of every simulation session. In addition, make sure the battery is re-charged at least once every 6 months even if the simulator is not being used; otherwise permanent loss of capacity might occur because of self-discharge.

Tablet Computer

The touchscreen tablet computer and the GaumardUI software serve as the simulator's control center. Two tablets are included with the system, one to control each simulator respectively.

Startup and control commands from the GaumardUI software are sent wirelessly to the simulator using the RF communication module shown in the next section. Please refer to the computer's documentation for important usage and safety information before powering on the tablet computer for the first time.

Using the stylus

The stylus operates very much like a mouse. You will notice that the pointer moves when the stylus is held near, but without touching the screen. Tapping the screen with the stylus tip is like clicking the primary (usually left) mouse button. Holding the stylus button while tapping the screen is like clicking the secondary (usually right) mouse button.

Calibrating the stylus

To work with the GaumardUI software and many other applications, the stylus input is far superior to a mouse in both speed and comfort. An additional advantage is it can be easily calibrated for your personal comfort.

The calibration utility found in the control panel will present the user with crosshair targets at each of the four corners of the screen. Position yourself and the tablet as if you are working, and carefully touch the exact center of each of the targets. After calibration, the pointer should be displayed directly beneath the stylus tip. Significant changes to viewing angle should be followed by calibration for best performance.

Communications Module

Connect the RF communication module to an available USB port on the tablet's left side. The module's USB cable can be connected whether the tablet computer is on or off.

WARNING: Never disconnect the communications module while GaumardUI software is running. Doing so can damage the module.

Secure the RF communication module to the tablet using the Velcro patch.

The tablet is now ready to communicate with NOELLE. For more information about the signal strength indicator, refer to page 23.

Virtual Monitor

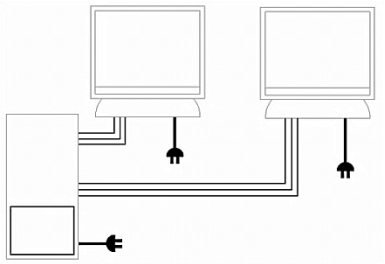
The dual virtual monitor system works with GaumardUI to display the vital signs of NOELLE, Newborn HAL and birthing baby.

Equipment installation

Please refer to the documentation included with the virtual monitor system components for important safety, installation and start-up information. Lastly, refer to the applicable system type for additional configuration.

System 1

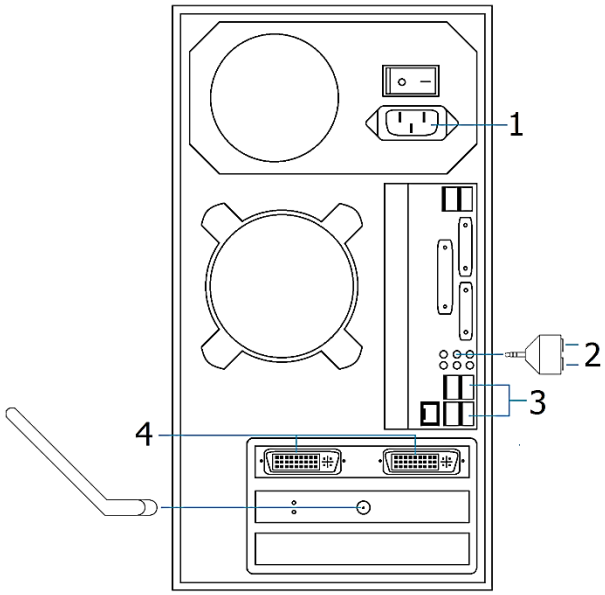
The setup consists of (1) desktop computer and (2) touchscreen monitors. Each monitor requires an independent video, audio and USB touchscreen connection to the desktop computer in addition to the power source.



Use the checklist below to confirm the necessary connections.

Desktop PC		Monitor 1	Monitor 2
1	PC Power cable	Touchscreen USB	Touchscreen USB
2	Monitor Audio 1	Monitor Video	Monitor Video
	Monitor Audio 2	Monitor Audio	Monitor Audio
3	Touchscreen USB 1	Monitor Power Cable	Monitor Power Cable
	Touchscreen USB 2		
4	Monitor Video 1		
	Monitor Video 2		
	Wireless antenna		

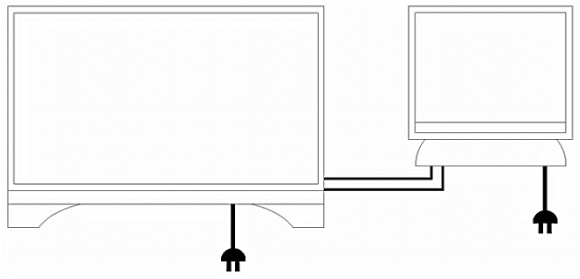
PC tower rear view



System 2

This setup consists (1) all-in-one PC and (1) touchscreen monitor. Use the checklist below to confirm the necessary connections.

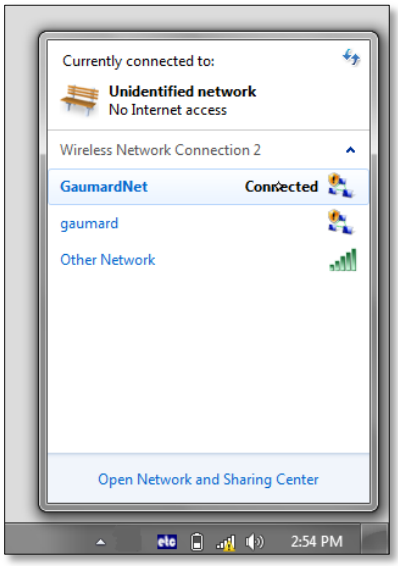
All-in-One PC	Monitor
Power	Power
Touchscreen USB cable	Touchscreen USB cable
DVI Video cable	DVI Video Cable



Wireless Ad-Hoc Connectivity

The tablet and virtual monitor computer automatically establish an **ad-hoc** (computer-to-computer) wireless connection at **startup**. The wireless connection between both systems allows GaumardUI to update the vital signs information displayed on the Gaumard Monitors program.

To verify the connection between the computers, click on the **wireless icon** located on the task tray of both the tablet and virtual monitor computer. Earlier systems may display NOELLENet575 as the wireless network connection name. To troubleshoot connection issues, please navigate to page 241.



Gaumard Monitors

After both computers are on and the ad-hoc connection is established, double click or tap the **Gaumard Monitors** icon located on the virtual monitor's home screen.

The Gaumard Monitors software is now ready to receive vital sign information once GaumardUI is initialized on the tablet.

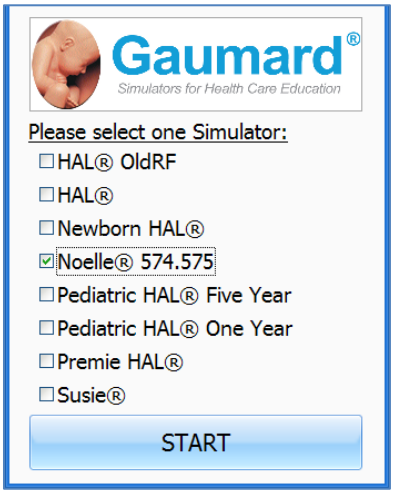
Continue to the next section to begin working with NOELLE and the GaumardUI software.

Working with GaumardUI

Initializing NOELLE

After reading the **Care and Cautions** section of the guide, click on the **GaumardUI icon** located on the tablet's home screen to start the simulator. NOELLE uses what is referred to as **soft power**, which means that the simulator is activated by the software less than 1 minute after clicking on the Gaumard icon. To address connection and startup issues, navigate to page 241.

A dialog box is then displayed which prompts you to select the active simulator. Select **NOELLE** and click **start**.

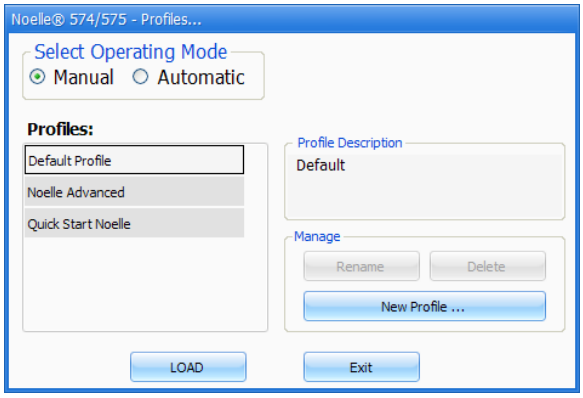


User profiles and operating modes

A profile is a unique configuration of customized palettes, scenarios, and options. Each profile functions independently, in that changes made to one profile have no effect on the others.

Manual Mode

In this operating mode, vital signs and other responses are changed according to the specifications given by the instructor. This mode has three factory preset profiles, Default, Quick Start NOELLE scenarios and NOELLE Advanced.

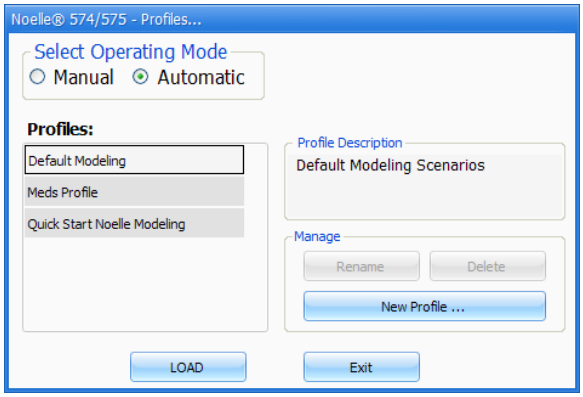


The profiles available under Manual Mode are the following:

- **Default Profile** – includes one palette with healthy vital signs.
- **Quick Start NOELLE** – contains a total of twelve labor scenarios.
- **NOELLE Advanced** – Contains fourteen linear scenarios, twenty-two labor scenarios and one branched scenario.

Automatic Mode

In this operating mode, vital signs respond automatically to caregiver participation, instructor specifications, and pharmacologic intervention. The model used in this operating mode was developed using on physiologic principles. Features unique to this mode include: a comprehensive list of drugs for easy administration, a drug profile editor for adding new drugs or editing existing ones and preset scenarios for Advanced Life Support. To activate this operating mode as an upgrade option, navigate to page 128.



The profiles available for the automatic operating mode are:

- **Default Modeling**– includes one palette with healthy vital signs.
- **Meds Profile** – This profile contains fifty-two pre-programmed drugs to be used on simulations.
- **Quick Start NOELLE Modeling** – Contains eleven linear scenarios, twenty-two labor scenarios and one branched scenario.

It is recommended that you use the **Quick Start NOELLE** profile, which was created in conjunction with experienced healthcare instructors and working medical professionals. It contains prebuilt labor scenarios for birth simulation and post-partum complications. For many applications, it serves a convenient starting point that can be customized to fit most simulation objectives. Once the operating mode and profile is selected, click **Load** to continue.

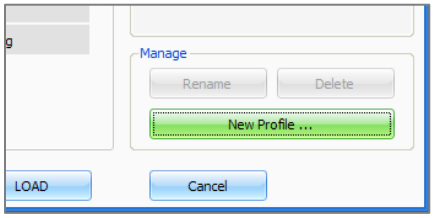
For more information on the items included on the Quick Start profile, navigate to page 168. To change profiles from inside the GaumardUI environment, select Profiles from the File pull-down menu.

Creating a new profile

Profiles are used to organize and protect software settings. As you begin to customize NOELLE, it will become clear how profiles can best serve your needs. For example:

- It may be appropriate to assign one profile to each user of your NOELLE system.
- Others may choose to create a profile dedicated to a specific academic course, which might be taught by multiple instructors.
- For the most detailed exercises, it is sometimes useful to devote an entire profile to one particular subject area, or even one particular scenario.

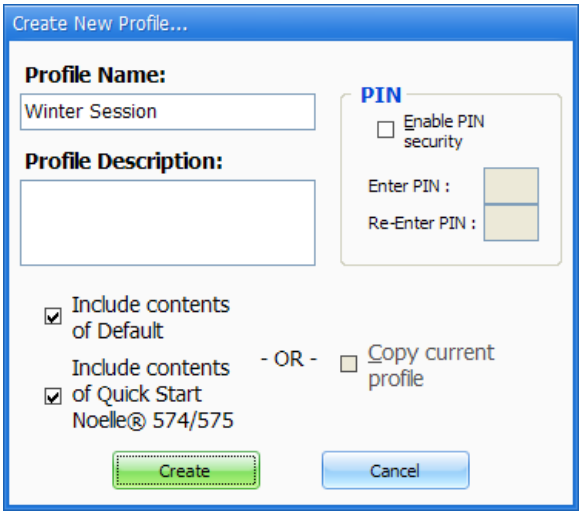
To create a user made profile, click on the **New Profile** button on the right panel.



Enter a name for the new profile followed by a description.

To include scenarios and palettes from other profiles, click the applicable check box. For security, enable PIN protection, which will require a user to enter a four-digit key before loading the protected profile.

Finally, click **create** to save the new profile. To import and export profiles, navigate to page 118.

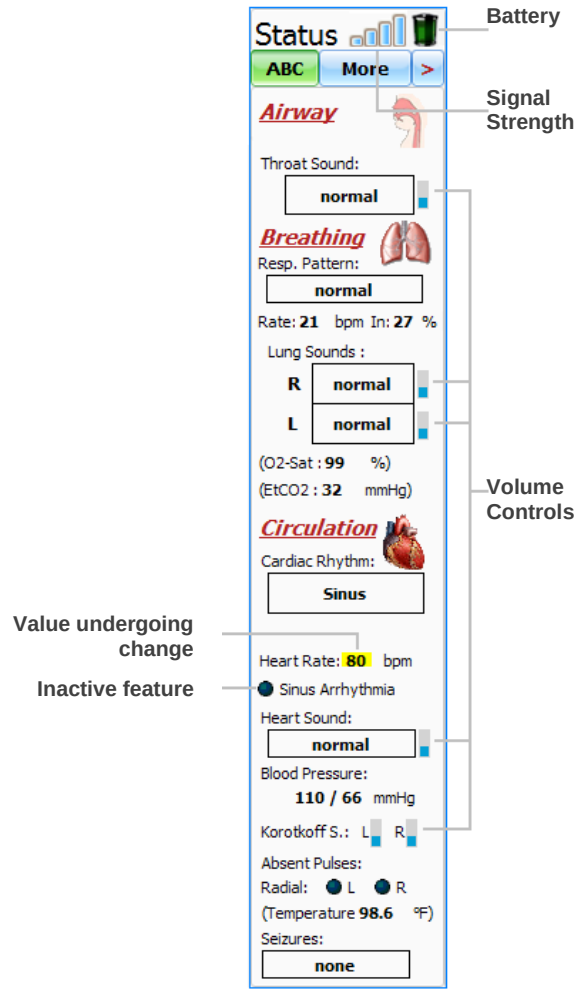


Environment

The GaumardUI environment is used by the facilitator as the simulation command center. In addition to managing NOELLE's functionality and vital signs, the facilitator can evaluate student training and act as the voice for the simulator. This powerful combination of tools provides the facilitator with an indispensable tool for simulation, training and testing.

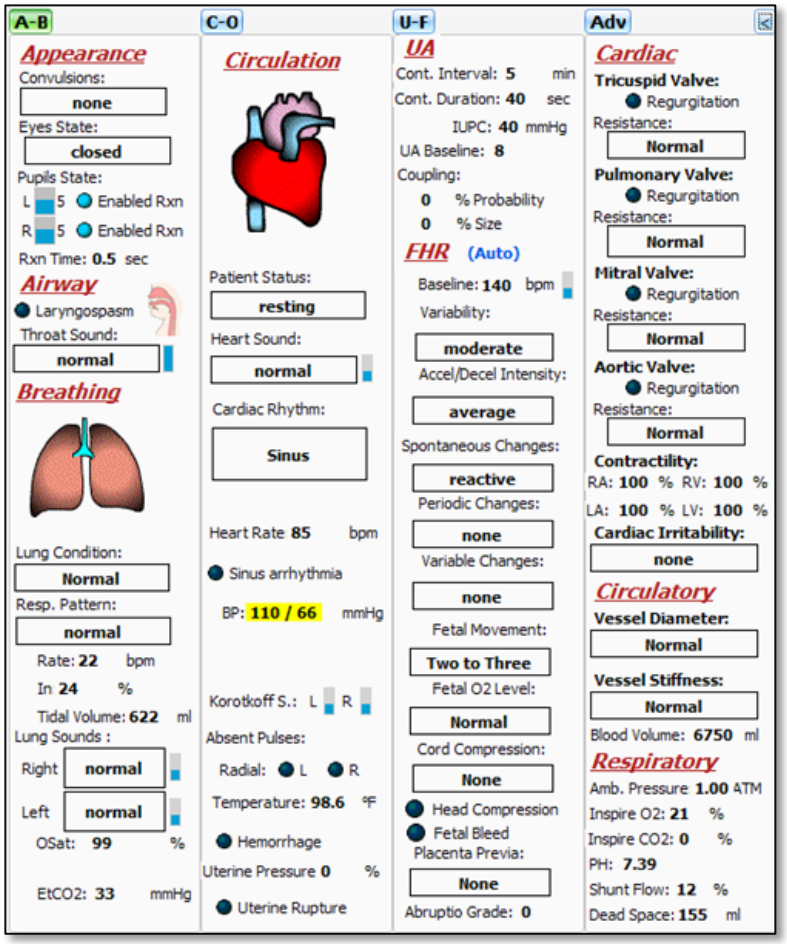
The Status Panel

The Status panel is visible along the left edge of the GUI window at all times. Information about the battery level, signal strength, volume controls/levels and state of vitals is shown in real time. Vital sign parameters such as heart rate, lung sounds and respiratory controls are highlighted in yellow while undergoing change.



Click the **arrow** to expand the viewer and access status entries for **Other**, **Uterine Activity** and **Fetal Heart rate**. Additional features only available to Automatic Mode will also be listed in the status viewer.

Expanded Automatic Mode Panel

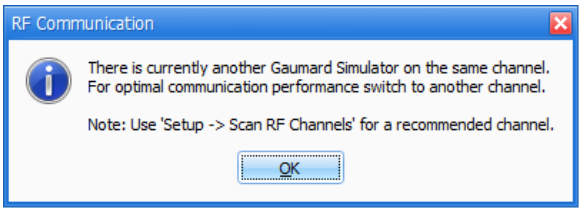


Some status panel entries and features might not be visible depending on the simulator's hardware configuration.

Communication Indicator

The communication indicator shows the status of the radio link between the computer and the simulator. Full bars indicate excellent communication between the computer and the simulator (i.e., normal operation). The indicator is clear when no attempts to communicate with the simulator are being made; for example when the module is not connected to the computer or the system is in STAND-BY mode.

The warning icon indicates a signal conflict with another simulator. Clicking the icon produces the following message:



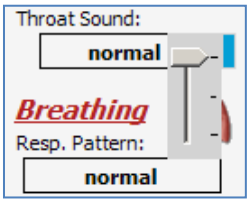
For more information on the Scan RF Channel window, navigate to page 134.

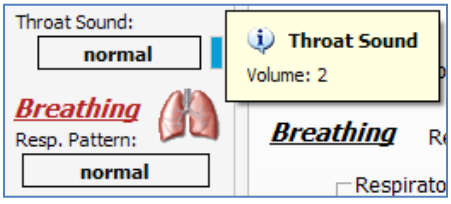
Battery Indicator

The battery status indicator progresses as the battery in the simulator is used. Approximate maximum battery run time is 2hrs30mins depending on usage. The exclamation mark indicator is shown when there is no communication with the simulator and the program cannot get the battery information.

Sound Volumes

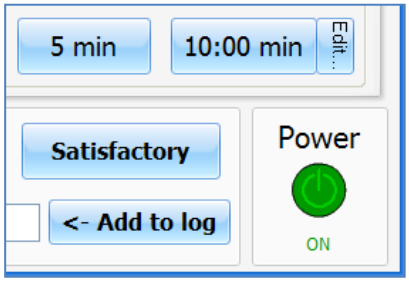
The volume of each sound can be adjusted from the Status Panel. Click on the volume level indicator next to each sound and a volume control will pop-up. Simply select the volume level you want and the sound will be adjusted instantly on the simulator (i.e., there is no need to click “Apply”).





Soft Power and Standby

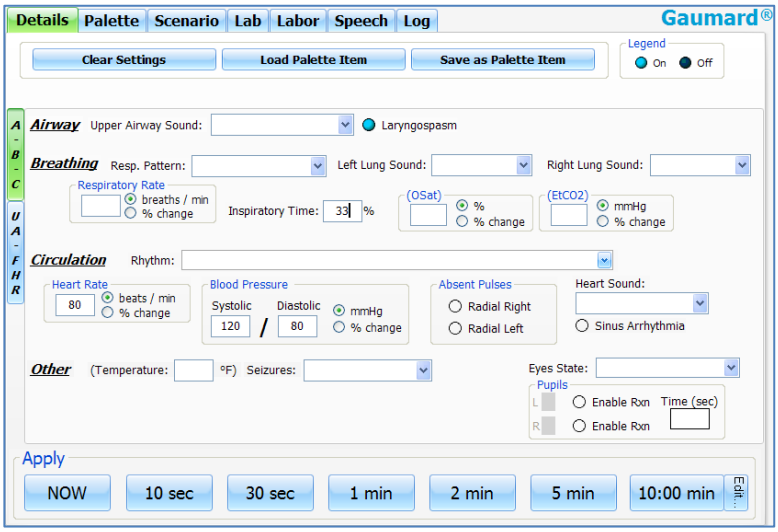
The standby button is located on the bottom right corner of the GaumardUI software. Use the standby mode to save battery power between exercises.



NOELLE will establish a connection less than one minute after resuming from standby. The connection bars will display the connection strength, confirming that the wireless RF link between the controller and model has been established. **The power adapter must be connected when resuming from stand by.**

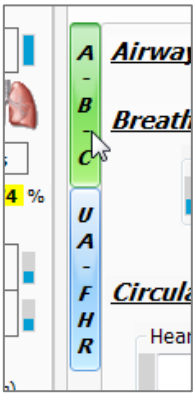
Details

The Details page is the first tab on the main environment window. From this tab, facilitators can manually control the simulator's vitals, enable/disable features or complications and create **palette items** later used to build **labor scenarios**. Changing controls directly from the details page is the simplest form of control available to the facilitator.



Vital controls are divided in several categories. For each vital control on the details tab, there is a corresponding entry on the status panel providing real time information.

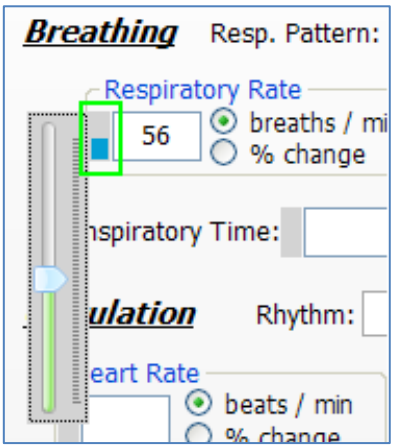
Some controls on the Details tab change depending on the operating mode (automatic or manual) and features installed on the simulator. Additional controls on either mode can be accessed by clicking on the **vertical tab** located on the left of the screen.



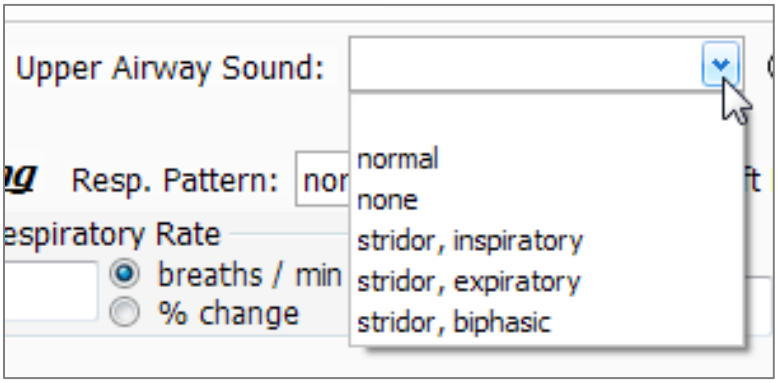
Changing Vitals

Set the changes on the available fields, and then use the **Apply panel** located at the bottom of the Details tab area to submit. GaumardUI only sends updated vital information to the simulator, **settings not specified will remain unchanged**. Outlined below are common control behaviors.

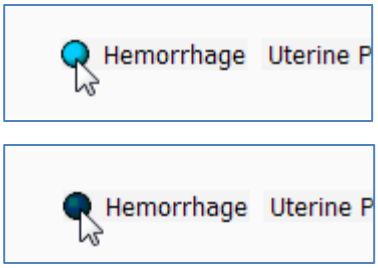
Click or tap **slider control** to quickly adjust numerical values using the stylus. Alternatively, use the **onscreen keyboard** to manually type in a numerical value.



Click on the **down arrow** to access sound types and rhythms.

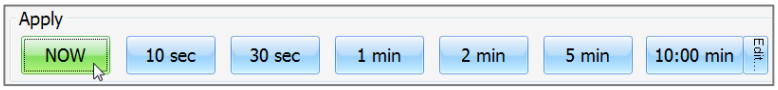


Click on the **feature control button** to enable (blue) or disable (black) features such as hemorrhage, chest rise and eye reaction. Some feature controls may not be available depending on the simulator configuration. For more information about the simulator's features, navigate to the **Working with NOELLE** section of this guide.



Apply Panel

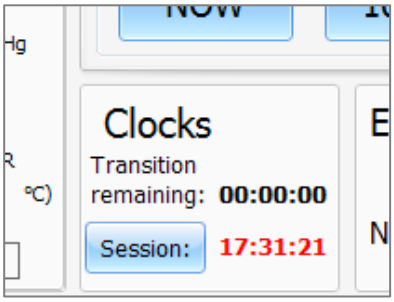
After the settings are selected in the details area, changes are submitted using any of the apply buttons located near the bottom of the page. Please note that **settings not specified will remain unchanged.**



Click the **NOW** button to change the simulator's condition instantly. Alternatively, click a **trending time** to gradually increase or decrease to the numerical value specified (e.g. heart rate, blood pressure) in the time allotted. The right-most button can be customized to any transition time you require by clicking the part of the button labeled "Edit".

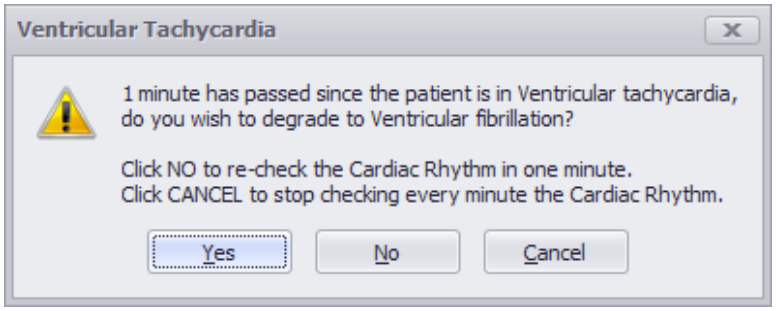
Some settings are applied immediately, such as cardiac rhythm and breathing pattern, while numerical settings, such as heart rate and respiratory rate, can be easily made to transition.

As transitions are applied, the time remaining in the transition is displayed in the **Clocks** panel at the bottom of the GaumardUI window. If there is already an ongoing transition at the moment you click an Apply button, it will stop, and a new transition will begin from the current physiological state.



Ventricular Tachycardia

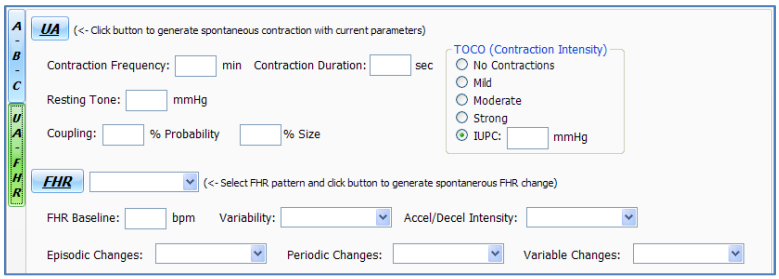
When cardiac rhythm is maintained at Ventricular Tachycardia for one minute, the following prompt dialog box will be displayed:



Click **Yes** to degrade the cardiac rhythm to **ventricular fibrillation**. Click **No** to maintain the cardiac rhythm and recheck after 1 more minute. Click **Cancel** to stop the software from checking the cardiac rhythm every minute.

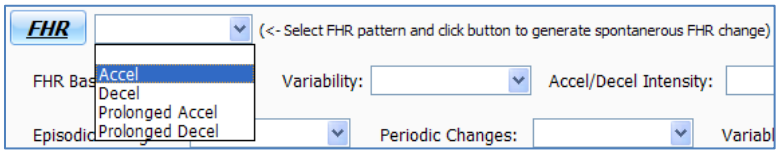
Uterine Activity/ Fetal Heart Rate

Click on the **UA-FHR** vertical tab to access uterine activity and Fetal Heart Rate controls.



UA - The instructor can generate a uterine contraction at any time by clicking the **UA** button; the contraction will have the same duration and intensity settings applied on the status viewer.

FHR - Generate a fetal heart rate acceleration or deceleration at any time by selecting one of the options in the drop box below the button, and then clinking on the button.



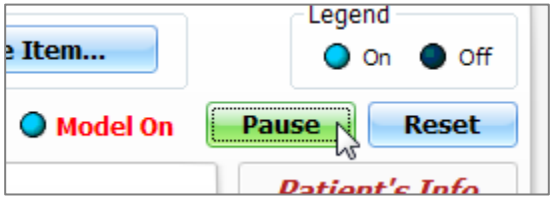
Automatic Mode

When operating in automatic mode, the **physiologic model** calculates physiologic responses from student interaction, facilitator input, drug administration, chronic conditions and programed environmental factors. The automatic mode is an upgrade option and requires an activation code to enable. Navigate to File>Profiles to change between operating modes.

Physiologic Model

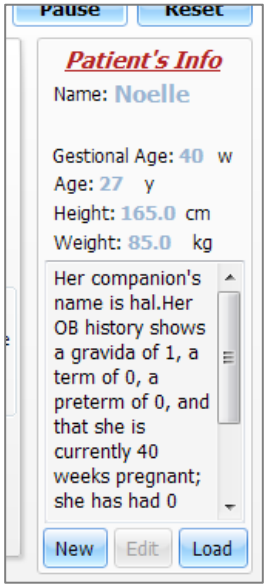
NOELLE's OB circulation physiologic model is composed of 3 components, the maternal (female pregnancy) model, fetal model and neonate (Full term) model. During simulation, the maternal model exchanges gas and temperature information with the fetal model. At the end of the delivery, important model parameters are then transferred from the fetal model in NOELLE to the neonate model in Newborn HAL. Therefore, NOELLE's conditions impact the fetus and the fetal conditions drive the Newborn's **APGAR** score. For more information on transferring fetal model information to the Newborn HAL system using the **Neonate Link** feature, navigate to page 143.

The physiologic model is constantly calculating and adjusting vitals automatically. Click on the **pause** button located on the right panel to freeze the model during lectures, and then click again to resume. To return the patient to a healthy state, click **Reset**.



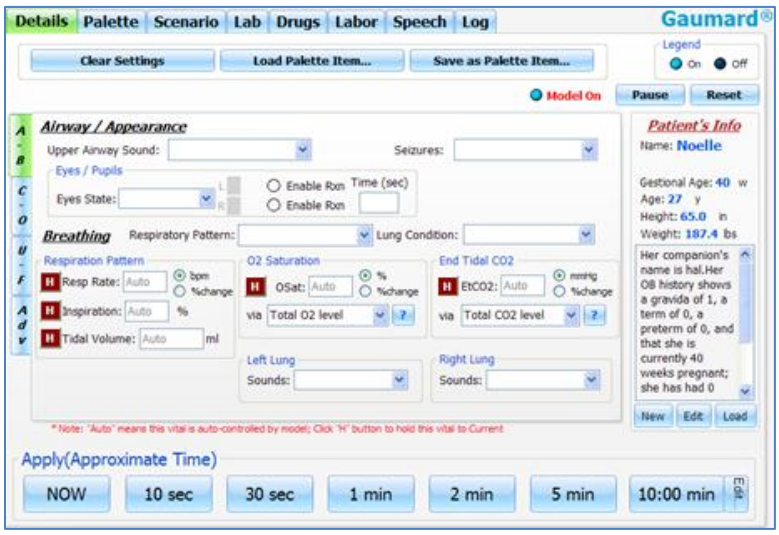
Patient Profile

Palette items and scenarios are saved under individual patient profiles. A facilitator can load, create and edit patients from the status/details panel or from the menu located on the right. To create new patients, navigate to page 135.

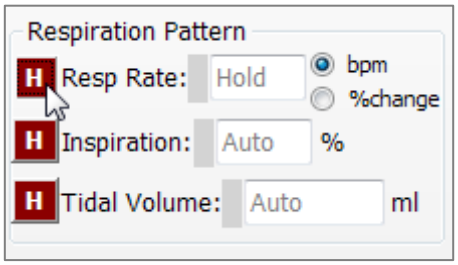


Automatic Mode Controls

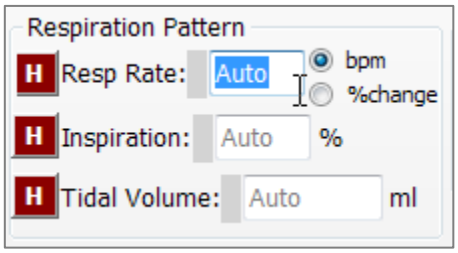
The **HOLD** and **Auto** buttons on the Details page are **unique** to the automatic mode. These controls add a new level of regulation that allows higher physiologic accuracy. Similar to manual mode, click an **apply** button to submit changes. Some changes are gradual and even the **NOW** apply button is pressed. The delay results from using a closed loop model that adjusts other related values over time, rather than displaying a unique value that is unrelated to other parameters.



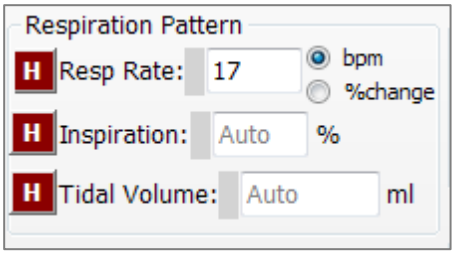
HOLD: Allows you to keep a current value constant. Recall, that in the manual mode, to keep a value constant, simply leave the control blank. Click on the **H** to change the option from Auto to **HOLD**.



Auto: Allow the model to auto-adjust the value. Click the **input field** blank to return to the default auto state.



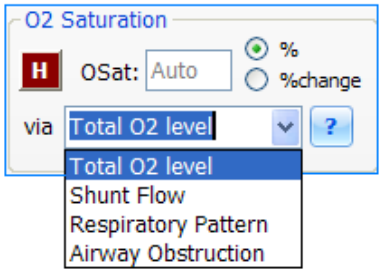
Manual: Input the value of the parameter manually. The model automatically adjusts related physiological values.



Airway/Appearance/Breathing

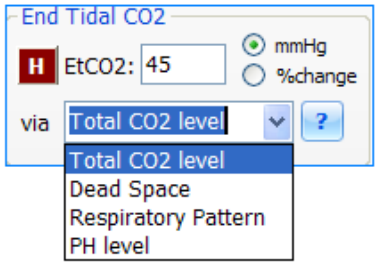
The A-B vertical details tab includes the airway, appearance and breathing controls. Outlined below are notable controls available in this section.

Oxygen saturation can be changed by adjusting one of the following four parameters. Click on the **question mark** button to view a brief description of the four options.



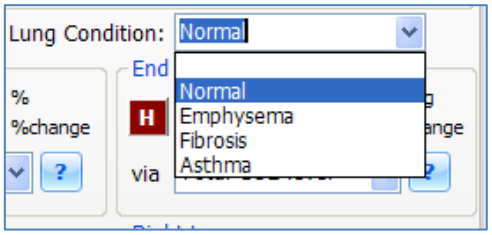
- Total O_2 level: oxygen reserve in the body.
- Shunt flow: the percentage of deoxygenated blood in pulmonary capillaries.
- Respiratory pattern Airway construction
- Airway obstruction

Similarly, EtCO2 can be changed by adjusting one of four parameters:

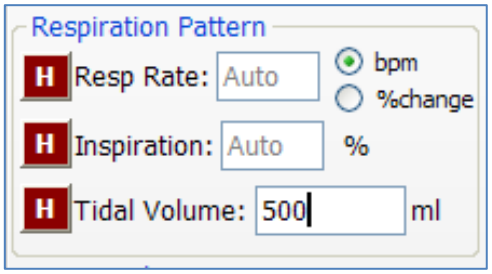


- Total CO_2 level: CO_2 build-up in the body;
- Dead Space: part of tidal volume that doesn't participate in gas exchange.
- Respiratory Pattern
- Ph level

Lung Condition – Change the condition and shunt flow, dead space, airway resistance and respiratory pattern are adjusted by the model.

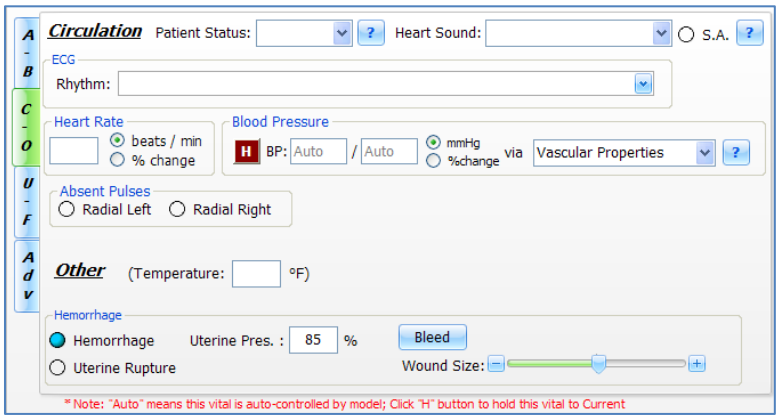


Tidal Volume – Adjust the tidal volume or amount of air breathed in or out during normal respiration. In the model, a tidal volume of 500 m/L is considered the normal level for an average adult build. If the respiratory rate goes to zero, the model does not restore it automatically. Always remember to specify a new respiratory rate.



Circulation/Other

The **C/O** vertical tab includes circulation and other emergency controls. Notable behaviors are outlined below.



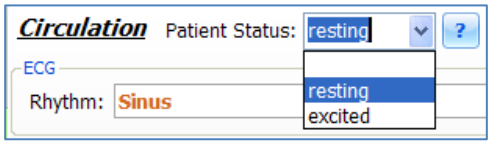
Each cardiac rhythm has a specific effect on the blood pressure wave forms. The pressure wave forms include ABP, CVP, PAWP and Pulse.

Similar to O_2Sat and $EtCO_2$, blood pressure can be changed indirectly when using the modeling mode. You can do so by selecting one of four options.

- Vascular profiles: vessel diameter and vessel stiffness.
- Heart Rate
- LV Contractility
- Total Blood Volume

There are three controls on this tab **unique** to the automatic mode:

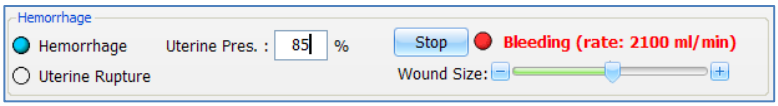
- **Patient status** - Selecting one of the two available options affects heart rate, temperature, respiratory rate, tidal volume, metabolism rate and carbon dioxide formation rate indirectly.



- **Bleed** – Click the bleed button to simulate internal bleeding.
- **Wound size** – Adjust the bleeding rate using the wound size slider control. Combine the wound size control with the post-partum hemorrhage feature to simulate labor complications. For information on filling the hemorrhage reservoir navigate page 166.

The model will automatically calculate the appropriate response to blood loss. The rate of blood loss can be monitored on the status panel in real time by clicking on the advanced tab. To treat the patient during the hemorrhage event, navigate to the Drugs tab and administer saline solution or blood.

Click the stop button to deactivate the software model bleeding complication. To stop the bleeding from the post-partum hemorrhage system, click the **Hemorrhage** control to inactive (black) and hit an apply button.



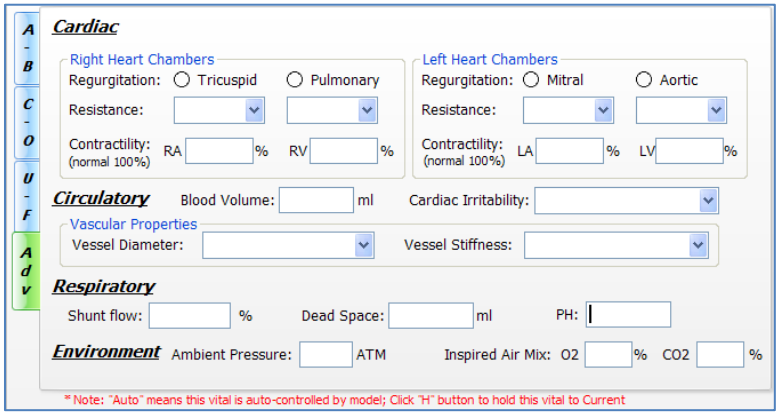
Uterine Activity/ Fetal Heart Rate

The **U/F** vertical tab includes uterine activity and fetal heart rate controls. While all the uterine activity controls are handled by the facilitator just like in the manual operating mode, some fetal heart rate controls are handled by the fetal physiologic model. Unique to the automatic mode are the following controls:

- Head compression
- Cord compression
- Fetal movement
- Fetal O_2 Level
- Placenta previa
- Bleed

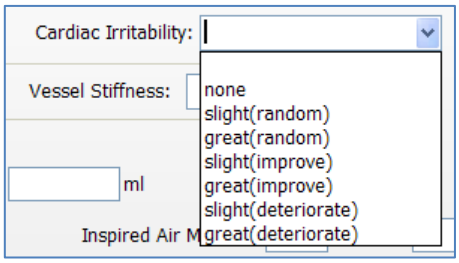
Advanced

The **Adv** vertical tab includes advanced cardiac, circulatory, respiratory and environment controls. All the controls in this page are **unique** to the modeling mode.

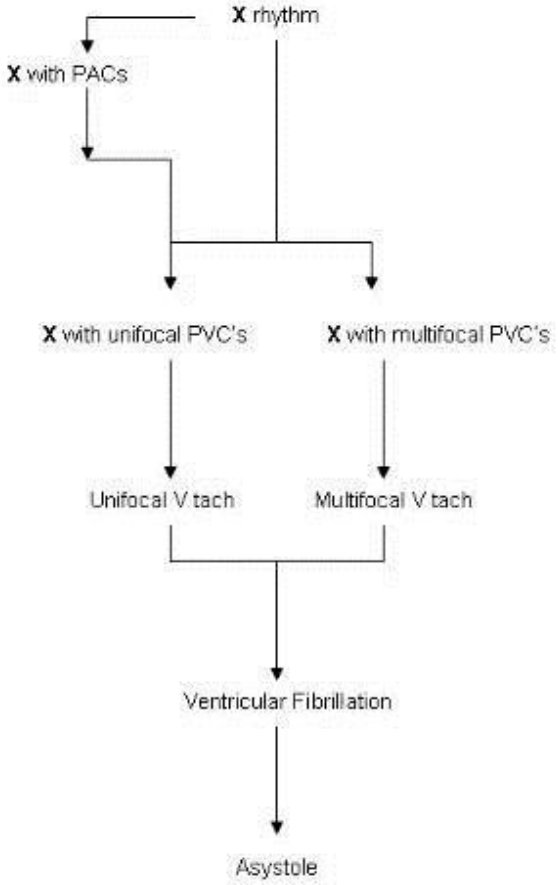


This tab gives you more control over the model by allowing you to edit additional parameters that have an effect on the cardiovascular and respiratory systems. Use this page if you want to add complexity to a scenario or if you need to superimpose special conditions.

Cardiac irritability can be used to modify cardiac rhythms indirectly. You can improve (move towards normal sinus rhythm), or deteriorate (move towards ventricular fibrillation and asystole) any of the rhythms.



The progression of rhythms generally follows the pattern displayed in the figure below, where X represents normal sinus rhythm, multifocal atrial tachycardia, atrial flutter, atrial fibrillation, junctional rhythm, left or right bundle branch block, or atrio-ventricular block:



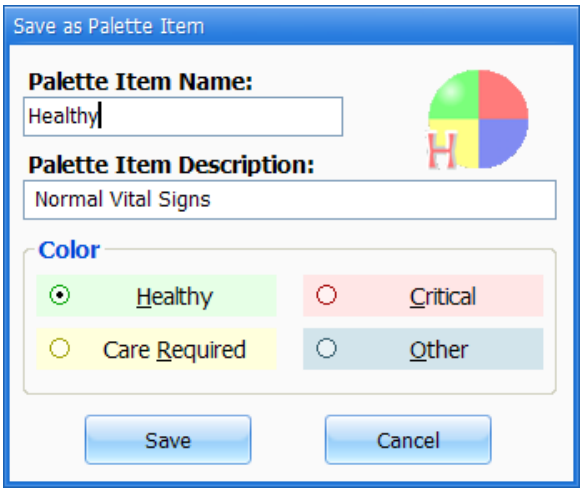
Palette Items

The Details page is also used to create Palette Items. A **Palette Item** is any full or partial set of physiological parameters that have been grouped and saved together under a single name. A collection of these palette items applied in succession are referred to as a **scenario**. For more information about scenario building, navigate to page 43.

Creating Palette Items

To create a Palette Item, choose the desired parameters on the Details page and click the Save as Palette Item button near the top of the page.

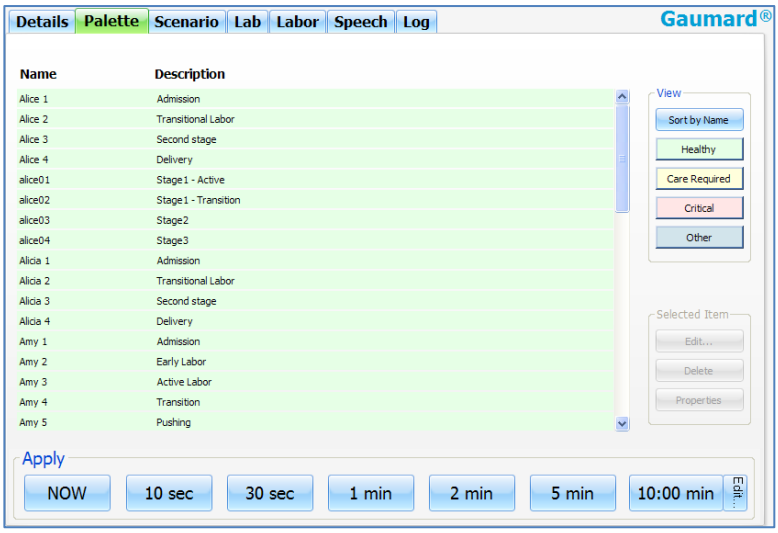
You will be prompted to name the palette, specify a description, and color code. Click **Save** to create the new palette Item.



Navigate to the Palette tab to view a collection of all the palette items in the current profile.

Palette

The second level of control is the Palette tab-page. Each item on the Palette represents a complete or partial physiological state. The Palette page displays all of the Palette Items in the active profile. Each profile has its own separately customizable Palette. Create Palette Items with the Details page, as described previously.



Apply Palette Items using the buttons at the bottom of the page, exactly as changes to NOELLE's condition are applied on the Details page. Change NOELLE's vital signs and symptoms instantly by clicking to select a Palette Item and clicking the “NOW” button. Alternatively, create a gradual transition in physiological state with one of the other Apply buttons.

Palette Items can be sorted with the “View” buttons found on the right side of the page.

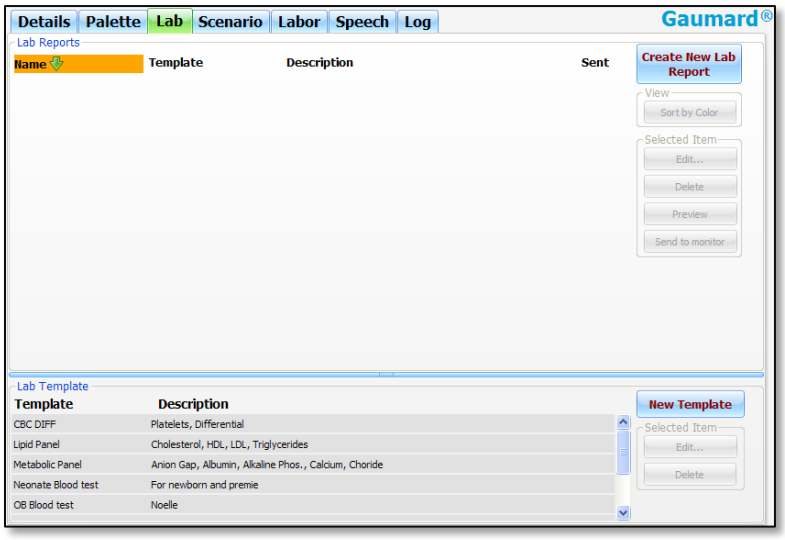
Editing existing Palette Items is simply a matter of selecting the item you wish to modify and clicking the Edit button. You will be automatically be taken to the Details page, and the settings that comprise the selected Palette Item will be displayed. Change them as desired, and click the “Save as Palette Item” button.

Many of the functions related to Palette Items are also available by clicking the second mouse button (usually the right button) while the pointer is positioned over an Item. Note that when using the tablet computer, this is best done by holding the stylus button while tapping the screen.

For more information on customizing the Palette, see the Tips on Palette Item and Scenario Creation section of the Appendix at the end of this guide.

Lab

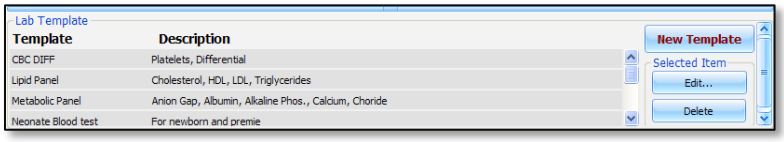
Laboratory tests are helpful tools for evaluating the health of a patient. To simulate this process, the Lab Tab allows the facilitator to create laboratory reports to aid providers during simulation. Once a laboratory test is created, the facilitator can display the results on the Virtual Monitor window for the provider to utilize.



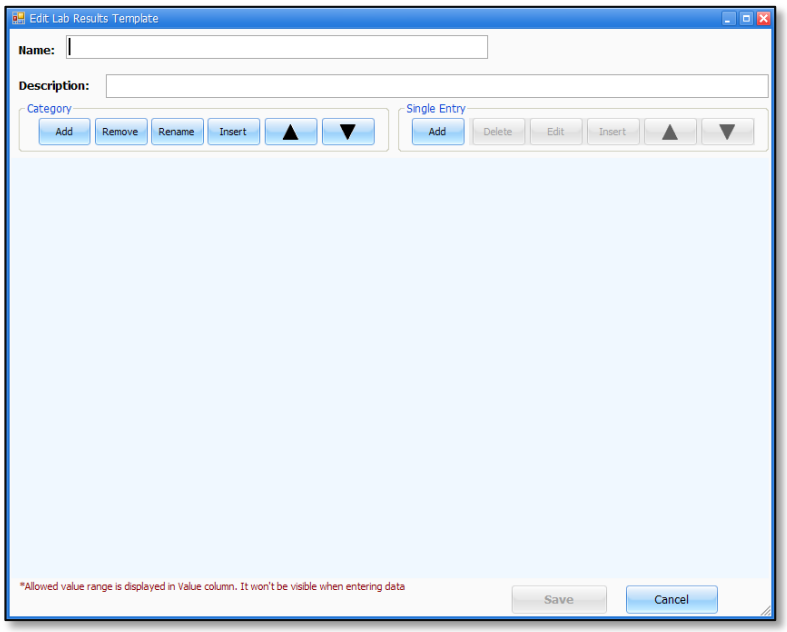
The Gaumard Virtual monitors must be connected before using the file sharing feature. To verify the connection navigate to PAGE 139.

Creating a Lab Template

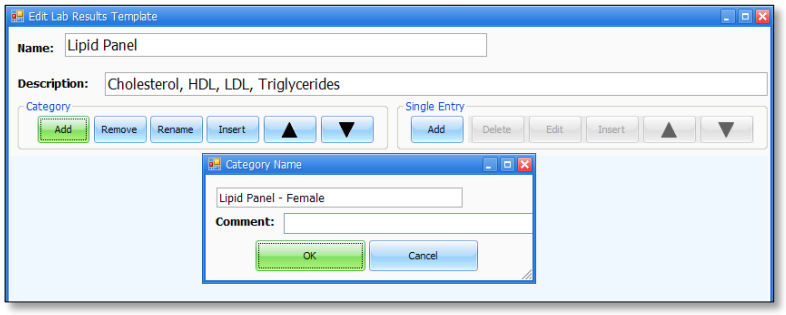
To begin, navigate to the bottom of the tab and click on the **New Template** button on the right panel.



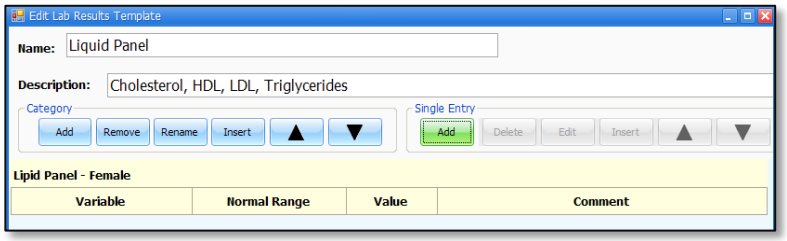
The **Edit Lab Results Template** window is used to create templates that will be later used to create lab reports. Enter a **name** for the lab template followed by a **description**.



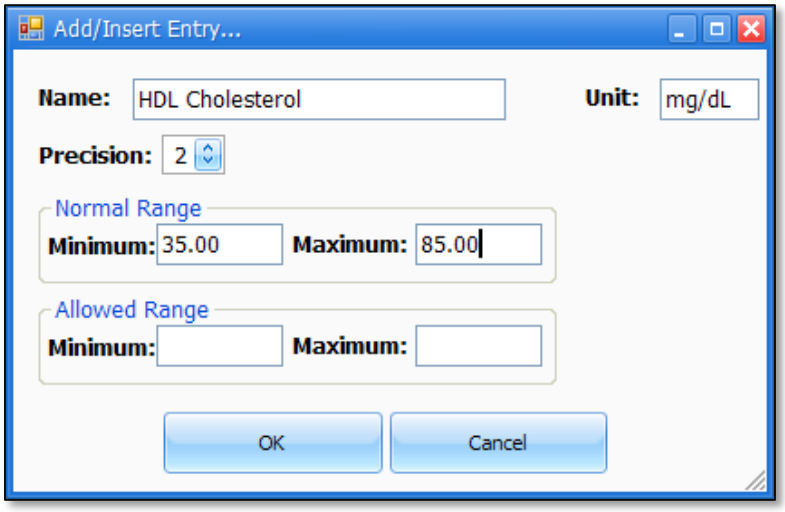
Categories are used to group a series of tests in a lab report. From the **Category** box, click **Add** to name and create a category. Then, click **OK** to save the new category.



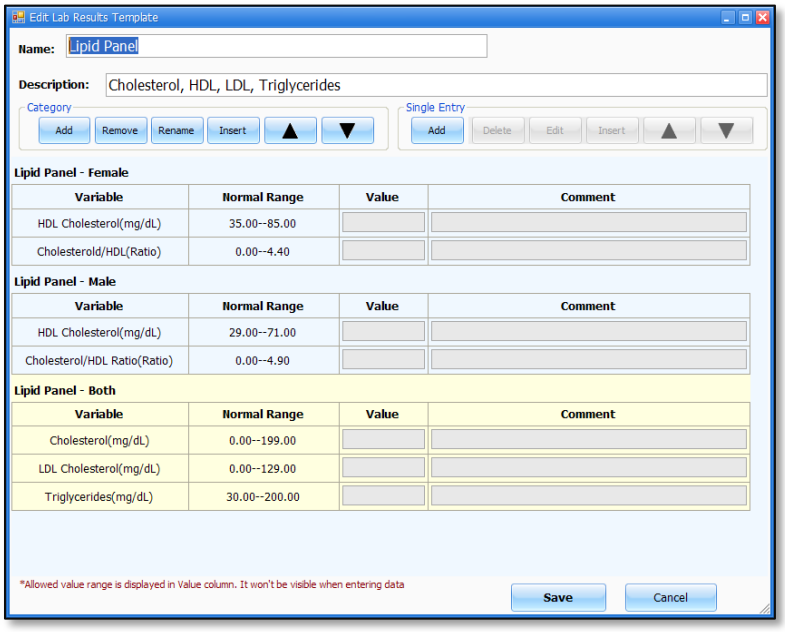
Use the **Single Entry** menu to add a test under the category previously created.



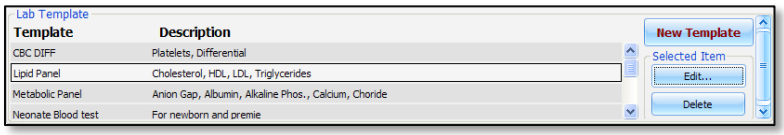
Use the **Add/Edit Entry** menu to customize the different parameters on a specific test. Begin by providing the name of the test, unit and decimal precision. The **Normal Range** will be displayed on the lab report for the provider to use as guide while reading the results. Meanwhile, the **Allowed Range** restricts the minimum and maximum value a facilitator can input as a test result. Once the test entry is configured, click **OK** to add the new test.



Repeat the process to add more tests and categories using the Category and Single Entry menu. Please note that individual items can be moved, deleted or modified after they are created. After all the tests are entered, navigate to the bottom of the page to **Save** the new template.

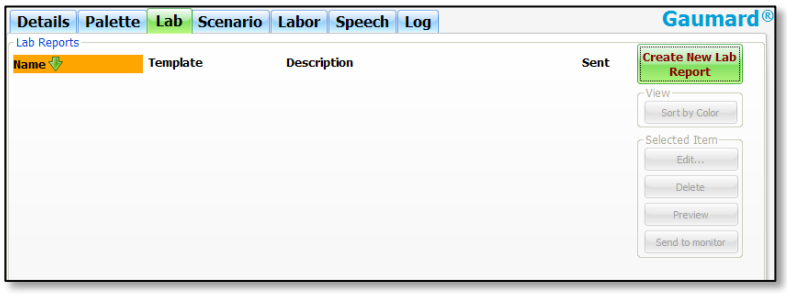


Once a new format is created, it will be listed on the Lab Format section at the bottom of the Lab tab. Use the buttons on the left panel to edit or delete lab formats.

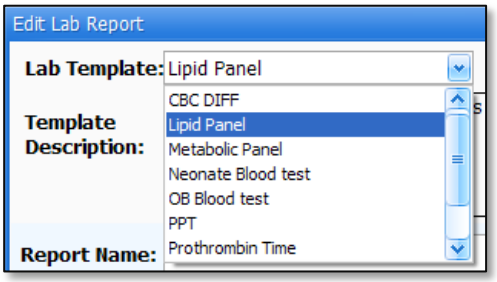


Creating a Lab Report

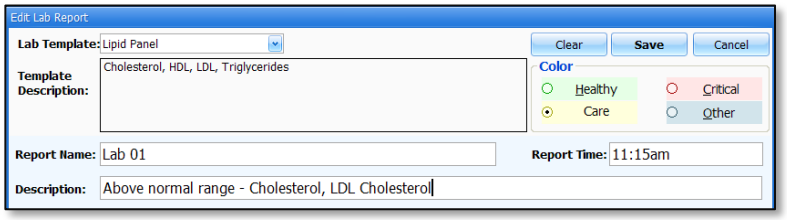
To begin, click on **Create a New Lab Report** from the right panel.



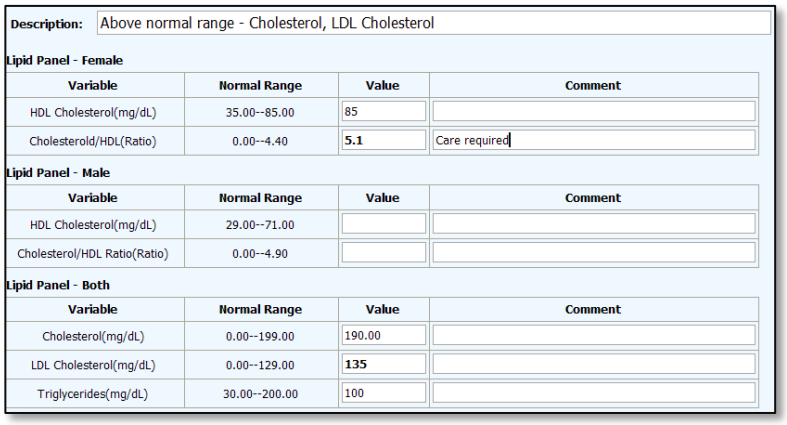
The **Edit Lab Report** window is used to prepare new lab report. First, select a **Lab Template** from the drop down menu.



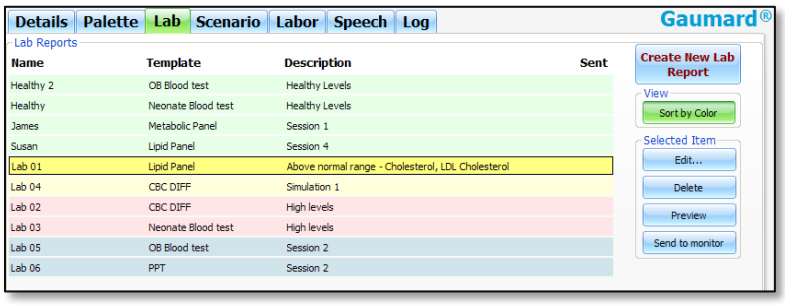
Provide a **Report Name**, **Report Time** and **Description**. In addition, select a condition color tag for the lab report on the right panel. Color tags aid the sorting of lab reports on the report list window.



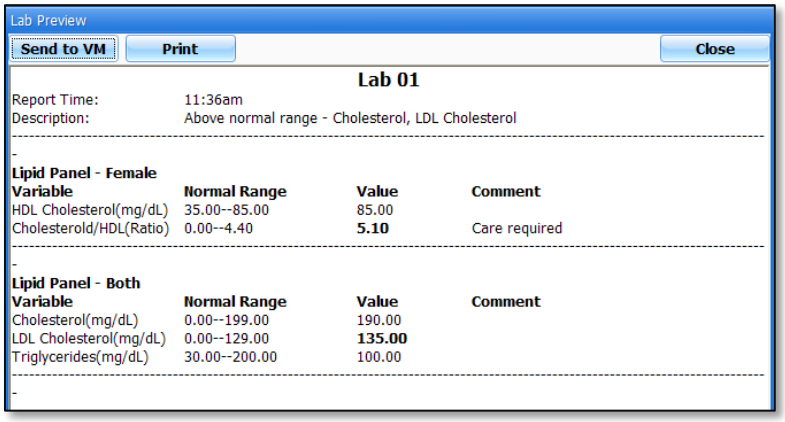
Input the results of the tests on the **Value** column. Values above the normal range specified will be displayed in bold. Include any comments associated with the test performed. Finally, click **Save** from the top right menu to create the lab report.



The newly created lab report will be listed on the Lab Reports list. Lab reports can be sorted by name, template, and description, sent status or colors.



Select a lab report and click the **Preview** button on the right panel to view the report on the facilitator's screen. From the Lab Preview window, the facilitator can print as well as send the report to the virtual monitor computer. To make changes, click **Close** and then **edit**.



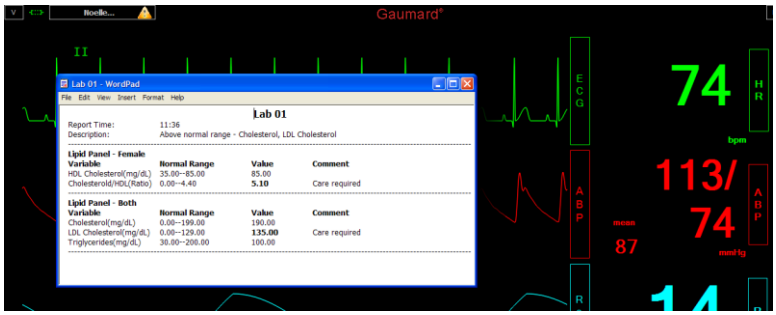
The preview window also allows the printing of results for distribution and archiving. To make changes, click **Close** and then **edit**.

Send to monitor

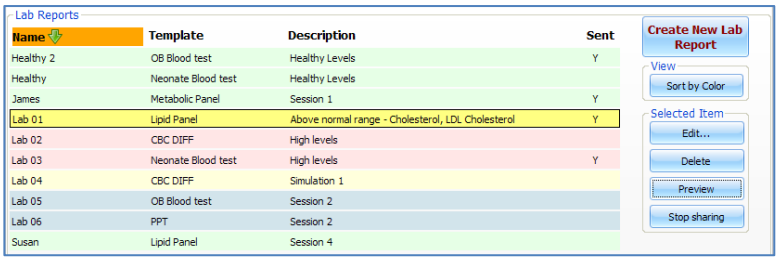
To send the lab report to the virtual monitor computer for the student to access, first select the lab from the list and then click "Send to Monitor**".**

On the Gaumard Monitor's window, an exclamation icon notifies the provider a file is ready for access. Click the NOELLE drop down menu to select the available lab report.

The lab report will open using the system's default application.



Once the report is sent, the letter Y will be present on the Sent column. Use the Stop Sharing button on the right panel to remove any items on the Gaumard Monitor file list.



An editable copy of the lab report is also copied onto the Gaumard_UI folder on the tablet's home screen. For information on how to access other files from the Gaumard Monitor screen, navigate to page 137.

Scenarios

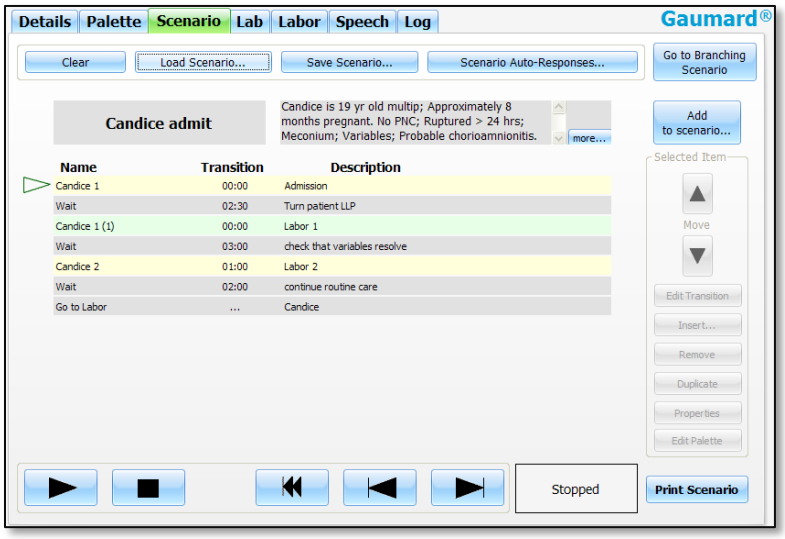
The most advanced method of controlling the system is to build a Scenario, a sequence of Palette Items and delay periods. This is done on the third tab-page in the main area of the GaumardUI window. The best way to think of a scenario is like a "playlist" of palette items. Consistent with this analogy, scenario controls at the bottom of the page look and behave just like traditional and software-based media players.

Scenarios let the facilitator automate most of the changes to NOELLE's condition, so that their attention can remain on the providers' actions. The scenario system can also provide standardization of the patient's presentation of symptoms. For fair assessment of providers and any research application, such standardization is key.

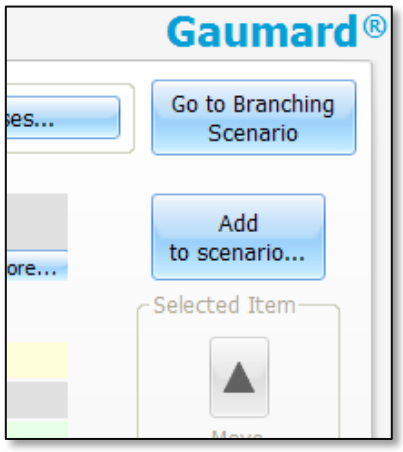
Scenarios can be linear or branching. The sections that follow explain in detail the difference between the two.

Linear Scenarios

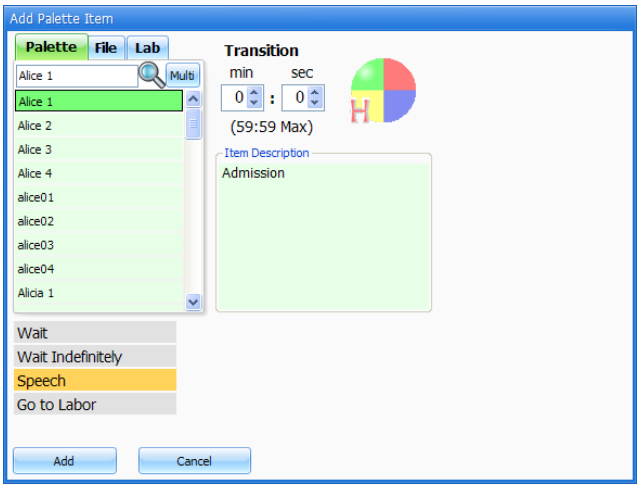
Linear scenarios consist of palette items added in sequence with specific transition times as shown in the figure below.



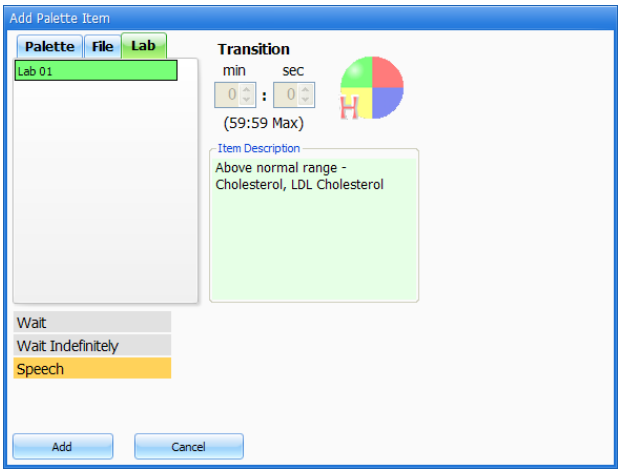
To add palettes to the scenario, click on the “Add to scenario” button.



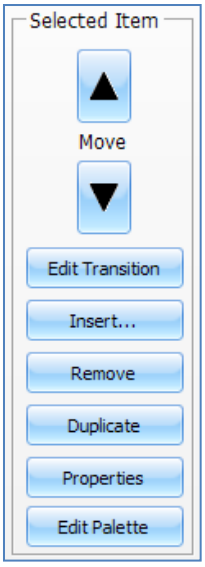
The following window is displayed:



Choose the desired palette and specify a transition time. If the list of palettes is long, you may search a desired palette using the search bar next to the search icon. To select multiple palettes at one time, enable the Multi control button. The palettes selected will be shown on the right panel.

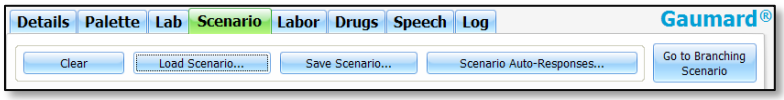


The lab and file tab allows the facilitator to include previously created lab reports or files. These files will be sent automatically to the Gaumard Monitor computer once the playlist reaches the item.



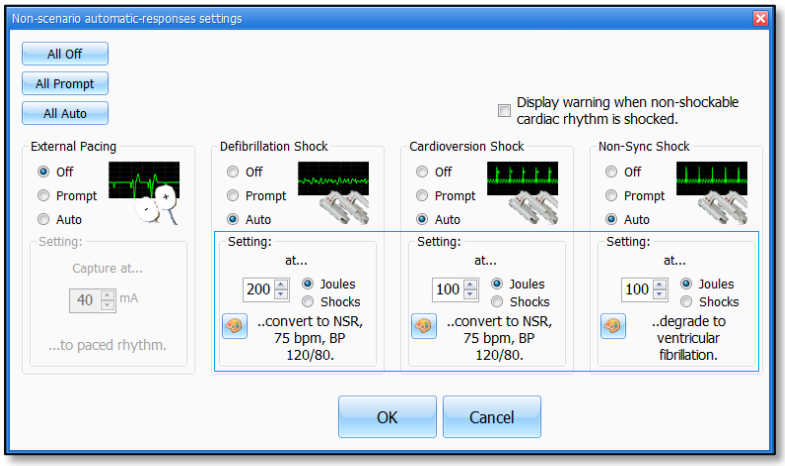
After a palette is added, you may select it to move it up and down from the list using the arrows. You may also edit the transition time, insert a new palette, remove or duplicate the palette, or check the properties using the buttons on the "Select Item" panel shown in the figure below.

The buttons found on the top panel can be used to clear any palettes listed on the scenario page, load or save a scenario, program settings for electrical therapy, and switch from linear to branching scenarios.

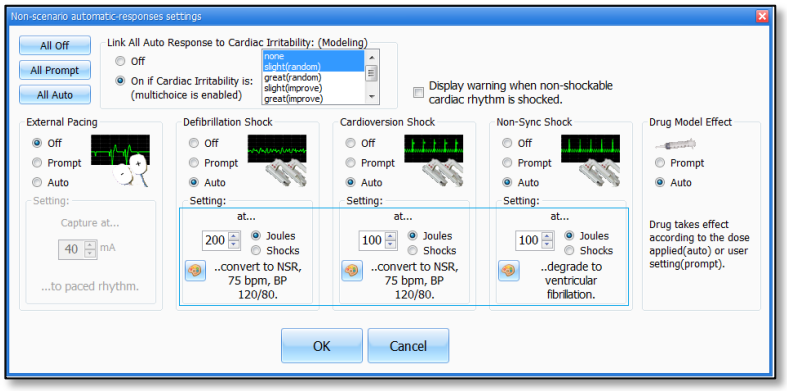


Unlike the Non-Scenario Auto Responses window described in page 130, setting shock therapy to "Auto" does not convert the vital signs to a pre-selected palette; rather, it advances the scenario to the next palette item. Please note that it will **only** advance to the next palette if the shock is applied while a "wait indefinitely" palette is being played. The settings on the "Scenario Auto-Responses" are applied for both linear and branching scenarios.

Manual Mode



Automatic Mode



Scenario Controls

Scenarios are controlled from the buttons at the bottom of the Scenario page. The same way a music player plays songs, the Scenario plays palette items. Intuitively, the facilitator can play, stop, pause, skip, or repeat items as appropriate. The Scenario Position Indicator points to the current item and shows the current status of the scenario. The following paragraphs describe in detail the behavior of each button and indicator.

The Scenario Position Indicator

An unfilled triangle means that the scenario is stopped. When the Play button is clicked, the item pointed by the indicator is be played.

A rapidly blinking triangle means that the scenario is playing the item to which the indicator is pointing.

A slowly blinking triangle means that the scenario is paused at the item to which the indicator is pointing.

The Scenario Buttons

Plays the item to which the scenario position indicator is pointing. This button has to states: play or pause.

Pauses the scenario. This state of the play button is only active when the scenario is playing. It is disabled when a 'Wait indefinitely' item is playing because in such case the scenario is already paused.

The Stop button has 2 behaviors depending on when it is clicked. When clicked once, the Stop button halts the scenario at the end of the currently playing item. When clicked a second time, the scenario is stopped immediately. For example, if the currently playing item has a transition of 1:00 minute and the Stop button is pressed when it has 0:10 seconds left, the scenario will be halted at the end the transition (i.e., in 10 seconds). If the Stop button is clicked again within those remaining 10 seconds, the scenario stops immediately.

The Next button advances the indicator to the next item on the scenario regardless if the scenario is playing, paused, or stopped. It can also be used to move the indicator to select an item before playing it.

Similar to the Next button, the Previous button returns the indicator to the previous item in the scenario

The Reset button stops the scenario immediately and returns the indicator to the first item in the scenario.

Factory Preset Scenarios

The following tables provide a brief description on the labor scenarios available under manual mode and automatic mode.

Manual Mode

The scenarios in the manual mode are found in the NOELLE Advanced. Fourteen scenarios are linear and one is branching.

Scenario Name	Labor	Type	Overview
Linear			
Becca Sedation	Becca	Variations on Normal	Becca delivered precipitously and has retained secundines
Bianca at Admit	Bianca	Variations on Normal	Bianca is 16 yr. old gravida 2/1 @38 weeks. She presents in active labor and is admitted to L&D. Note: Instructor must place tight nuchal cord on fetus during set-up.
Candice Admit	Candice	Shoulder Dystocia	Candice is 19 yr. old multip; Approximately 8 months pregnant. No PNC; Ruptured > 24 hrs; Meconium; Variables; Probable chorioamnionitis.
Frances section	Frances	Cord Prolapse	Frances was found to have a cord prolapse following SROM during labor. The fetus began to brady down, but stabilized back to 120 bpm when the head was displaced
Gabriella Cesarian	Gabriella	Uterine Rupture	19 year old Mexican girl has a vertical abdominal scar indicative of previous c-section. She says she has a child who is with her mother in Mexico city. She is having painful contractions and suddenly becomes pale and diaphoretic while screaming and clutching her abdomen. Her BP drops to 80/60 and the fetus begins to brady down to 80 bpm. This is a uterine rupture scenario
Gail		Uterine Rupture	Gail is a 29 yr old primip @ 35 weeks. She and her husband Alan were in a head on collision at an intersection. She is transferred to L&D from the ER strapped to a back board with her neck stabilized with a c-collar. She has a fractured right humerus and there is bruising from the seatbelt across her abdomen. She is in great pain, but the condition of the fetus needs to be established stat before she can be given pain meds.

Haley		Peripartum Hemorrhage - Previa	Haley is a 33 yr old gravida 2 @ 35 weeks. This is the 5th time she has been admitted in 11 weeks. Previous U/S showed partial placenta previa and she was given orders to rest and avoid any kind of vaginal stimulation. At 32 weeks she had a very heavy bleed and was admitted for three days. Presently, she has arrived by ambulance with heavy bright red bleeding and her OB is on the way in to the hospital. palpation reveals the uterus to be soft and non-tender
Heidi postpartum	Heidi	Peripartum Hemorrhage - Previa	Heidi had low-lying placenta, but still delivered vaginally. The baby does not breathe spontaneously and needs some resuscitation. Heidi begins hemorrhaging following delivery of the placenta which has a Velamentous cord at the attachment point.
Inez postpartum	Inez	Peripartum Hemorrhage - Abruption	Inez suffered massive uterine abruption. She is bleeding heavily post-partum and uterus is boggy.
Janie PPH	Janie	Peripartum Hemorrhage/PPH	Janie had history of low-lying placenta, but delivered with no problems. 20 minutes after delivery the placenta is delivered with a gush of bleeding. She has been hemorrhaging since.
June PPH	June	Peripartum Hemorrhage/PPH	June suffers PPH following svd of healthy baby boy
Kelly resuscitation	Kelly	Amniotic Fluid Embolism	Kelly has suffered an AFE in stage 2 labor. She is rushed into OR for emergency c-section and placed on a ventilator. She codes as the c/s is being performed and needs full resuscitation.
Kimberly C_S	Kimberly	Amniotic Fluid Embolism	Kimberly has coded during delivery and the doctor has decided to deliver the baby by emergency c/s due to severe bradycardia.
Maria PTL		Preterm Labor	Maria is 30 yr old multip @ 27 weeks. She's had 2 miscarriages in the last 4 years due to an incompetent cervix. For this pregnancy she had a McDonald's suture placed @ 14 weeks. She is admitted c/o abdominal cramping.
Branching			
Heidi PP Branch	Heidi		Heidi delivered with a low lying placenta. Upon delivery of the placenta a velamentous cord insertion was noted. Heidi begins hemorrhaging due to a retain portion of the placenta which must be removed.

Automatic Mode

These scenarios in the automatic mode are found in NOELLE's **Quick Start NOELLE Modeling** profile. There seven linear scenarios and no branching scenarios.

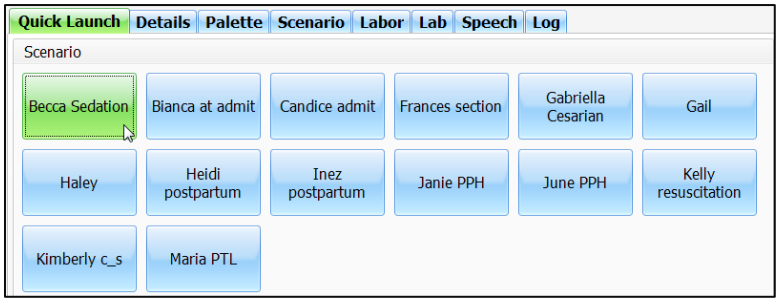
Scenario Name	Labor	Type	Overview
Linear			
June PPH	June	Peripartum Hemorrhage/PPH	June suffers PPH following svd of healthy baby boy
Becca sedation	Becca	Variations on Normal	Becca delivered precipitously and has retained secundines
Frances section	Frances	Cord Prolapse	Frances was found to have a cord prolapse following SROM during labor. The fetus began to brady down, but stabilized back to 120 bpm when the head was displaced.
Candice admit	Candice	Shoulder Dystocia	Candice is 19 yr old multip; Approximately 8 months pregnant. No PNC; Ruptured > 24 hrs; Meconium; Variables; Probable chorioamnionitis.
Gabriella cesarian	Gabriella	Uterine Rupture	19 year old Mexican girl has a vertical abdominal scar indicative of previous c-section. She says she has a child who is with her mother in Mexico city. She is having painfull caontractions and suddenly becomes pale and diaphoretic while screaming and clutching her abdomen. Her BP drops to 80/60 and the fetus begins to brady down to 80 bpm. This is a uterine rupture scenario
Maria PTL	Maria	Preterm Labor	Maria is 30 yr old multip @ 27 weeks. She's had 2 miscarriages in the last 4 years due to an incompetent cervix. For this pregnancy she had a McDonald's suture placed @ 14 weeks. She is admitted c/o abdominal cramping.
Kelly resuscitation	Kelly	Amniotic Fluid Embolism	Kelly has suffered an AFE in stage 2 labor. She is rushed into OR for emergency c-section and placed on a ventilator. She codes as the c/s is being performed and needs full resuscitation.

Scenario Quick Launch

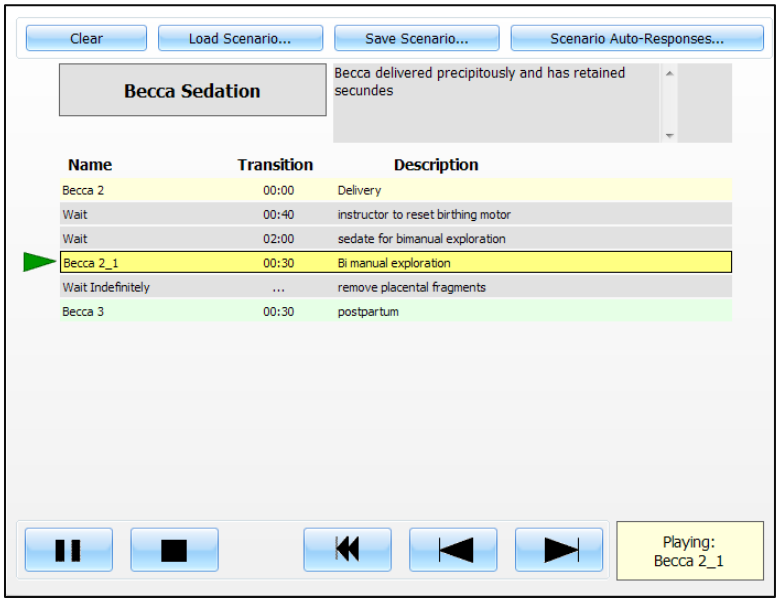
Use the scenario quick launch window to start scenarios with a single click. The Quick Launch window displays all the scenarios saved in the current profile.

Linear Scenario Quick Launch

Click the scenario button to start the scenario.



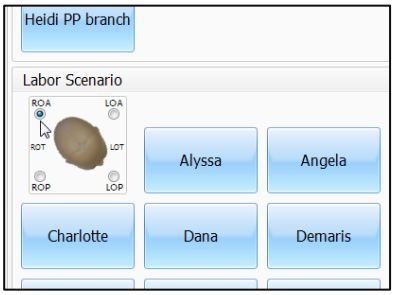
After the scenario button is clicked, GaumardUI will automatically start the scenario.



Labor scenario Quick Launch

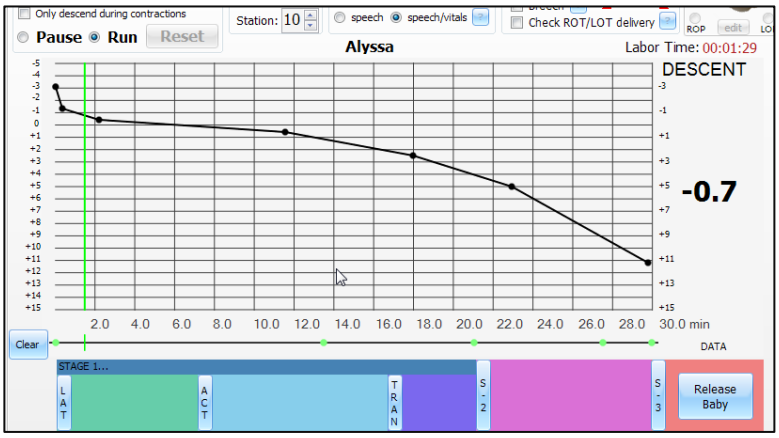
To start a labor scenario from the quick start tab, first specify the position of the birthing baby on the birthing mechanism by clicking on the corresponding labor position radio button.

Before using the labor quick launch feature for the first time, go to page 154 for important information on preparing NOELLE for delivery.



After the position is set, click on the labor scenario to start.

GaumardUI will automatically start the labor scenario and switch to the labor tab.

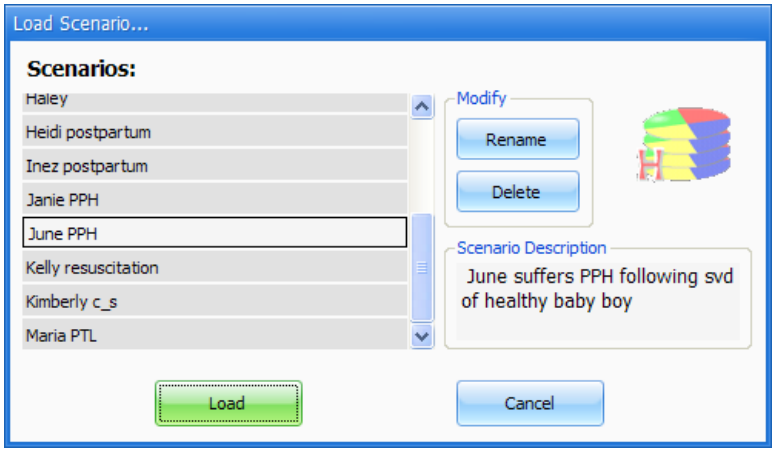


Using Factory Preset Scenarios

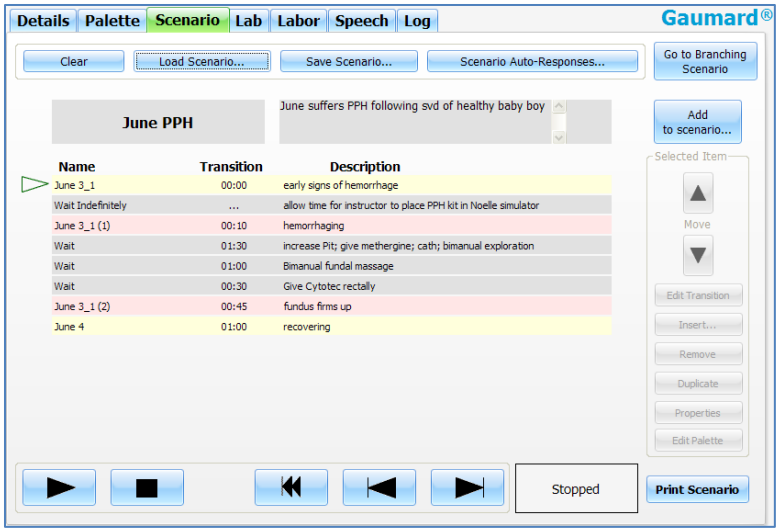
A powerful way to supplement the labor feature is to load factory preset scenarios. To locate and load these scenarios follow the steps below.

While operating under a Quick Start Profile, go to the Scenario tab and Click on **Load Scenario.**

Select the desired scenario and click on “Load”.

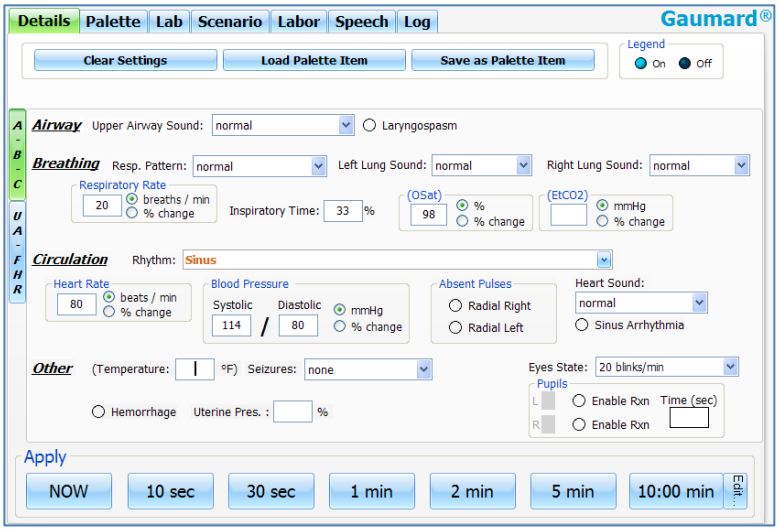


After loading the desired scenario, click the **Play** button and watch the vital signs adjust according to the specifications of each palette.



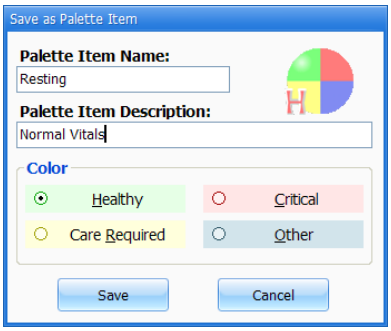
Creating your own Scenarios

First, create the palette items to be used in the scenario. To do so, go to the Details tab and change the controls that best describe the condition to be simulated. Not every field has to be populated in order to save a palette item



When operating in automatic mode, if inconsistent combinations or vitals are selected the model does not adjust to the specified values. The model is based on accurate physiologic principles, and therefore, choosing a combination of vitals that is inconstant with these principles, will not deliver the appointed results.

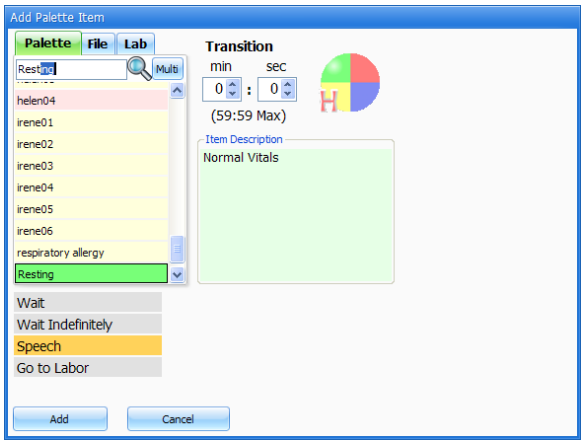
1. Save your palette(s) by clicking on the **Save as Palette Item** button on the upper right side of the page. Assign a **name** to the Palette Item and specify a brief description. Also, select a color that represents the palette's condition: Green for healthy, red for critical, yellow for care required, and blue for other. Then click **Save.**



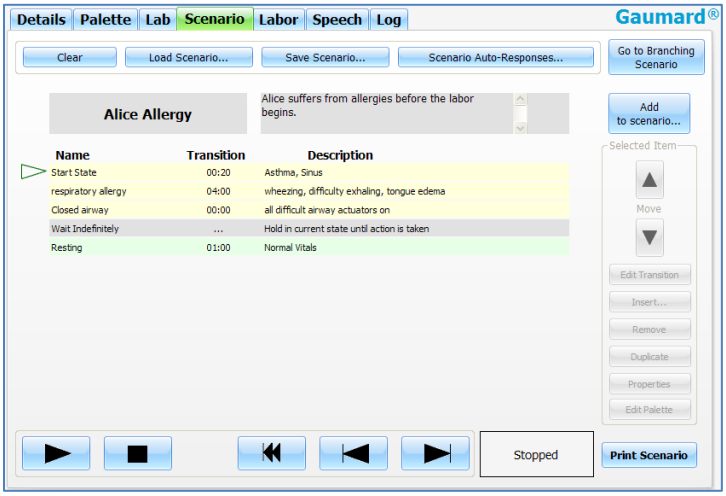
2. After creating all your palettes, go to the **Scenario** tab.

3. Click on the **Add to Scenario** button. Select a single palette or enable **Multi** to select multiple palettes at the same time. Specify a transition time for the palette and click **Add**.

4. From the add menu, you may also choose the **Wait** item, which causes a delay of a specified duration, or a **Wait Indefinitely** item, which causes the scenario to pause until the facilitator **manually** advances to the next item.



5. Repeat the previous step to add more palettes, wait times, speech or labs.

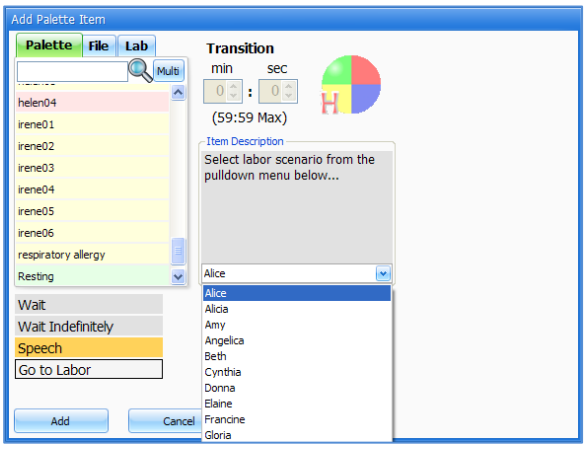


6. Begin the scenario by pressing play. Watch the vital signs adjust according to the specifications of each palette item.

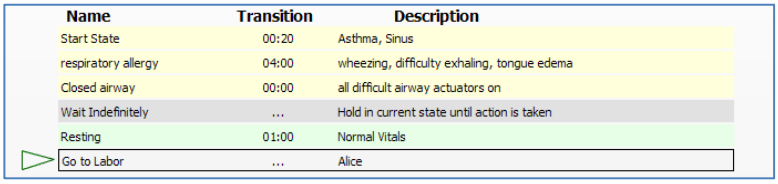
Hold the stylus button and tap the palette item to access the right click menu and view additional options.

Auto-transition to Labor Scenario

To automatically transition from a linear scenario to a labor scenario, add a “Go to labor” palette at the end of the list. From the drop down, select the labor that will begin at the end of this scenario and click add.



Upon reaching the “Go to Labor” palette, the software will automatically begin the labor scenario named Alice.



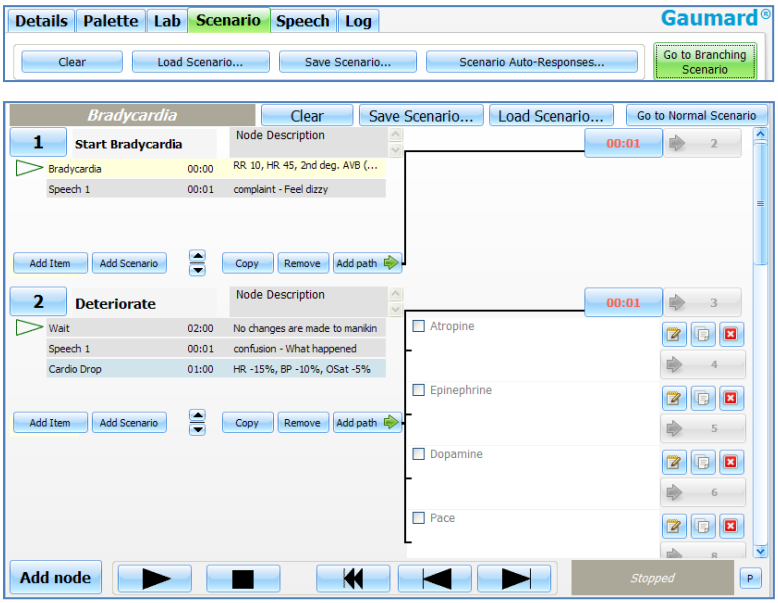
Name	Transition	Description
Start State	00:20	Asthma, Sinus
respiratory allergy	04:00	wheezing, difficulty exhaling, tongue edema
Closed airway	00:00	all difficult airway actuators on
Wait Indefinitely	...	Hold in current state until action is taken
Resting	01:00	Normal Vitals
Go to Labor	...	Alice

WARNING: Prepare the simulator for delivery before using a linear scenario that automatically transitions to a labor scenario.

Branching Scenarios

The branching scenario is an advanced linear scenario editor. It allows the user to branch towards different scenarios/palettes depending on specific “Key Events” activated by the instructor.

To access the Branching window, click on the **Go to Branching Scenario** button on the Scenario tab. Similar to the linear scenario page, the buttons on the top panel can be used to clear, load and save a scenario, or to switch from branching to linear scenarios.

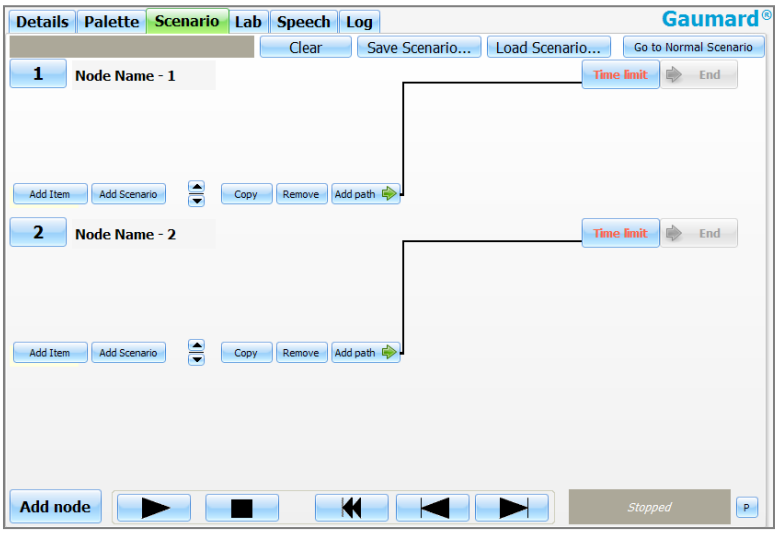


Go to the linear scenario page by clicking on the “Go to Normal Scenario” button.

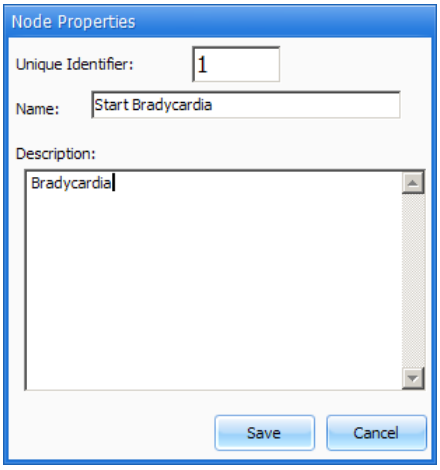
Adding Nodes

A branching scenario will consist of several “Nodes” added by the facilitator. Each node is preconfigured to run a normal scenario or a series of palettes. The facilitator will then activate key events that will alter the trajectory of the nodes.

To add a node, click **Add node** near the bottom of the page.



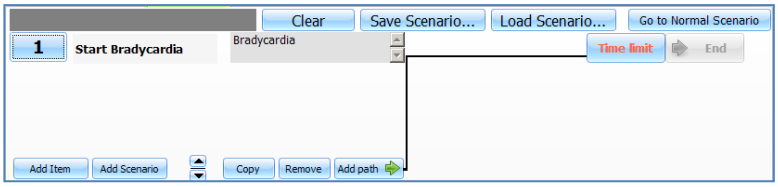
To edit the node name and description, click the node's **Unique Identifier** number. Click **Save** to apply changes.



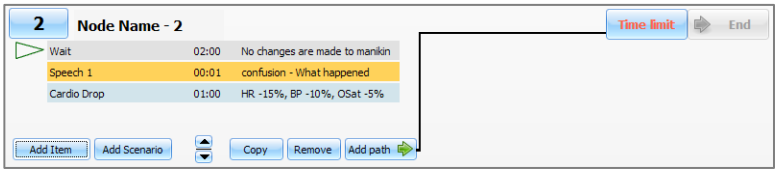
In this example, the following nodes will be created: [1] Start Bradycardia, [2] Deteriorate, [3] Interventions, [4] Atropine, [5] Epinephrine, [6] Dopamine and [8] Pace. Each node has been programmed with specific palettes.

Adding Palettes or Scenarios

Each node is configured with a set of palettes or scenarios.

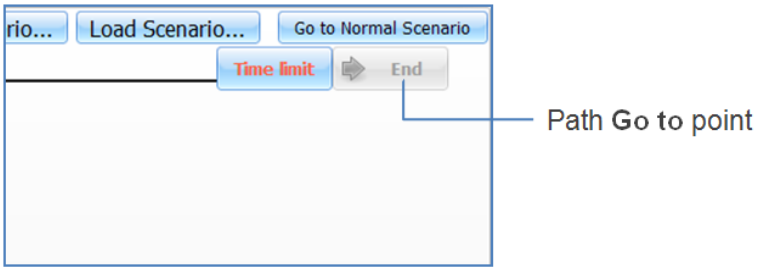


Click **Add Item** to add specific palette items or **Add Scenario** to add full scenarios to this node. Repeat the process and add palettes to the rest of the nodes.

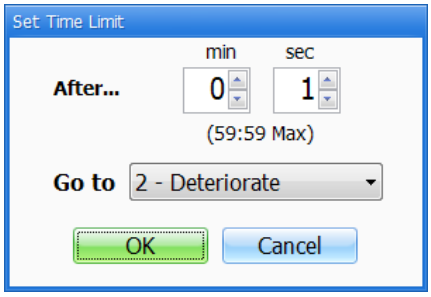


Adding Paths

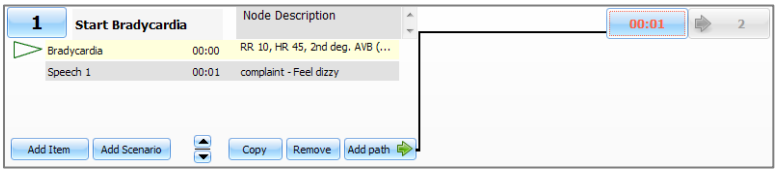
A path refers to the trajectory from one node to another after the last palette in a node expires. Click on the **Time Limit** icon to modify the **Go To** point for the default path. After the last palette expires, the scenario will move on to the node as indicated by the arrow.



Configure the countdown timer and the “go to” point for the default path. Click **OK** to save.

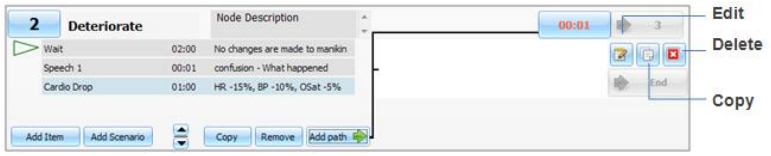


Node 1 is now configured to continue to Node 2 as indicated by the path’s time limit.



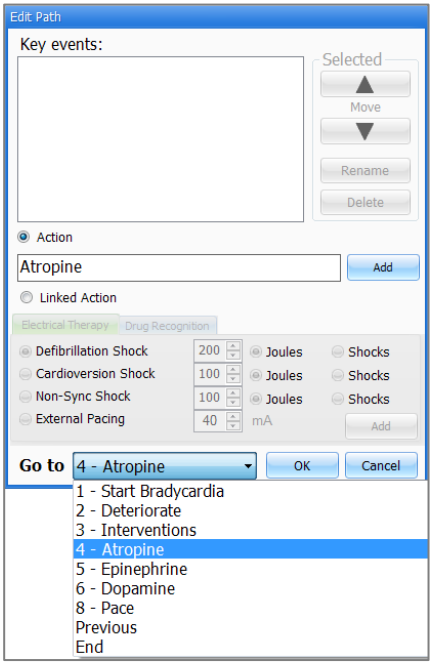
Key Events

Key events allow the facilitator to alter the trajectory of a branched scenario. This is done by assigning multiple paths to a single node, then selecting one of the paths when the provider completes a desired task. To add a key event to a node, first click the **Add path** button, then the **edit** button located on the right.

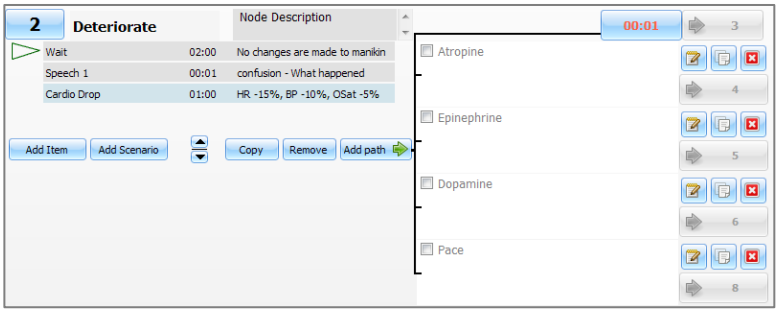


Use the **Edit Path** window to name, sort and create **key events**. Begin by naming the *key event*, and then assigning a node destination from the **Go to** drop-down menu. Click **OK** to save changes.

In this example, the provider will have the option to administer Atropine.



The facilitator added a total of four paths to **Node 2 Deteriorate**: Atropine, Epinephrine, Dopamine and Pace. Once the provider performs an action (administration of Atropine or epinephrine) the facilitator clicks the key event to alter the path of the scenario.



Linked Action Key Events

A linked action key event could either be a facilitator's checkmark, student interaction or automatically triggered actions.

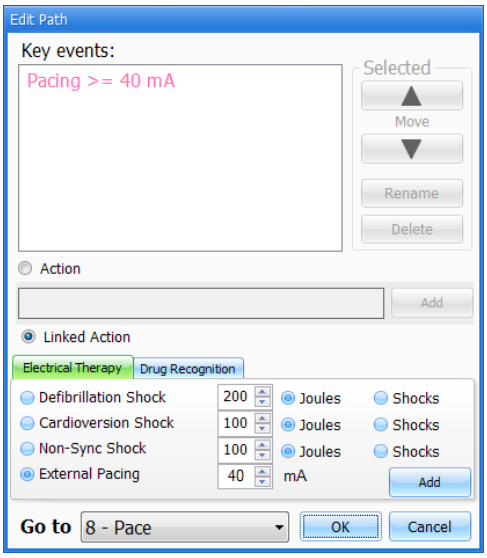
Electrical Therapy – The key event can be triggered by the electrical therapy applied by the students.

Configure the electrical therapy linked action menu to automatically trigger a key event or palette progression when electrical therapy is detected. The software responds to physical interaction and GaumardUI's software shock panel.

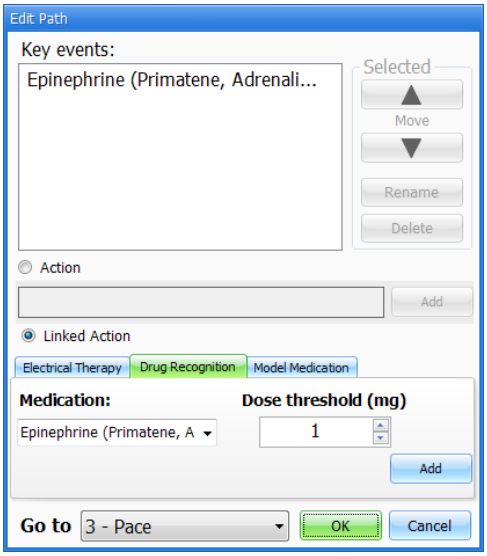
The settings for each Auto Response configured as a linked action event will override the general settings made in Setup, Auto Responses (auto, prompt, off).

Select from Defibrillation Shock, Cardioversion Shock, Non-Sync Shock or External Pacing. Set the parameters for response to either joules or number of shocks using the number fields and radio buttons.

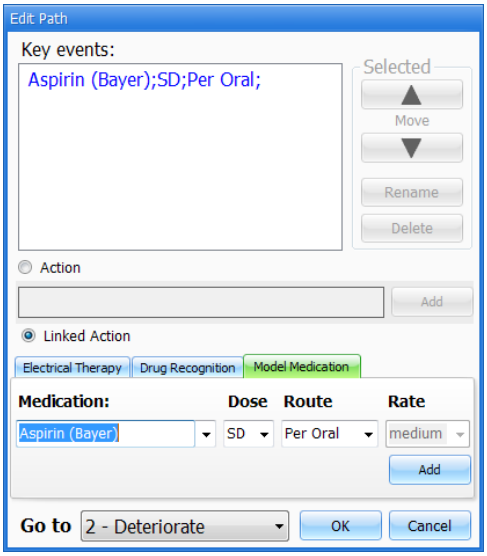
Click **Add** to insert the electrical therapy into the Key Events field, and then **OK** to apply to the path. Electrical therapy can be identified by pink text in the node display.



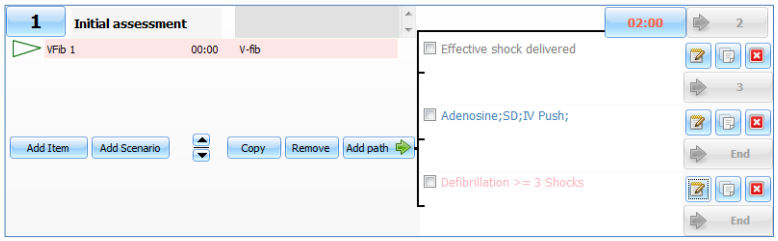
Drug Recognition – The event is triggered by the administration of a medication using a preprogramed syringe by the facilitator. For information on programming a syringe, navigate to page 131.



Model Medication (Automatic Mode) – The key event applies a medication palette to the model. Select the medication, dose and route, and then assign a **Go To** point from the drop down list. Medications activated by this key event can be monitored through the drug tab.



Node 1 of a Cardiac Arrest branching scenario with Model Medication and Electrical Therapy paths added:



Path Controls

Once a path is opened for any node, you can edit, copy or delete the path using the buttons below:

Edit

This button allows you to add, remove, or change the order of actions in a specific path. Clicking on this button also enables you to select where the scenario should go after the path is finished playing.

Copy

This button allows the user to copy the entire path. You can paste it to a different node, or paste it in the same node to duplicate it.

Delete

This button allows the user to delete any undesired path.

Drugs (Automatic Mode Only)

The drug tab is available only in automatic operating mode. It is used by facilitators to simulate the physiological effects and reactions of medications administered to the patient model. The physiologic model processes the drug's properties, dosage, administration time and interactions then adjusts the patient model vital signs accordingly.

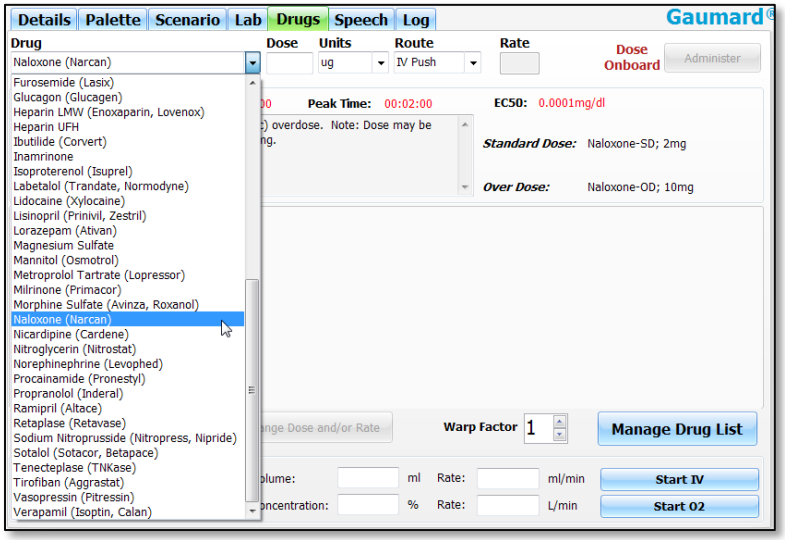
While operating in the automatic mode, select the Meds Profile to load a large library of preprogrammed drugs. The built in drug editor allows facilitators to stay current with new medications or make changes to the properties of existing drugs. All of the preprogrammed drugs included in the library are found in the 2008 Handbook of Emergency Cardiovascular Care published by the American Heart Association.

Administering medications

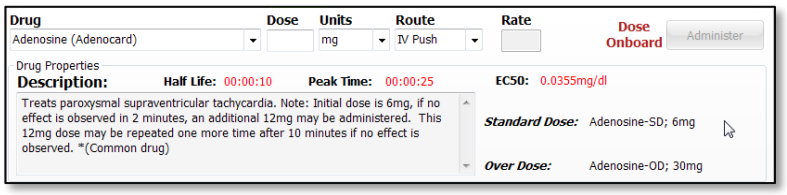
Medications are administered to the patient model by either of the following methods.

- **Using the Drug Recognition Arm** – The drug recognition arm detects tagged syringes preprogrammed with a medication type and concentration. When this method of administration is used, selecting a medication from the drug list is not necessary. Instead, GaumardUI will automatically load the medication's details when the provider injects volume into the simulator's drug recognition arm. For information on programming tagged syringes go to page 131. Information on calibrating the drug recognition arm, go to page 123.
- **Software administration** - Facilitators can administer medications directly from the medication tab by selecting the medication from the Drug list and clicking **Administer**.

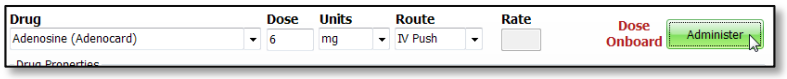
Follow the steps below to administer a medication directly from the medication tab. Begin by selecting a medication from the drug list.



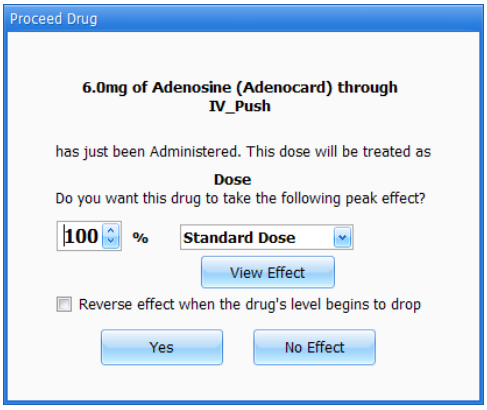
A brief description is displayed at the top of the window. The half-life, peak time and drug concentration are listed in addition to the standard and over dose dosages.



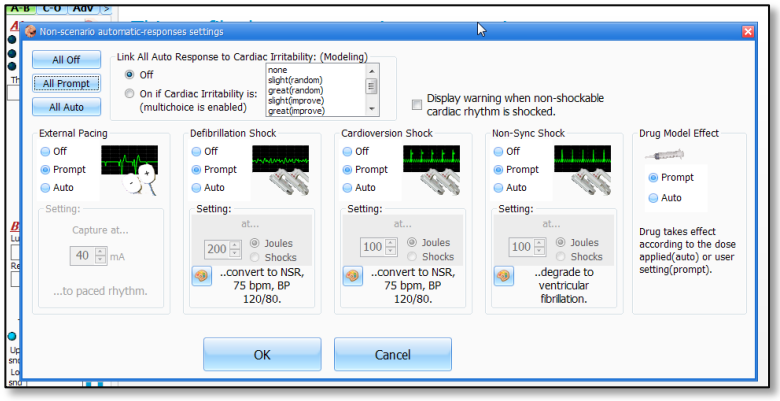
Enter the dose, units, route and rate (if applicable), and click the **Administer** button.



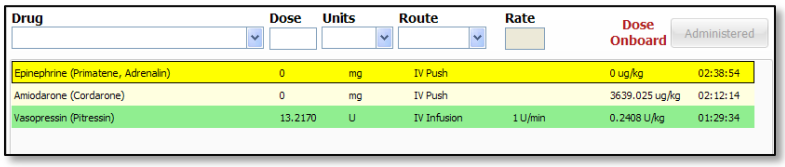
By default, the Proceed Drug window prompts the facilitator to confirm dosage effects before applying them. Adjust the peak effect percentage and/or the dosage effect. Click **Yes** to begin administering the drug.



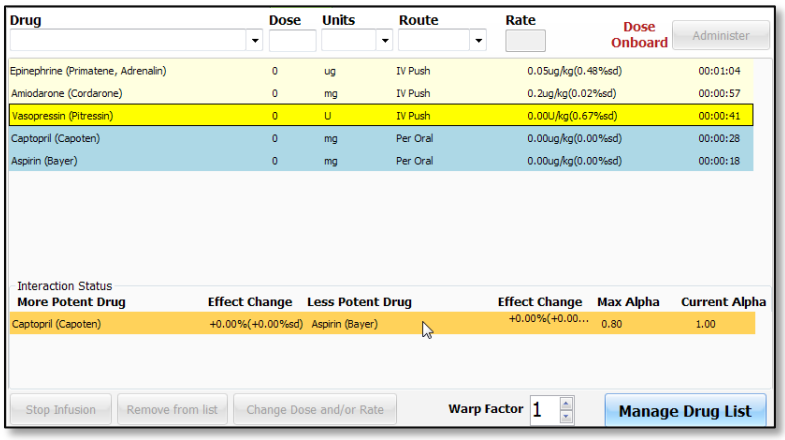
To turn off the Proceed Drug prompt, go to the menu bar and click Setup>Auto Responses then change Drug Model Effect to Auto.



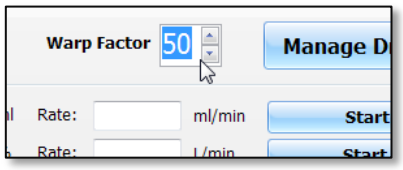
The administered drug panel displays information on dosage rate, percentage of dose completed and total time of administration.



In addition, if a drug interaction is detected, information about the effect and the interactor is displayed in the interaction status panel.



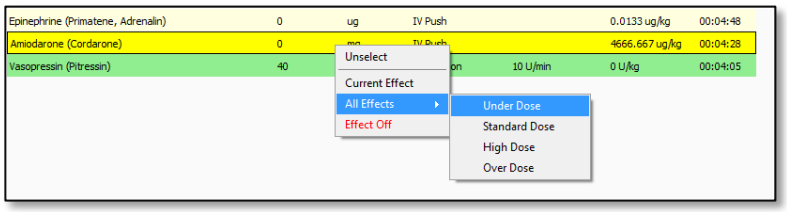
Increase the warp factor to speed up the effect of a medication on the patient model.



After the drug's administration is complete, select the drug and click **Remove from list**. Drugs cannot be removed from the list during the administration process with the exception of IV infusions. However, the drug effects for each medication can be turned off. To remove all the drugs from the list and reset the patient model, click **File** and **New Session**.

Click **Stop Infusion** to pause the drug's administration. During this state, the IV infusion dose and/or rate can be adjusted or removed altogether if necessary.

Right click on the drug entry to show the drug effect menu.



Select from the following options.

Unselect - Unselect a highlighted drug.

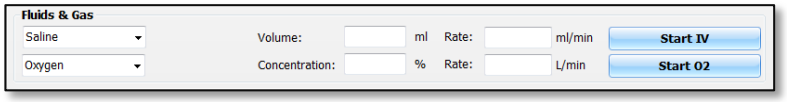
Current Effects - View the effect on the patient's vital signs.

All effects - View all the available programmed drug effects for this medication.

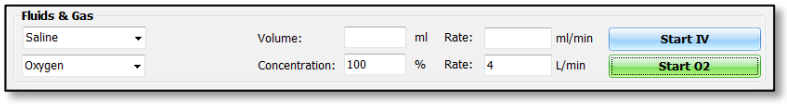
Drug effect toggle -Turn the drug effect off/on.

Fluid & Gas

Controls for fluids and gas administration are found at the bottom of the Drugs page. Two fluids can be administered, saline or blood.

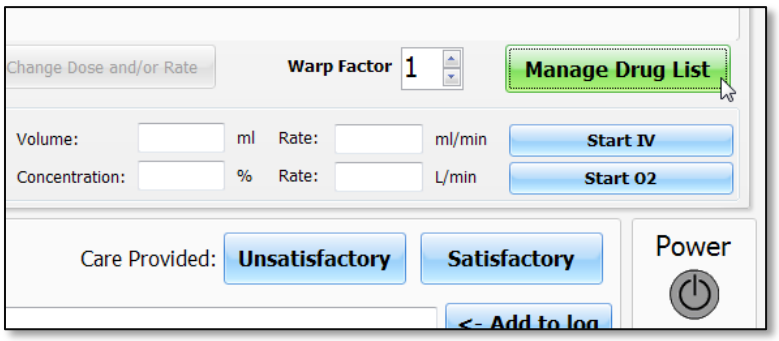


To apply any of these options, including oxygen, select the desired choice and specify the volume or concentration and the rate. Then click on **Start IV** or **Start O2**. You can pause the administration at any time by clicking **Stop**.

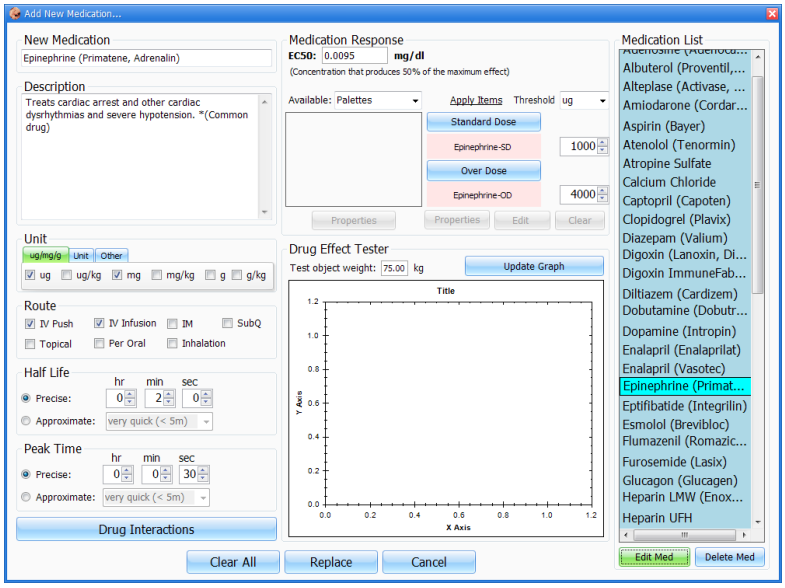


Drug list manager

To add new drugs, edit or update existing items and program drug interactions, click the **Manage Drug List** button.

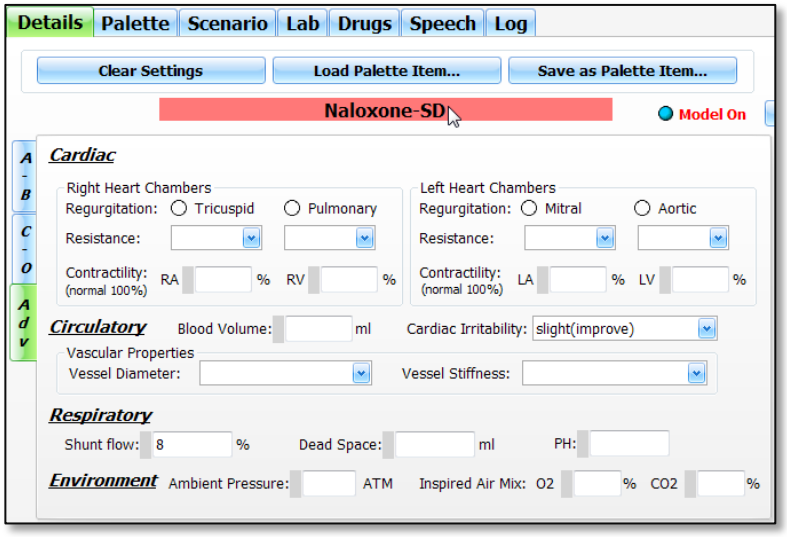


Select a drug from the Medication List and click edit to view the medication's properties.

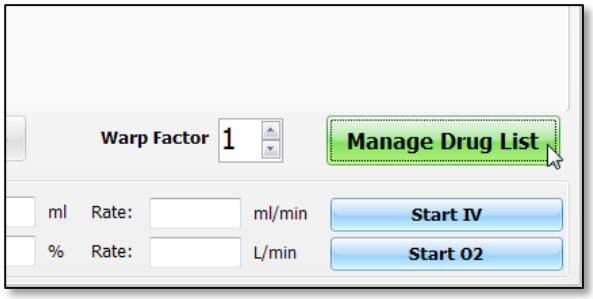


Adding New Drugs

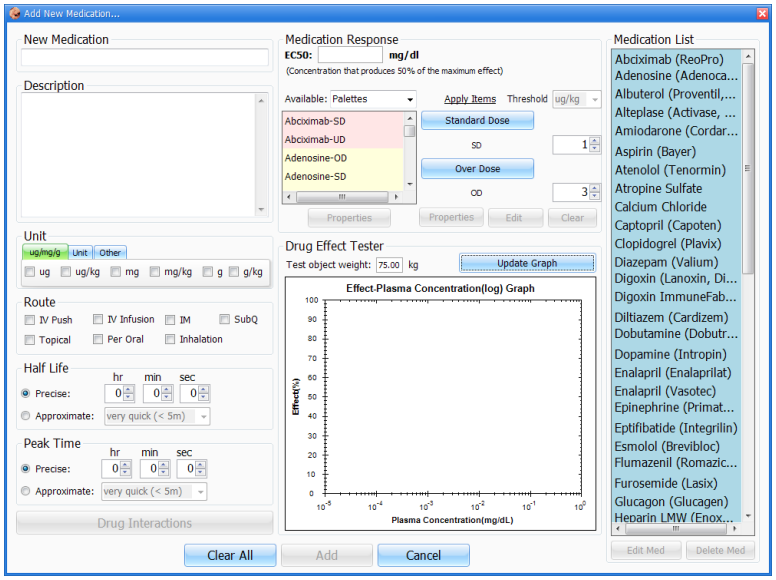
First, go to the Details tab and create a palette item with vital sign parameters consistent with the effects of a standard drug dose. Then, create an additional palette for the effects of an overdose. These two palette items will be later used to program the medication's dosage effect. For general information on creating a palette items, go to page 24.



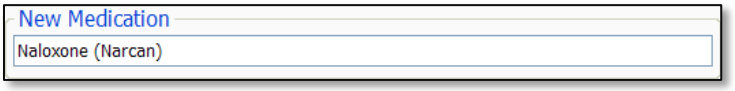
After creating the dose effect palettes got to the Drug tab and click the **Manage Drug List** button.



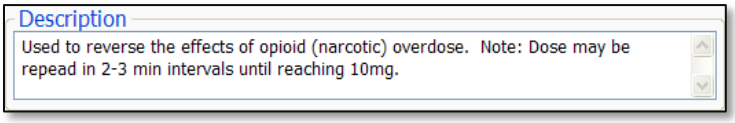
The Add New Medication window appears. A list of all the drugs included with the Meds Profile is shown on the right.



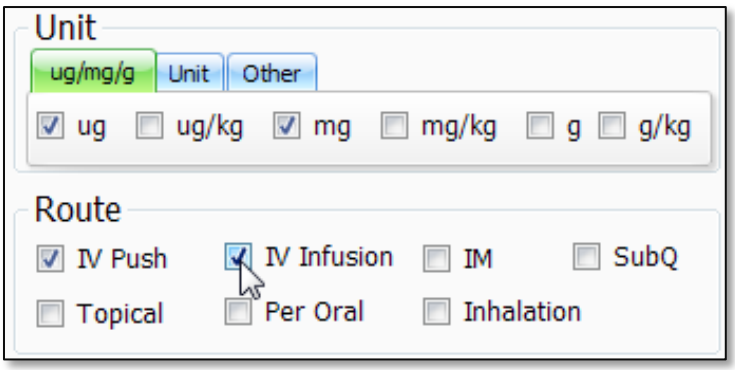
1. Type the name of the new drug under New Medication following this pattern: Generic Name (Brand Name).



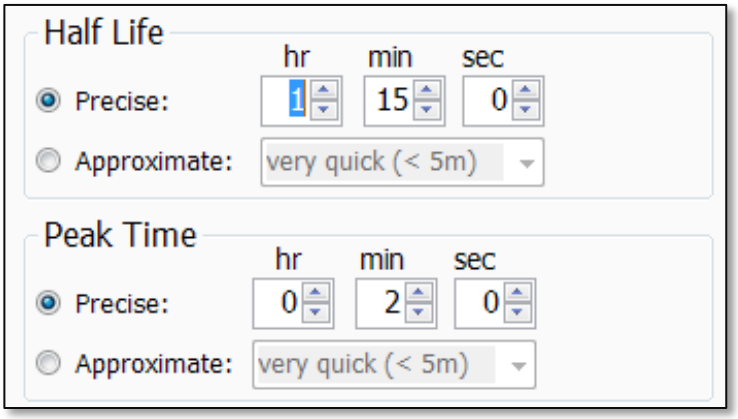
2. In the Description field, type the condition this medication treats and reference information about the dosage.



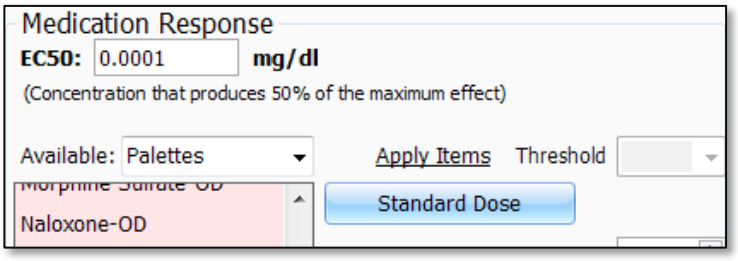
3. Select the units and the administration route.



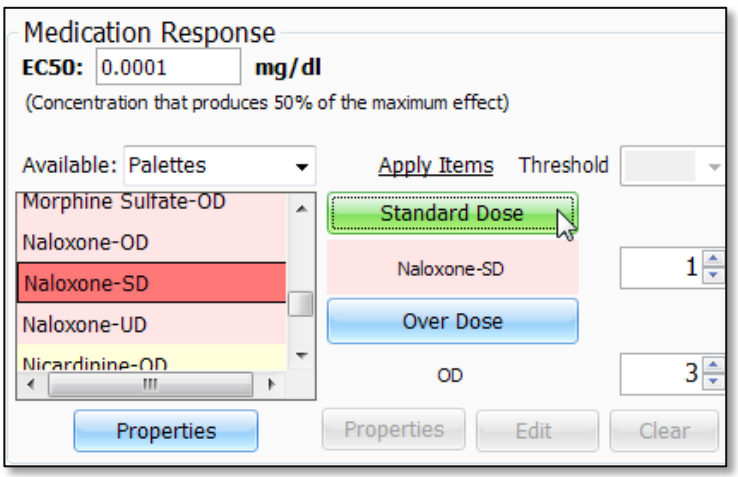
4. Enter the drug's Half Life and Peak time. If these numbers are unknown, use the approximate option.



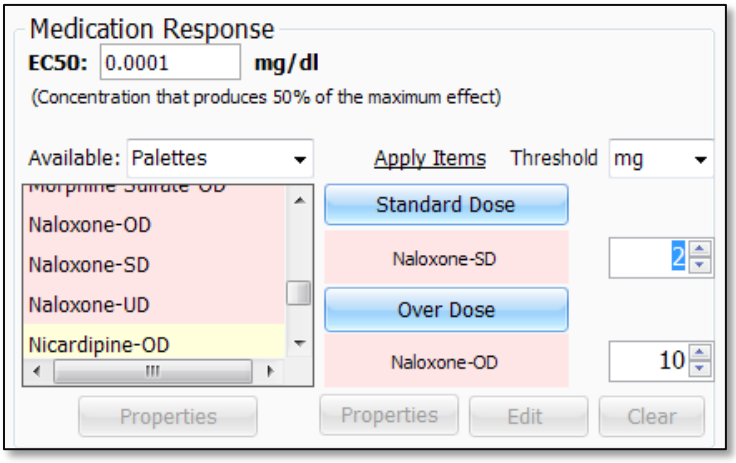
5. Enter half maximal effective concentration.



6. From the list, select the dose effect palette created earlier and click the applicable dosage button to assign. Repeat this step to assign the over dose effect palette to the Over Dose option.

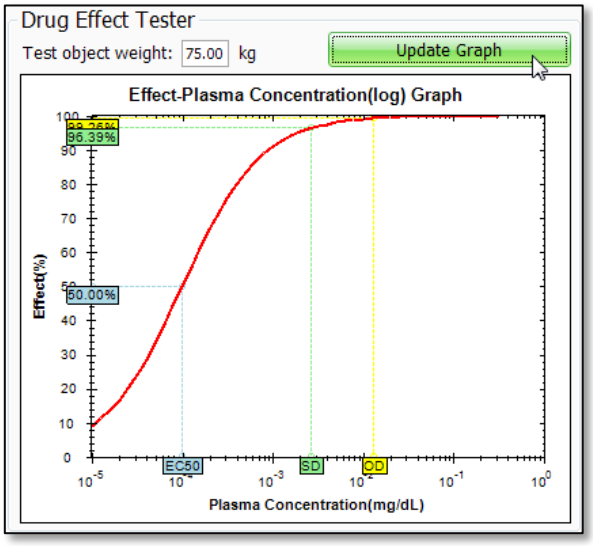


7. Select the threshold unit and adjust the value for each dosage effect.



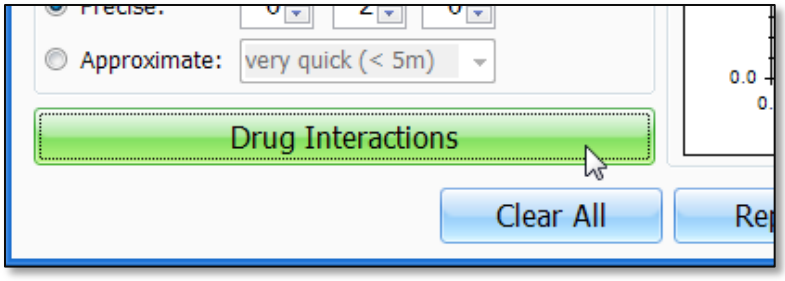
Drug effect Tester

After configuring the drug properties, click the **Update Graph** button to generate the effect-plasma concentration results. Continue to the next section to program interactors for this drug.

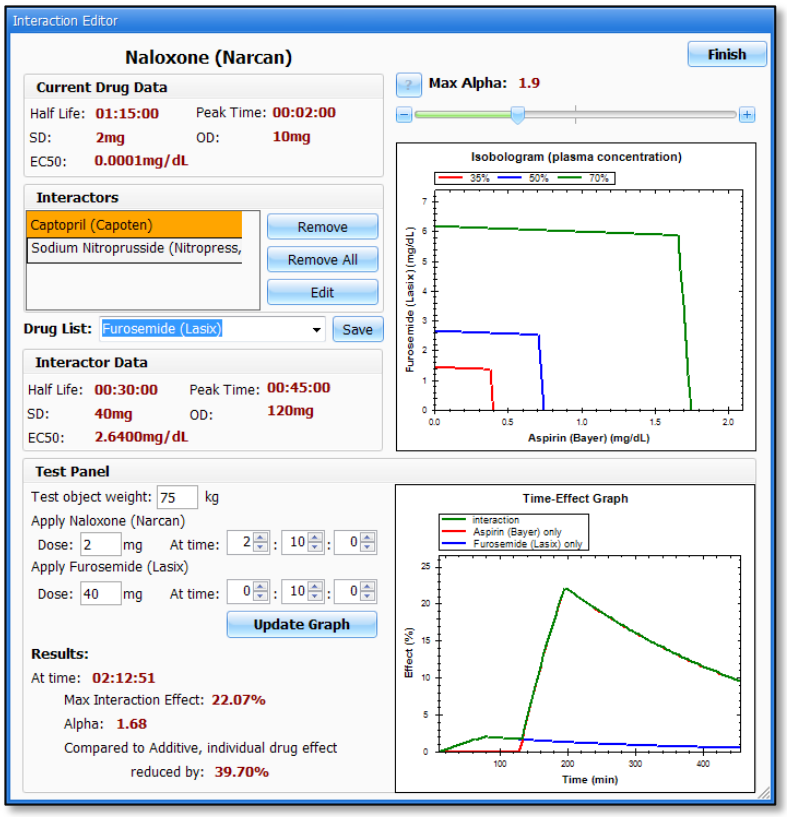


Drug Interaction Editor

Click on the **Drug Interactions** button to begin.

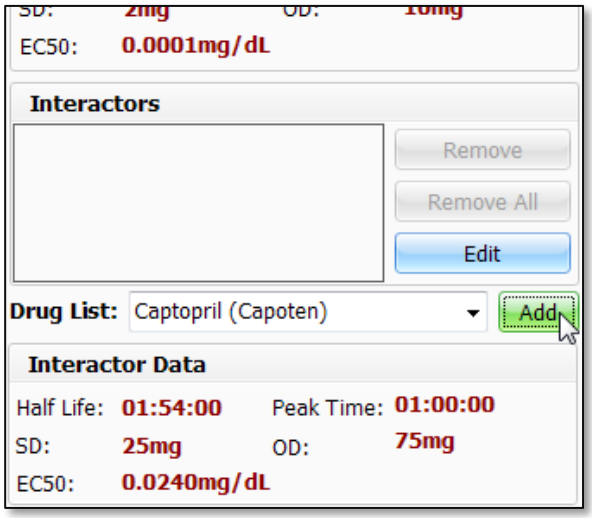


Use the Interaction Editor window to program and test interactions between medications in the drug library. When two or more medications preprogrammed to interact are administered, the physiologic model will adjust vital signs as a response of the interaction effect.

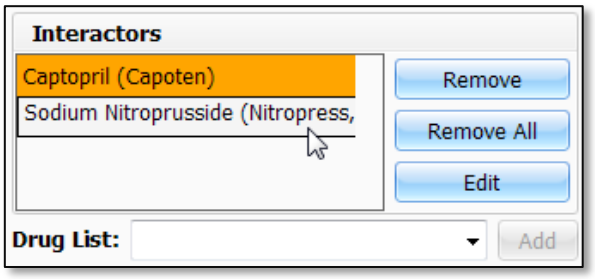


Adding an Interactor

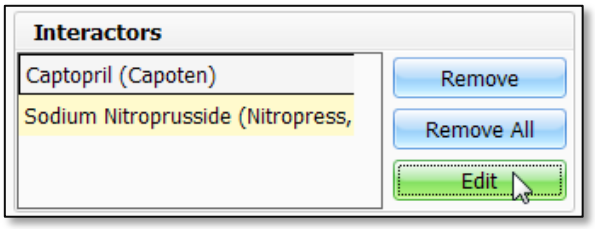
First, select the drug from the drug list that will be programmed to interact with the current medication and click **Add**. Information about the interactor drug is displayed in the Interactor Data window.



Once added, the drug is shown in the interactors list. Repeat the process to add more drugs to the interactors list if necessary.

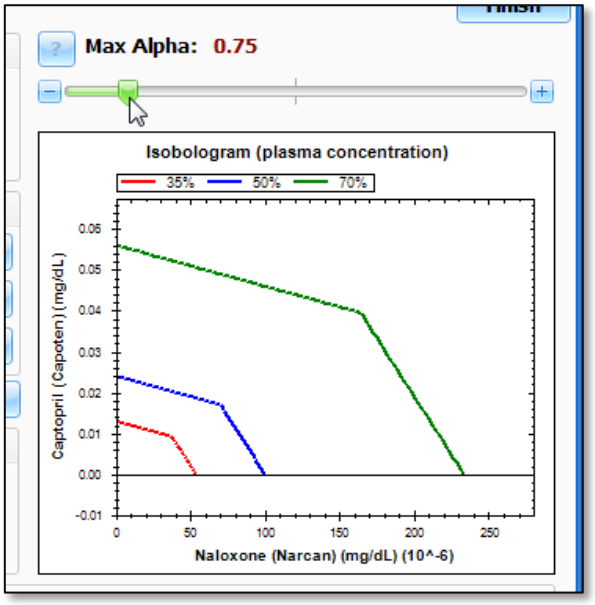


Select the interactor and click **Edit**.



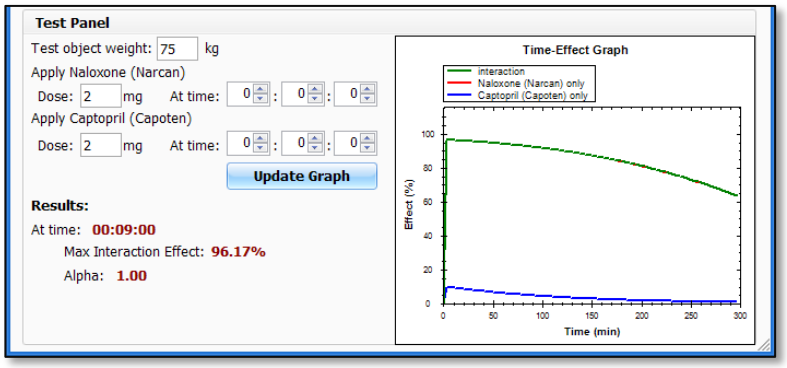
On the right, adjust the **Max Alpha** to modify the type of interactivity effect. Monitor the graph for a visual model of the plasma concentration.

- **Alpha** = 1: Additive
- **Alpha** < 1: Synergistic/Induction
- **Alpha** > 1: Antagonistic/Inhibition

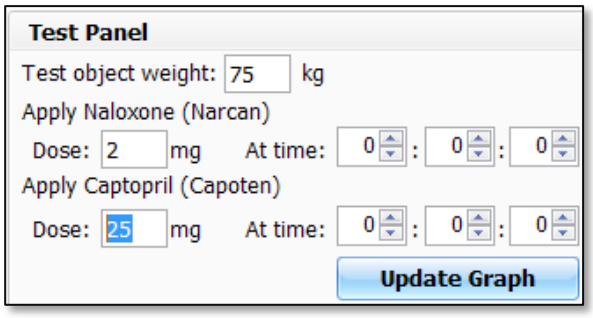


Test Panel

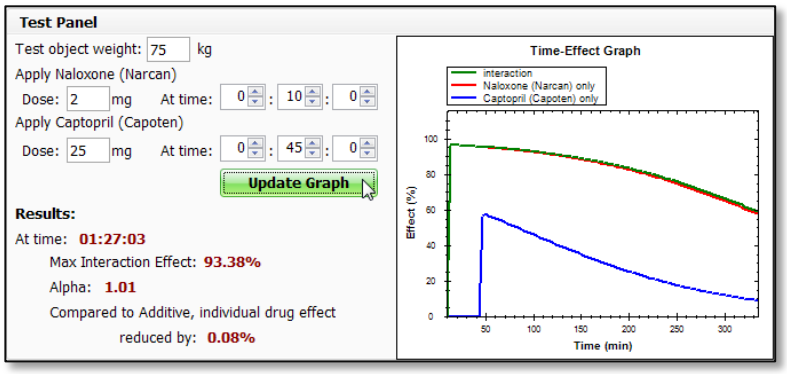
The test panel simulates the interactivity between the drugs based on dosage and time of administration.



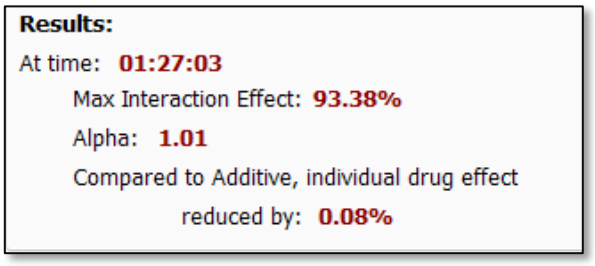
To simulate the interaction, first enter the patient's weight and then the dose for each drug.



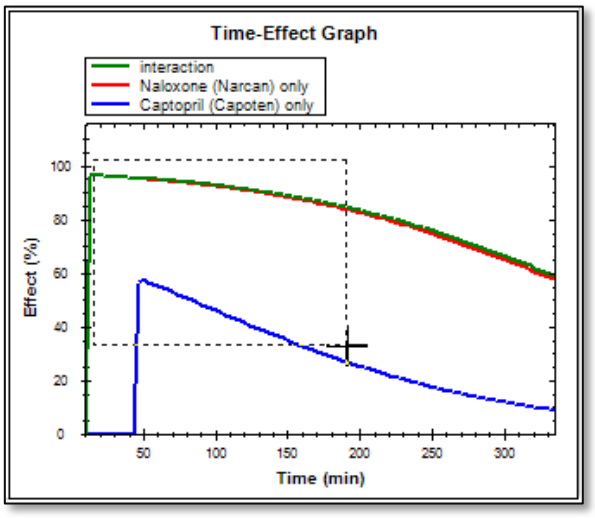
Lastly, enter the time of administration for each drug and click **Update Graph**.



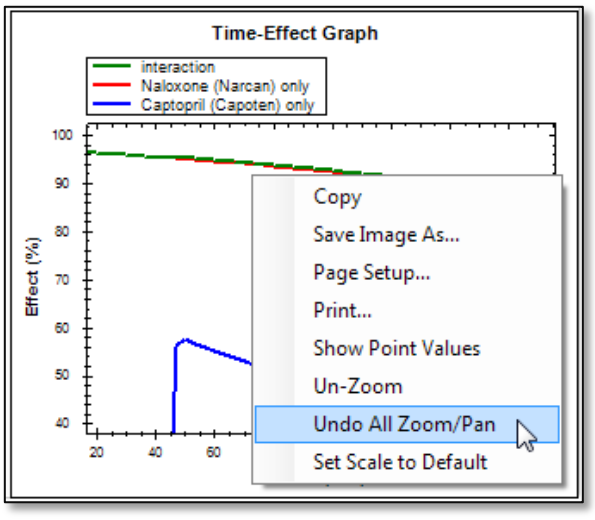
The results indicate that the maximum interaction effect (93.38 %) occurs at 01:27:03. The alpha at that point is 1.01 and the drug effect for each drug is reduced by 0.08%. If the drug interaction effect is not realistic, fine tune the Max Alpha control and retest.



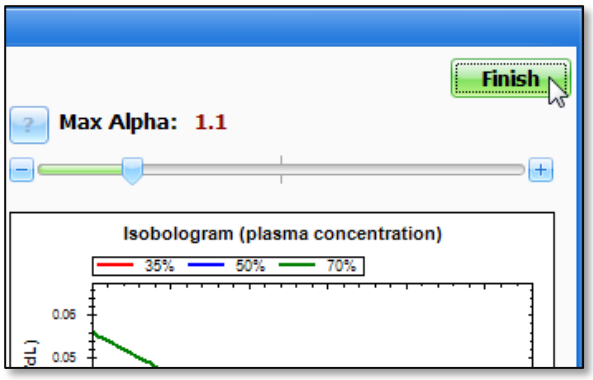
A time-effect graph is also generated from the test results. Tap and hold to draw a zoom area.



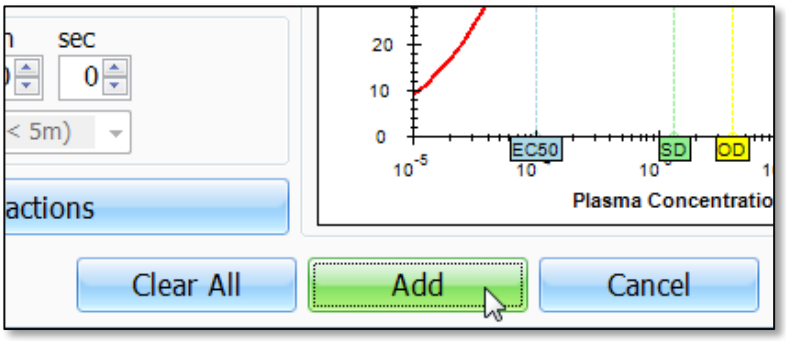
To un-zoom or print, right click anywhere on the graph to access additional options.



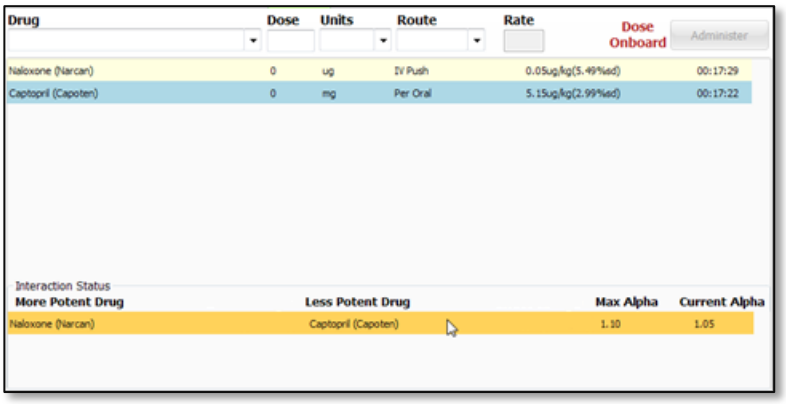
After all the interactors are configured and tested, click on **Finish** to save the interaction settings.



Lastly, review all the properties of the new medication and click Add to save.



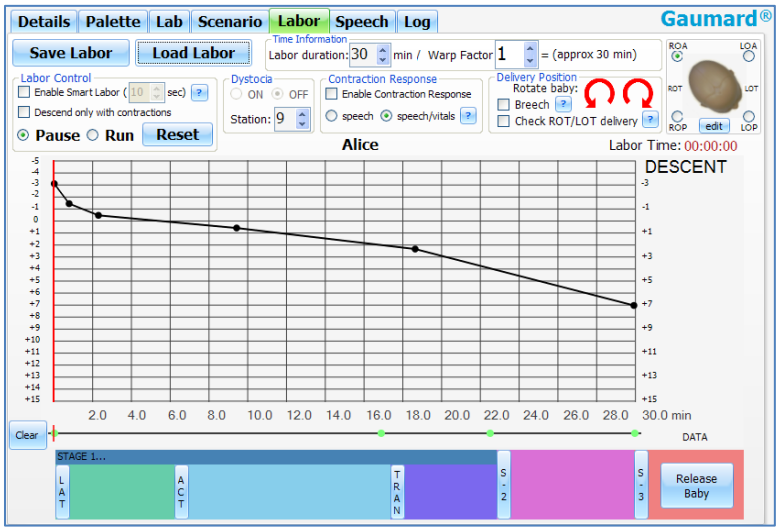
In the example below, two drugs programmed with interactions have been administered. The physiologic model has detected the interaction and displays additional information for the facilitator to monitor.



.

Labor

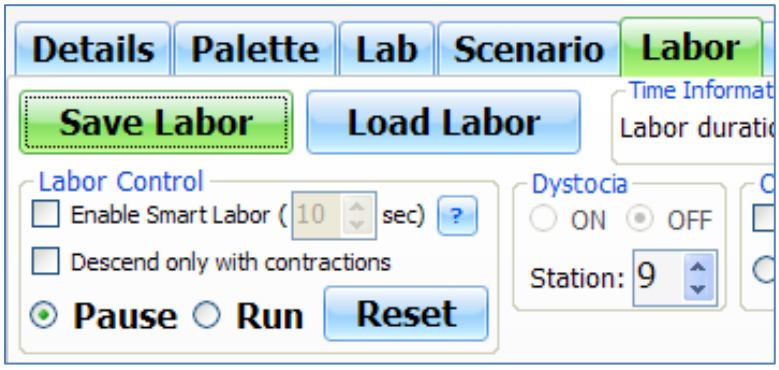
The most advanced method of controlling the NOELLE birthing system is to build a Labor Scenario, which is a sequence of Palette Items with delay periods corresponding to a labor curve.



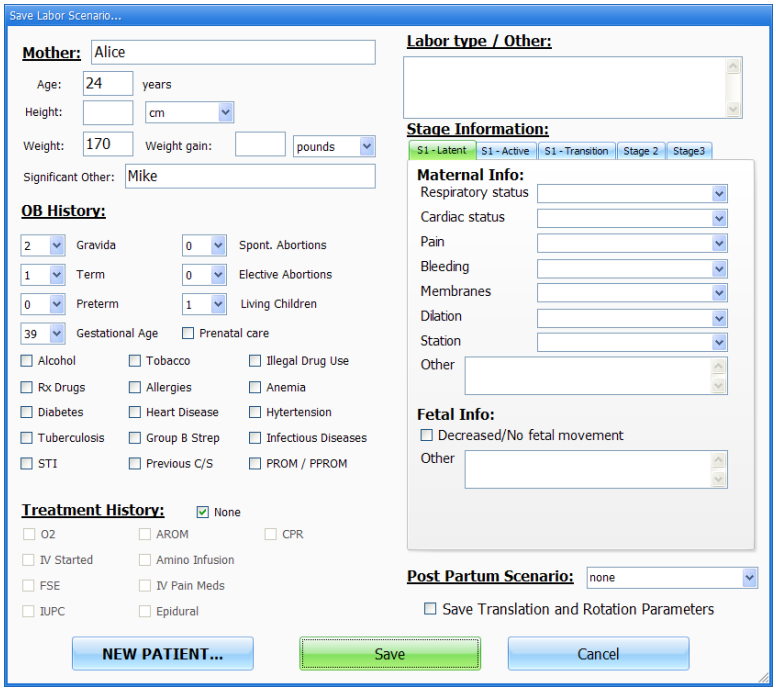
The sections that follow describe in detail the function of the various controls found in the Labor page.

Save Labor

Click on the **Save Labor** button to save the current configuration of the descent curve.



The window shown below opens. Use this window to input relevant information about the scenario for future reference. You **must** enter the Mother's name which will become the name of the scenario. All the remaining information can be left blank, as it is optional.



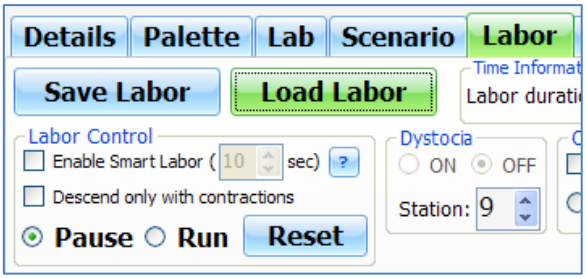
The Save Labor Scenario dialog box is divided into the various sections listed below:

- **Mother**: you can enter specific information about the mother including age, height, weight, among others. The only field that **must** be completed is the name of the Mother.
- **OB History**: Use this section to select specific details about the medical history of the patient.
- **Treatment History**: Use this section to check off any treatment histories that apply.
- **Labor type / Other**: Use this field to enter specific text regarding the labor. Entries may include notes such as "Postpartum Hemorrhage" or "Preterm Labor."
- **Stage Information**: this section contains a total of five tabs. Each tab corresponds to a labor stage. Use each tab to describe specific details about the patient during each stage of labor.
- **Post-Partum Scenario**: You can link a labor scenario to a postpartum scenario. This allows the software to automatically start the post-partum scenario upon delivery of the fetus and completion of the labor scenario.

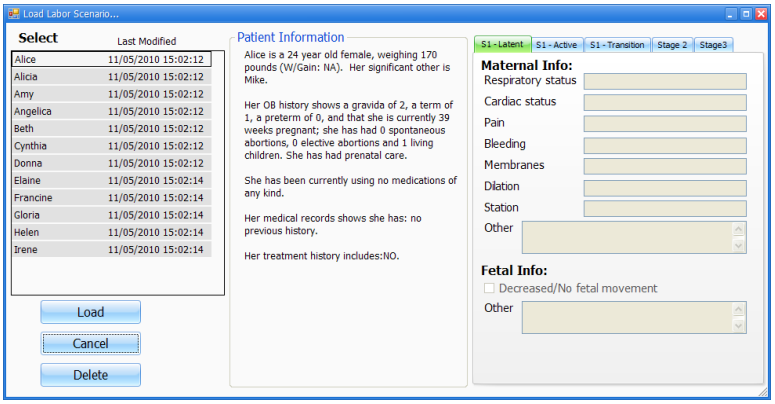
To view the Stage information while a labor is in progress, click on the label for the corresponding labor stage. Refer to page 168 for more information.

Load Labor

To load a labor scenario, click the “Load Labor” button on the Labor tab and the Load screen will open.



All the previously saved files will appear on the left-hand side text box. A single click over a name displays the patient information for that labor scenario. To see the details for each stage, select each tab on the right hand side individually.

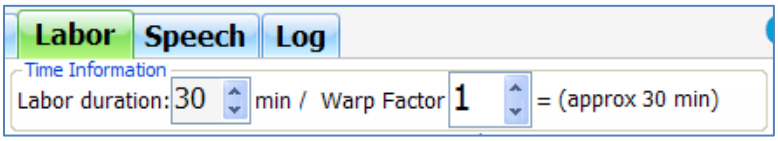


The preset labor scenarios are only found in the “Quick Start NOELLE or “NOELLE Advanced” profiles. There are no factory preset scenarios in the “Default Profile.”

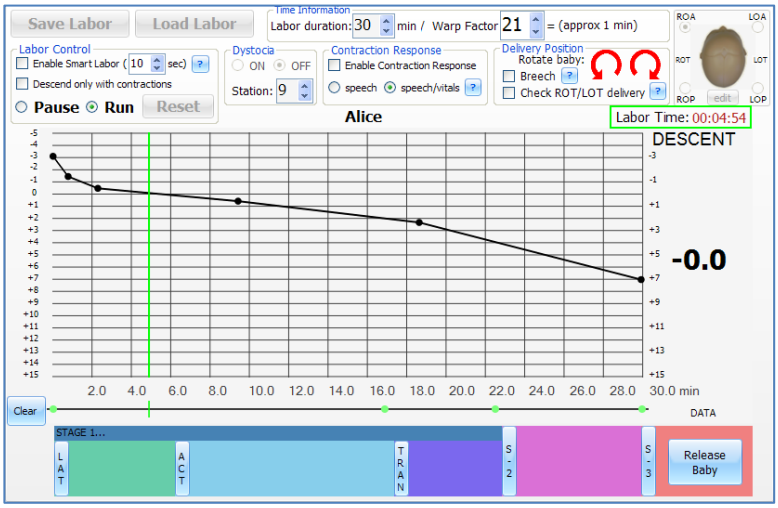
Time Information

Labor duration: This is the time of the delivery being simulated from stage one to stage three.

Warp Factor: By increasing this number the labor duration will be shortened so that the labor can be simulated faster. An approximation of the “Labor duration” will be given in parenthesis. In this way, a two-hour labor can be simulated in five minutes as an example.



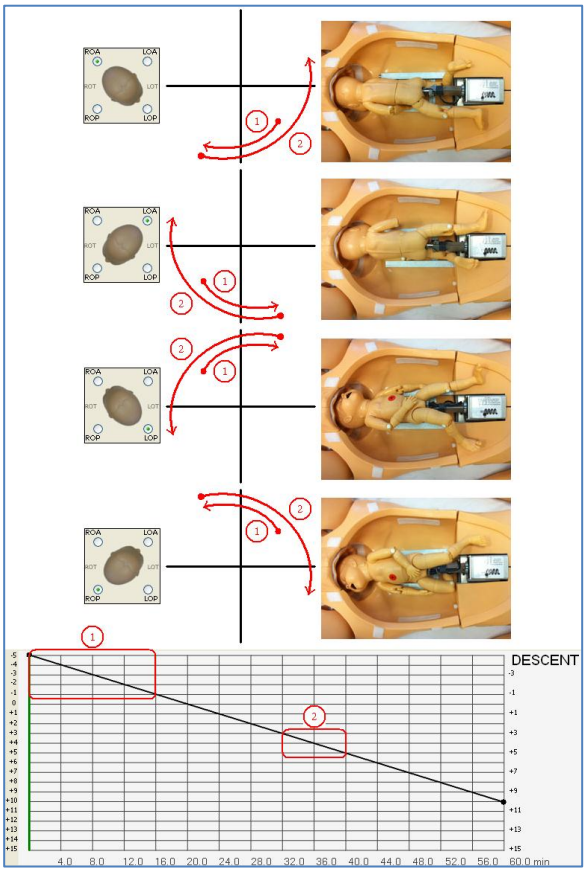
Labor Time: This timer represents the time on the labor curve.



Delivery Position

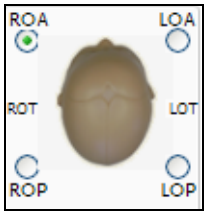
NOELLE's birthing mechanism can be preset to four different initial configurations, if a regular vertex delivery is desired. These conditions are ROA, LOA, LOP and ROP. It is very important that once the motor has been reset, the instructor selects the desired delivery configuration in the software. Then the baby has to be connected representing this state.

Select the initial position for the baby. Make sure it represents the position at which the baby was inserted inside NOELLE.



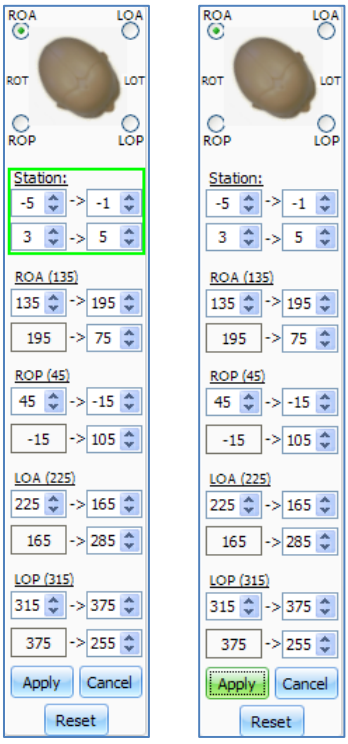
Each of these states has a different rotation program that will represent the internal rotation and the external rotation. The rotation is also dependent on the labor curve. Notice that the internal rotation (marked as “1” on the diagram above) will be calculated between the stations −5 and −1, and the external rotation (marked as “2” on the diagram) will be calculated between the stations +3 and +5. If by any chance a labor curve is designed in such a way that the first point of the curve is below −1, the internal rotation will not be calculated.

The rotations may be edited by the instructor. Click on the “Edit” button at the bottom of the head rotation selection box to expand the fields. The first two rows allow you to set where in the delivery curve the two rotations occur. The software will not allow an overlap of the rotations – the stations specified for Rotation 2 will always be values greater than those specified for Rotation 1 (further down the curve)



Each head position has two pairs of fields, one pair each for Rotation 1 and Rotation 2. The provider can set the arc of the rotation to be as shallow or complete as desired. Please remember that the zero point in the arc will always be at the top of the head position rotation box, between ROA and LOA.

Below is an expanded view of the “Edit” control.



These settings will be retained until either altered again, or the “Reset” button is pressed. “Reset” will return all stations and arcs to factory defaults.

Make sure the labor curve covers all the points from −5 to +5 if both rotations are desired. Also notice that the rotations are somewhat exaggerated — this is done because the head swivels a couple of degrees separately from the alignment of the torso. The torso is the portion of the baby that’s being rotated by the motor, so the head lags behind by a small amount.

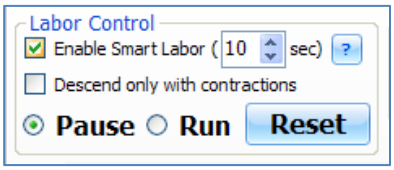
Rotate baby: Both of these arrows allow the instructor to rotate the baby to any desired position while the delivery is in progress.

Breech: Use this control when planning a breech delivery. When selected, it disables the motor rotation.

Check ROT/LOT delivery: this control limits the release mechanism to trigger only when the neonate's shoulders are positioned vertically. If the shoulders are not aligned vertically, the mechanism will not release. The only way to detach the baby then is by manually clicking on the "Release Baby" button.

Labor Control

Enable Smart Labor: this option allows you to run all non-speech palettes in real time. You can specify for how long the palettes will run in real time. The software defaults to ten seconds.



When the Smart Labor is activated, the window circled in red below is displayed:

Hide the message by clicking the "Hide" button or "Stop" that palette from running in real time; otherwise, the message will display for ten seconds. The number in red indicates how many seconds are left before switching back to warped speed. The name of the palette being applied in real time is also shown in this dialog box.

Descend only with contractions: If checked, this option configures the motor to descend ONLY when there is a contraction.

Run: Begins a labor and **initializes the birthing mechanism**. The red bar on the left of the labor screen turns green when labor scenario is running.

WARNING: Do not initialize the birthing mechanism until reading Working with NOELLE and Care and Cautions sections of this guide for important information on preparing NOELLE for delivery.

On first revision birthing mechanisms, always adjust the motor arm before every delivery to prevent the power cable from wrapping around the motor arm. First revision systems can be identified by the warning label located atop of the labor mechanism.

Never operate the birthing mechanism without the tummy cover in place.

Pause: This button pauses the labor.

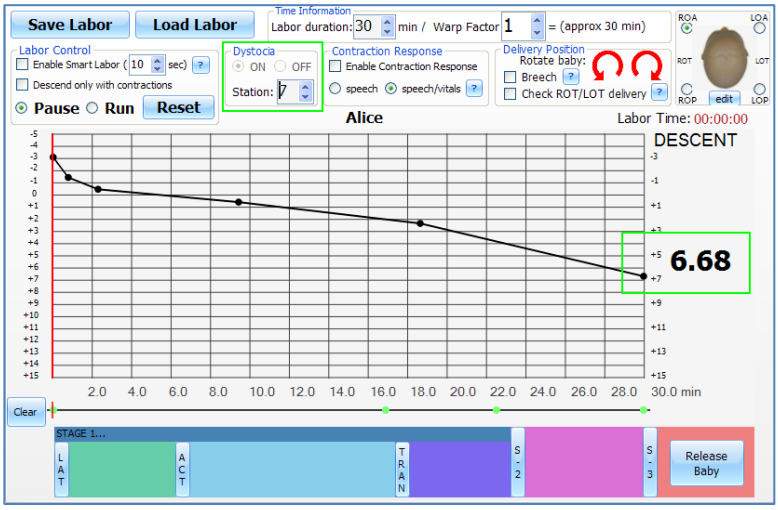
Reset: This button will reset the motor to the initial position and also reset the labor scenario to its initial conditions. The reset button is enabled only when a labor is paused. If a labor is running, this button will be grayed out. To troubleshoot the motor mechanism, navigate to page 241.

Dystocia

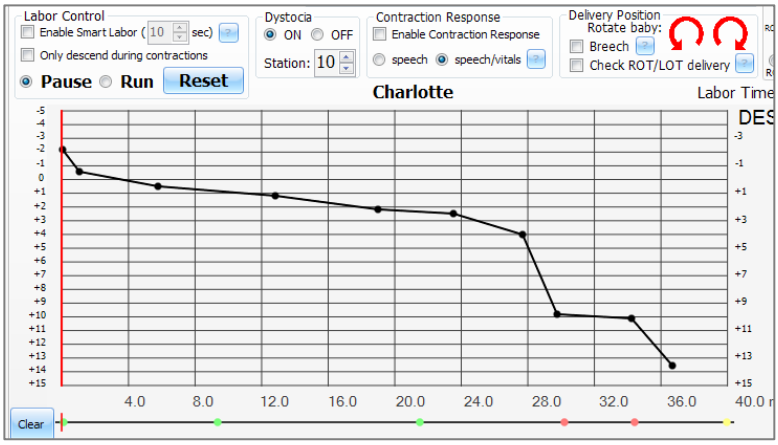
The dystocia controls will be activated only if the last point on the descent curve is lower than the dystocia threshold set on the “Options” or on the “Dystocia Control Box”. Dystocia can be used during any scenario by switching the control on in the Dystocia control box. When the dystocia is set to “On” and the labor starts, the warp factors for labor and perinatal monitor will change to real time (warp factor 1) as the descent curve passes the preset dystocia threshold. While in dystocia mode, a "Turtle Sign" will occur with each uterine contraction.

The dystocia controls are disabled when the last point on the descent curve is less than the indicated dystocia station.

In the example below, dystocia controls are disabled because the last point is less than **seven** (the current dystocia station).

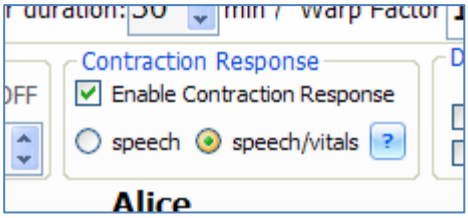


In the example below, shoulder dystocia and turtle signs begin station 10.



Contraction Response

The contraction response feature makes your labor simulation more realistic. When enabled, this feature can automatically make changes to the maternal vital signs or add speech palettes during the contraction.



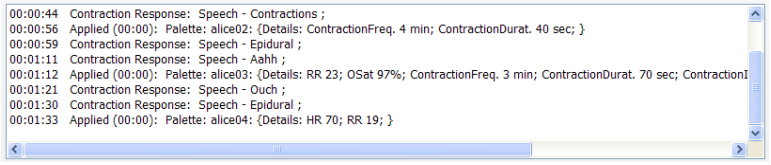
There are two kinds of patients that you can simulate: Pain-controlled patients and patients with uncontrolled pain. The changes made are different depending on the selection speech or speech/vitals.

Selection	Maternal Vital Signs Changes	Audio Palettes	Notes
Speech	No Changes	"I think I'm having contractions"	Simulates a patient that is pain-controlled
Speech/vitals	Increase HR, BP and RR	"Ouch," "Ahhh," "Please, I need something for the pain," "Please give me an epidural."	Simulates a patient that is NOT pain-controlled

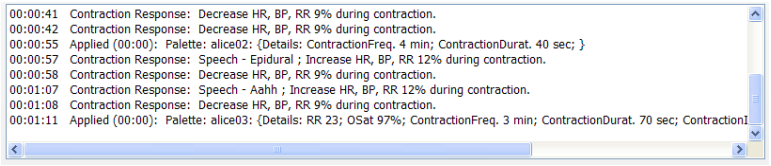
The changes are applied only during the length of the contraction. At the end of a contraction, the maternal vital signs-if changed- adjust back to the previous setting.

When a contraction response is applied, the changes are recorded in the Log page.

Pain controlled patient:

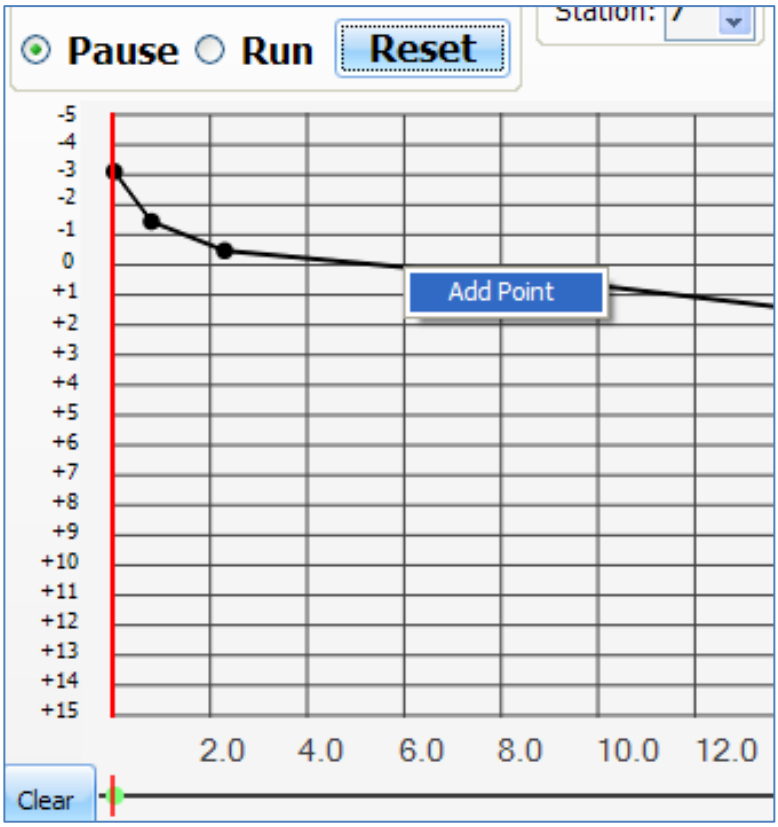


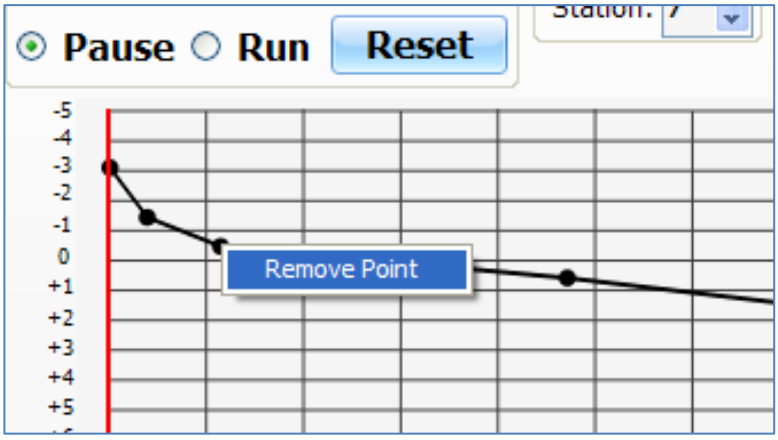
No pain controlled patient:



Descent Curve

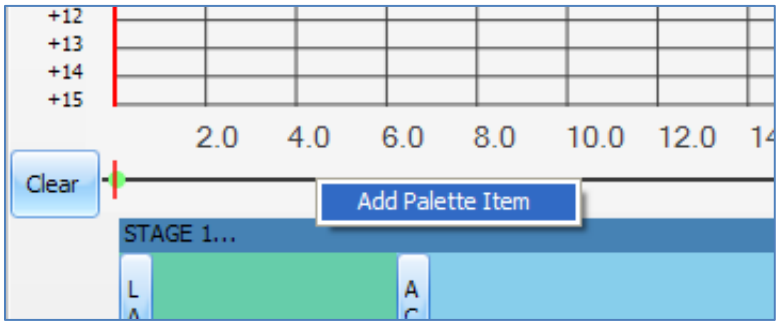
The descent curve represents the position of the fetal head relative to the ischial spines in centimeters, from −5 cm to +10 cm (station). The user can manipulate this curve by clicking over a point on the line and dragging it to the desired location on the grid. In order to add more points, right-click on the line between existing points and select “Add Point”. To remove points, right-click over the point and select "Remove Point".



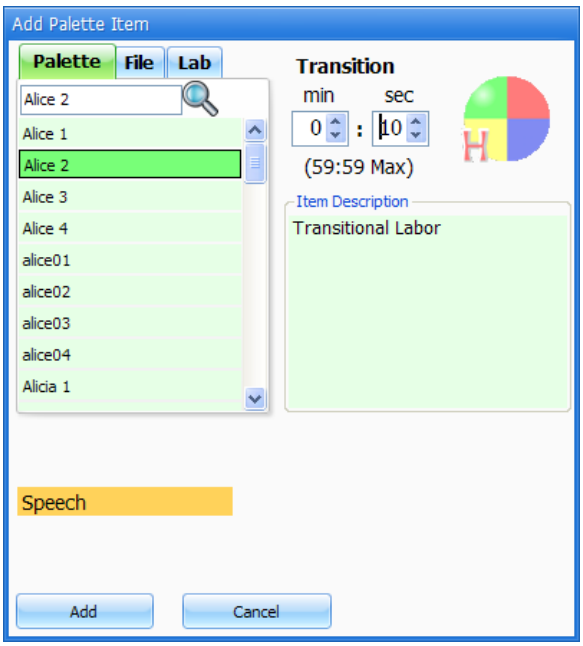


Time Line

The time line is where Palette Items are added to build the labor scenario. As the time indicator line passes over each point, the corresponding Palette Item is implemented. To add a palette item, right-click on the time line and select “Add Palette”. This will open a window with all the palette items available in the current profile.

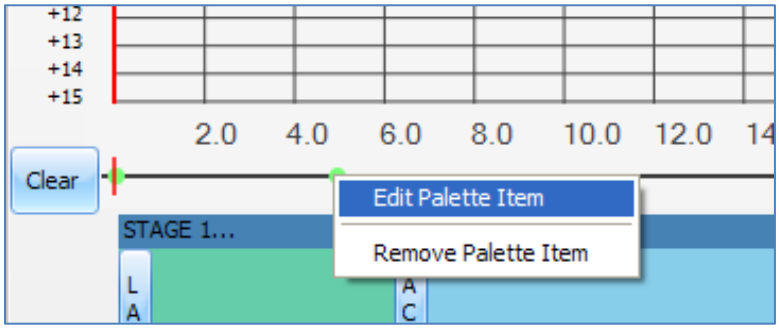


Select a palette item or speech and specify a transition time, then click **Add**.



Once the point has been added, you can touch it with the stylus and drag it to the desired location on the time line. Double-click over the point to bring up a window displaying the properties of the Palette Item represented by the point.

To remove or edit a palette item from the time line, right click over the point and select the desired option.



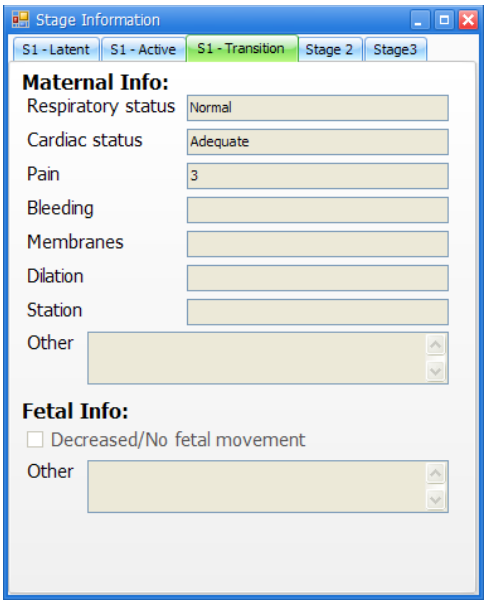
The user can remove all palette items at once by pressing the "Clear" button located to the left of the timeline. When all palette items are removed the user is left with a clean slate to either rebuild or to completely change the scenario.

Stages

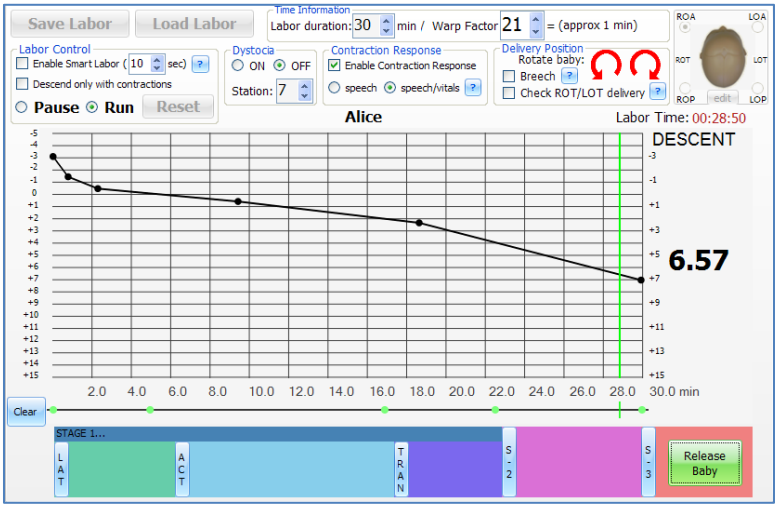
The stages (shown in colored blocks under the timeline) are also dependent on the descent curve.

The blocks, representing different stages of labor, change size as the points on the descent curve are moved. Click on each stage label to view the details.

This information was assigned when the scenario was created.



Release Baby: This button activates the release mechanism on the baby, which allows either the providers to disengage the baby or the instructor to connect the baby.



After clicking on the Release Baby button, as shown below, the system will take a few seconds to send the release commands to the simulator.

Locking Mechanism

Once the baby is plugged into the motor arm, the locking mechanism acts twice to secure the birthing baby (a clicking noise can be heard coming from inside the baby). The user then must hold the baby until the noise stops, and make sure that it is locked by pulling the baby to check that it is held fast. For more information on preparing the simulator for delivery, navigate to page 154.

Follow the guidelines below when releasing the baby from the birthing mechanism. To troubleshoot any additional issues, please navigate to page 241.

If shoulder dystocia turned OFF:

- The release mechanism is automatically actuated ten times in one-second intervals once vertical progress bar reaches **STAGE 3.**
- The baby has descended more than 80% of its entire translation (baby's head is out) and user pulls the baby with more than three pounds of force.
- By pressing the **Release Baby** button inside the "Labor" tab.

If shoulder dystocia is turned on:

- When user pulls the baby with more than 35 lbs., the baby is released as a safety feature in order to avoid damage
- By pressing the **Release Baby** button inside the "Labor" tab.
- Allow at least 30 seconds after the baby has been initially locked before trying to release it.
- The labor progress line reaches Stage 3 and dystocia is turned off.

WARNING: Guide the baby out of the birth canal by gently pulling in line with the birthing mechanism. Pulling the baby upward or downward in contrast to the birthing mechanism's linear trajector may bend the motor arm and cause damage to the birthing mechanism.

Labor Activity

As labor progresses, the simulator will detect manipulations performed on the fetus by the care providers. Activity on the fetus prompts the "Activity on Fetus" window to appear on the tablet screen, providing the instructor with feedback on pulling force, uterine contractions, torque on the baby (twisting force) and shoulder position. The instructor can evaluate the providers in terms of pulling in, or out of, sync with uterine contractions. The labor activity is a beneficial tool for the instructor as excessive forces applied to the fetus by care providers during delivery can lead to brachial plexus injuries. All of these values will be given in real time and they will be recorded by the graphical interface for further analysis.

Peak Force - measurement of how hard the provider is pulling the fetus. (Can be displayed in lbs. or Newton)

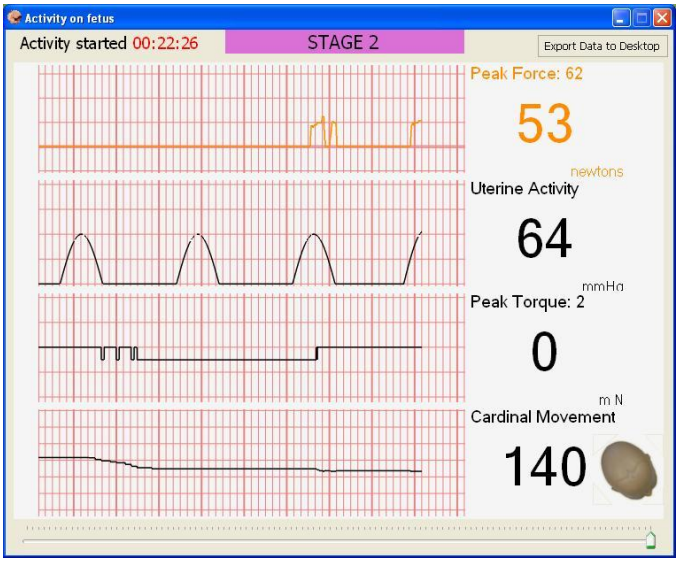
Uterine Activity - contractions generated by NOELLE.

Peak Torque - measurement of the torque induced as the provider rotates the fetus; negative readings represent counter clockwise rotation, and positive values represent clockwise rotation.

Cardinal Movement - the angular position of the baby is measured in degrees, taking into account that "0 degrees" corresponds to the fetus facing upwards with the shoulders horizontal.

Export Data to Desktop - exports labor force data to an Excel file. Use the data to make graphs to study trends and performance patterns.

Slider - The slider at the bottom of this screen lets you rewind the strip to see the previous graph data.



Factory Preset Labor Scenarios

NOELLE has a total of thirty-six factory preset labor scenarios, which were designed in conjunction with healthcare professionals. The scenarios are divided into two separate profiles. Below is information on the scenarios available under the Manual Mode and Automatic Mode.

Manual Mode

Below follows a brief overview of these scenarios. For more details, refer to the Appendix.

Quick Start Scenarios

Scenario Name	Labor Type	History	Overview
Alice	Normal	Alice is a 24 year old gravida 2/1 at 39 weeks. She weighs 170 pounds. She has had prenatal care. She has not been using medications of any kind.	Runs for 30 minutes. Labor progresses normally and fetal heart tones remain within normal limits. The normal male infant earns good APGAR scores.
Alicia	Variations on Normal	Alicia is a 24 year old gravida 2/1 at 39 weeks. She weighs 160 pounds. She has had prenatal care. She has not been using medications of any kind.	Runs for 20 minutes. Labor progresses normally and fetal heart tones remain within normal limits. The normal infant earns good APGAR scores.
Amy	Variations on Normal	Amy is 19 years old 1/0 at 40 weeks. She weighs 160 lbs.	Runs for 30 minutes. Labor progresses normally and fetal heart tones remain within normal limits. The baby earns good APGAR scores.
Angelica	Variations on Normal	Angelica is a 31 year old gravida 5/3 at 41 weeks. She weighs 160 lbs. She has experienced no prenatal complications and has a history of fast labors.	Runs for 20 minutes. Labor progresses normally and fetal heart tones remain within normal limits. The normal infant earns good APGAR scores.
Beth	Variations on Normal	Beth is a 16 year old gravida 2/0 at 37 weeks. She has had one elective abortion. She has had prenatal care.	Runs for 10 minutes. Fetal descent is rapid. Fetal baseline is maintained at 150. Nuchal chord is evident and moderate bleeding is noted immediately following delivery from a second degree perineal laceration. The normal female infant is limp, dusky and does not cry spontaneously. Baby is hypothermic and tachypneic.
Cynthia	Shoulder Dystocia	Cynthia is a 31 year old gravida 3/1 at 41 weeks. She weighs 170 lbs.	Runs for 30 minutes. Labor progresses normally and fetal heart tone baseline remains within normal limits. Patient is unable to fully “crown.” Vacuum extractor is required to deliver the head. Shoulder dystocia is encountered and McRobert’s and suprapubic pressure maneuvers are required. Male infant is centrally cyanotic, limp, and flaccid and requires immediate resuscitation. Stat CXR reveals a fractured right clavicle and right pneumothorax.

Scenario Name	Labor Type	History	Overview
Donna	Breech	Donna is a 20 year old gravida 4/2 at 31 weeks. She weighs 180 lbs. She has had one elective abortion. She has had prenatal care.	Runs for 20 minutes. Labor progresses quickly and breech is delivered by the nurse. Meconium is noted. The preterm female baby cries weakly with stimulation but color and tone are poor. She is transferred to the nursery for stabilization and continuing care.
Elaine	Preeclampsia	Elaine is a 23 year old gravida 1/0 at 37 weeks. She weighs 140 lbs. She has had prenatal care. She complains of mind frontal headache. 3+tibial edema and 4+ DTRs with 2 beats clonus are noted.	Runs for 40 minutes. Progressive cervical change and fetal descent are noted during 9 hour induction. Fetal descent continues with little active pushing. FHTs show decreased variability and mild to moderate decelerations. Delivery is accompanied with outlet forceps. Female infant is dusky, limp and does not breathe spontaneously at delivery. Meconium is noted and a small amount is observed below vocal cords. Baby is suctioned and is eventually transferred to NICU for continued observation.
Francine	Cesarean Delivery	Francine is a 19 year old female gravida 2/1 at 37 weeks. She weighs 145 lbs. She has had prenatal care. She has STD, Herpes.	Runs for 10 minutes. Delivery of male infant is accomplished through a low transverse uterine incision. The infant exhibits good tone and cries spontaneously at delivery, peripheral.
Gloria	Cord Prolapse	Gloria is a 34 years old gravida 1/0 at 25 weeks. She weighs 190 lbs. She has had prenatal care.	Runs for 10 minutes. Gloria arrives at the hospital with ruptured membranes and an obviously prolapsed cord. Profound fetal bradycardia is noted. Delivery occurs almost immediately after the patient is moved to the delivery room. C&S is obtained and sent to pathology. The male infant is placed on infant warmer. His earns APGAR score
Helen	Hemorrhage	Helen is a 25 year old gravida 1/0 at 35 weeks. She weighs 180 lbs. She has had prenatal care.	Runs for 30 minutes. FHT remain WNL. Midline episiotomy is performed and the delivery is spontaneous. The placenta delivers but is not intact. Bimanual uterine exploration removes small amount of placental tissue. The male infant is pale and flaccid. He is covered with vernix and blood. Neonatal resuscitation is begun immediately.
Irene	Cesarean Delivery	Irene is a 19 year old gravida 2/0 at 29 weeks. She has had one spontaneous abortion.	Runs for 45 minutes. Sterile speculum exam indicates a shortened cervix with a cerclage in place. Fluid is noted in the vaginal vault and ferning is positive. Breakthrough contractions occur and sterile speculum reveals cervical change. Cerclage is removed. Fetal heart tones remain stable throughout the short labor. Spontaneous delivery occurs. The female infant born earns good APGARs.

NOELLE Advanced

Patient Name	Labor Type	History	Overview
Alyssa	Normal Labor	Alyssa is a 23 year old primip at term. She has received prenatal care in a multidisciplinary practice. Her general health is good and she has experienced no prenatal complications. She wants to have an unmedicated natural birth.	Runs for approximately 30 minutes. Simulates 8 hour labor without complications resulting in SVD over intact perineum. Baby is vigorous and earns good APGARS.
Angela	Normal Labor	Angela is a 31 year old grand multip. Even though she has had only a few contractions she came in anyway because she has a history of rapid labors.	Runs for approximately 30 minutes. Simulates normal labor and delivery of grand multip resulting in shorter labor duration.
Becca	Variations on Normal	Becca is a young pregnant teen who is living on the streets. She is a heavy smoker and drug user. She was seen twice in the Adolescent Clinic and referred to Social Services, but she only saw the social worker once and did not go to the follow-up appointment. The extremely precipitous delivery and patient's agitated state should point participants to order tox screen to check for illicit drug use.	Runs for approximately 18-22 minutes. Following ROM, nurse must support fetal head to prevent explosive delivery. Patient has retained secundes therefore bimanual exam is required. **Safety Note**: Instructor is required to reset motor before allowing learner to perform bimanual exam.
Bianca	Variations on Normal	Bianca is a 16 year old gravida 2/1. She had an elective abortion at age 13. She lives with her 17 year old boyfriend and has no contact with her family. She has been inconsistent with appointments at the teen clinic due to transportation issues.	Runs for approximately 30 minutes.La3-25 **Note**: To run full scenario, load Bianca at Admit from scenario tab. Instructor has to set up fetus with Nuchal chord prior to running scenario.
Candice	Shoulder Dystocia	Candice is a 19 year old multip. She and her boyfriend and 3-year-old daughter are homeless and currently living in a car. She has not seen a doctor, but believes that she is about 8 months pregnant.	Full scenario runs for approximately 23-25 minutes. Dystocia drill runs for 15 min. Labor progresses normally for about 6 hours, but after 45 minutes of pushing, patient is unable to bring vertex to perineum. A vacuum extractor is necessary to bring the head to the perineum. Patient is still unable to deliver. McRobert's, suprapubic pressure, Woods and Rubin maneuvers fail. Baby is finally delivered using Gaskin maneuver. **Note**: To run full scenario, load Candice Admit from scenario tab. To run dystocia drill only, load Candice from labor tab.
Charlotte	Shoulder Dystocia	Charlotte is a 31 year old gravida 3/1 at 41+5/7 weeks. Her physician stripped her membranes yesterday and she began contracting during the night. She is admitted in active labor.	Scenario runs for approximately 40 minutes. Baby is delivered after basic shoulder dystocia maneuvers such as McRoberts and stiff arm suprapubic pressure.

Patient Name	Labor Type	History	Overview
Dana	Breech Presentation	Dana is a 24 yr old multip @ 29 weeks who was admitted because she began contracting. Upon V/E physician discovers that she is 4-5cm with bulging membranes. She was given Terbutaline subQ and then transported to the regional medical center.	Runs for approximately 45 minutes. Instructor must set up baby for double footling breech delivery. To skip resolution of contractions portion of scenario, it is suggested that the instructor warp to around 20 minute mark on the timeline.
Demaris	Breech Presentation	Demaris is a young Hispanic teen who has received prenatal care in the Adolescent OB clinic. She kept the pregnancy a secret as long as was possible and did not attend any childbirth classes. Her plan is to return to high school while her mother cares for the baby. The baby's father will not accept any responsibility and does not wish to be involved.	Runs for approximately 30 minutes. Frank breech position has been confirmed by real time U/S. Patient refuses Cesarean delivery. Pinard maneuver must be utilized to bring the legs down. MLE is performed and baby is delivered.
Eleanor	Preeclampsia	The ER is notified that EMS is about 4 minutes away with a 19 year old pregnant, post-ictal patient named Eleanor. Her aunt found her convulsing in the bathroom and called 911. The aunt told the EMS providers that Eleanor was 8½ months pregnant with her first baby and that it was a difficult family situation. She added that Eleanor had just moved in with them and had not yet seen a doctor. The paramedic reports to the ER physician by radio that the patient is responsive only to pain. Her initial blood pressure is 180/120. The EMS crew applies a C-collar and move her onto a backboard for transport. The paramedic initiates ECG monitoring and does a genital exam before they move her. She notes a small amount of vaginal bleeding. The crew moves her to the ambulance and the paramedic starts an IV of LR and initiates oxygen @ 10L by non-rebreather mask. She monitors the ECG and VS during transport, and also tilts the backboard about 15º to the left with a blanket roll to decrease vena caval compression. Eleanor has no further seizure activity during transport, but her BP remains consistently 180/110. The ER notifies L&D about the patient and asks that an OB nurse come to the ER to assist.	Runs for approximately 20 minutes. Instructor must place C-collar on NOELLE simulator before beginning scenario. During delivery, patient has tonic-clonic seizure followed by tetanic contractions. Fetal baseline drops to approximately 60 bpm. SVD occurs very quickly. Infant is cyanotic and limp, and no respiratory effort is evident. Baby is pronounced dead after 20 minutes of resuscitation.

Patient Name	Labor Type	History	Overview
Erin	Preeclampsia	Erin is a 28 yr old @ 38 weeks admitted by her physician for preeclampsia. She is started on Magnesium sulfate per protocol, induced with pitocin and her membranes are ruptured. Light meconium staining is noted following AROM.	Runs for approximately 60 minutes. Upon induction of pitosin and rupture of membranes, instructor should tell participants to switch audio output on fetal monitors to FSE tones.
Faye	Cord Prolapse	Faye is a 34 year old gravida 1/0 @ 25 weeks' gestation. She had been involved with a married man and this unexpected and unwanted pregnancy caused a great deal of stress in her life. After much emotional upheaval, she decided to have the baby. The affair ended and she is no longer involved with the father of the baby. None of her family or friends are aware of the pregnancy. She began cramping about 3 hours ago and decided to drive herself to the hospital when she began leaking clear fluid. An admitting clerk helps her into a wheelchair and takes her to L&D.	Runs for approximately 20 minutes. Pro-lapsed cord is protruding into the vaginal opening. Faye is put into deep Trendelenburg position. There is no palpable cord pulsation and FHTs are not audible with Doppler. Upon VE, fetus presents as double footling breech and is already partially into birth canal. Therefore, baby has to be delivered vaginally. Fetus is non viable.
Frances	Cord Prolapse	Frances is admitted into a small town hospital due to regular contractions @ 4 minutes apart and bloody show. She labors without problems for about 4 hours and then the fetus starts to brady down after SROM. A V/E reveals a prolapsed coed in the vagina.	Runs for approximately 22-27 minutes. Instructor must set up prolapse cord prior to beginning scenario. Instructor may disconnect NOELLE simulator from power outlet and continue running scenario while transferring the NOELLE birthing simulator to the OR.
Gabriella	Uterine Rupture	Gabriella is a young Hispanic woman who presents to a small hospital just across the Mexican border. She is alone and speaks little English. Her nurse is fluent in Spanish, but Gabriella is very quiet and gives little information.	Runs for approximately 25 minutes. Shortly after admission, patient clutches her abdomen and fetal baseline bradys down to the 80s. Patient becomes very pale and diaphoretic. BP drops to 80/60 and pulse is 120. She suffers heavy vaginal bleeding. Patient is rushed for emergency C-Section. Baby is limp and severely depressed, needs to be intubated and ventilated.
Gail	Uterine Rupture	Gail is a 29 year old primip @ 35 weeks. She was admitted to L&D from the ER after being involved in car accident. Both she and her husband, Alan, were seriously injured and she is on a backboard wearing a c-collar to stabilize the spine. Her right humerus is fractured and seat belt marks are visible across the abdomen.	Runs for approximately 181-20 minutes. Use file sharing feature to display pictures of C-spine x-ray as patient was involved in car crash.

Patient Name	Labor Type	History	Overview
Haley	Peripartum Hemorrhage - Previa	Haley is a 33yr old G2 @ 35 weeks. Previous U/S revealed a low lying placenta and this is the 5th time in 11 weeks she been admitted for bleeding. This time the bleeding is is heavier and is not resolving. Her OB is on the way to the hospital; bi-manual palpation shows the uterus to be soft and non-tender.	Runs for approximately 15 minutes. Instructor must set up for partial placenta previa. Instructor must fill hemorrhage kit with fluids before running the scenario
Heidi	Peripartum Hemorrhage - Previa	Heidi is a 25 yr old primip @ 35 weeks. She has experienced several mild bleeding episodes during pregnancy and is known to have a low lying placenta. She arrives in L&D complaining of abdominal cramps and has bright red vaginal bleeding.	Runs for 35-45 minutes. This scenario utilizes a vaginal delivery even though there is a low lying placenta. Instructor has option to run a linear or a branching postpartum section of the scenario. Instructor must fill hemorrhage kit with fluids before running the scenario
India	Peripartum Hemorrhage - Abruption	India is a 19 yr old gravida 2 @ 37 weeks. She arrives at hospital with her husband who says she fell down the stairs and she has been cramping and bleeding for about an hour. During admitting interview husband answers all the questions and India doesn't make eye contact. The nurse palpates uterus, initiates fetal monitoring and starts a pad count.	Runs for approximately 25 minutes. This scenario is a suspected spousal abuse case. Patient has a central abruption of the placenta. Instructor must fill hemorrhage kit with fluids before running the scenario.
Inez	Peripartum Hemorrhage - Abruption	Inez is a 27 yr old primip @ 35 weeks. She arrives at hospital one evening crying and doubled over in pain. She is admitted to a birthing room and the nurse notices bright red blood on Inez's panties. She is having very intense and close contractions.	Runs for approximately 18 minutes. This scenario involves a precipitous delivery with heavy bleeding due to placental abruption. Abruption was brought on by use of alcohol and cocaine. Instructor must fill hemorrhage kit with fluids before running the scenario.
Janie	Peripartum Hemorrhage/PPH	Janie is a 23 yr old G 2 @ 38 weeks. She has experienced several bleeding episodes due to a low lying placenta. She has been counseled about the potential for postpartum hemorrhage. Her religious beliefs prohibit the administration of any blood products.	Runs for approximately 25 minutes. Even though patient suffers heavy blood loss, blood products are not to be used so alternative methods must be found. Instructor must fill hemorrhage kit with fluids before running the scenario.

Patient Name	Labor Type	History	Overview
June	Peripartum Hemorrhage/PPH	June is a 31 year old who is about to deliver her 5th baby. She has had a normal pregnancy and plans natural childbirth and breastfeeding. Her husband and oldest daughter attended the CBE refresher course and she has arranged for the 11 year old to attend the delivery.	Full scenario runs approximately for 22-25 minutes. PPH runs for 8-10 minutes. Labor and delivery progress uneventfully. Heavy bleeding begins immediately upon delivery of placenta. Uterus remains atonic despite Fundal massage and rapid pitosin infusion. Patient's BP drops to 80/50 and uterus begins to clamp down following Cytotec rectal insertion. **Note:** Running full scenario requires retraction of motor mechanism and insertion of PPH kit following delivery. To run PPH only, load June PPH from the scenario tab.
Kelly	Amniotic Fluid Embolism	Kelly is a 34 year old gravida 5/2 @ 38 weeks. She is scheduled for an induction due to problems with her last pregnancy. That baby weighed almost 10 pounds, and she had experienced a severe shoulder dystocia with the delivery. She has gained 43 pounds with this pregnancy and her glucose tolerance test (GTT) is borderline. An ultrasound a few days ago estimated current fetal weight at 3800 to 4000 grams. Kelly's physician feels that her cervix is favorable, so he has recommended an elective induction.	Runs approximately for 35-40 minutes. Shortly following SROM, Kelly begins having mild variable decels that are associated with contractions. Over the next few minutes, variables become more severe. Kelly vomits and begins gasping then suddenly becomes unresponsive. Decels now have late characteristics. She is given SQ Terbutaline and fetal baseline drops to 90. She is intubated and very difficult to ventilate. Patient develops VFib and then arrests. Baby is removed by emergency C-Section. Kelly remains on a ventilator. Baby is limp and unresponsive and requires resuscitation, and suffers repetitive seizure activity.
Kimberly	Amniotic Fluid Embolism	Kimberly is a 27 yr old multip @ 42 weeks. She began having contractions at home and now they are becoming stronger. She is excited to be finally going into labor. By the time the nurse completes admission Kimberly is requesting pain meds as her labor is progressing quickly.	Runs for approximately 30 minutes. In this scenario, patient has an AFE and resuscitation efforts are in vain. Fetus is delivered via perimortem C-section.
Madonna	Preterm Labor	Madonna is a 41 year old multip @ 31 weeks. She has experienced difficult pregnancies in the past and has one Downs Syndrome baby, so she is very apprehensive. An early U/S and genetic studies showed this baby to be a normal female. She has had several episodes of preterm contractions that resolved with LLP bed rest and oral hydration. She began contracting again 3 hours ago and again tried LLP bed rest and oral hydration, but the contractions have continued & become stronger.	Runs for approximately 35 minutes. Patient starts having contractions and is given SQ Terbutaline to stop contractions. She begins to have unfavorable reactions to the drug, and contractions break through about 30 minutes later. Another dose of Terbutaline is given, and her reaction is worse, and contractions break through yet again. Eventually, she's given Procardia which resolves the contractions and does not give adverse reactions.

Patient Name	Labor Type	History	Overview
Maria	Preterm Labor	Maria is a 30 yr old multip @ 27 weeks. She has an 11 yr old and has been trying for more children. She has had 2 miscarriages in the last 4 years and she lost both due to an incompetent cervix. This time a McDonalds suture was placed @ 14 weeks.	A run for approximately 15 minutes and it is a tocolysis emergency. Patient has reaction to overmedication of magnesium sulfate.

Automatic Mode

Quick Start NOELLE Modeling

Patient Name	Labor Type	History	Overview
Alyssa	Normal Labor	Alyssa is a 23-year-old primip at term. She has received prenatal care in a multidisciplinary practice. Her general health is good and she has experienced no prenatal complications. She wants to have an unmedicated natural birth.	Runs for approximately 30 minutes. Simulates 8 hour labor without complications resulting in SVD over intact perineum. Baby is vigorous and earns good APGARS.
Becca	Variations on Normal	Becca is a young pregnant teen who is living on the streets. She is a heavy smoker and drug user. She was seen twice in the Adolescent Clinic and referred to Social Services, but she only saw the social worker once and did not go to the follow-up appointment. The extremely precipitous delivery and patient's agitated state should point participants to order tox screen to check for illicit drug use.	Runs for approximately 18-22 minutes. Following ROM, nurse must support fetal head to prevent explosive delivery. Patient has retained secundes therefore bimanual exam is required. **Safety Note**: To run full scenario, load Becca Sedation from the scenario tab. Instructor is required to reset motor before allowing learner to perform bimanual exam.
Candice	Shoulder Dystocia	Candice is a 19-year-old multip. She and her boyfriend and 3-year-old daughter are homeless and currently living in a car. She has not seen a doctor, but believes that she is about 8 months pregnant.	Full scenario runs for approximately 23-25 minutes. Dystocia drill runs for 15 min. Labor progresses normally for about 6 hours, but after 45 minutes of pushing, patient is unable to bring vertex to perineum. A vacuum extractor is necessary to bring the head to the perineum. Patient is still unable to deliver. McRobert's, suprapubic pressure, Woods and Rubin maneuvers fail. Baby is finally delivered using Gaskin maneuver. **Note**: To run full scenario, load Candice Admit from scenario tab. To run dystocia drill only, load Candice from labor tab.
Demaris	Breech Presentation	Demaris is a young Hispanic teen who has received prenatal care in the Adolescent OB clinic. She kept the pregnancy a secret as long as was possible and did not attend any childbirth classes. Her plan is to return to high school while her mother cares for the baby. The baby's father will not accept any responsibility and does not wish to be involved.	Runs for approximately 30 minutes. Frank breech position has been confirmed by real time U/S. Patient refuses Cesarean delivery. Pinard maneuver must be utilized to bring the legs down. MLE is performed and baby is delivered.

Patient Name	Labor Type	History	Overview
Eleanor	Preeclampsia	The ER is notified that EMS is about 4 minutes away with a 19-year-old pregnant, post-ictal patient named Eleanor. Her aunt found her convulsing in the bathroom and called 911. The aunt told the EMS providers that Eleanor was 8½ months pregnant with her first baby and that it was a difficult family situation. She added that Eleanor had just moved in with them and had not yet seen a doctor. The paramedic reports to the ER physician by radio that the patient is responsive only to pain. Her initial blood pressure is 180/120. The EMS crew applies a C-collar and moves her onto a backboard for transport. The paramedic initiates ECG monitoring and does a genital exam before they move her. She notes a small amount of vaginal bleeding. The crew moves her to the ambulance and the paramedic starts an IV of LR and initiates oxygen @ 10L by non-rebreather mask. She monitors the ECG and VS during transport, and also tilts the back-board about 15º to the left with a blanket roll to decrease vena caval compression. Eleanor has no further seizure activity during transport, but her BP remains consistently 180/110. The ER notifies L&D about the patient and asks that an OB nurse come to the ER to assist.	Runs for approximately 20 minutes. Instructor must place C-collar on NOELLE simulator before beginning scenario. During delivery, patient has tonic-clonic seizure followed by tetanic contractions. Fetal baseline drops to approximately 60 bpm. SVD occurs very quickly. Infant is cyanotic and limp, and no respiratory effort is evident. Baby is pronounced dead after 20 minutes of resuscitation.
Faye	Cord Prolapse	Faye is a 34 year old gravida 1/0 @ 25 weeks' gestation. She had been involved with a married man and this unexpected and unwanted pregnancy caused a great deal of stress in her life. After much emotional upheaval, she decided to have the baby. The affair ended and she is no longer involved with the father of the baby. None of her family or friends are aware of the pregnancy. She began cramping about 3 hours ago and decided to drive herself to the hospital when she began leaking clear fluid. An admitting clerk helps her into a wheelchair and takes her to L&D.	Runs for approximately 20 minutes. Prolapse cord is protruding into the vaginal opening. Faye is put into deep Trendelenburg position. There is no palpable cord pulsation and FHTs are not audible with Doppler. Upon VE, fetus presents as double footling breech and is already partially into birth canal. Therefore, baby has to be delivered vaginally. Fetus is non-viable.

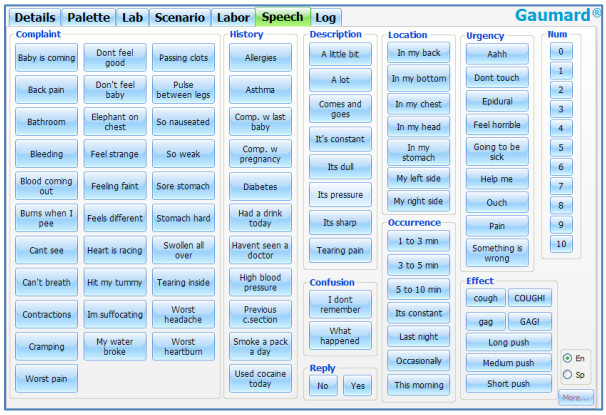
Patient Name	Labor Type	History	Overview
Gabriella	Uterine Rupture	Gabriella is a young Hispanic woman who presents to a small hospital just across the Mexican border. She is alone and speaks little English. Her nurse is fluent in Spanish, but Gabriella is very quiet and gives little information.	Runs for approximately 25 minutes. Shortly after admission, patient clutches her abdomen and fetal baseline bradys down to the 80s. Patient becomes very pale and diaphoretic. BP drops to 80/60 and pulse is 120. She suffers heavy vaginal bleeding. Patient is rushed for emergency C-Section. Baby is limp and severely depressed, needs to be intubated and ventilated. To run Caesarian only, load Gabriella Caesarian from the scenario tab.
June	Peripartum Hemorrhage/PPH	June is a 31 year old who is about to deliver her 5th baby. She has had a normal pregnancy and plans natural childbirth and breastfeeding. Her husband and oldest daughter attended the CBE refresher course and she has arranged for the 11 year old to attend the delivery.	Full scenario runs approximately for 22-25 minutes. PPH runs for 8-10 minutes. Labor and delivery progress uneventfully. Heavy bleeding begins immediately upon delivery of placenta. Uterus remains atonic despite fundal massage and rapid pitosin infusion. Patient's BP drops to 80/50 and uterus begins to clamp down following Cytotec rectal insertion. **Note:** Running full scenario requires retraction of motor mechanism and insertion of PPH kit following delivery. To run PPH only, load June PPH from the scenario tab.
Kelly	Amniotic Fluid Embolism	Kelly is a 34 year old gravida 5/2 @ 38 weeks. She is scheduled for an induction due to problems with her last pregnancy. That baby weighed almost 10 pounds, and she had experienced a severe shoulder dystocia with the delivery. She has gained 43 pounds with this pregnancy and her glucose tolerance test (GTT) is borderline. An ultrasound a few days ago estimated current fetal weight at 3800 to 4000 grams. Kelly's physiccian feels that her cervix is favorable, so he has recommended an elective induction.	Runs approximately for 35-40 minutes. Shortly following SROM, Kelly begins having mild variable decels that are associated with contractions. Over the next few minutes, variables become more severe. Kelly vomits and begins gasping then suddenly becomes unresponsive. Decels now have late characteristics. She is given SQ Terbutaline and fetal baseline drops to 90. She is intubated and very difficult to ventilate. Patient develops VFib and then arrests. Baby is removed by emergency C-Section. Kelly remains on a ventilator. Baby is limp and unresponsive and requires resuscitation, and suffers repetitive seizure activity. Select "Kelly Resuscitation" from the scenario tab to run resuscitation drill only

Patient Name	Labor Type	History	Overview
Madonna	Preterm Labor	Madonna is a 41 year old multip @ 31 weeks. She has experienced difficult pregnancies in the past and has one Downs Syndrome baby, so she is very apprehensive. An early U/S and genetic studies showed this baby to be a normal female. She has had several episodes of preterm contractions that resolved with LLP bed rest and oral hydration. She began contracting again 3 hours ago and again tried LLP bed rest and oral hydration, but the contractions have continued & become stronger.	Runs for approximately 35 minutes. Patient starts having contractions and is given SQ Terbutaline to stop contractions. She begins to have unfavorable reactions to the drug, and contractions break through about 30 minutes later. Another dose of Terbutaline is given, and her reaction is worse, and contractions break through yet again. Eventually, she's given Procardia, which resolves the contractions and does not give adverse reactions.
NOELLE		NOELLE is a 27-year-old female, weighing 155 pounds (W/Gain: 25). Her significant other is Hal. Her OB history shows a Gravida of 1, a term of 0, a preterm of 0, and that she is currently 40 weeks pregnant; she has had 0 spontaneous abortions, 0 elective abortions and 0 living children. She has had no prenatal care. She has been currently using no medications of any kind. Her medical records show she has: no previous history. Her treatment history includes none.	Runs for approximately 60 minutes.

Speech

Prerecorded Sounds

NOELLE has over 90 pre-recorded expressions, which can be initiated with a single click on the Speech page. The collection of speech and other sounds was chosen to cover a wide range of simulated emergencies.

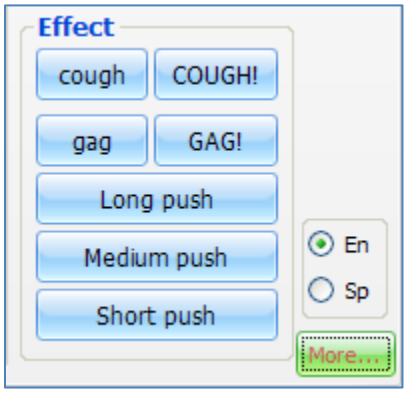


For ease of use, NOELLE's expressions are divided into categories: complaints, history, description, confusion, reply, location, occurrence, urgency, effect and numbers. These categories are labeled in blue on the speech page. Any of the speech items listed on the Speech page can be incorporated into labor and post-partum scenarios.

Streaming Audio (If factory installed)

Streaming audio makes simulation even more realistic. It allows the facilitator to hear everything the providers are discussing around the simulator. At the same time, the facilitator can interact as the patients voice for the provider t. The instructor will also be able to record his own speech phrases that can be used at any given time or within a scenario.

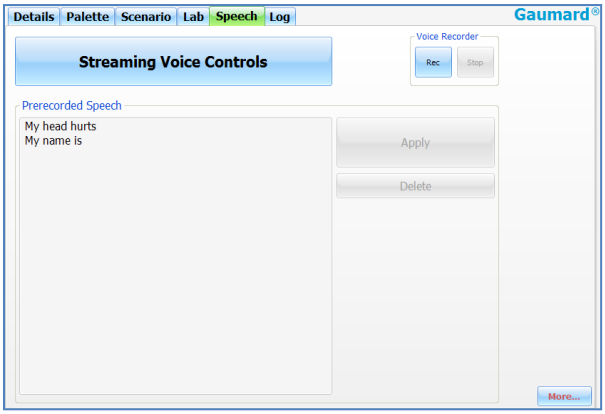
The streaming audio controls can be accessed by clicking on the “More” button in the lower right corner of the “Speech” tab.



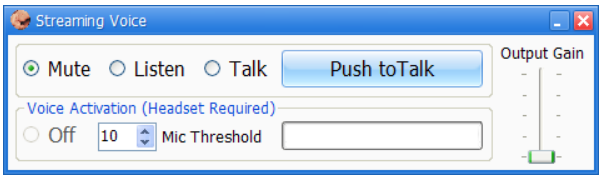
Please verify that the simulator is connected by serial number on the Setup> Options> Environment FIXED field to access the more button.

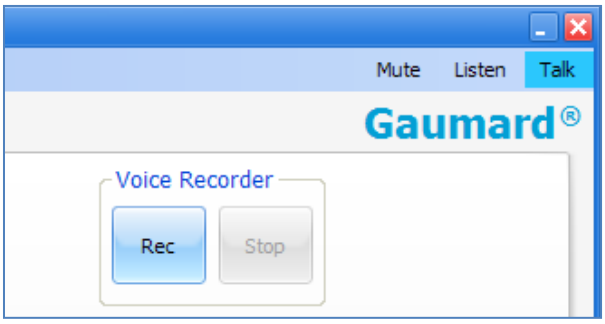
Streaming Voice Control window

Streaming Voice Controls: This button opens a new dialog box that is available to the user at all times. Selections on that dialog box include “Mute,” “Listen,” and “Talk”. Select “Mute” to stop the communication; “Listen” to hear what providers are saying, or “Talk” to speak to the providers as the simulator’s voice.



Mute, Listen and Talk controls are always available on the top right corner of the user interface.





It is recommended that the instructor uses a headset to improve sound quality. The headset also allows the user to use the “Voice Activation” so that at any time the instructor wishes to speak, it is sent directly to the simulator without user intervention.

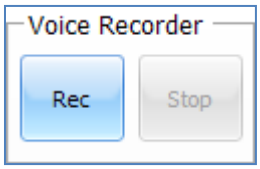
The voice activation threshold can be adjusted. The “Mic Threshold” is used to adjust how sensitive the microphone is to the user’s voice. The higher the threshold, the less sensitive the microphone is; and vice versa. For instance, if the threshold is set to high, users must speak loudly for the microphone to detect the audio.

Voice Clarity

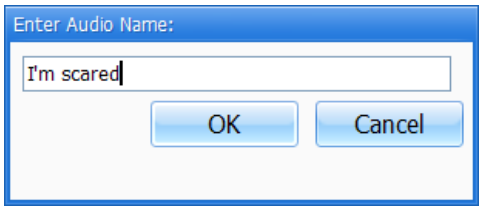
To achieve better clarity:

- Verify that the physical MIC control on your headset is set to high.
- Enable “Microphone boost” from the Windows® setting.
- Use the “Output Gain” to increase the microphone volume as a last resource. To raise the output gain in increments, tap and hold the control, then slide to the desired level.

Voice Recorder: The instructor is able to record his/her own speech phrases at any time. Once the instructor clicks on the “Rec” button the software automatically starts capturing everything that is said into the microphone.

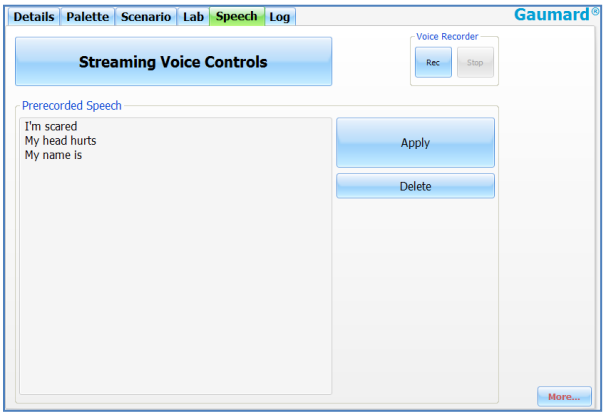


Press “Stop” to finish recording. Use the Enter Audio Name window to name the speech phrase.



Enter a name and click “OK.” The phrase will now be accessible under the “Prerecorded Speech” menu.

Prerecorded Speech: On this section the instructor is able to play any of the custom phrases by either typing on the text box or clicking on the menu option. Once a phrase is selected, it can be played as the simulator’s voice or deleted.



More...: If the instructor wishes to play any of the Simulator’s prerecorded speech phrases, he will need to click on the “More...” button located on the bottom right corner of the Speech page.

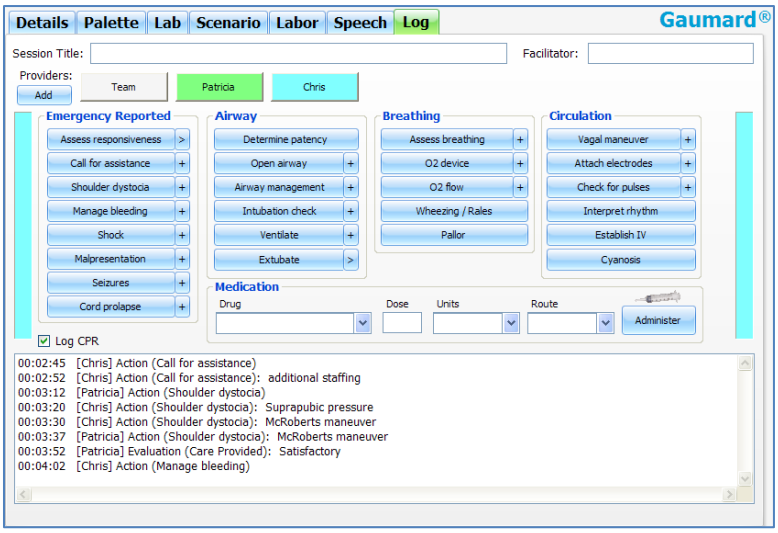
Technical considerations for improved Communication Range and Sound Quality

- Streaming audio doesn’t reach as far as normal data. It has a range of up to 300 ft (150 meters) line of sight between simulator and PC. Keep Tablet PC as steady as possible and point it to simulator to get the best possible range.
- When more than one Gaumard tetherless simulator is in the vicinity, try to allocate one channel in between to avoid interference (see ‘Options and more’ section in your simulator manual)
- At any time the user can change the sound volume for sending and receiving. To change volume at simulator’s end, change the tablet’s microphone gain. To change volume on the tablet, use the speaker volume control.
- See troubleshooting section in the manual for more info.

To increase the microphone volume, go to page 248 in the Appendix.

Log

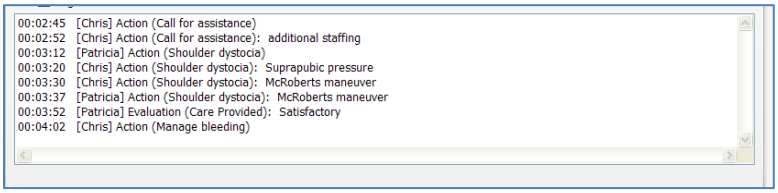
The Log page allows the facilitator (Instructor or tablet operator) to keep track of every event during a session. It automatically creates an entry whenever a detected event occurs as well as every change in the condition of the patient. In addition, the facilitator can enter observed provider actions to the log with a simple click.



The Log page consists of four different areas (from bottom to top): the text log, provider action buttons, team logging buttons, and session info.

Text Log

This is the large panel at the bottom of the Log page, containing all of the time-stamped text entries. Every event that occurs in a session is recorded as an entry in the Text Log. The types of entries recorded by the log are categorized as follows: Actions, Applied Changes, Detected Events, Evaluations, Speech, and Notes.



Actions

The term actions refers to tasks performed, by one or more of the providers, on the simulator during the session. The facilitator can quickly log actions from the Provider Actions section of the log page. To assign the entry to a particular provider or to the team in general the instructor may utilize the Team Logging feature. The following is an example of an unassigned Action entry:

"00:07:24 Action (Assess responsiveness)"

Applied Changes

An “Applied” log entry occurs automatically every time a change is applied to the physiological condition of the simulator. In other words, each time changes are applied to the simulator from the Details page, the Palette page, or from a Scenario a log entry similar to the following is created:

"00:04:01 Applied (00:30): Details: Rhythm Sinus; Cardiac event 0; HR 80;"

Detected Events

Each time one of the various sensors within the simulator detects a provider action, it is automatically logged as a “Detected” entry. These actions include intubation, BP cuff placement, artificial ventilations, chest compressions, and electrical therapy (pacing, defibrillation, cardioversion, inappropriate shock). The following example shows a detected log entry after a provider attempts to defibrillate:

"00:03:26 Detected (defibrillation): Shock # 2 - 300 Joules."

Evaluations

Evaluations are added by the facilitator clicking on the “Satisfactory” or “Unsatisfactory” buttons on the Evaluation panel. The Evaluation panel is present at the bottom of the screen next to the clocks panel and is accessible at all times. Team Logging allows the facilitator to evaluate individual providers with a single click. For example, if provider Charles Parker performed a procedure satisfactorily, the Evaluation entry would be:

"00:07:43 [Charles Parker] Evaluation (Care Provided): SATISFACTORY"

Speech

When the facilitator makes NOELLE speak by pressing buttons on the Speech page, an entry into the text log is automatically generated:

"00:18:10 Speech (Urgency): "Don't touch me"

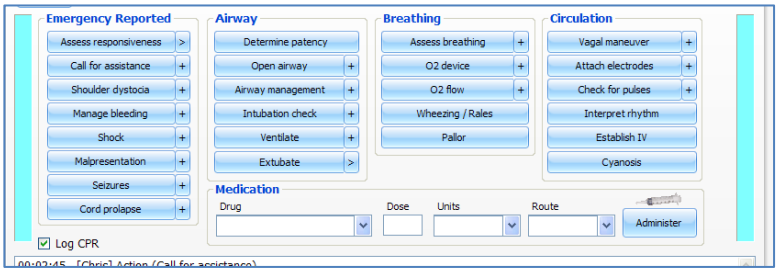
Notes

Notes can be entered directly from the Evaluation panel or by right-clicking on the text log at any time by the facilitator. Note entries display each and every character the facilitator types into the text box. The following is an example of a Note entry:

"00:10:10 Note: provider took too long to assess patient."

Provider Actions

The Provider Actions section refers to the collection of buttons in the middle of the log page. These buttons permit the facilitator to accurately and quickly track common provider actions.



The buttons are categorized into five groups: Emergency Reported, Airway, Breathing, Circulation, and Medication. Any time the facilitator clicks one of the buttons, a time-stamped log entry is generated documenting the action. For example, if the “Assess responsiveness” button is clicked when the session clock reads 00:07:24, the following entry is automatically generated:

"00:07:24 Action (Assess Responsiveness)"

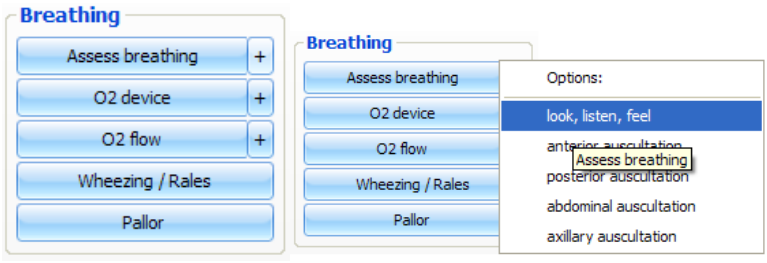
Special Buttons

Some provider-action buttons are accompanied by a special option button.

The first special button, " **+** ", lets the facilitator be a log actions in more detail. For example, if the button "Assess breathing" is clicked, the following entry is created:

"00:01:28 Action (Assess breathing)"

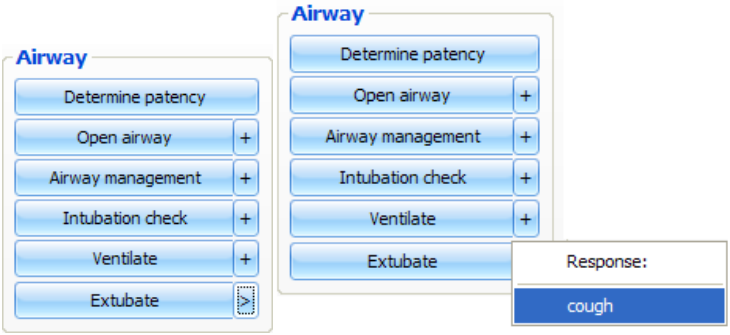
On the other hand, if the " **+** " button next to "Ventilate" is clicked, a list of additional options appears. The facilitator can be more specific and choose, for example, "look, listen, feel"...



...and the following entry is added:

"00:01:28 Action (Ventilate): look, listen, feel"

The second special button, " **>** ", allows pre-programming common responses to specific actions. For example, the facilitator can pre-program normal respiratory sounds and re-enable the lungs when the provider performs a needle decompression.

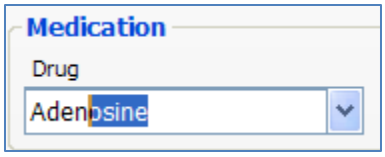


When the "extubate" button is, the following entry is created:

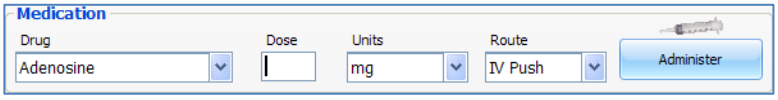
"00:01:28 Action (Extubate): cough"

Medications (Manual Mode Only)

The Medications section allows for quick and easy logging of drug administration, including dosage and route. The software comes preloaded with a set of commonly used drugs. Each of these drugs has a default dosage unit and a default route for administration (which can be overwritten by just typing over it). For example, Adenosine has the default dosage unit of "mg" and the default route is "IVP" (intravenous push). In order to enter, an administered dose 6 mg of adenosine via IVP, the facilitator need only enter the text "ad", which prompts the software to automatically search the drug list and display the best match (if any).



After a drug has been selected, the action of clicking on the “dose” text field, the units and route fields with the default values for that particular drug are filled automatically.

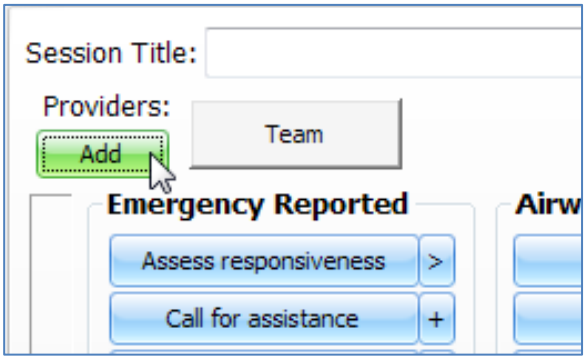


The facilitator then enters the dose and clicks on the “Administered” button prompting the event to be recorded in the log. Following the example, suppose the dose entered was “6”:

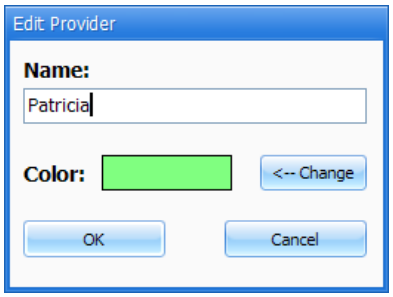
"00:05:43 Action (Medication Administered): Adenosine, 6 mg, IVP"

Team Logging

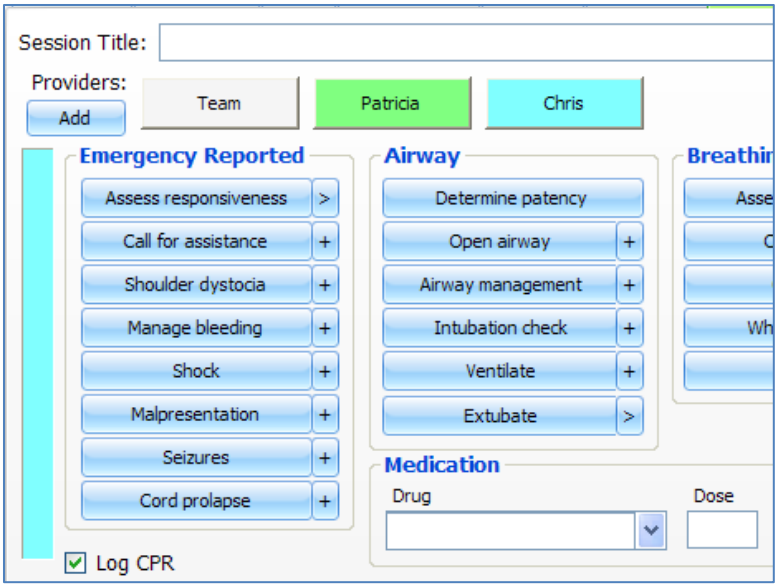
The Team Logging feature allows the facilitator to designate which member of the team performed a particular action. The Team Logging section is right above the Provider Actions section on the Log page.



Before beginning a session, the facilitator can add the names of all providers in the team to the team log. This is done by clicking on the **Add** button and filling in the **Add Provider** name field.



As shown in the Log page image, a colored button is inserted onto the Team Logging region for the provider just added. The software allows up to six different providers, each with a corresponding button to be entered. Each time one of the provider buttons is clicked, the indicated person becomes the active provider in the evaluation window.



The colored vertical bars on either side of the log text box will match the color that is coded to the chosen provider. On the Log page image, above, **Chris** is the active provider, so the vertical bars are turquoise . Notice that Patricia, who has a green colored button, is not the active provider. While there is an active provider, every time a Provider Action or Evaluation log entry is created it will have the name of the provider prefixed to it as follows:

"00:07:41 [Chris] Action (Check for pulses): radial"

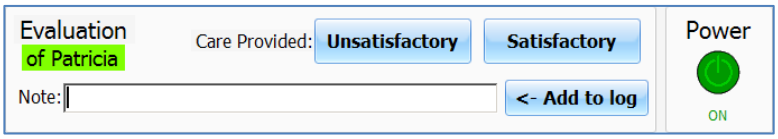
To deactivate this feature, deselect the active provider, and return to general logging, click the “Team” button and the vertical bars will return to neutral color. All provider buttons can be edited or deleted by right-clicking them and selecting an option from the menu that appears.

Session Information

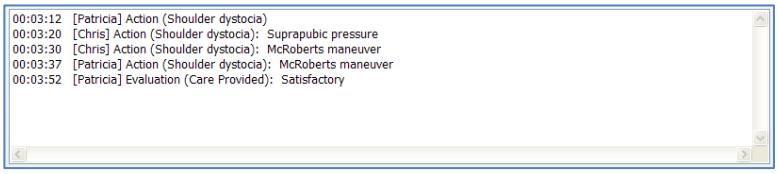
The session info area contains the “Session Title” and “Facilitator” fields at the top of the page. At the beginning of each training session the session title and facilitator fields can be filled in and the information contained in them is stored with the text file when the log is saved or printed.

Evaluation

The Evaluation panel, always visible at the bottom of the GaumardUI window, allows the facilitator to insert standard evaluations or other relevant notes into the log. The stylus device and hand-writing recognition technology makes annotation in real-time rapid and convenient.



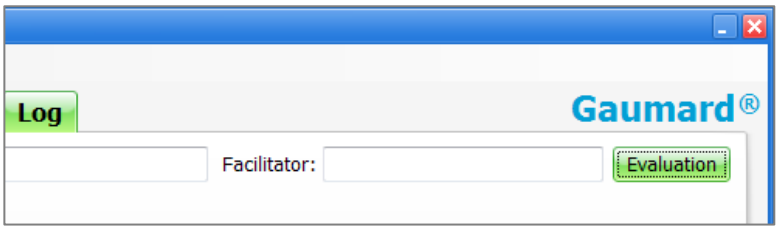
Standard evaluations (satisfactory or not) are given context by their position in the log relative to detected and observed provider actions. The following example illustrates this idea.



The evaluation panel is part of the team-logging system, described previously. When a particular provider is selected, log entries generated via the Evaluation panel will be prefaced with the provider's name. For more information on Team Logging, see the previous section of this guide on Logging.

Evaluation Form

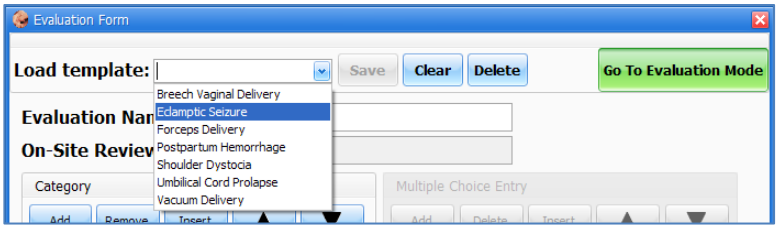
The evaluation tool assists facilitators in reporting and assessing provider interaction using a questionnaire form. A completed evaluation form can then be stored as a digital document or printed for distribution.



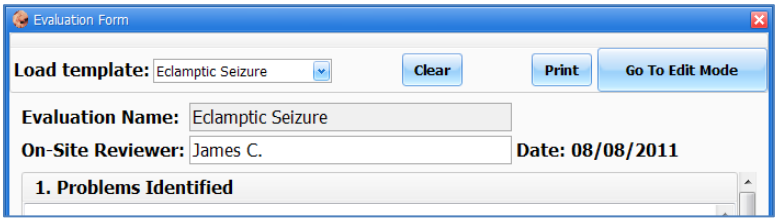
Using built in evaluation templates

Several evaluation templates are built-in to GaumardUI's evaluation tool. Each template includes a set of multiple choice questions related to the type of assessment being performed.

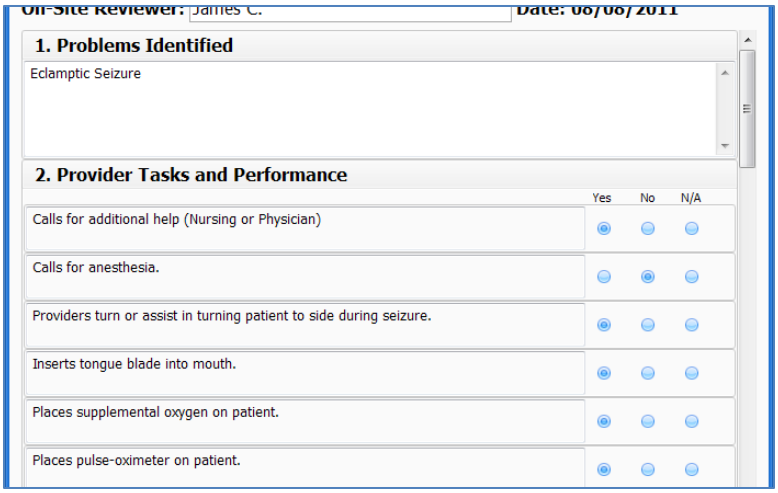
To begin, select an evaluation template from the **Load Template** dropdown. New templates created in the edit mode will also be listed.



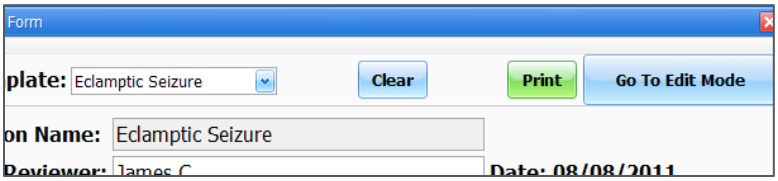
Enter the name of the facilitator performing the review in the **On-Site Reviewer** field.



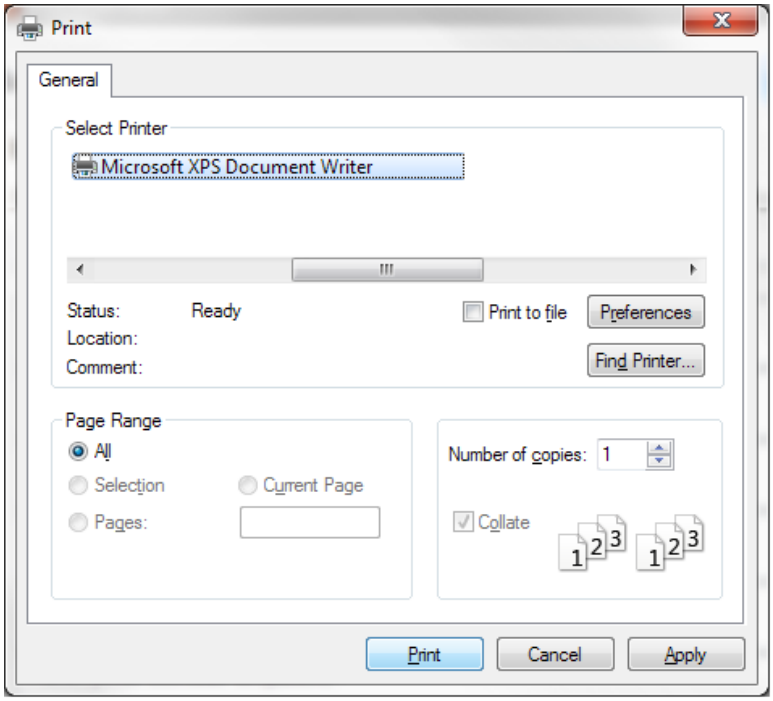
Complete the form by first entering the written response in the “Problems Identified” field and selecting the applicable multiple choice responses throughout.



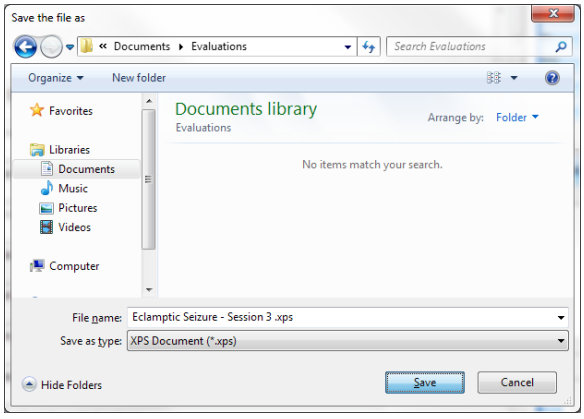
Once the evaluation is completed, click the **Print** button located at the top right corner of the screen.



To save the finished evaluation as digital document, select **Microsoft XPS Document writer** and click **Print**. It is recommended that documents are first saved as XPS files before being printed into hard copies.

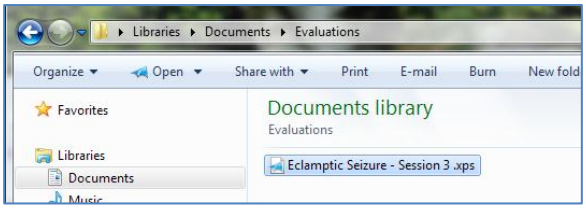


Enter the name of the evaluation, Select a location and click **Save**.

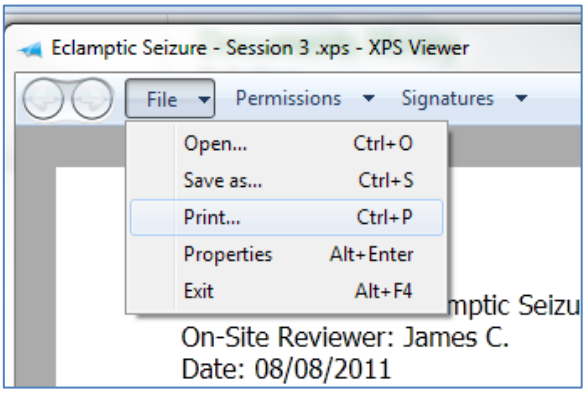


Printing an evaluation

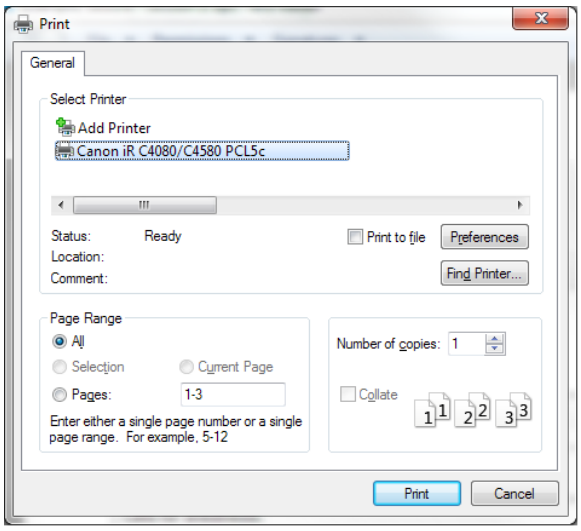
If a print device is connected to the tablet, first select and open the evaluation document saved in the previous step.



In the XPS Viewer, navigate to the file menu and select print.



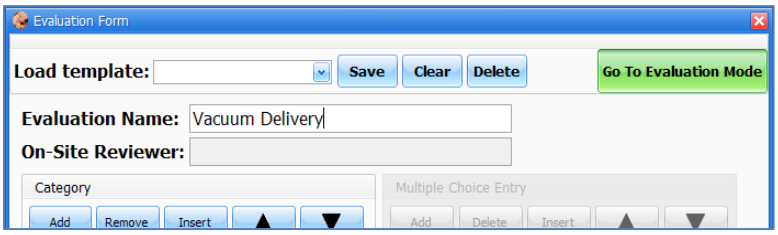
Select the printer device from the list box and click **print**.



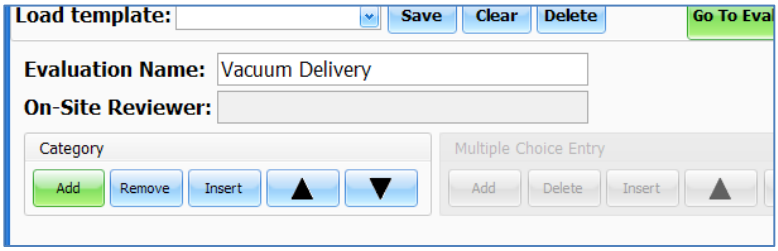
Creating new evaluation templates

Each evaluation is based on an evaluation template. Facilitators can create new evaluation templates to tailor specific assessments. Template design and creation is done in the evaluation form **edit mode**. To enter the edit mode, toggle the Go To button located on the top right of the evaluation form window.

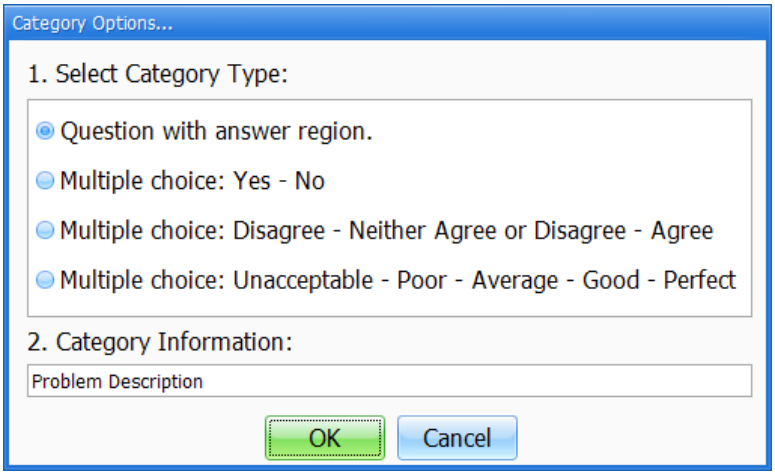
In edit mode, enter the name of the evaluation template in the **Evaluation Name** field.



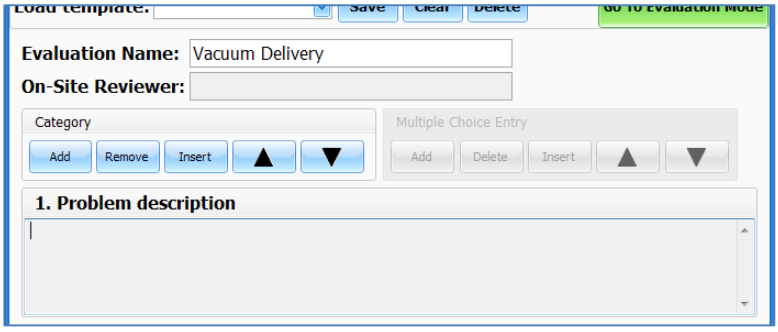
From the **Category** menu, click **Add**.



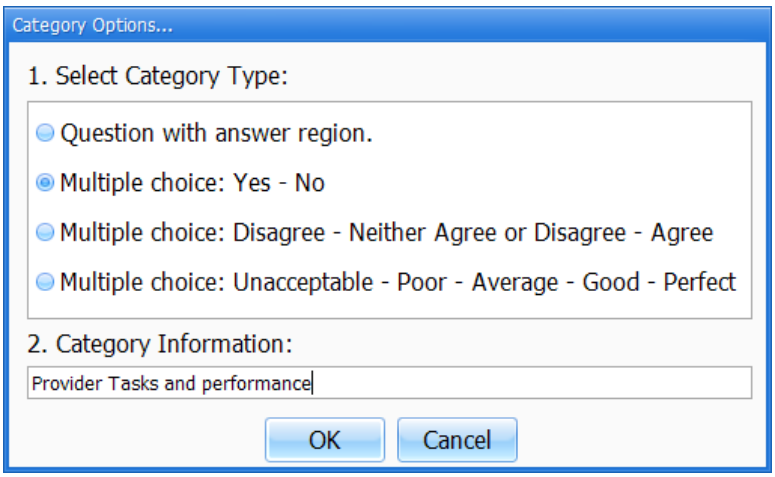
Select the **Question with answer region** category type and enter the category information title. To save the changes, click **OK**.



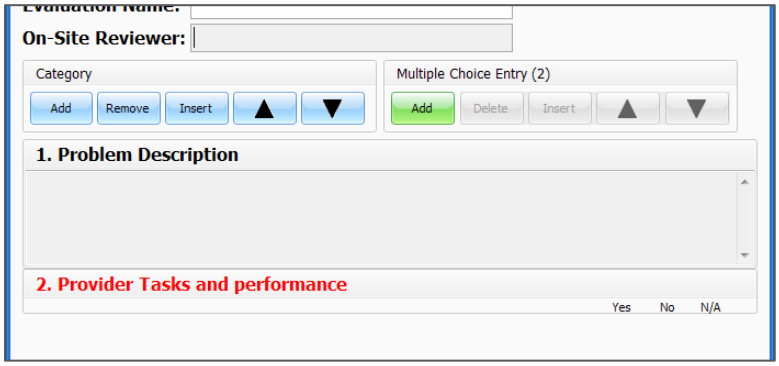
The newly created category is shown.



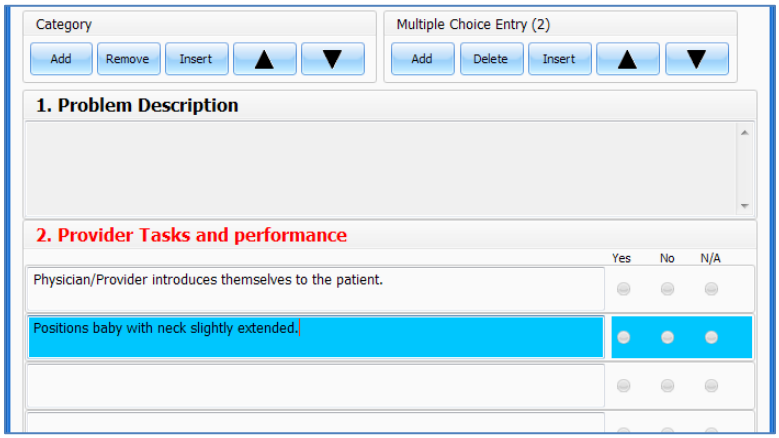
Click, **Add** to include another category. Select the **Multiple choice** category type, enter the category information title and click **OK**.



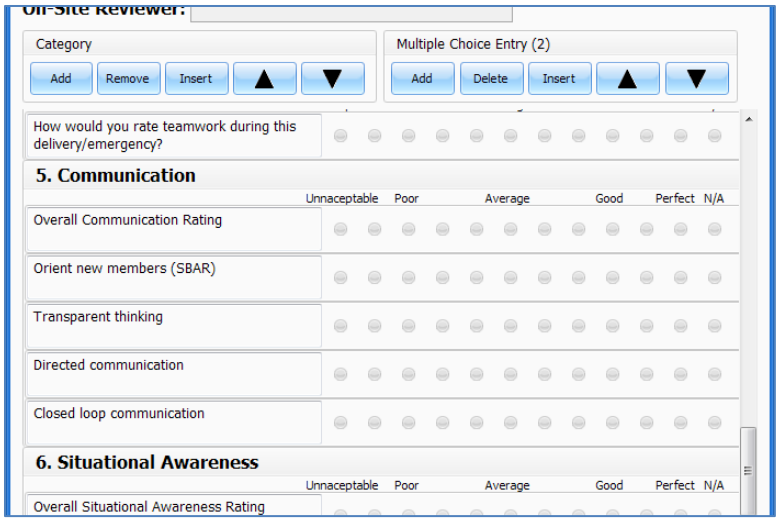
Highlight the **Provider tasks and performance** category and then click **Add** from the **Multiple Choice Entry** menu.



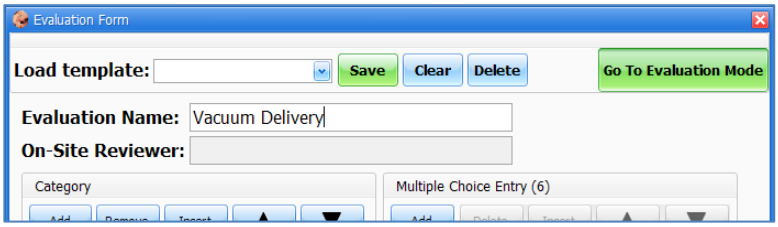
Enter the multiple choice information in the entry fields.



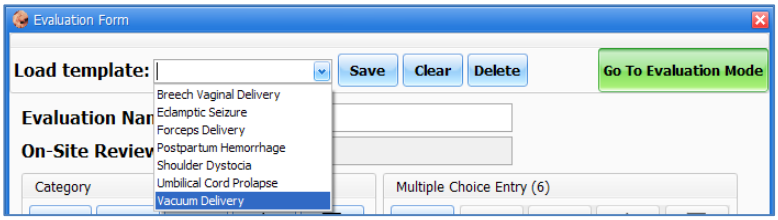
Repeat the previous steps to add more categories, questions and multiple choice options.



After the evaluation template design is complete, click **Save** at the top of the window.

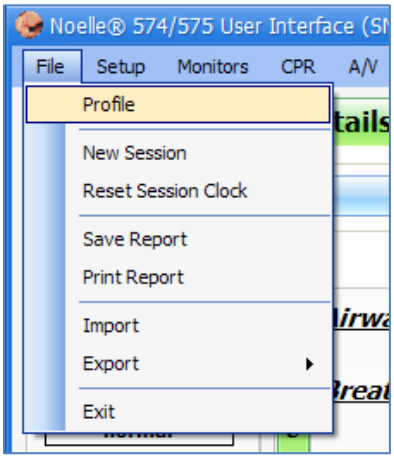


Finally, select the new template from the Load template drop down to use the completed evaluation form.



Menus

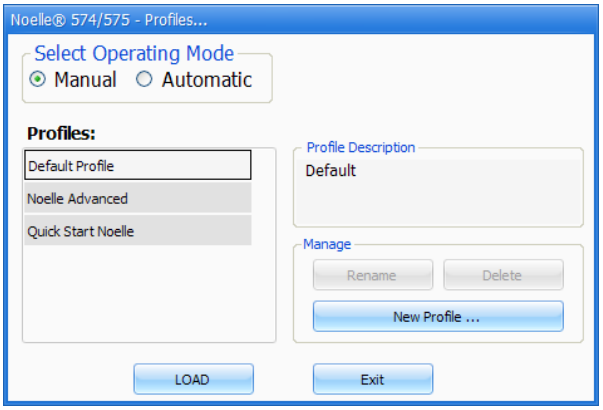
File



Profile

This option allows you to change your current profile.

The profile window is displayed:



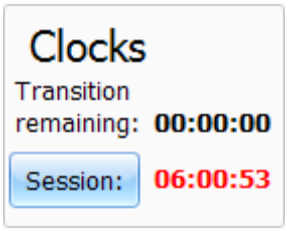
The profiles dialog box displays the available profiles. A software restart is not necessary to switch between profiles.

New Session

Clicking New Session in the file menu will:

- Clear any loaded/playing scenario
- Clear any loaded/playing palette
- Reset vital signs to normal values
- Clear out log page
- Restart the session clock.

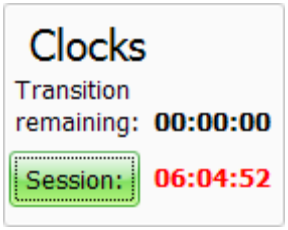
The session clock is located at the bottom of the dialog box.



The shortcut key for staring a new session is: **Ctrl + N**

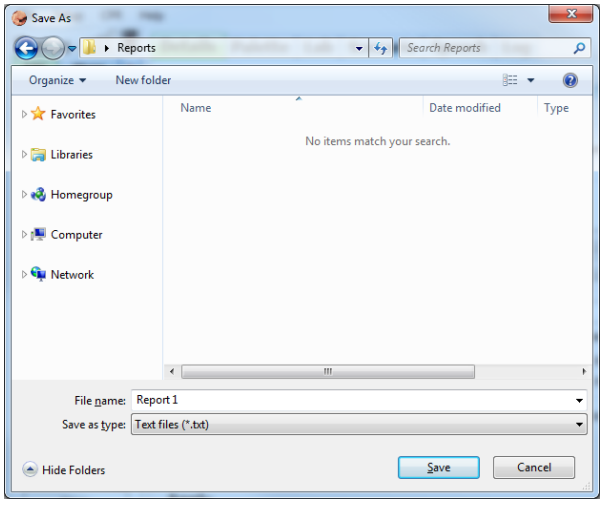
Reset Session Clock

Clicking on Reset Session Clock resets the clock back to zero. It does not have any effect on the transition time remaining on a scenario; it does not reset the vital signs, or clear out loaded scenarios. The facilitator can also reset the session clock by clicking on the Session button next to the session time.



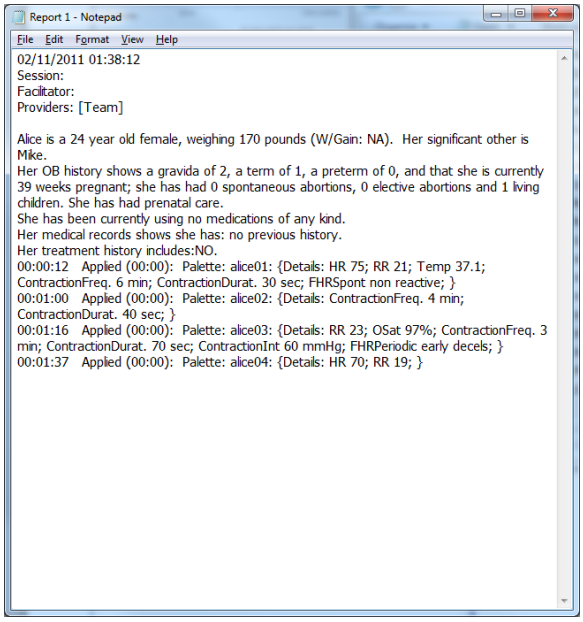
Save Report

This option allows you to save all the information recorded in the log page as a text file. Clicking on it brings up the “Save As” dialog box:



Select the desired name and path, and click “Save”.

The shortcut key for saving a report is Ctrl + S. For a sample report, look at the figure below:



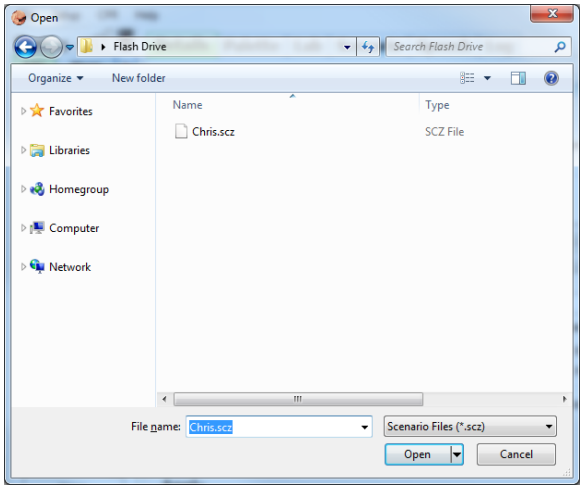
Print Report

This option allows you to print a text file containing all the information in the log for the latest session. Clicking on “Print Report” brings up the Print dialog box. The shortcut key for this option is **Ctrl + P**.

Import

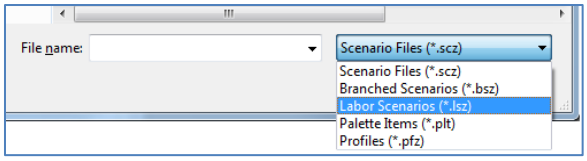
This tool allows the import of palettes, scenarios or modeling patients that may have been created on another tablet PC.

When Import is clicked, the “Open” dialog box is displayed:



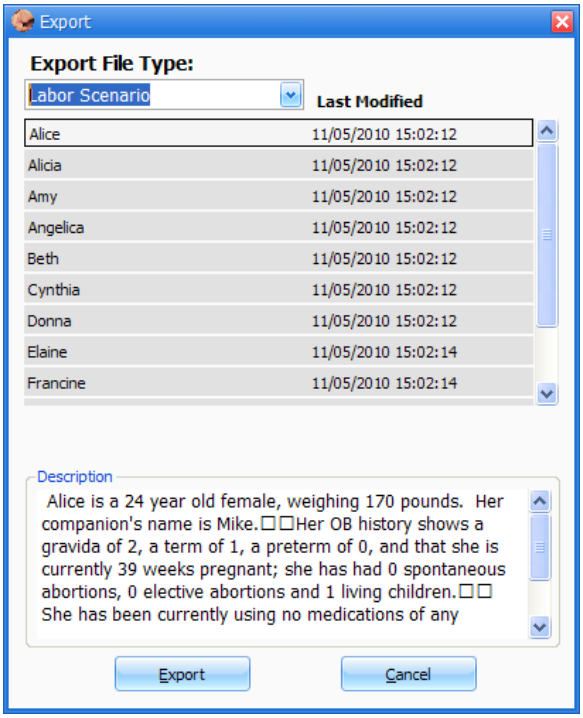
Browse to the location where the palette, scenario, or patient files have been saved and open it. They are automatically brought into the GaumardUI.

Make sure that you have the correct file type selected:

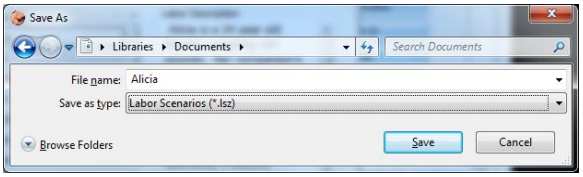


Export

You can export palettes, scenarios (branched or linear), and model patients. After selecting the kind of file to be exported, the following dialog box is displayed.



Make a selection and click “Export”. The “Save As” window is then displayed.



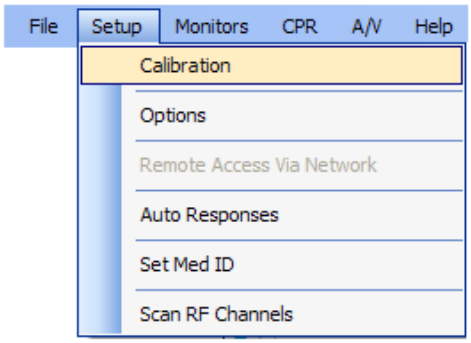
Once the files are saved on to the flash drive, plug the drive to the computer where the files will be imported. From the GaumardUI, select import from the file menu.

Navigate to the location where the file was saved on the flash drive and click open. GaumardUI will copy the scenario to the computer during the import process.

Exit

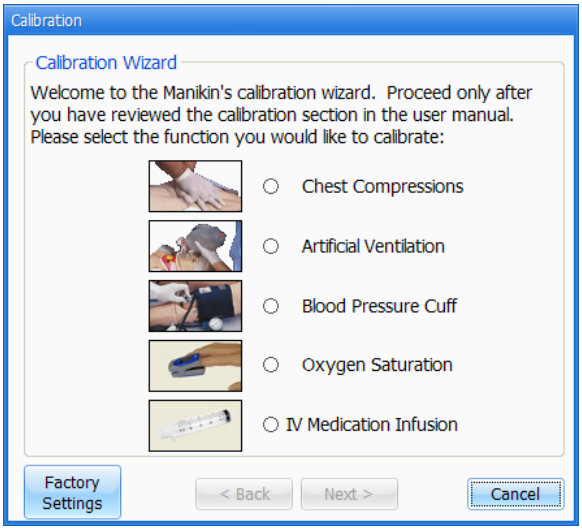
You can exit the software at any time by going to File, Exit or by clicking on the “x” button at the top right corner of the user interface.

Setup



Calibration

This tool allows you to easily calibrate the sensors inside the simulator. First choose which function you would like to calibrate: chest compressions, artificial ventilations, or blood pressure cuff. The Simulator will not breathe or have chest rise during any calibration procedure.

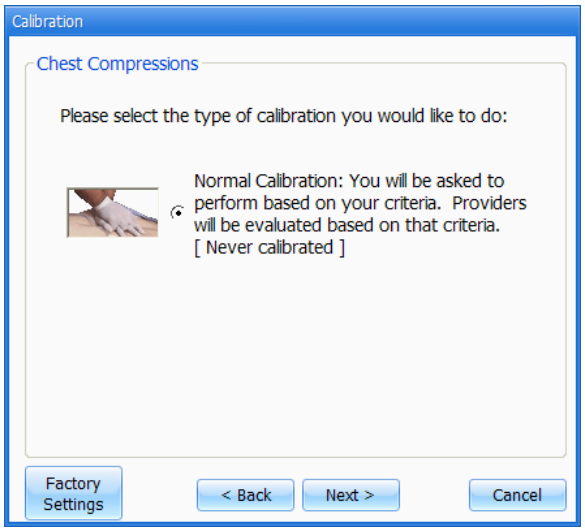


The procedures for each specific calibration are described in the sections below.

Chest Compressions/Artificial Ventilations

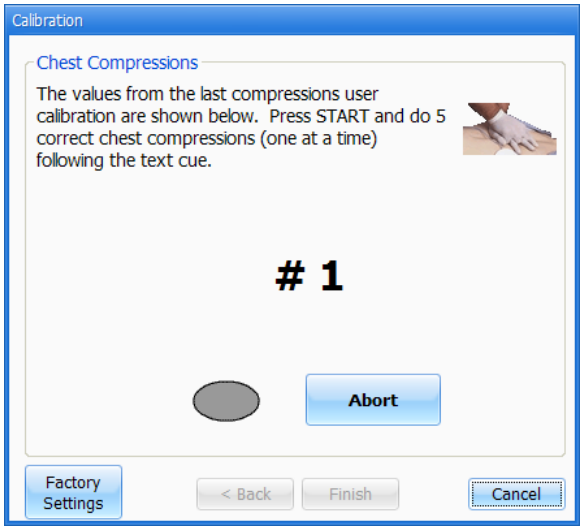
This tool helps you calibrate the chest compressions and the artificial ventilations to your specific criteria. That is, you will be telling the system what a correct chest compression is and/or what a correct artificial ventilation is. Providers will be evaluated by the system based on this criteria.

The chest compressions and ventilations are calibrated the same way. After making a selection, this dialog box is displayed:



Click next to proceed with the calibration.

The software will now ask you to perform a number of "correct" chest compressions or artificial ventilations, depending on what you are calibrating.



The facilitator should follow the text cue on the screen to perform just ONE compression or ventilation at a time, until prompted for the next one.

For example, if calibrating chest compressions:

1. The wizard prompts you with a "#1".
2. Perform one correct chest compression.
3. A green filled oval indicates that the chest compression was successfully recorded.
4. The wizard prompts you with a "#2".
5. Perform a second correct chest compression.
6. A green filled oval indicates that the chest compression was successfully recorded....
7. Continue the same process to finish the calibration.

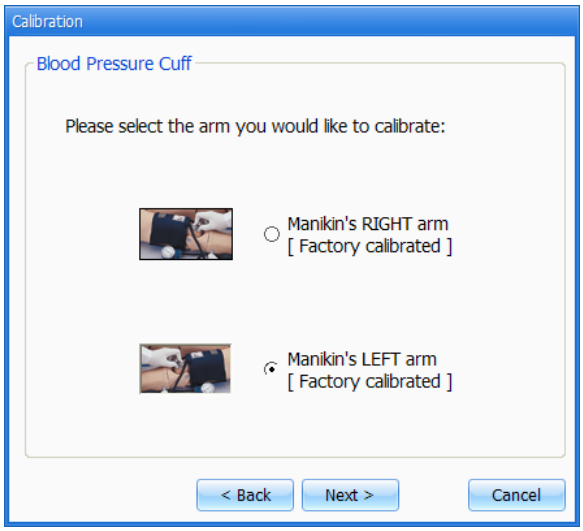
At the end of the calibrating session, the wizard shows the average peak, depth, and duration values for the procedure. If you feel you performed the procedures correctly, click the “Save” button. Otherwise, press the “Back” button to repeat the calibration.

Notice that you can go back, abort or cancel at any time during the procedure.

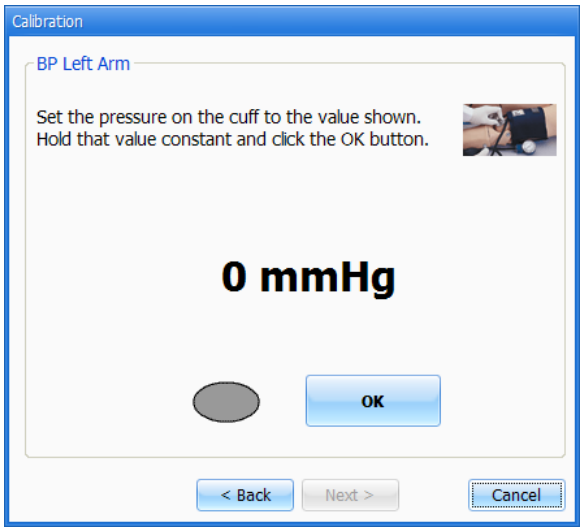
Blood Pressure Cuff

Blood pressure cuff calibration should be performed only when the Korotkoff sounds do not match the systolic and diastolic values set from the computer. To calibrate, place the blood pressure cuff on the arm you wish to calibrate, right or left. Remember to connect the cuff's Luer-lok connector to the simulator's shoulder.

Select which arm you will like to calibrate.



You will then be prompted to set the BP cuff to a certain pressure, hold that pressure constant, and press the “OK” button. Follow the text cue on the screen and repeat the procedure for each pressure level until "Done" is displayed.



For example, if calibrating the left arm:

The wizard prompts you with "0 mmHg."

Set the pressure on the BP cuff to 0 (i.e. cuff valve open).

1. Click the “OK” button.
2. A green filled oval indicates that the value was successfully set.
3. The wizard then prompts you with "20 mmHg".
4. Set the pressure on the BP cuff to 20 mmHg.
5. Click the “OK” button.
6. A green filled oval indicates the value was successfully set.
7. Continue the same process to finish the calibration. Once the prompt reads “Done”, go back and calibrate another function or click the “Finish” button to close the calibration wizard.

Oxygen Saturation (if factory installed)

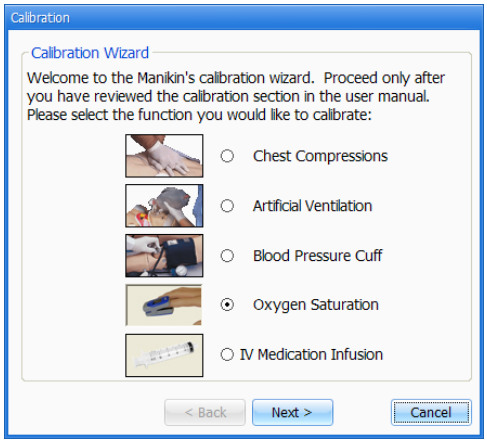
To calibrate the oxygen saturation, follow the steps below:

CAUTION: Oxygen saturation is calibrated to match a specific oximeter. Repeatability is accomplished when using the same oximeter and sensor. Even if the oximeter is interchanged with another one from the same brand and model, the reading might not coincide. To avoid reading discrepancies, calibrate this feature each time before using a different oximeter or sensor.

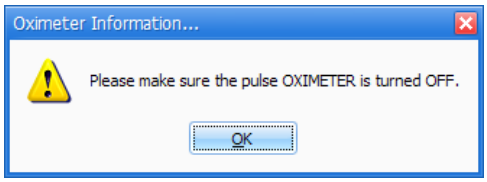
Disclaimer: Co-Oximeters that in addition to reading oxygen saturation also read carbon monoxide (SpCO) and methemoglobin (SpMet) are not compatible with this simulator.

1. Make sure that the oximeter is turned off. Place the oximeter sensor all the way into the index finger, making sure the finger is at the center covering the emitting and sensing element.

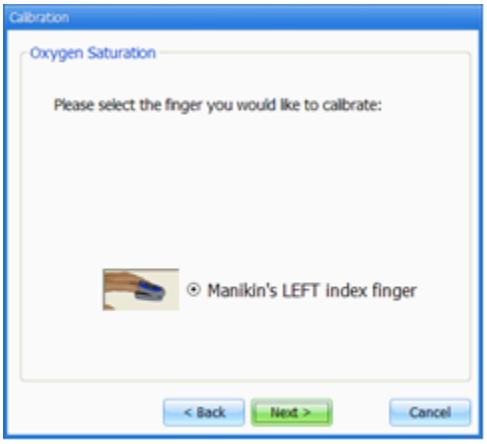
2. Go to Setup→Calibration and select "Oxygen Saturation". Click "Next".



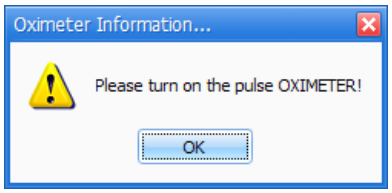
A message box is displayed to remind you to have the oximeter turned off. "Click OK".



3. Select which finger you want to calibrate, left. Then click "Next".

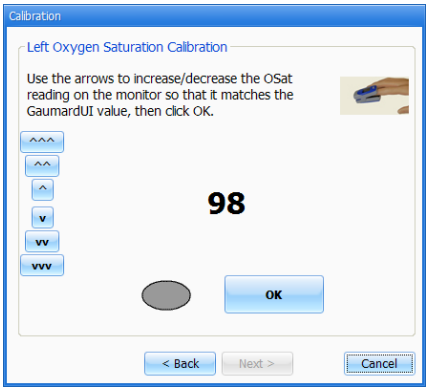


4. A message box is displayed requesting you to turn the oximeter ON.



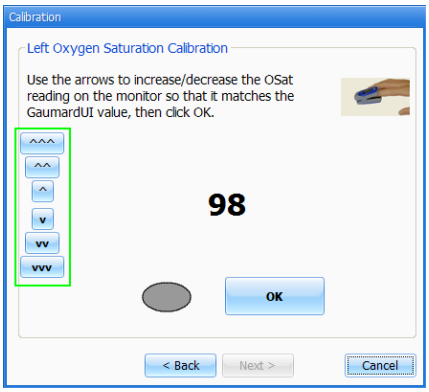
5. Now **turn on the oximeter** and click "OK" on the dialog box.

6. The oxygen saturation calibration dialog box is displayed (for 98%).



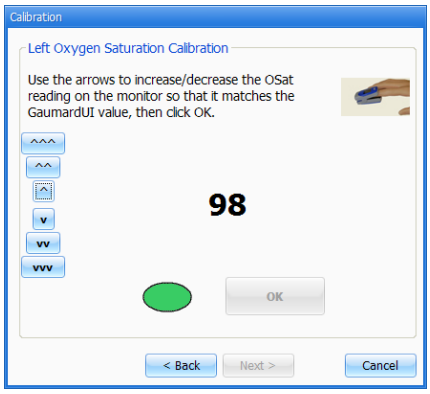
7. Click the arrows on the left column of the calibration window to adjust the **oximeter monitor screen** reading to **98.**

   For large increases or decreases, use the triple arrows. For moderate changes, use the double arrows. Use single arrows for small changes of one or two percent reading (only for 98% calibration).

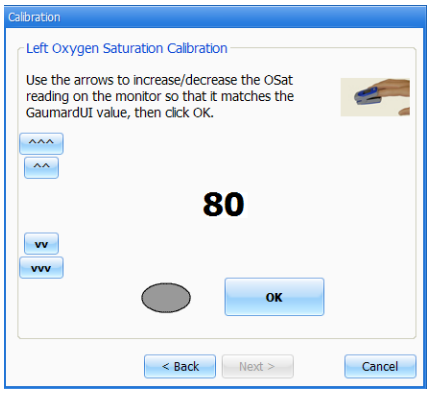


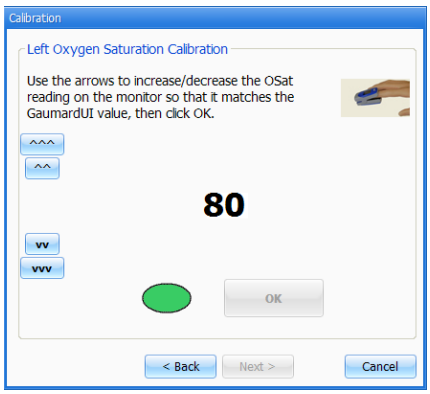
CAUTION: To ensure proper calibration, always allow the oximeter to stabilize readings by waiting 3-5 seconds after the value is adjusted. After the value on the oximeter screen stabilizes, click "Next" to continue calibration.

8. Click “OK”. The calibration oval blinks green before showing the next value.

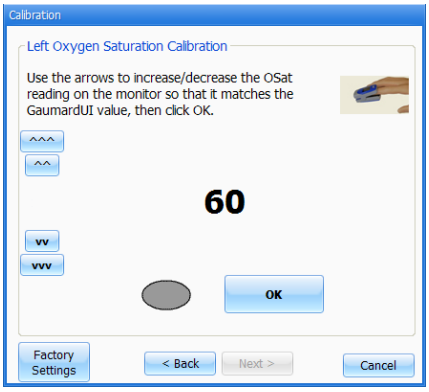


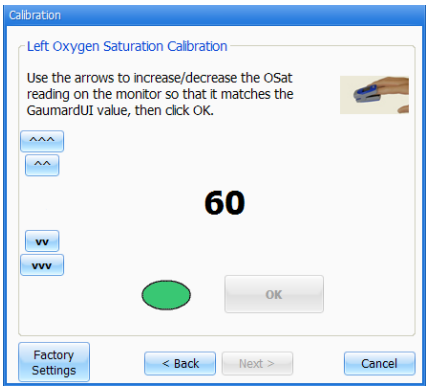
9. The oxygen saturation calibration dialog box for 80% is now displayed. Calibrate using the instructions from step 6 and 7. Once the value on the oximeter matches the screen, click “OK”.



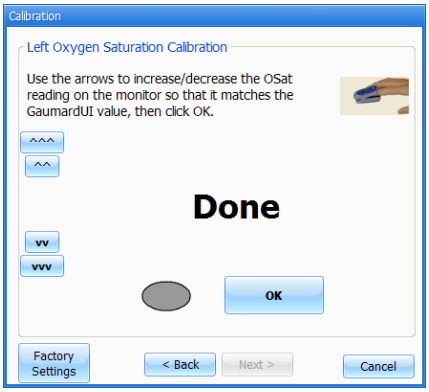


10. The oxygen saturation calibration dialog box for 60% is now displayed. Calibrate using the instructions from step 6 and 7. Once you achieve the desired results, click “OK”.





11. After the calibration oval blinks green, the following dialog box will be displayed, indicating that the calibration has been completed.



12. Click Finish.

Verifying O_2Sat calibration settings

1. Go to the details page and vary the oxygen saturation value on the software.

2. Observe that the oximeter reading coincides with the value you specified (±3 differences are acceptable on readings above 80%).

3. Test calibration at two points; values between 80 and 95% are recommended.

4. Now take the oximeter sensor off the finger, wait for five seconds and again place the sensor on the finger.

Make sure to slide the finger all the way into the oximeter sensor and in the same position as it was calibrated.

5. Check that the oximeter reading coincides with the value specified on the Details page (±3 % value differences are accepted).

6. If it does, you are ready to use the oxygen saturation feature with this oximeter. If the first, second, or both readings do not coincide, make sure to slide the finger all the way into the oximeter sensor. If the reading still does not coincide, the feature was not properly calibrated. Go back to step one and repeat the procedure.

For information on troubleshooting this feature, refer to the troubleshooting guide in the Appendix.

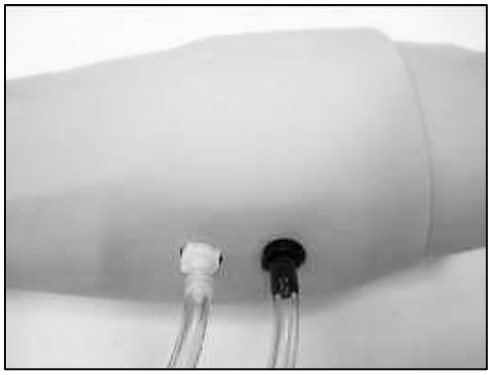
IV Medication Infusion (if factory installed)

IV medication infusion calibration is only performed when the infusion rate is inaccurate as shown on the drug tab. The system is calibrated from the factory. To re-calibrate the IV medication infusion functionality of the drug recognition arm, follow the steps below.

WARNING: The simulator must be powered on when working with the drug recognition arm. This includes calibration, purging, draining, IV infusion, Set Med Id and injecting fluids. Failure to do so will permanently damage the simulator and void the warranty.

1. Locate the drug recognition fill kit and attach the drain hose to the black output port. Place the end of the drain tube inside a container lower than the arm in order to siphon the fluids in the next steps.

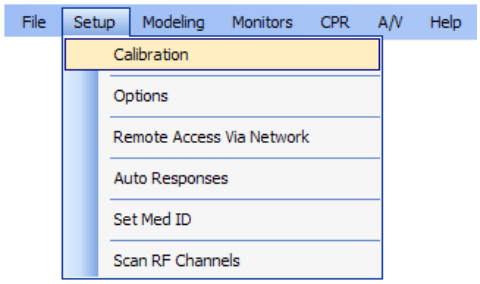
2. Next, attach a prefilled syringe with clean water to the white port.



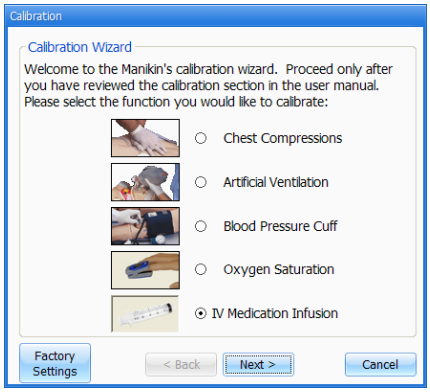
3. Insert water in the system until fluids flow through the drainage hose into the container. The fluid drained must flow in a downward direction.

WARNING: You must always have water in the IV vasculature for the drug recognition module to work.

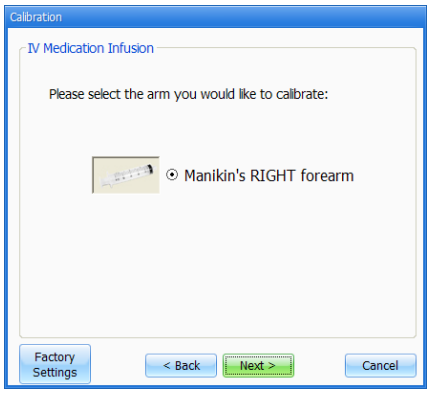
4. Go to the Setup menu and click on Calibration.



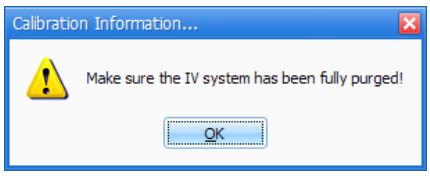
5. The Calibration dialog box is displayed. Select IV Medication Infusion and click "Next".



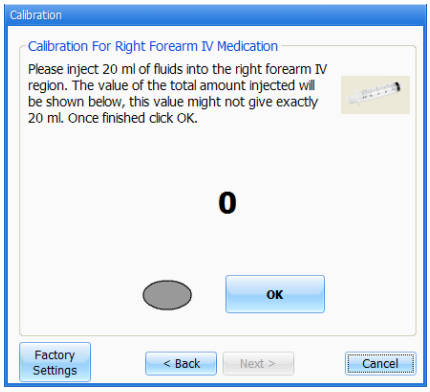
6. Select the arm to calibrate and click next.



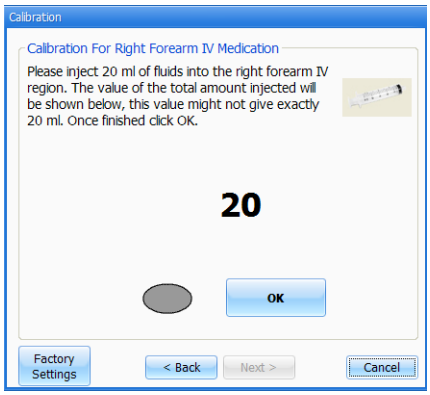
The calibration information box is a reminder that the IV vasculature must be filled with fluid before continuing.



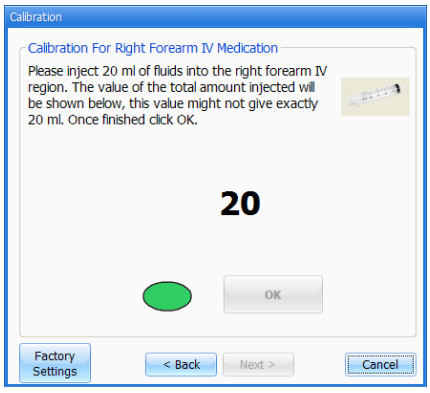
7. Follow the instructions and insert 20 ml of fluids in the forearm using the fill syringe. Remember to keep the drain tube connected throughout the calibration process



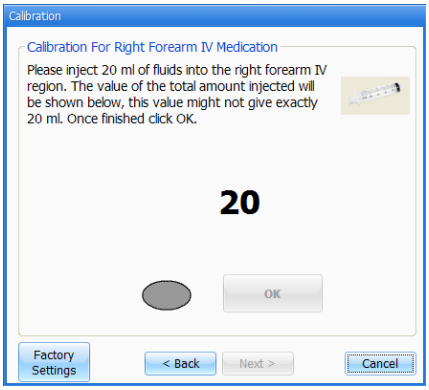
8. The value in the middle of the window will begin to update as you slowly insert the fluid. After inserting 20 mL, click "OK".



The word "Done" will flash in the middle of the window, and the oval will fill green temporarily.



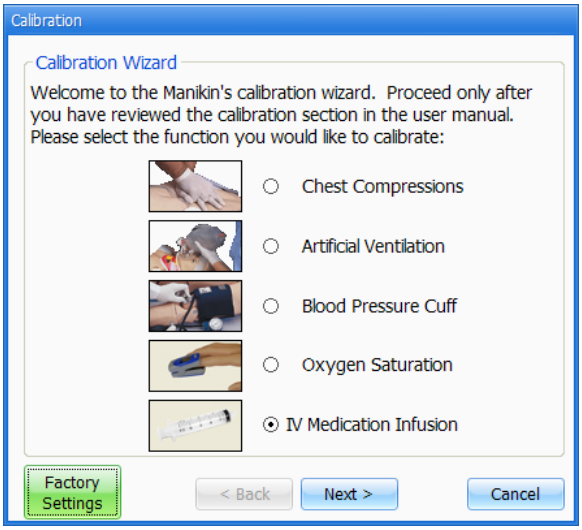
After a few seconds, the “Finish” button will be enabled and the oval will default back to gray.



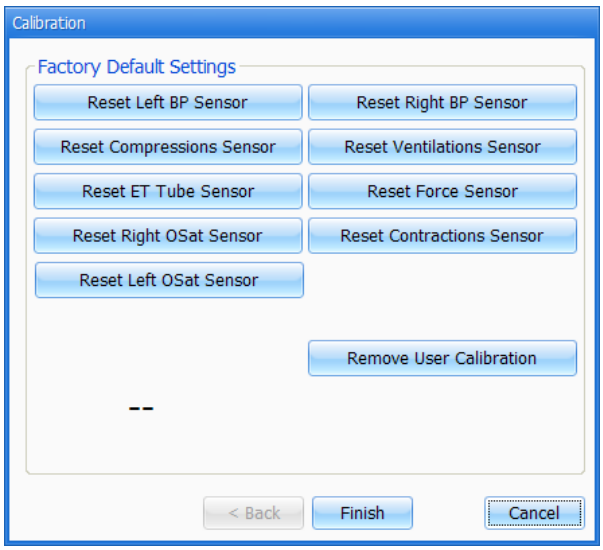
9. Click “Finish” to save the new calibration.

Factory Settings

Factory Settings is a very useful tool to consider when recalibrating. It restores the sensors to factory settings over-riding any calibrations performed by users.



Make sure that when you are restoring the sensors to the factory settings that no one is practicing chest compressions, ventilations, intubation or reading a blood pressure. Any of these actions may interfere with the reset. Each time that one of these sensors is clicked a message will appear at the bottom left of the screen notifying the user of the status of the reset (OK, or TRY AGAIN). Should the sensor not respond, please refer to the troubleshooting guide or contact Customer Support.

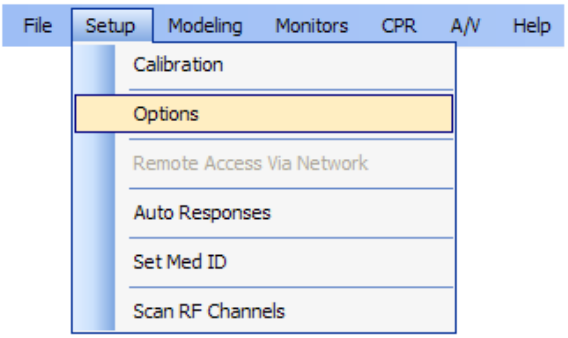


At the end of calibrating a function, the Calibration Wizard resets the simulator for the changes to take effect and displays the message "Done". If the wizard displays the message "Can't reset", it simply means that the new calibration values will take effect next time you start the software.

If the changes need to take immediate effect, simply close the GaumardUI software, wait about one minute (for the simulator to turn off), and then start the GaumardUI software again.

Options

The GaumardUI has several options that can be preset by the instructor.

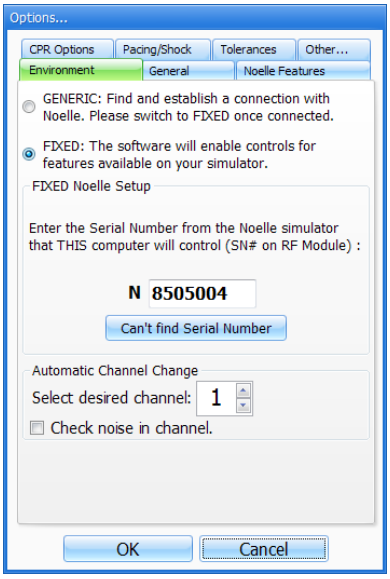


The “Options…” window contains seven tabs: Environment, Tolerances, General, NOELLE Features, Pacing, CPR Options, and Other.

Environment

If the **FIXED** button is selected, you must enter the correct simulator's serial number in the text box. Fixed mode is required when entering Automatic Mode and Virtual Monitor **activation codes** and detecting optional upgrades such as streaming voice and drug recognition.

If you cannot find the serial number, first connect to the simulator using **GENERIC** and then press on the button that says “Can't find Serial Number” and follow the instructions.



At the bottom of this tab, optionally select the channel that the RF module will use to communicate with the simulator. It is recommended to set the Auto Channel Change to active because it makes sure the initialization channel is always clear for other simulators’ start-up.

If it is preferred that the simulator automatically switches to a cleaner channel when possible, select the “Check noise in channel” button.

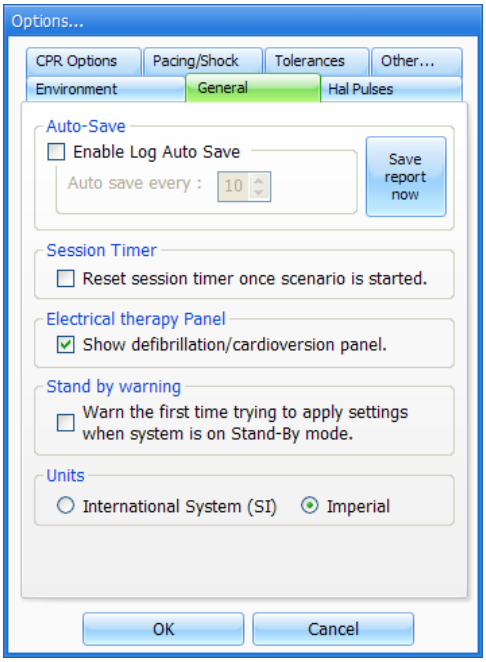
When more than one Gaumard tetherless simulator is in the vicinity, allocate one channel in between to avoid interference.

General

This tab allows the facilitator to:

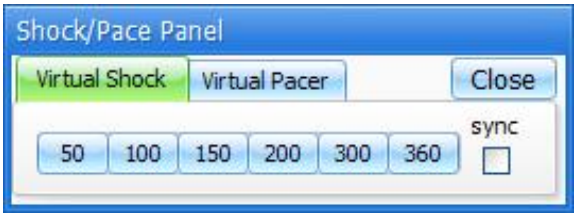
- Enable auto saving of the log.
- Save your current log report.
- Enable stand-by warning.
- Select units (SI or English).
- Enable electrical therapy shock panel

The shock panel is a floating window used for simulating electrical therapy. It can also be used in conjunction with “auto-responses”. For more information, navigate to page 130.



If the Electrical therapy panel is enabled, a new control will be accessible from the top right of the screen.

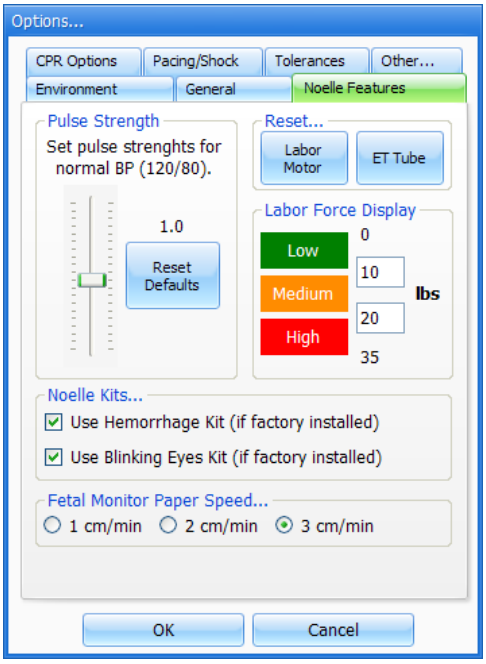
Use this control to bring focus to the floating shock/pace control window.



At any moment the shock/pace window can be moved or closed, while remaining accessible by clicking the button above.

NOELLE Features

Configure NOELLE specific features.



Reset the labor motor

If the motor is not moving properly through the track during a labor, remove the baby and click Reset Labor Motor. The motor will move down the track and calibrate the proper starting position.

Reset the ET tube

Calibrate the ET sensor using the reset button if the log displays incorrect intubation readings. Prior to performing a calibration, ensure that the airway is clear of tubing or obstructions.

Pulse Strength

Configure the pulse strength or reset to default. Increase or decrease the intensity of the pulse for a healthy patient (Normal sinus rhythm, BP 120/80).

Labor force display

Set the threshold for the labor force display. To read more about the labor force display, go to page 90.

NOELLE Kits

Use hemorrhage kit (if factory installed). Check this box to use this option if your NOELLE is equipped with the hemorrhage kit.

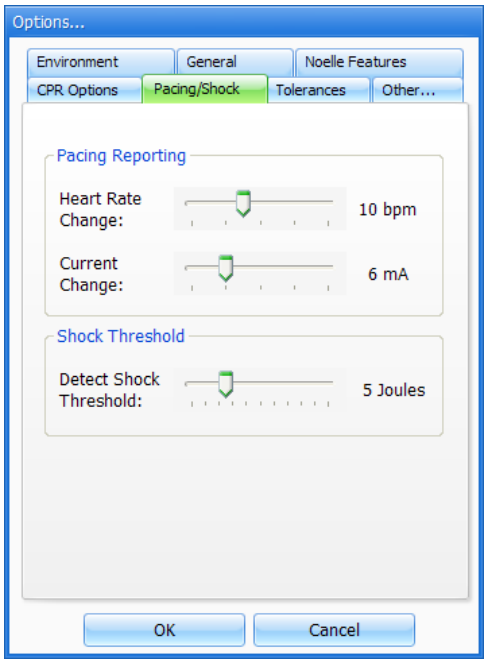
Use Blinking eyes kit (if factory installed). Check this box to use the active eyes feature and to display the blinking control on the details page.

Fetal Monitor paper Speed

Use this feature to adjust the speed of the fetal monitor paper on the FHR monitor screen.

Pacing

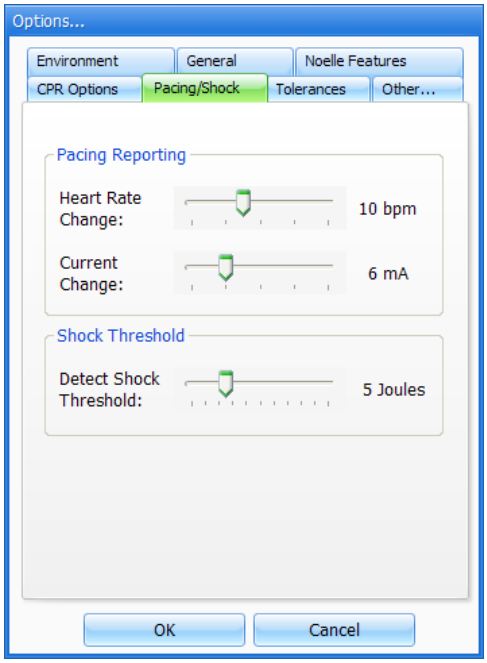
When NOELLE is being paced, the pacers oscillate by a minimum fraction both on the heart rate and the current. This oscillation can make the software fire an event each time these small changes are captured. In this tab you can set a threshold for each parameter so that only changes greater than these settings will be taken into account by the software.



CPR Options

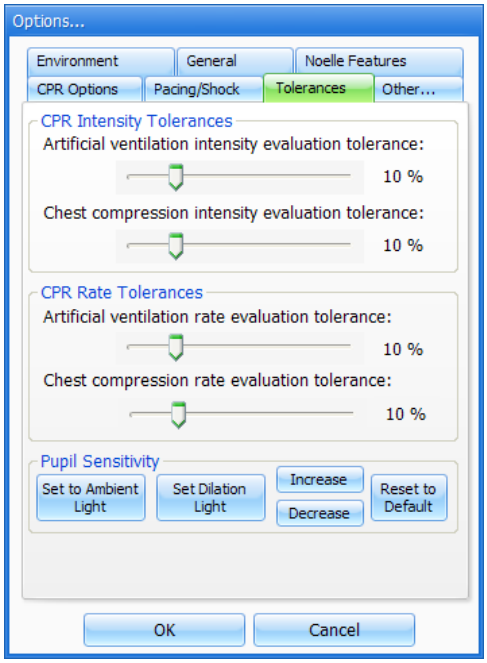
In this tab you can:

- Select the number of desired compressions per minute.
- Specify the compression/ventilation ratio
- Select number of ventilations per minute (if the 'Only Ventilations' button is selected).



Tolerances

This tab is used to select the tolerance and intensity of both chest compressions and ventilations. At the bottom of the tab you can find controls related to pupil sensitivity.

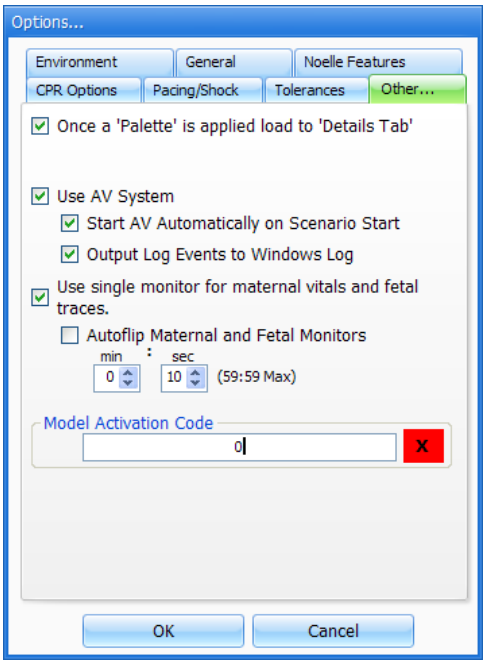


If the Blinking eyes kit is installed, the Pupil Sensitivity section is displayed. You can use these controls to calibrate the pupil sensitivity. The five buttons are described below:

- **Set to Ambient Light**: If the pupils are constantly closing with the current ambient light, you can disable the pupil reactivity and open the pupils to the desired diameter. Use the "Set to Ambient Light" button to recalibrate the sensitivity to the current environment, and then enable the reactivity on each pupil.
- **Set Dilation Light:** The pupils should react to low ambient light by increasing their diameter. To set pupils to react to proper low ambient light intensity, cover both eyes blocking MOST, not ALL incoming light, then click "Set Dilation Light" button.
- **Increase-Decrease**: Use these controls to increase or decrease the sensitivity to light.
- **Reset to Default**: Use this button to reset the pupils' sensitivity to the factory settings.

Other

This tab gives you additional control over the simulation. The first option "Once a 'Palette' is applied load to "Details Tab"' is useful for people who want to keep track of the latest parameters that were updated using the Details Tab.



Model Activation Code

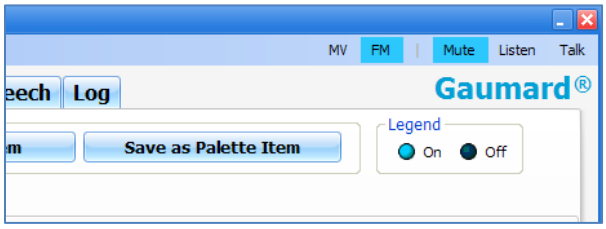
Input the activation code required to enable the Automatic operating mode option in the GaumardUI software. First enter the serial number in the FIXED environment field before entering the activation code.

AV System

GaumardUI is capable of interfacing with a number of third-party A/V recording systems. Checkmark the Use AV System to display the AV drop down as shown on page 142.

Single Vital Monitors

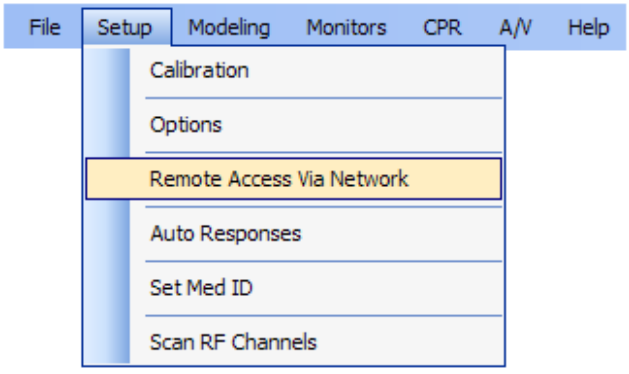
You can display Gaumard Monitors using one monitor. To do so, select the checkbox “use single monitor for maternal vitals and fetal traces.” When you enable this checkbox, the Maternal Vitals/Fetal Monitor control is shown in the GUI. These controls enable you to change the display on the vital signs monitor.



Select FM to display the fetal monitor and MV for maternal vitals. You can also have both screens auto change from one to the other. To do so, select the box labeled auto-flip and specify how often you will like the switch to take place.

Remote Access via Network

The “Remote Access Via Network” option is used as an alternate configuration of the RF module-to-simulator wireless connection. When the feature is enabled, NOELLE will receive the control commands from the Virtual monitor computer normally stationed at the bedside via the USB RF module. This alternate configuration is recommended only for environments with many walls between the Simulator and the controlling PC.



Configuration

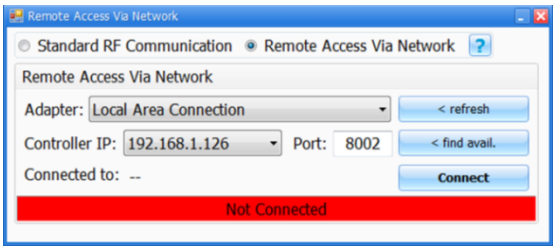
To use this alternate configuration, please install the USB RF module drivers on the Virtual monitor computer. Navigate to www.Gaumard.com to download the USB RF module drivers, and then transfer them to the virtual monitor computer using a USB flash drive.

Exit the GaumardUI software and disconnect the RF module from the tablet.

WARNING: Never disconnect the communications module while GaumardUI software is running. Doing so can damage the module.

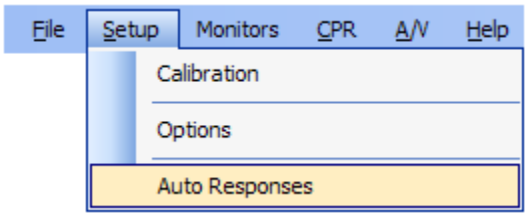
1. Connect the **RF module** to the Gaumard Monitors PC.
2. Verify that both computers are connected to the ad-hoc network (e.g. GaumardNet,)
3. Initialize the Gaumard software on the tablet computer and navigate to the **Remote Access Via network** option from the set-up drop down menu.
4. Select the **Remote access via network** radio button.
5. Verify that **Wireless Network Connection** is selected from the adapter list.
6. Click the **find available** to auto configure the port used for this connection.
7. Write down the **controller IP** and **port number**, then click the **connect** button.
8. Navigate to the **V** menu on the virtual monitor computer and select **Remote access Via Network**.

   Please wait 30 seconds for the feature to initialize.
9. Enter the **controller IP** and port number as specified on step 7 and click **connect**.

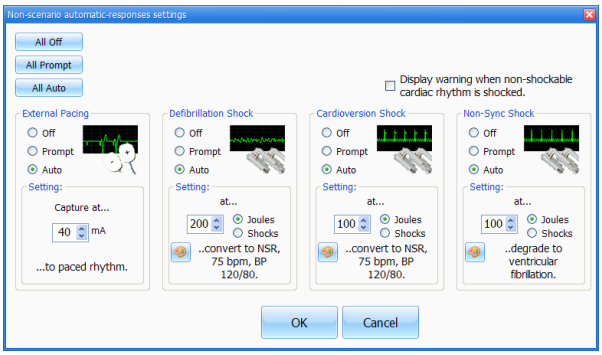


Auto Responses

The GaumardUI Module software can be configured to respond to electrical therapy when changes are applied using the detail list.



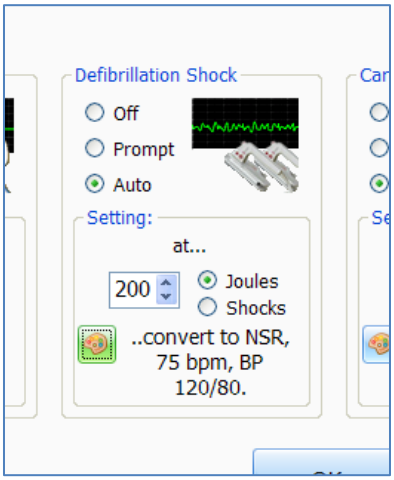
Auto responses configured from the set-up menu respond to shocks when a scenario is not in progress. This type of auto response is referred to as a Non-Scenario Automatic Responses.



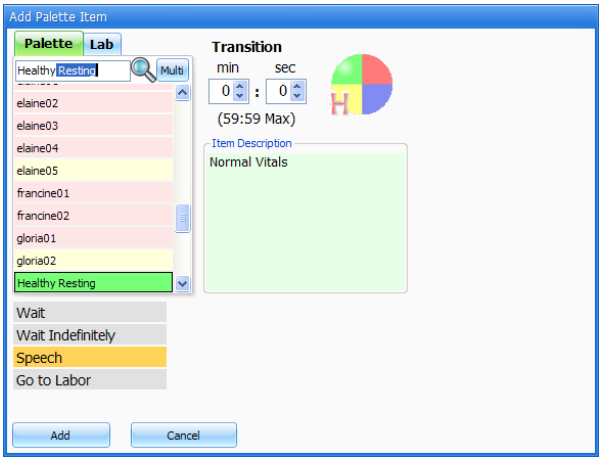
These three states are defined below:

- **Off** - The software **does not** respond to the electric therapy.
- **Prompt** - The software detects the electrical therapy and prompts the user if they would want to change the simulator's vitals to some preset healthy vitals.
- **Auto** - The software automatically detects the electrical therapy and compares it to a threshold selected by the provider, and once this threshold is accomplished the vitals automatically change to a healthy vital state.

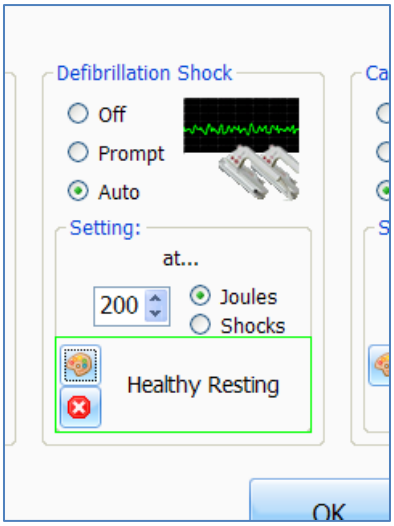
Click on the palette button to program a specific palette to be applied after the electrical therapy.



The “Load Palette Item” window is displayed. Highlight the desired palette and click “Load”.



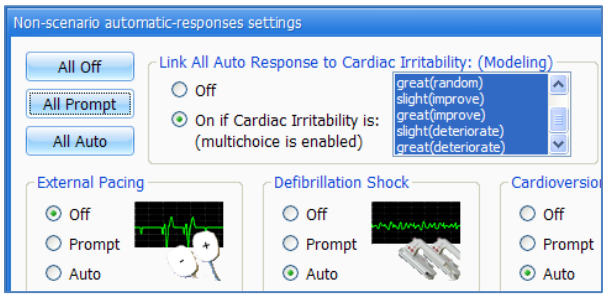
The desired palette is now displayed in the “Setting” section. You can delete the palette by clicking the “X” button. Deleting the palette defaults the electrical therapy to NSR, 75 bpm, BP 120/80.



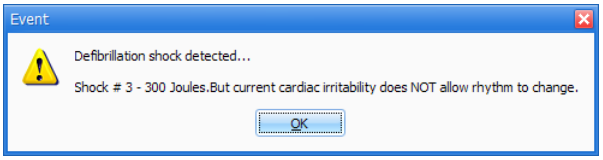
Automatic Mode Non Scenario automatic responses

The non-scenario automatic-responses settings window has two additional features in the automatic mode: “Link All Auto Response to Cardiac Irritability” and the “Drug Model Effect” panel.

Link All Auto Response to Cardiac Irritability - if this feature is turned on, the auto-responses will work auto or prompt **if and only if** the cardiac irritability option on the details page matches the selection on this window.

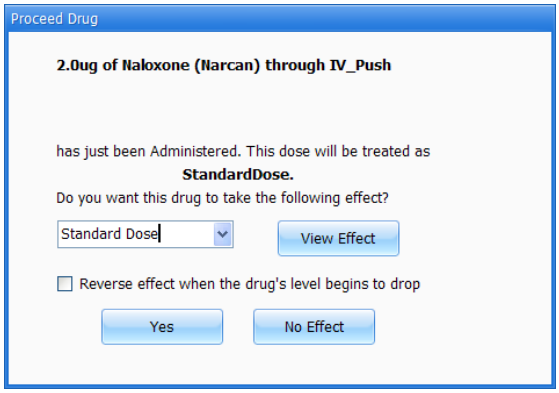


If the cardiac irritability on the details page does not match the selection on this window, the following error message is displayed when the electrical therapy is detected:



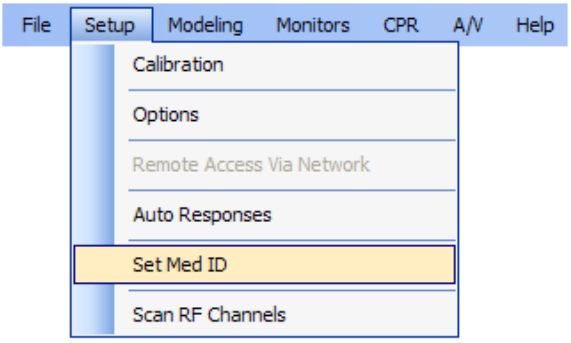
Drug Model Effect - this feature is used to panel has two options:

- **Auto:** applies drug effect as soon as the drug recognition module detects a drug. Note that the effect applied will be determined by the calculated dosage.
- **Prompt:** this option displays the Proceed Drug every time a drug is detected by the drug recognition module to ask the user if the drug effect should be applied now. This option allows the user to select which drug effect to apply, and whether or not the drug effect should reverse when the drug’s level begins to drop.



Set Med ID

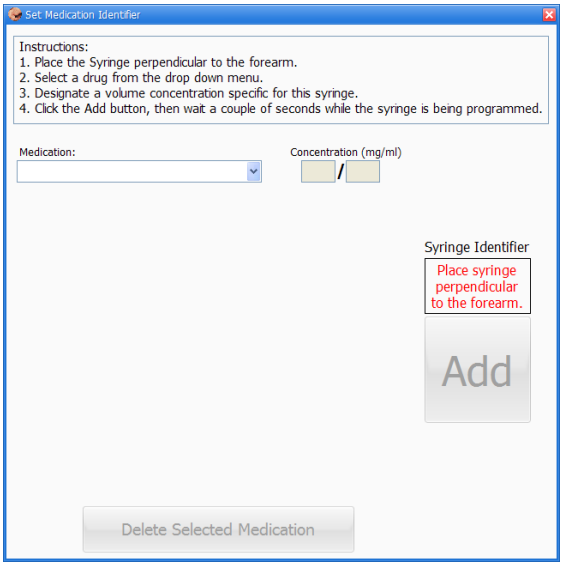
The Set Med Id option is available on simulators equipped with the **Drug Recognition Arm.**



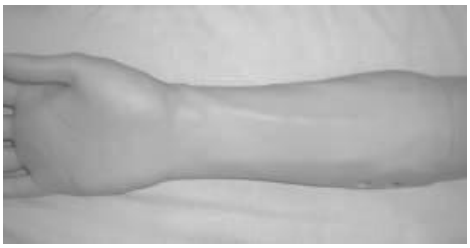
The syringes supplied with the **Drug Recognition Arm** must be programmed before use. Each syringe will be linked with a specific drug and concentration. You only need to program the syringes once unless you wish to change the drug and concentration associated with it. Follow the instructions below to program the syringes.

WARNING: The simulator must be powered on when working with the drug recognition arm. This includes calibration, purging, draining, IV infusion, Set Med Id and injecting fluids. Failure to do so will permanently damage the simulator and void the warranty.

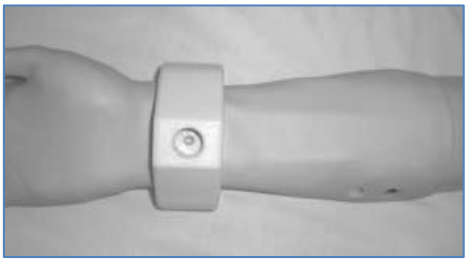
1. Set the GaumardUI operating mode to **Automatic**.
2. From the Setup menu, click on **Set Med ID**.
3. The Set Medication Identifier dialog box is displayed. This dialog box is used to program each of the syringes provided with a specific drug and concentration.



4. Rotate the lower right arm so the palm of the hand is facing up.

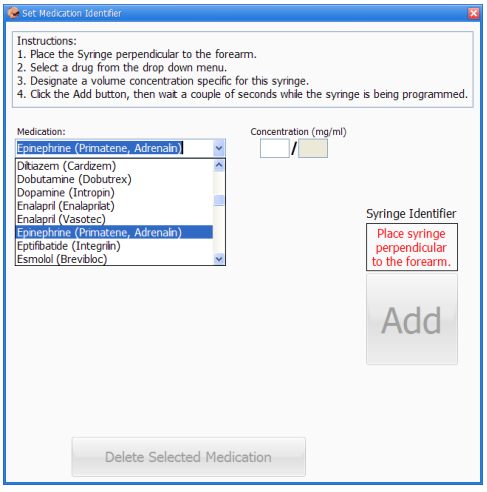


5. Place the syringe holder on the simulator's right wrist as shown below.

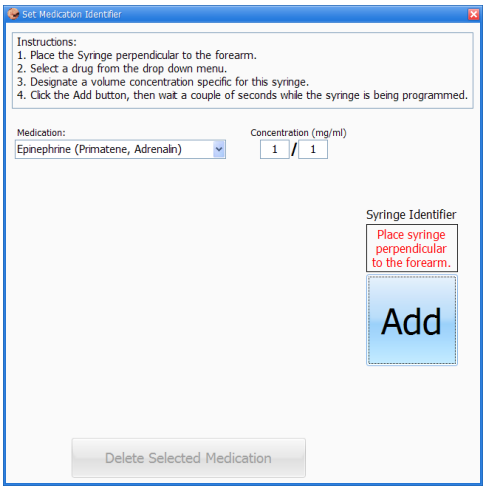


6. Place the syringe without the needle on the holder. The syringe must be perpendicular to the surface of the forearm as shown in the figure below.

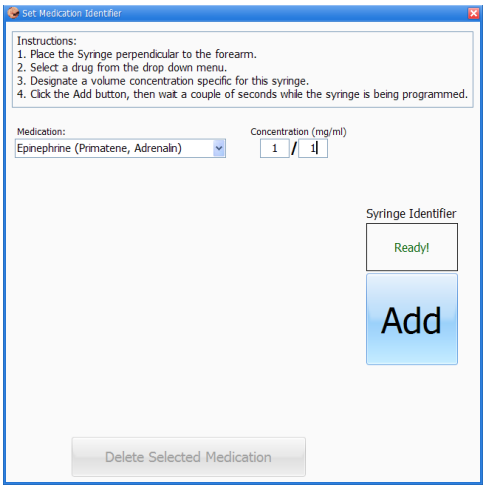
7. Select a drug from the drop-down menu.



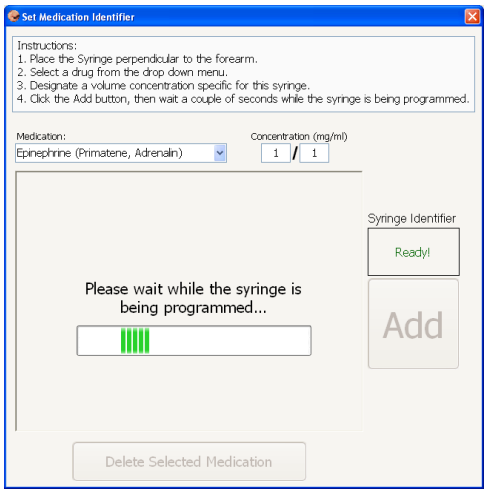
8. Assign a volume concentration for this syringe.



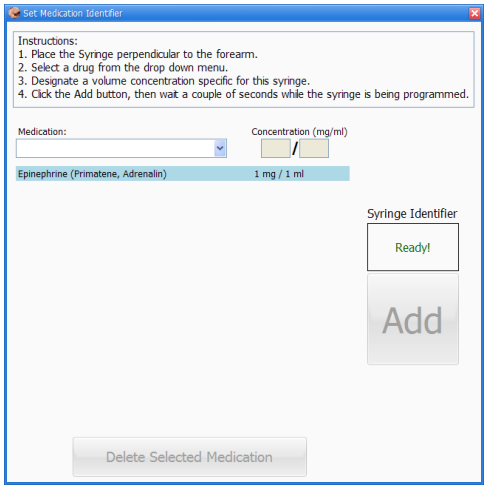
When the syringe is ready to be programmed, the Syringe Identifier will say "Ready!" and the Add button will be enabled.



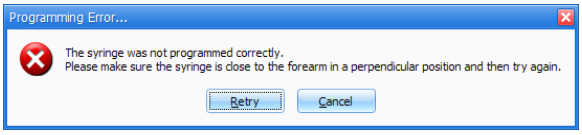
9. Click on the Add button and wait while the syringe is being programmed.



10. After the syringe is programmed, it will be listed on the Set Medication Identifier dialog box.

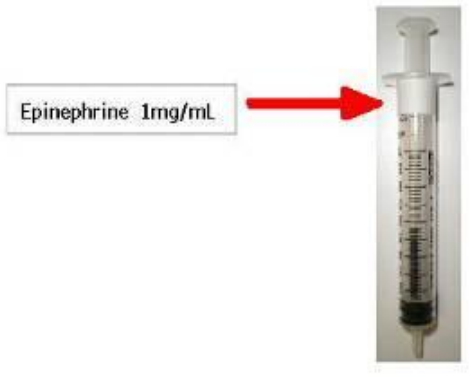


If there is a problem with the programming of the syringe, the following error box will be displayed:



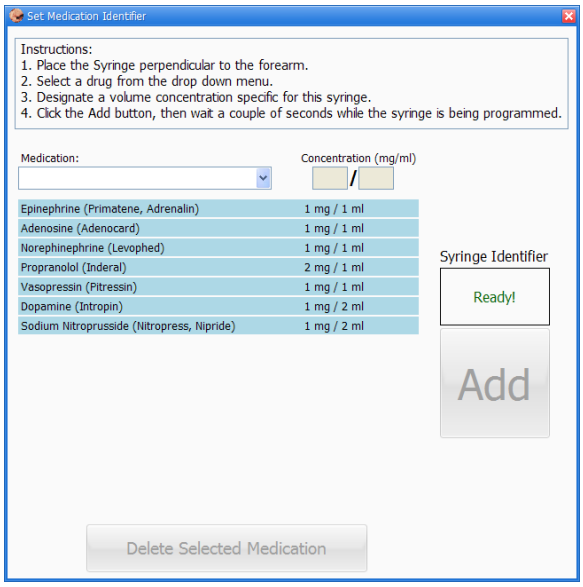
Click the Retry button until you see the drug listed on the Set Medication Identifier dialog box

11. After the drug is listed on the Set Medication Identifier dialog box, identify the syringe with the drug name and concentration using the labels provided.

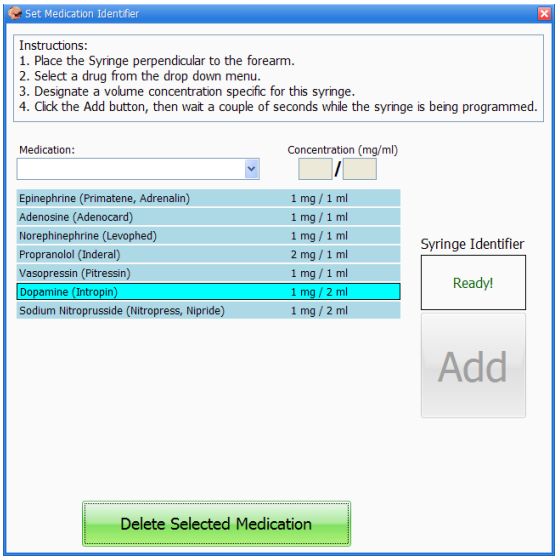


12. Repeat steps 5-10 to program additional syringes.

CAUTION: If you accidentally misplace a syringe, you must delete the drug from this list, and reprogram a new syringe with this drug and concentration.

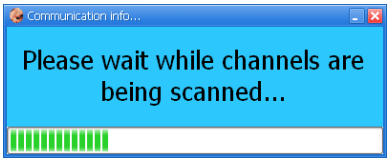


13. You may delete a drug ID at any time. First, highlight the desired drug. This enables the Delete Selected Medication button. Click on this button to remove the drug from the list.

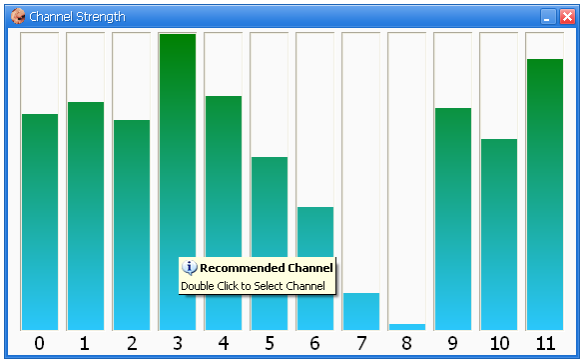


Scan RF Channels

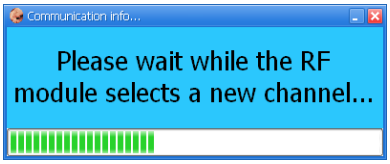
Manually select the best possible RF channel for tablet-simulator communications by selecting “Setup”, then “Scan RF channels”. The following notice displays while the scan is in progress:



When the scan is complete, a series of bars will display, with the highest bar indicating the best signal. On mouseover, a popup will display “Recommended Channel” over the channel bar with the best measured signal. The other bars will only display a “Double Click to Select Channel” message.



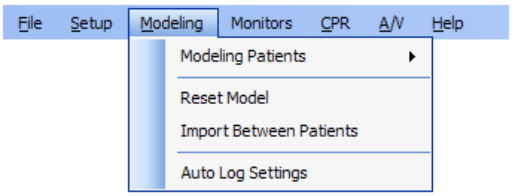
Click on the recommended channel in the graph to select it. The following message will display while the command is processed.



The new channel should subsequently ensure four solid bars display in the communications indicator at the top of the Status bar.

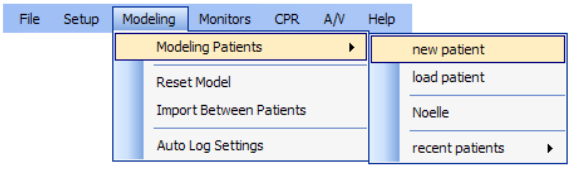
Modeling (Automatic Mode Only)

The 'Modeling" drop down menu in the top left corner of the GaumardUI contains four options: Modeling Patient, Reset Model, Import Between Patients, and Auto Log Setting.

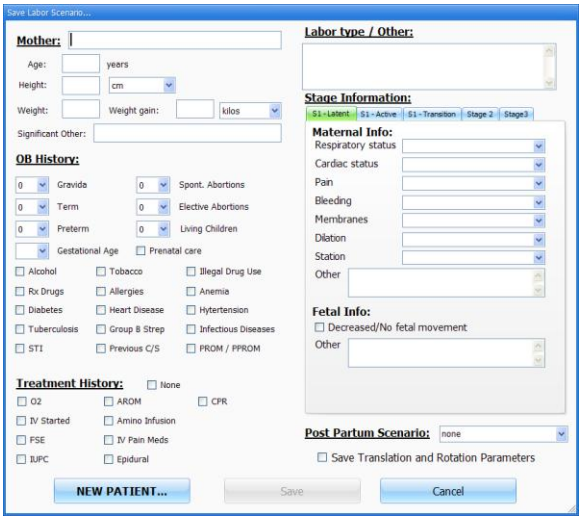


Modeling Patient

This option allows you to create a new patient or load an already existing one.

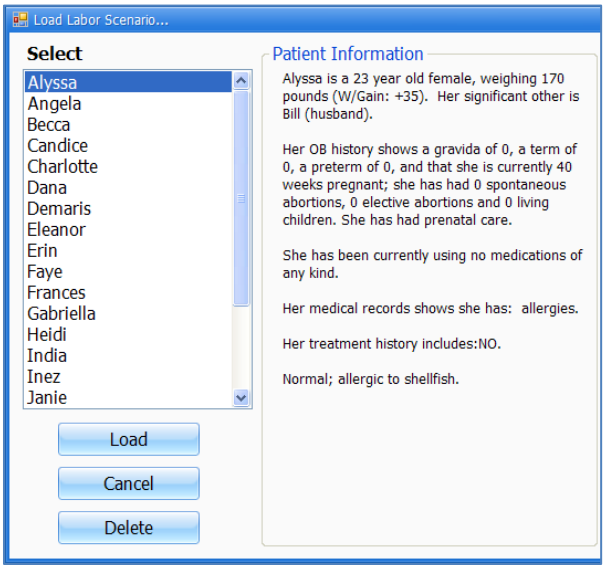


To create a new patient, go to Modeling, Modeling Patient, new patient. The following dialog box is displayed:

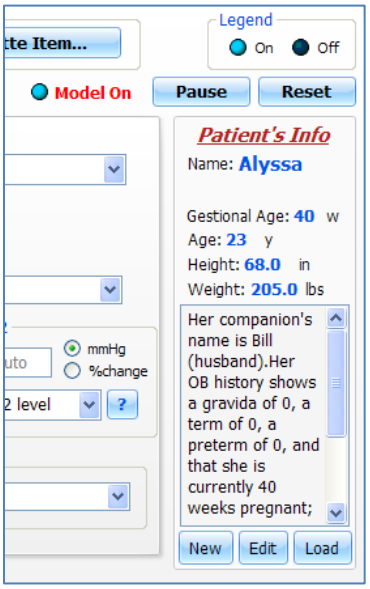


Enter the name of the patient, age, gender, height, weight and/or additional notes. Then, click on Save.

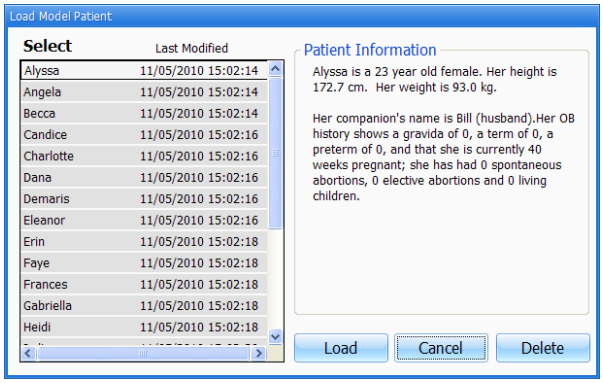
To load an already existing patient, go to Modeling, Modeling Patient, load patient. Select the desired patient, and click on Load. Notice that the factory pre-set patients® cannot be deleted, as opposed to any of the patients that you create yourself, which can be deleted.



Also notice that after loading a patient, there are two places where you can see the name. Patient information is displayed on the right panel of the details page. Use the control buttons to pause or reset the model back to the initial model stage.

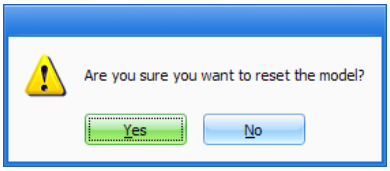


To load an already existing patient, go to Modeling, Modeling Patient, Load Patient.



Reset Model

Clicking on Reset Model under the Modeling drop down menu, will restore all vitals and physiologic controls to normal state. For instance, if the ECG rhythm is currently on Ventricular Fibrillation, clicking on reset model changes the ECG rhythm back to sinus. After clicking this menu option, the following dialog box is displayed:

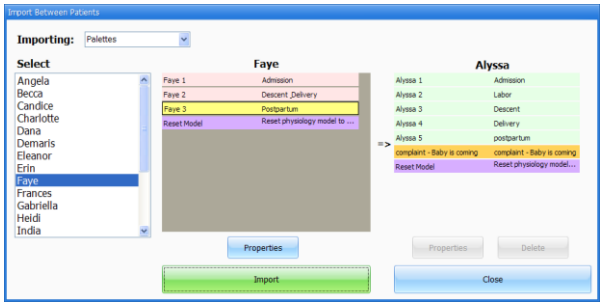


Click yes to proceed with the reset.

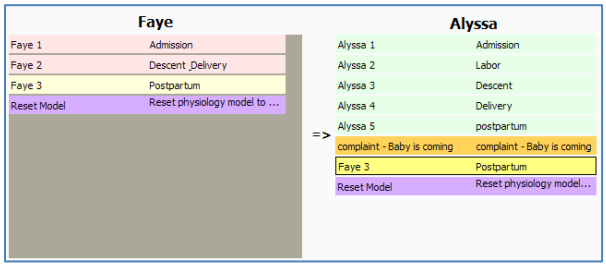
Import between Patients

This menu option allows you to import palettes, scenarios and branching scenarios from one patient to another. To do so select what you will like to import, highlight the patient you would like to import items from, and then select the specific item and click on import. After importing an item, it appears under the patient to whom it was imported.

The following figure illustrates how to import palettes from patient Faye to Alyssa.

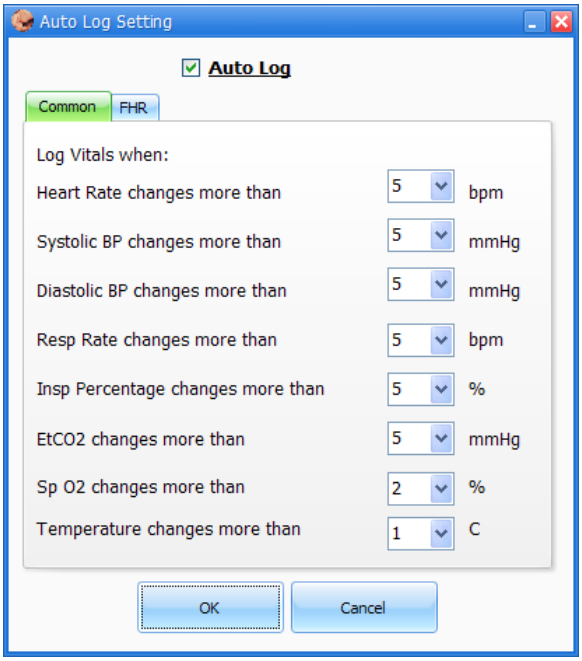


After importing an item, it appears under the patient to whom it was imported.



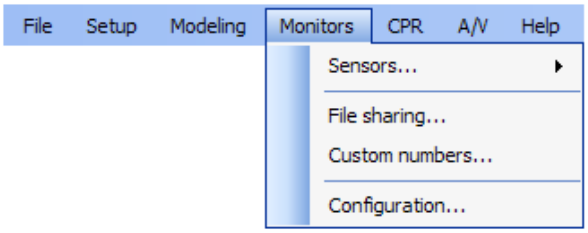
Auto Log Setting

This menu option is used to specify various vitals that you would like to be logged automatically after reaching a specific threshold.



Monitors

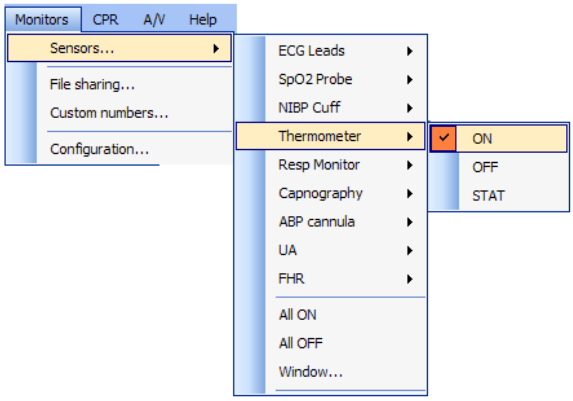
The optional Virtual Signs Monitor computer simulates a vital signs monitor attached to the patient. The vital signs information is sent through the ad-hoc wireless network from the facilitator's tablet to the computer running the Gaumard Virtual Monitor software.



Use the Monitors drop down menu to enable/disable sensors on the virtual monitor screen, share files, program custom scalars and configure the connection between the GaumardUI and Gaumard Virtual Monitor software. For detailed instructions on how to configure and connect the Gaumard Vital Signs Monitors, refer to page 252.

Sensors

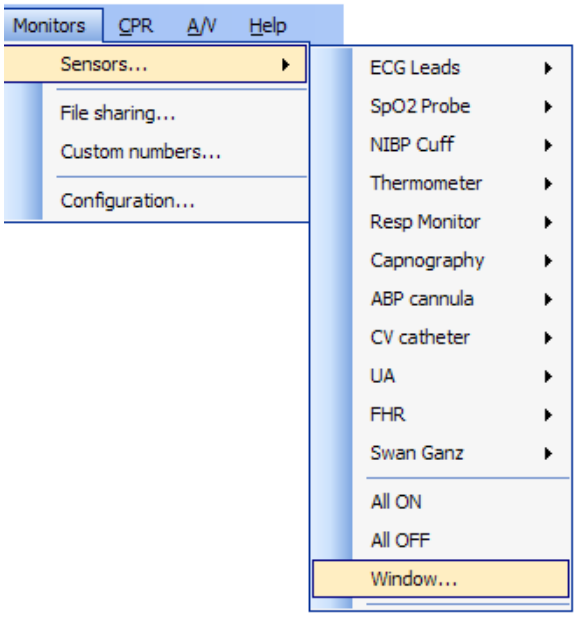
This tool allows you disable any of the waveforms present in the vital signs monitor.



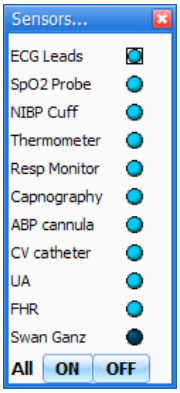
Select any of the waves that you will like to display and select “ON”. If you want to turn any of them off, click “OFF”. The vital signs monitor defaults to “All On.”

Some sensors, such as NIBP and Thermometer are equipped with a STAT control that will allow the facilitator to activate readings on the virtual monitors from the controller software.

Another way to control the sensors is to go to Monitors> Sensors> Window.



This option brings up a floating window that can be viewed from any of the tabs in GUI. It can also remain opened as the users work in different scenarios. The sensors dialog box will look like the example below:



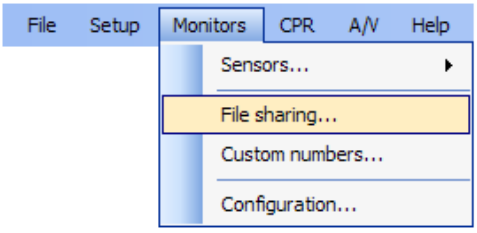
Light blue buttons indicate that a particular sensor is turned on and dark blue buttons indicate that a sensor is turned off. In the example above, all the sensors are turned on, except the thermometer and the ABP cannula.

File Sharing

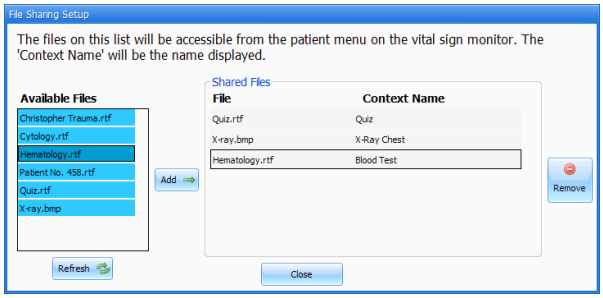
File sharing is only available when using the Gaumard vital signs monitor. To use this tool you must first locate the “GaumardUI” folder on the desktop (of the tablet). Make sure you enable it for file sharing. This can be done by doing a right click over the folder, selecting ‘Properties’ and then enable sharing.

Add to this folder any kind of files that you wish to share with your students or providers.

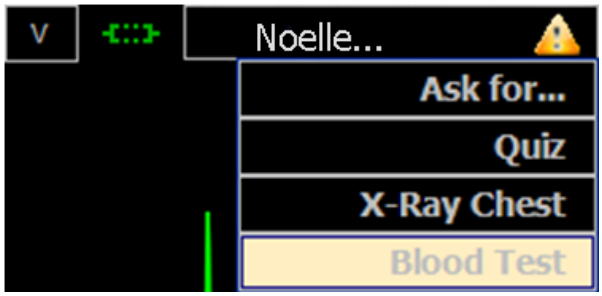
The File Sharing Setup menu is used to manage shared files.



Files in the Gaumard_UI folder will be listed on the **Available Files** panel located on the left. To share a file, click on the **Add** button in the middle of the screen. Enter a context name on the pop-up menu and click **OK**. The shared file will appear on the right list box. Remove individual files by using the remove button on the right.



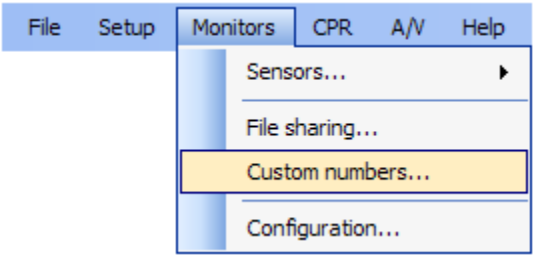
A yellow icon will be shown on the top left of the screen once a file is shared. This will inform the provider that a file is available for viewing.



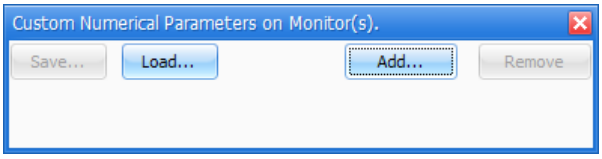
Click on the NOELLE button to bring down the selection of available files. Once a file is selected, it will automatically open on the Gaumard Monitor screen.

Custom Numbers

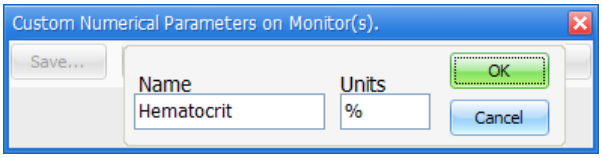
Use the custom numbers tool to add a new parameter, such as glucose level or platelet count, to NOELLE®'s virtual monitor.



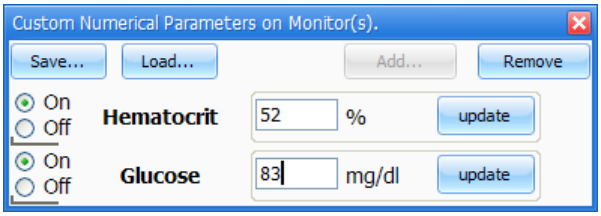
On clicking the "Custom numbers" option, the following window is displayed:



Click Add to enter a new parameter for display in the virtual monitor. This dialog box is displayed:

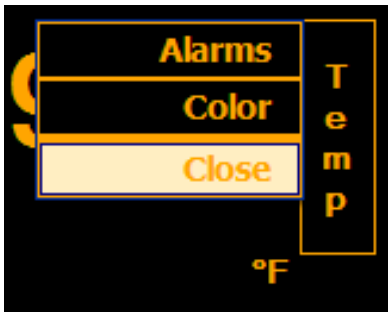


Enter the name and units of the new parameter and click "OK". The new parameter is displayed. Several custom numbers may be entered at a time.

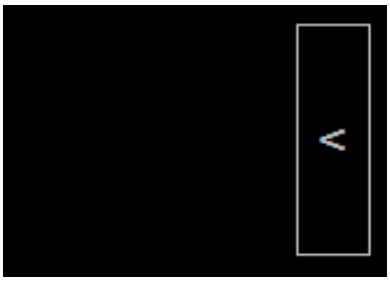


Enter the amount to be displayed in the virtual monitors and click "update".

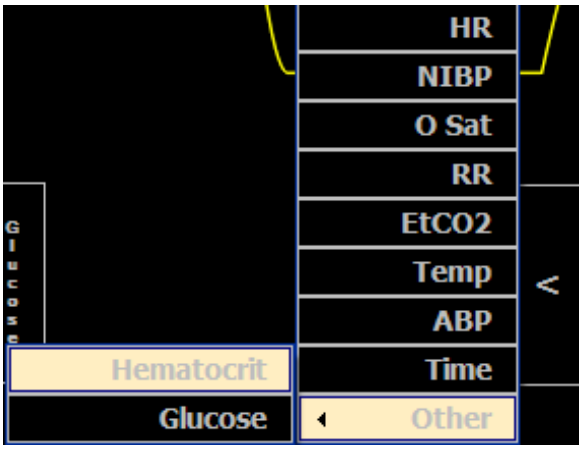
Have the student or provider close one of the parameters currently displayed by the virtual monitor by clicking on the button of the value to be removed, and selecting "Close".



Now the new custom number has a display slot.

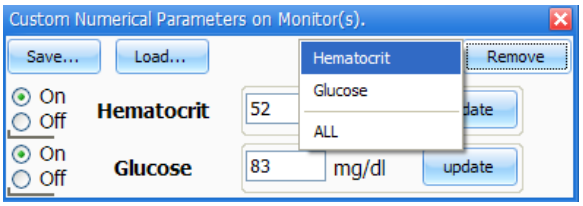


Click on the button and select “Other”. Choose the value to display.

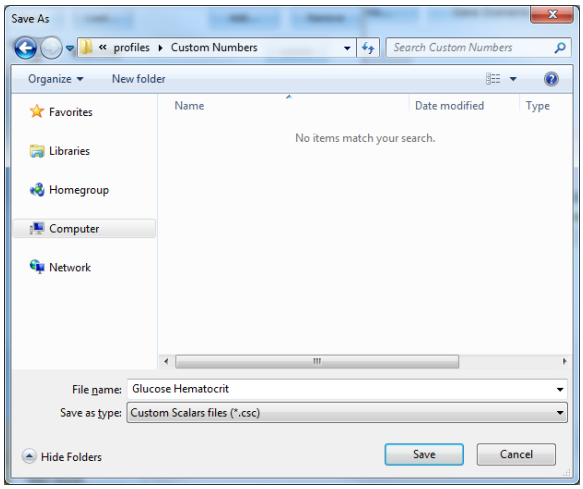


Do the same for as many new values as preferred for display. The figure below shows three new values: Glucose level, hematocrit, and TSH levels along the bottom of the display.

Delete any parameter by clicking “Remove”.



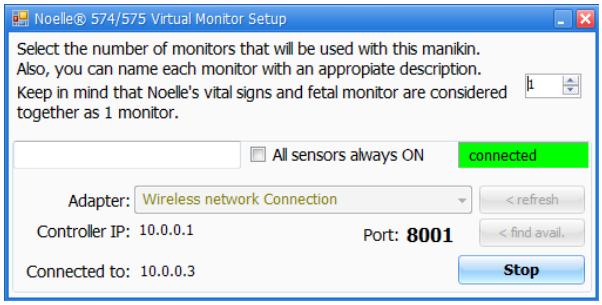
Save any list of added custom numbers by clicking on the “Save…” button. After clicking this button, the “Save As” window is displayed:



Type a file name, and click “Save”. You can load any of the pre-saved combination of custom numbers by clicking on the “Load” button.

Configuration

The configuration button is used to properly connect the virtual monitor to the tablet. Clicking on it, displays the following dialog box:



To configure the connection between the computers and establish a connection to the virtual monitors software, refer to page 250.

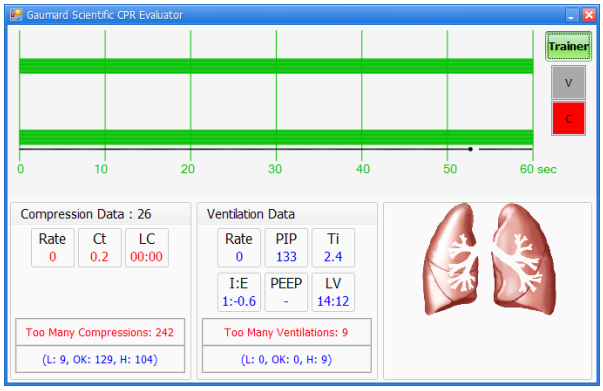
CPR

GaumardUI features a CPR performance evaluator and trainer. From the menu bar, click on CPR and select Evaluator to access the CPR Evaluator window.

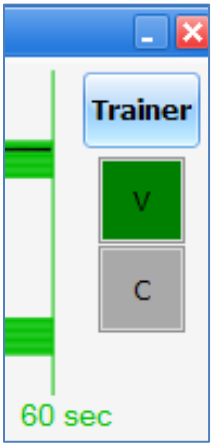
Chest compressions will not be detected if the cardiac rhythm is set to a healthy state.

Ventilations are reported only if the respiration rate is set to zero.

The CPR evaluator feature provides real time feedback on the provider's compression and ventilation performance.

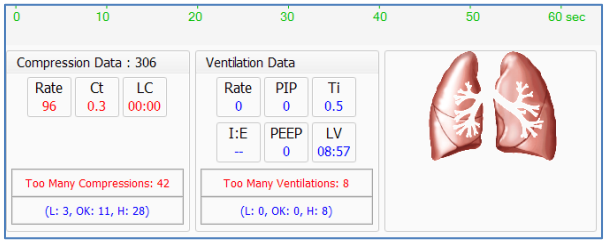


The provider performance indicator boxes are located on the right. The V (ventilation) and C (compression) box fill color changes between the following states:



- **Grey** – No intervention was detected.
- **Yellow** – Compression was too shallow. Ventilation was too weak.
- **Green** – Compression/ventilation was performed correctly.
- **Red** – Compression was too deep. Ventilation was too strong.

Compression and ventilation data is displayed at the bottom of the window as CPR is performed by the provider.



Compression Data

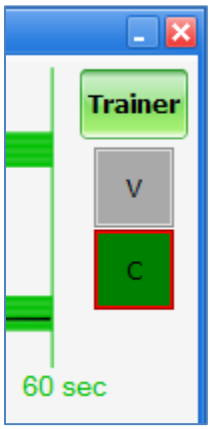
- **Rate** – Rate of compressions in real time.
- **Ct** (Compression time) – Average length of each compression in seconds.
- **LC** (Last Compression) – Time elapsed since the last compression performed.

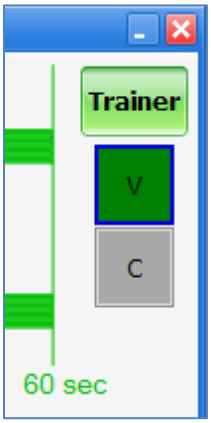
Ventilation Data

- **Rate –** Ventilation rate in real time.
- **PIP –** (approx.) Peak Inspiratory Pressure
- **Ti –** Time Inspiration
- **I:E –** Inspiratory: Expiratory Ratio
- **PEEP -** (approx.) Positive end-expiratory pressure.
- **LV** (Last Ventilation) **–** Time elapsed since the last ventilation performed.

Trainer

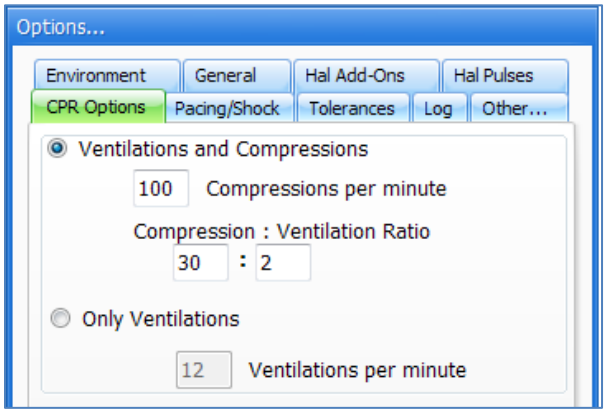
The CPR trainer features generates a visual queue of the compression to ventilation ratio programmed in the CPR Options menu. When the **Trainer** button is clicked, the V (ventilations) and C (compressions) box borders blink to indicate the correct reference CPR rate.





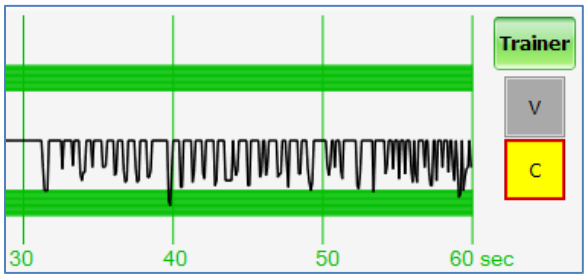
CPR Options

By default, the trainer is configured to blink the reference borders at a 30:2 compression to ventilation ratio. To change the ratio, navigate to the menu bar and click the CPR dropdown and CPR Options.

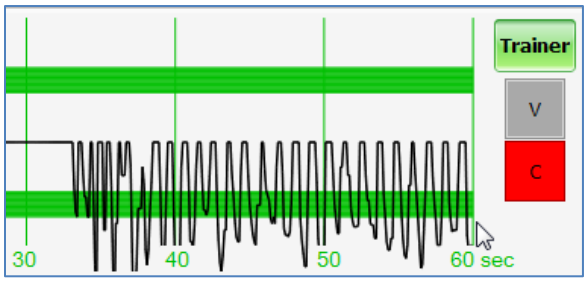


Performance Examples

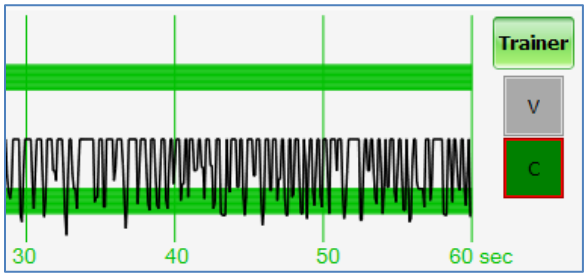
Compressions are too shallow. Waveforms mostly do not reach the green zone. Compression indicator is yellow.



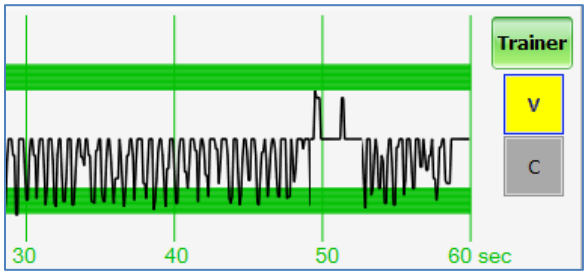
Compressions are too deep. Waveforms mostly exceed the green zone. Compression indicator is red.



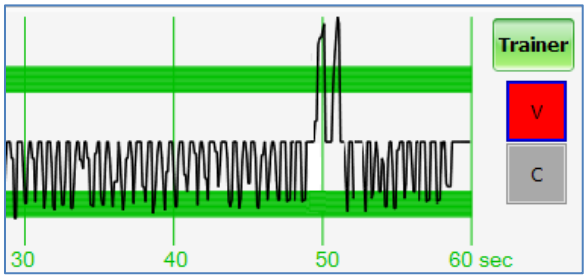
Compressions are performed correctly. Waveform peaks are mostly inside the green zone.



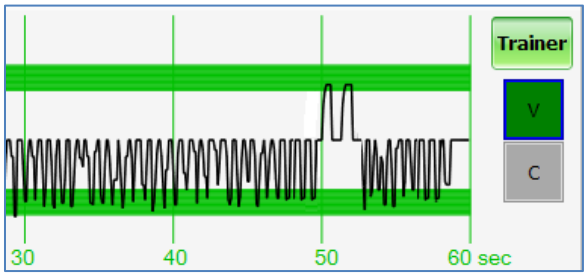
Ventilations are too shallow. Waveform peaks do not reach the green zone.



Ventilations are too strong. Waveform peaks exceed the green zone.

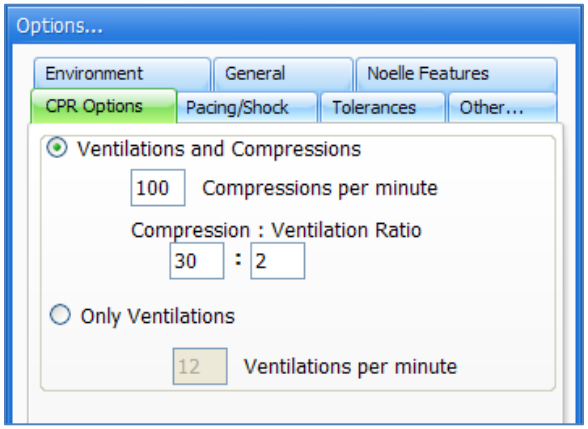


Ventilation was performed correctly. Waveform peak is inside the green zone.



Options

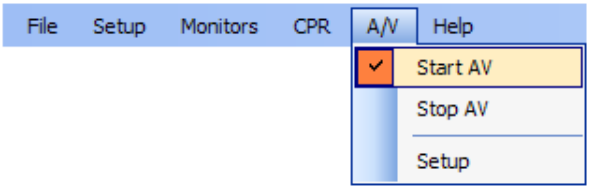
Navigate to CPR>Options to modify the ventilation and compression ratio.



A/V

GaumardUI is capable of interfacing with a number of third-party A/V recording systems that enable the capture of Audio and Video interlaced with the events recorded in the software log.

Enabling the AV Link displays the following A/V menu:

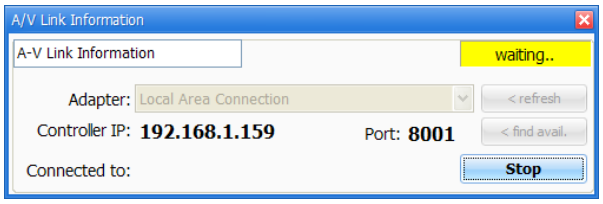


Click “Start AV” to enable the Audio Video messages in the log system. GaumardUI also permits automatic sending of a “Start Record” message to the A/V Unit.

Because it is possible to extend a simulation session beyond the last step in a scenario, the “Stop Recording” message does not have an “automatically stop” option.

Setup A/V

Clicking on A/V, Setup displays the following dialog box: This menu permits sending Start and Stop messages to the recorder, as well as displaying the connection status. In order to set up the connection on the A/V System side, please consult your A/V System’s documentation.

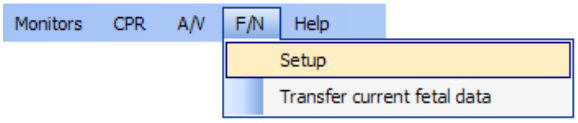


Fetal Neo Link (Automatic Mode)

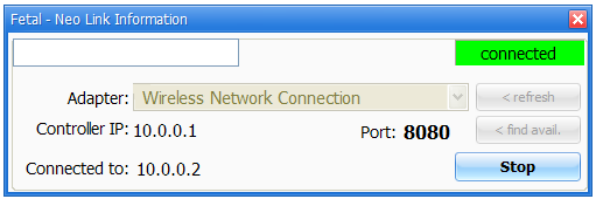
The Fetal Neo Link feature automatically transfers fetal vitals to the Newborn HAL/ Preemie HAL tablet, once a labor scenario is complete. To configure this feature, follow the steps below to establish a connection between the NOELLE Model and the Newborn HAL/ Preemie HAL model.

NOELLE Tablet

Enabling the Fetus-Neonate Link from the options menu displays the following drop-down menu.



Clicking on F/N, Setup, displays the Fetal – Neo Link Information connection window. Enter a port number for this connection and click connect.

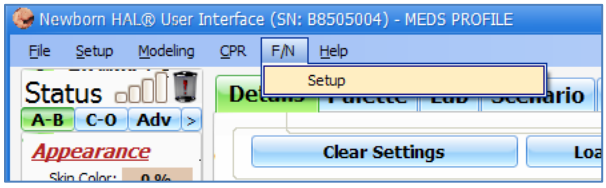


Click find available to automatically find an open port.

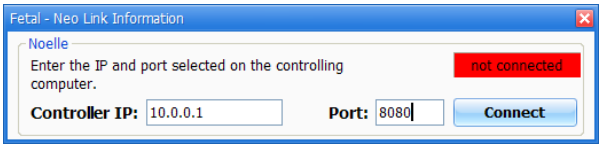
Newborn HAL / Preemie Tablet (Automatic Mode)

Enabling the Fetus-Neonate Link from the options menu displays the following drop-down menu.

Access the F/N setup menu on Newborn HAL /Preemie HAL tablet.



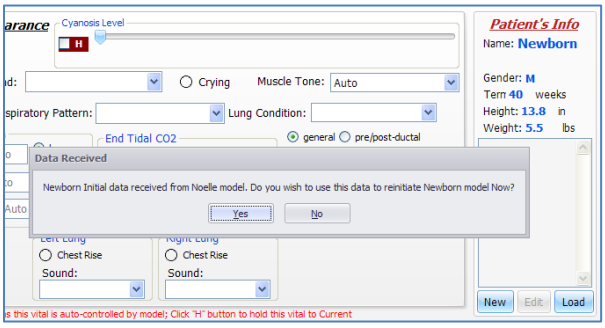
Enter the IP address of the NOELLE tablet and matching port number and click connect.



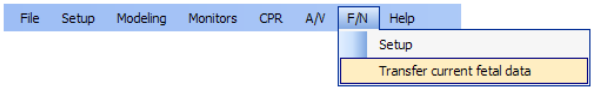
Once the connection is established the system is ready to transfer the information between computers.

Using the Neo Link

Fetal vital information will now be sent automatically to the newborn tablet when a labor scenario is complete. The Data Received window will prompt the facilitator to accept the incoming neonatal vital information from the NOELLE model. Click **Yes** to load the transferred information onto the Newborn tablet.



The Neo Link feature also allows the facilitator to send a current state of the fetal data from the NOELLE Model.

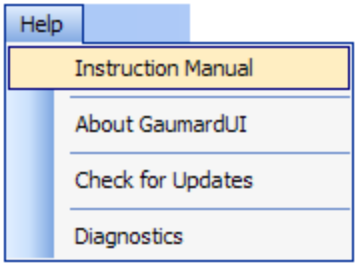


Click on the Transfer current fetal data perform this action.

Help

The help menu has four options: Instruction Manual, About GaumardUI, Check for Updates and Diagnostics.

Instruction Manual



Instruction Manual allows you to view a soft copy of the entire NOELLE S574-575-576 help manual.

About GaumardUI

The About GaumardUI window displays the software and simulator firmware version.

Check for Updates

To check and install software upgrades, follow these simple steps:

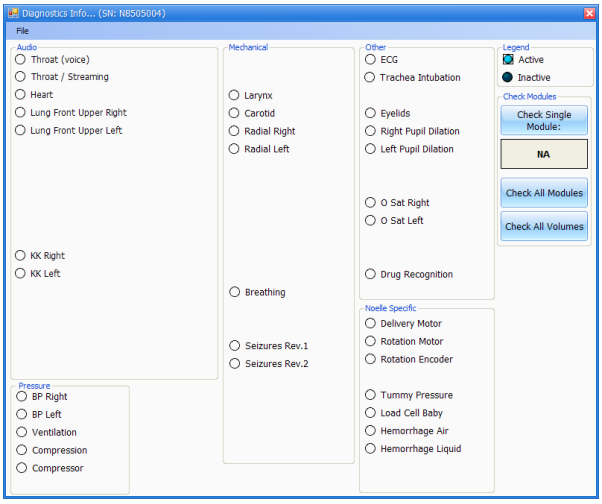
CAUTION: Do not change the network configurations of the tablet to connect it to your local wireless network. Such changes will interfere with the proper operation between the tablet and your virtual monitor virtual monitor computer.

1. Connect an Ethernet cable to the tablet PC.
2. Go to the Help menu, and click on Check for Updates. The GaumardUI automatically starts searching for available updates.
3. Click "Install" to begin the update. The download progress bar begins to auto-fill as the setup file is downloaded.

   Upon completion, the software automatically launches the setup wizard.
4. Click "Next", and follow the wizard instructions to complete the software download.

Diagnostics

Use this feature as a troubleshooting tool.



For more information, go to the Appendix.

Working with NOELLE

DISCLAIMER: The section below describes all possible features in the NOELLE simulator. These features are available in all three NOELLE Models: 574, 575, and 576. Please use the table below to identify which features are standard and which ones are optional in your NOELLE model before you complete reading Section II. The content of this table is subject to change without prior notice. Please contact Gaumard Scientific for the most current information.

Legend: Y = Yes **O** = Optional

Category	Feature	NOELLE 574/575/576
Airway	Airway intubation	Y
	Airway sounds	Y
	Nasal intubation	Y
Breathing	Chest rise	Y
	Lung sounds	Y
	Pulmonary ventilation: BVM, mechanical	Y
	Respiratory patterns	Y
Cardiac	Chest compression	Y
	ECG Monitoring	Y
	Electrical therapy	Y
	Heart Sounds	Y
Cephalic	Reactive Eyes	Y
	Seizures	Y
Circulation	Automatic blood pressure	Y
	Bilateral IV Arms	Y
	Bilateral pulses (Carotid, Brachial, Radial)	Y
	Virtual blood pressure	Y
Obstetrics	Breech birth	Y
	Caesarean delivery	Y
	External version	Y
	Leopold Maneuver	Y
	Normal Labor and delivery	Y
	Placenta delivery	Y

Category	Feature	NOELLE 574/575/576
	Placenta previa	Y
	Postpartum activity	Y
	Prolapse of the umbilical cord	Y
	Shoulder dystocia	Y
	Vacuum-Assisted delivery	Y
Systemic	Intramuscular injection sites	Y
	Oxygen saturation	Y
	Urinary Catheterization	Y
Other	Drug Recognition (Right Arm)	O
	Postpartum hemorrhaging	Y
	Streaming audio	O
	Virtual vital signs monitor	Y

The content of this table is subject to change without prior notice. Please contact Gaumard Scientific for the most current information.

Airway

Nasal and Oral Intubation

Airway management techniques can be practiced on NOELLE including BVM, nasal/oral intubation, and suctioning. Endotracheal tubes, NG tubes and LMAs can be used. Use the Sellick maneuver if needed to bring the vocal folds into view.

Procedure	Recommended Device Size
Intubation (Blade size)	Miller 4 or MAC 3.5
LMA	Size 4
Nasal Intubation	8 mm outer diameter max
Oral Intubation	ETT Fr 7 or 7.5

WARNING: Do not introduce liquids when performing nasal and oral intubation. Doing so can permanently damage the system.

Always lubricate tubing, airway and nasal opening prior to performing any nasal or oral intubation.

Resuscitation

Ventilation and manual chest compressions are measured and logged showing the instructor exactly how students are performing.

Teeth

NOELLE is supplied with fixed upper and lower dentures. The tongue may be moved gently from side to side.

Airway Sounds

NOELLE has multiple upper airway sounds synchronized with her breathing.

Breathing

Respiratory Patterns

Users can easily control rate and depth of respiration; and choose independent right or left lung sounds, which are synchronized with selectable breathing patterns: Kussmaul's, Cheyne-Stokes, Biot's, Apneustic, apnea, and normal.

Lung Sounds

Multiple lung sounds available include: normal, wheezing, inspiratory squeaks, crackles and rales.

Pulmonary Ventilation

The airway contains nominal landmarks permitting either BVM or intubation exercises including the use of a LMA. The trachea extends to the bronchi and lungs.

Chest Rise

Lungs expand normally permitting realistic chest rise. Chest compressions are measured and logged.

CPR

Use a normal size adult BVM which will seal around the mouth and nose. The ribs have normal anatomic landmarks and the lungs permit an adequate chest rise. Normal CPR procedures can be followed with aid of GaumardUI's CPR trainer.

CAUTION: Do not perform mouth to mouth ventilation. Doing so may lead to molding of the airway. The airway itself cannot be sanitized or cleaned.

Cardiac

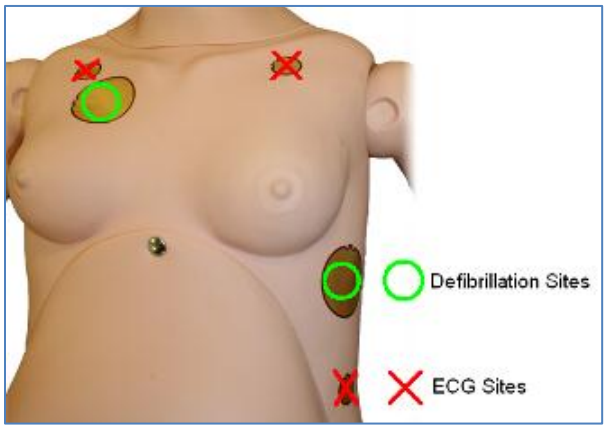
Heart Sounds

NOELLE is equipped with several realistic heart sounds, which are related to the user defined heart rate and cardiac rhythm.

ECG Monitoring and Electrical Therapy

NOELLE is equipped with conductive skin sites that allow the attachment of real electrodes and defibrillator pads. This feature permits the user to track cardiac rhythms and events with their own equipment just like with a human patient.

NOELLE can be shocked or paced with real energy for cardioversion, defibrillation and pacing drills. AED will display NOELLE's ECG, analyze her cardiac rhythm and advice action.



ECG and electrical therapy checklist and warnings:

- Only deliver electrical therapy when the simulator is fully assembled, dry, and undamaged.
- Make sure the defibrillation patches on the simulator are in good condition, including removing any and all gel residue on the defibrillation patches from previous use(s). It is a good practice to remove gel residues after every use. Failure to do so will leave behind a film of electrode gel that hardens causing arcing and pitting.
- Do not re-use the gel-adhesive pads. Do not leave them on for next day use.
- Use hard paddles or wet-gel pads preferably. Avoid using solid-gel pads since they present higher risk of burning the simulator's skin.
- Gel pads have a shelf life. Make sure they are not expired to avoid arcing.
- Make sure the simulator is not in contact with any electrically conductive surfaces.
- Use the simulator only in a well-ventilated area, free of all flammable gases.
- NEVER attempt to service or modify any of the electrical connections, especially those between conductive skin sites and the internal electronics. Discontinue use if any wires are found exposed with damaged insulation.
- Real medical products, especially electrodes, sometimes use powerful adhesives that can be difficult to remove. A gentle, degreasing cleanser may be needed. Refer to Care and Cautions for more information.
- Electrode gel on the skin between any two electrode targets can become a pathway for electrical current, just as in real life. If this occurs, NOELLE's skin can be burned.
- Do not allow defibrillation pads to overlap ECG sites. Doing so will may damage the simulator and cause arcing.
- Should dark traces appear on the conductive patches due to gel residue or previous arcing, use a pencil eraser to remove the traces and then clean with alcohol.
- **DO NOT SCRATCH** the patches with abrasive objects; doing so will cause irreversible damage to the conductive sites and subsequently cause arcing.

Cephalic

Reactive Eyes

NOELLE has blinking eyes with photo sensitive pupils. The dilatation state of the pupils, the blinking rate and light reactivity are easily manipulated from the tablet PC giving the user total control (simulators with serial number N0908408 or higher only).

Seizures

NOELLE is outfitted with a convulsion mechanism that can be used in conjunction with scenarios, preeclampsia for example. The severity of the convulsions can be programmed with a touch of the stylus.

Circulation

Bilateral Pulses

NOELLE's palpable pulses (carotid, brachial, radial) are dependent on blood pressure. Users can also disable distal pulses to simulate severe hypotension

Programmable Blood Pressure

Programmable blood pressure can be measured using any standard sphygmomanometer. Korotkoff sounds are heard between systolic and diastolic. To use this feature:

1. Put the cuff around the simulator's upper left arm with the cuff mark at the medial site of the bicep brachii, about an inch (two cm) above the anterior elbow, which is the correct site when taking the blood pressure on real patients.

CAUTION: Placing the cuff any differently might give an incorrect reading.

2. Calibrate the BP arm, if it has not been calibrated. Refer to page 120 for information.
3. Inflate the BP cuff, and auscultate Korotkoff sounds as you would a normal patient.

Modified BP port for Virtual BP system

Connect the Luer-Lok fitting on the end of the extra branch to the Luer-Lok port on NOELLE's left shoulder. Some facilitators prefer to make this connection before commencing a simulation session.

Drug Recognition (option)

The drug recognition module can be used to simulate drug administration by reading a programmed syringe filled with water. GaumardUI identifies the programmed drug type and volume injected into veins of the right lower arm as a medication.

This feature can also be used to practice drug administration to patients using IV procedures. Physiologic changes as a result of the medications administered are calculated by the physiologic model.

WARNING

The simulator must be powered on when working with the drug recognition arm. This includes calibration, purging, draining, IV infusion, Set Med Id and injecting fluids. Failure to do so will permanently damage the simulator and void the warranty.

Do not attempt to fill IV system without the drain connector in place.

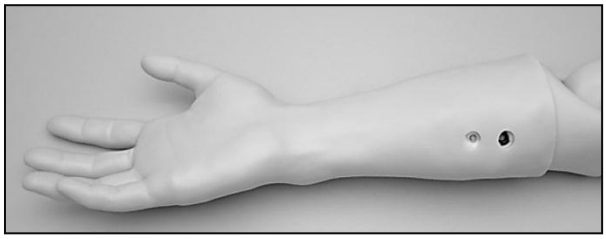
Always leave the drain port connected when injecting fluids into the system.

Use only Gaumard's provided simulated blood. Any other simulated blood brand containing sugar or any additive may cause blockage and/or interruption of the vasculature system.

Always flush the IV system with distilled water at the end of every simulation.

A drug recognition arm is equipped with a black drainage port. Reversing the fill and drain connections on a drug recognition arm will damage the system and void the warranty.

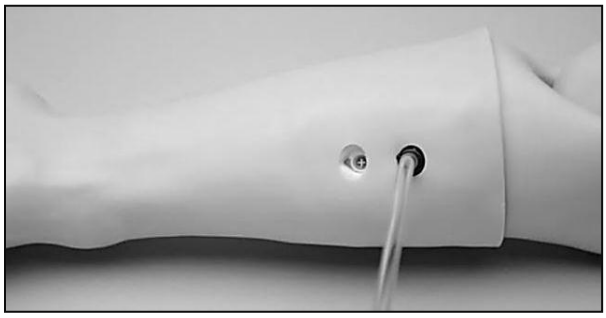
A drug recognition-capable arm can be identified by the black drainage port located on the right forearm.



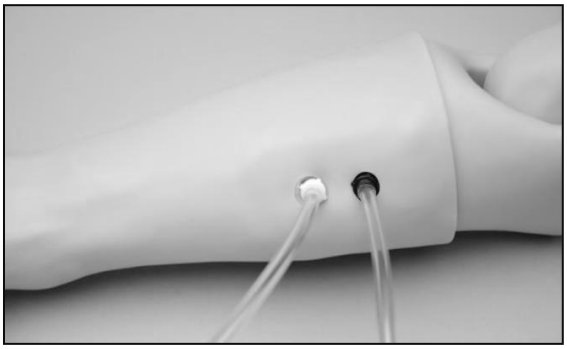
1. Power on the simulator by starting the GUI software on the tablet. Select NOELLE from the menu and click **start**.
2. Locate the IV Filling kit, which contains: Drainage tube with black tip, filling tube with white tip, and syringe.

3. Attach the drain tube to the black output port and place the end of the drain hose inside a container.

CAUTION: The location of the container must be lower than the arm in order to siphon the fluids in the next step.



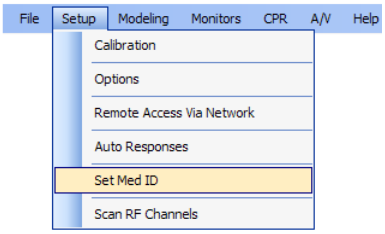
4. Next, attach the fill syringe with clean water to the white port.



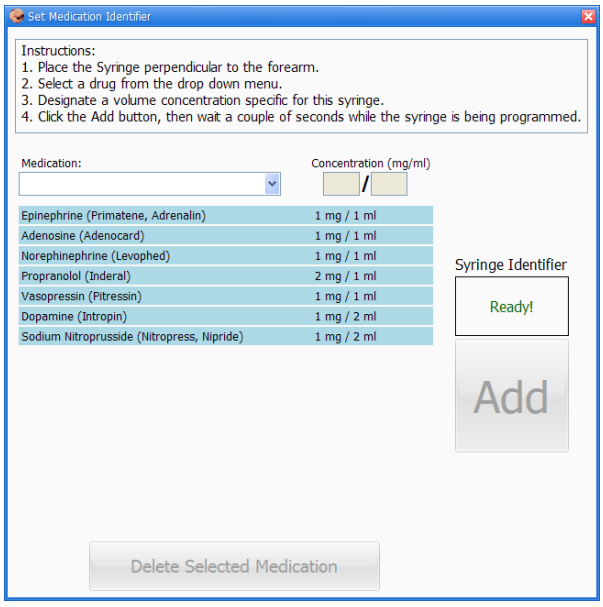
5. Insert water in the system until fluids flow through the drainage tube into the container. You may remove the drain tube and the fill syringe. The fluid drained must flow in a downward direction.

WARNING: You must have water in the IV vasculature for the drug recognition module to work. Failure to do so will damage the module and void the warranty.

6. Check which drugs have been programmed to a syringe by clicking on "Setup", then "Set Med ID".



The Set Medication Identifier is displayed.



If none of the drugs required display on this list, go to page 131 to set up the syringes. Otherwise, exit out of the Set Medication Identifier dialog box and proceed to the next step.

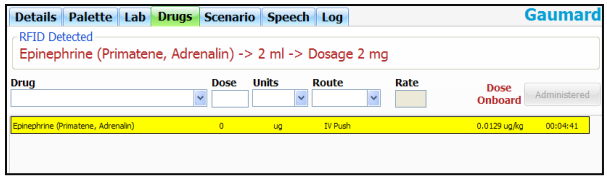
7. Prepare the desired syringe for use by filling with water or simulated blood.

WARNING: Use only Gaumard's provided simulated blood. Any other simulated blood brand containing sugar or any additive may cause blockage and/or interruption of the vasculature system.

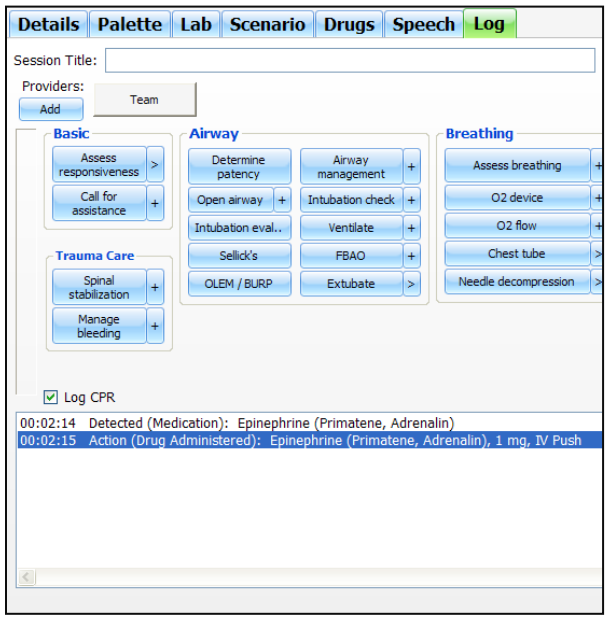
8. Using the desired syringe, inject one of the veins posterior to the hand, or one of the veins anterior to the arm in the forearm. For IV infusion exercises, make sure to place a tagged syringe on top of the arm. The tagged syringe must be close to the arm for the drug recognition module to function properly.

WARNING: Maximum amount of fluid injected without draining should not exceed 40 mL and the maximum injection rate is 9999 mL/hr.

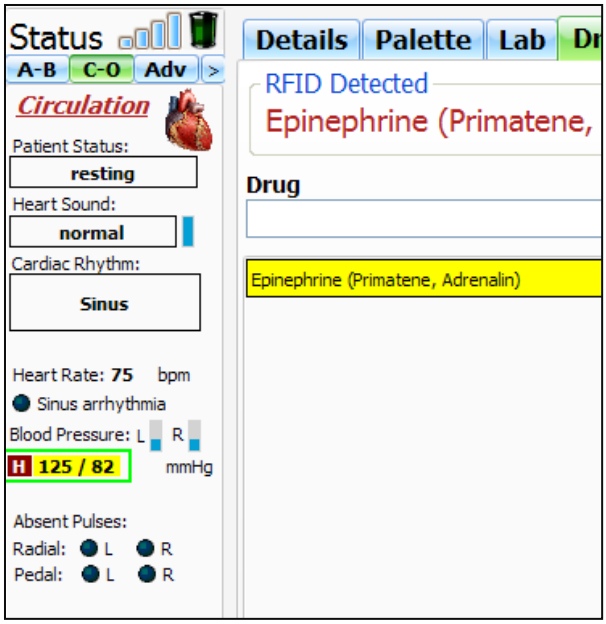
The software automatically recognizes the drug administered and calculates the dosage given and the current concentration of the drug in the simulator. This information is shown on the Drug page.



The log panel also records the drug detected.

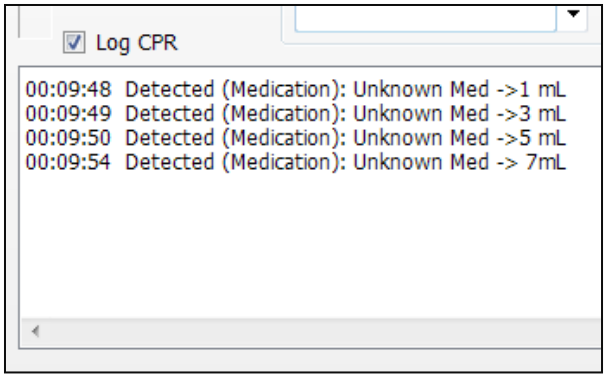


In addition to calculating the dosage and concentration, the software automatically changes the vital signs of the simulator to reflect the effect of the medication applied. To show a prompt before applying the effect of the medication, navigate to page 130.

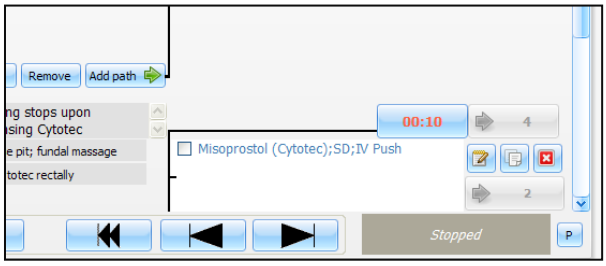


To edit the effects of a medication, navigate to page 67.

If the software does not recognize the drug that is being administered, the Log page reports "Detected (Medication): Unknown Med" followed by the amount of drug detected.



If you are running a branching scenario where a drug is added as a path in one of the nodes, the software automatically checks the action and moves to the next node if no other actions are pending. For more information about adding drugs as actions on a node's path, go to page 57.



WARNING: At the end of every simulation session, you must purge the IV system with clean water with the simulator powered on. If the drug recognition arm is not going to be used for a week or more, purge the system with 70% isopropyl alcohol solution. Failure to do so may permanently damage the system.

Bilateral IV arms

NOELLE has a bilateral IV training arms that can be used for bolus or intravenous infusions as well as for drawing fluids.

WARNING

The simulator must be powered on when working with the drug recognition arm. This includes calibration, purging, draining, IV infusion, Set Med Id and injecting fluids. Failure to do so will permanently damage the simulator and void the warranty.

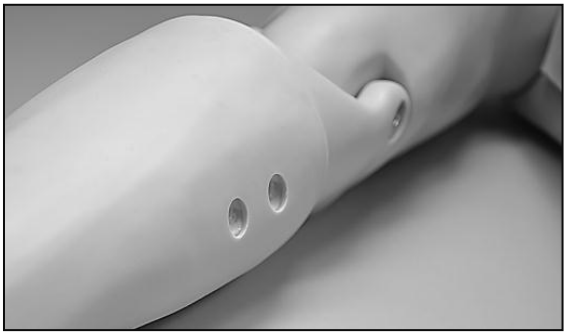
Do not attempt to fill IV system without the drain connector in place.

Always leave the drain port connected when injecting fluids into the system.

Use only Gaumard's provided simulated blood. Any other simulated blood brand containing sugar or any additive may cause blockage and/or interruption of the vasculature system.

Always flush the IV system with distilled water at the end of every simulation.

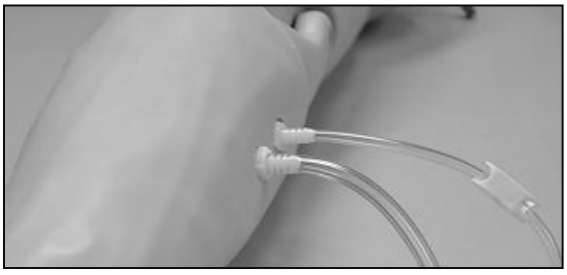
1. First, locate the fill syringe with tubing and the drain tube with pinch-clamp. Fill the syringe with the desired fluid -- water or simulated blood.



2. Connect the syringe with tubing to one port and the drain tube with clamp to the other port as shown.

WARNING: A drug recognition arm is equipped with a black drainage port. Reversing the fill and drain connections on a drug recognition arm will damage the system and void the warranty.

3. Leave the drain tube clamp opened and depress the syringe until all air has been pushed from the IV system and fluid runs from the drain.



4. To simulate a patient with no accessible peripheral IV sites, connect only the syringe. Pull the plunger to create suction, which will collapse the veins. Disconnect the syringe tube from the arm port while maintaining suction. The port will seal, and the veins will remain collapsed.

Obstetrics

Normal Labor and Delivery

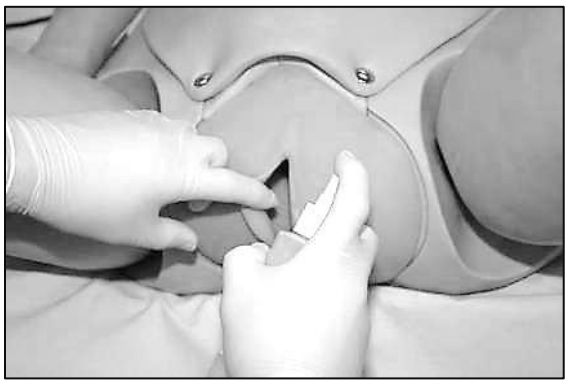
Birth Canal Maintenance:

- Ball point pens, ink and markers permanently stain the birth canal insert.
- Do not wrap this or any other Gaumard product in newsprint.
- The birth canal insert can be cleaning by wiping with a mild solution of soap and water. After cleaning, dust with talcum powder.
- Store the unit in a cool, dry place.
- After exercise is completed, **DO NOT** leave birthing baby in contact with the birth canal.
- Always lubricate the birth canal prior to delivery.

Preparing for a delivery

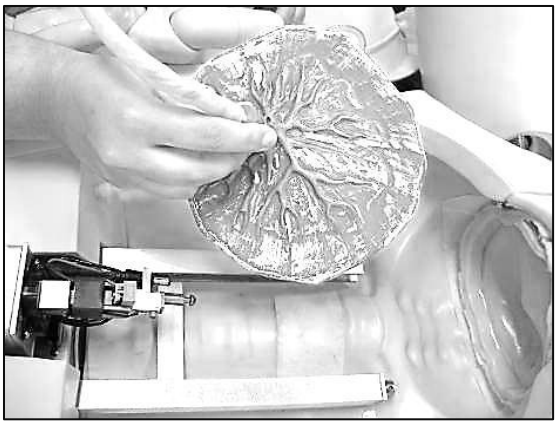
1. Lubricate the fetal head and shoulders, plus the inside of the birth canal insert, using the silicone oil provided.

WARNING: Always lubricate the fetus and the birth canal before every delivery. Failure to do so will result in damage to the birthing mechanism and the birth canal.



2. Lubricate the head and shoulders of the fetus.

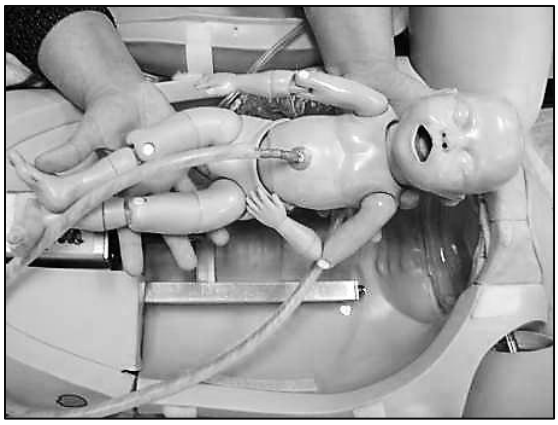
3. Attach the umbilicus to the placenta.



4. Attach placenta to either side of the abdominal wall. Orienting the Velcro patches in parallel causes segments of the placenta to be retained, if secundes are reversed; orienting them at right angles causes the placenta to release with modest traction.

5. Attach the umbilical cord to the baby, route the cord so it does not bind in the mechanism and attach the placenta to the pelvic cavity using the Velcro® fastener. Note that the fetus has 2 receptacles at the perineum into which the matching pins located on the birthing mechanism are inserted.

6. Position the fetal arms and legs as shown.



7. Umbilical cord can be wrapped around the neck, demonstrating a nuchal cord.

Locking Mechanism

The birthing mechanism arm attaches and locks into the fetus attachment port. The motor arm low voltage cable feeds power to the locking mechanism and fetal heart tones speaker inside the fetus.

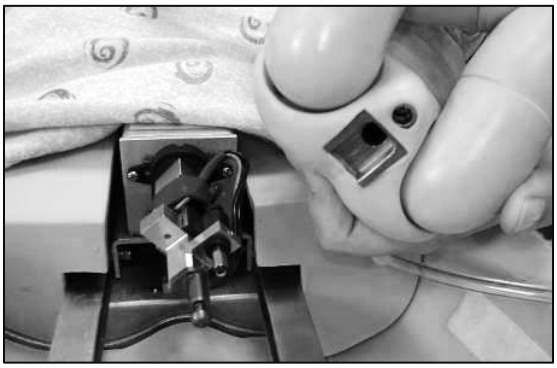
There will be one actuation of the locking mechanism when the articulating baby is inserted, which is normal.

WARNING

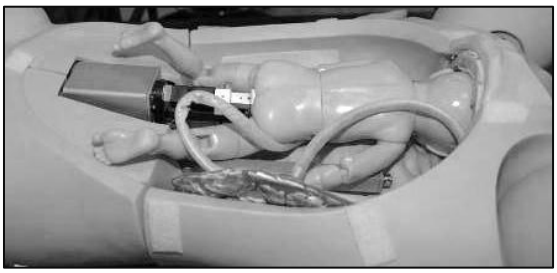
On first revision birthing mechanisms, always adjust the motor arm before every delivery to prevent the power cable from wrapping around the motor arm. First revision systems can be identified by the warning label located atop of the labor mechanism.

Do not operate the birthing mechanism without the tummy cover in place.

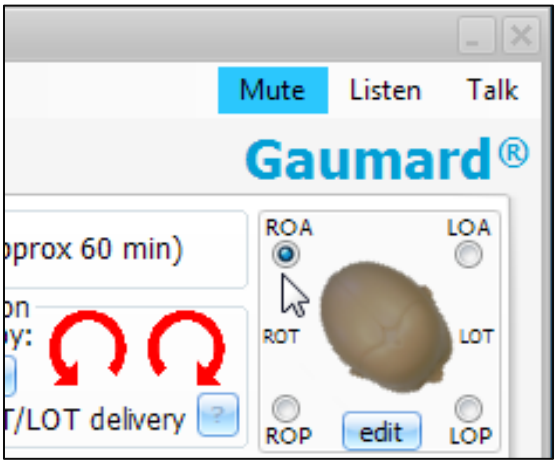
1. Position the baby so that its face is upward (anterior). Connect the baby to the birthing mechanism while the simulator is "ON" so that the electromechanical mechanism allows the baby to be locked into place.



2. Once the baby is connected and locked onto the mechanism, position the baby to its initial birthing position. The user has the choice of ROP, LOP, ROA, LOA.



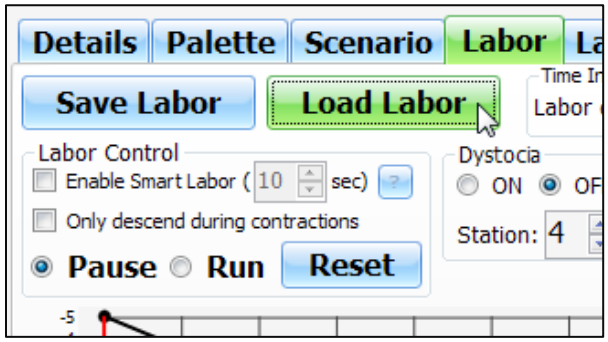
3. On the labor tab, select the fetal position that matches the birthing baby's initial position on the simulator.



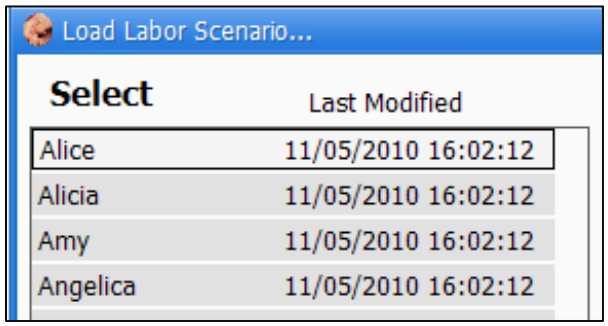
Loading a Labor Scenario

Several prebuilt labor scenarios are included in the Quick Start NOELLE Profile. Click the **Load Labor** button to load a labor scenario.

Navigate to File>Profile from the menu bar to quickly change between profiles.



On the **Load Labor Scenario…** window, select the **Alice** labor from and click **Load**.

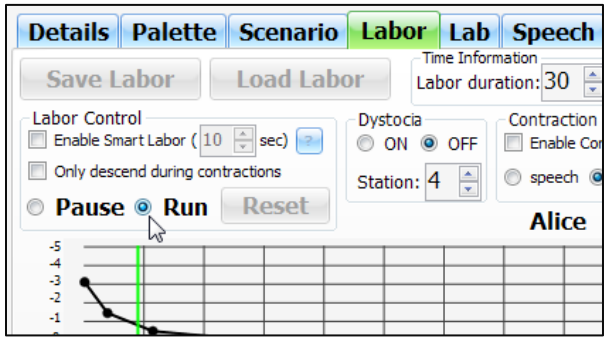


Starting the Labor

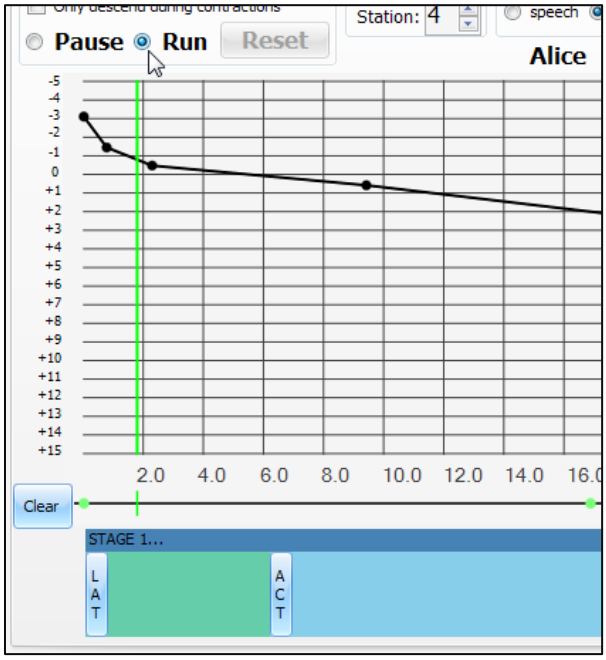
The labor process is started from the labor control panel. Increase the **Warp Factor** to simulate a 30 minute labor in a fraction of the time.

WARNING: Always place the tummy cover on the birthing cavity prior to starting the labor mechanism.

Click the **Run** to begin the labor process.



The labor mechanism will descend as indicated by the green vertical progress bar and descent curve.

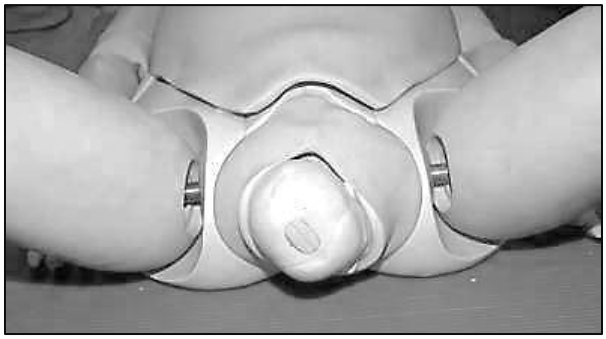


During delivery, fetal heart tones can be heard by placing the bell of a conventional stethoscope on the abdomen. Move it around until the tones are clearly heard. Tones are supplied via a small speaker located in the fetus.

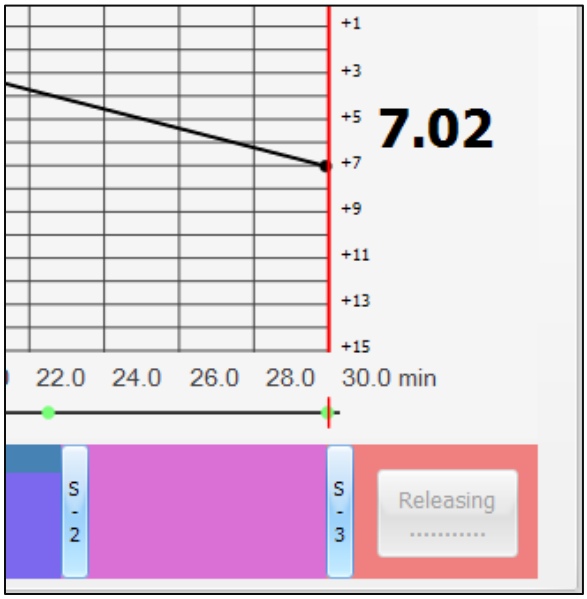
Completing a Delivery

The first few centimeters of movement normally take about half the total delivery time. The baby rotates internally as it moves forward, after the head is delivered and before the shoulders are delivered.

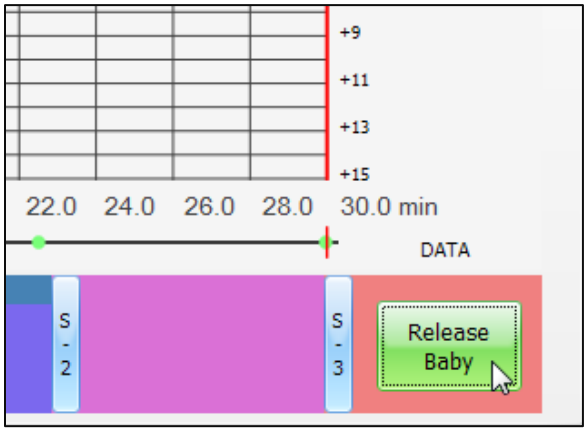
The fetus is turning and the head is crowning.



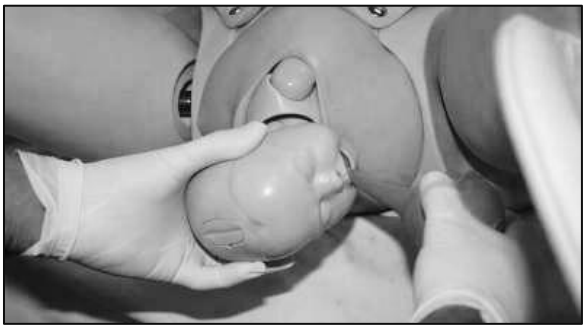
The student or instructor may help the fetal head and shoulders through the vulva just as in real life. However, the fetus will **automatically unlock** only after the vertical progress bar reaches **Stage 3** of the delivery process. The automatic unlock process is indicated by the **Releasing…** status.



Click the **Release Button** to manually disengage the baby.



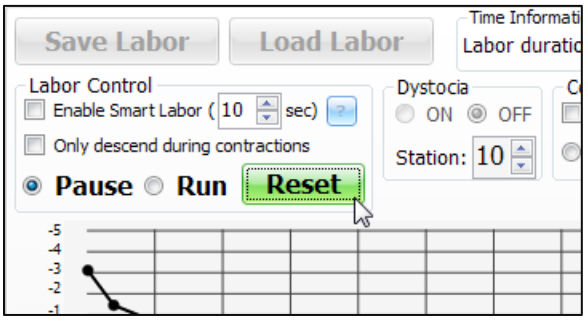
WARNING: Do not pull the baby upward in contrast to the birthing mechanism's linear trajectory. Doing so can bend the motor arm and cause damage to the birthing mechanism.



Resetting the Delivery Mechanism

After the delivery is complete, click the reset button to return the delivery mechanism to the initial position.

WARNING: Do not turn off the simulator until the birthing mechanism has fully retracted to its initial position.



Vacuum-Assisted Delivery

Vacuum-assisted delivery is a technique for the management of arrest during the second stage of labor. Criteria for successful delivery include: (1) cervical dilation is complete;(2) cephalic presentation is confirmed ;(3) the fetal head is no more than 1/5 palpable above the pubic bone; (4) effective uterine contractions continue; (5) maternal expulsive efforts continue. A soft skin scalp cover for the articulating baby is provided for vacuum-assisted deliveries.

WARNING: The soft skin scalp cover is meant to be used during the process of a vacuum delivery, and not resting against the cervix during non-simulation times. If pressure is left on the cervix from the scalp cover for lengthy times, both pieces will be damaged.

Vacuum-assisted delivery may be practiced with the NOELLE simulator using a vacuum cup available from a number of suppliers. Vacuum-assist device attaches to fetal scalp between fontanelles:

Await the next contraction that may be simulated by asking NOELLE to bear down, and have the student apply steady traction perpendicular to the plane of the cup. Some vacuum-assisted delivery devices are equipped with a means for measuring the amount of traction, which may be on the order of about fifteen pounds.

The software will also give the instructor a graph that indicates applied force, as the delivery mechanism is equipped with a strain gauge. The student must stop traction when the simulated contraction ceases. Repeat this procedure of waiting for the simulated contraction and providing traction during the contraction if and only if the fetus is moving down the birth canal with each contraction.

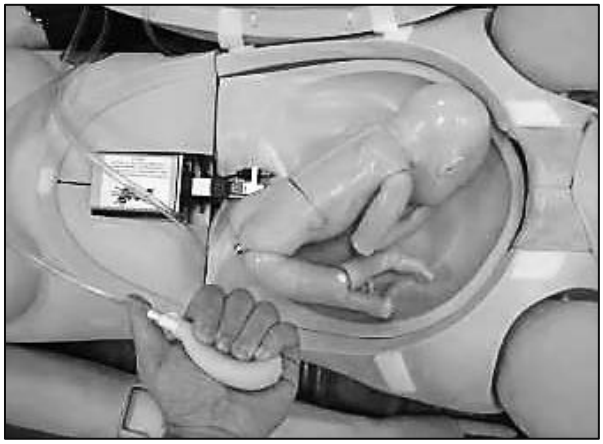
Leopold Maneuver

To perform Leopold Maneuvers, retract the birthing mechanism fully and remove the articulating birthing baby. Place the elevating cushion within the birthing torso. Route the inflation bulb outside NOELLE through any space open on the left side. Place the birthing baby in the elevating cushion in the vertex, breech, or transverse positions. Install the “tummy cover”. Inflate the elevating cushion until the fetus can be felt under the abdomen cover.

WARNING: Do not enable the motorized birthing mechanism while performing this exercise.

Placing elevating pillow within simulator:

Place fetus onto elevating pillow and lift fetus anteriorly using the squeeze bulb:



Set abdominal cover into place:

Lift fetus anteriorly using squeeze bulb until it can be felt under the cover.

Conduct the four Leopold Maneuvers.

Shoulder Dystocia

Shoulder dystocia is a dangerous condition defined in the NOELLE Guide as the “arrest of delivery of the fetal body after the successful delivery of the fetal head”. It may be characterized by the so-called “turtle-sign” wherein the fetal head moves forward and then retracts.

During dystocia, the fetal shoulders become wedged behind the symphysis pubis. NOELLE may be used to practice the resolution of dystocia using episiotomy techniques, the McRobert’s maneuver, suprapubic pressure, posterior arm sweep, or elbow-knee delivery.

The McRobert’s maneuver causes pelvic tilt that helps release the fetal shoulder from behind the pubic bone:

Suprapubic pressure may also release the fetal shoulder:

To demonstrate shoulder dystocia, place the fetal baby in the ROA position. Activate the delivery mechanism moving the fetus down the birth canal until the fetal head is delivered. Simulate dystocia by clicking the “Turn ON Dystocia” button on the Labor Tab. Once the dystocia mode is active, the fetal traces will automatically convert to real-time mode, and with each subsequent contraction there will be a “Turtle Sign”.

Students must use the various maneuvers including fetal manipulation to deliver the baby. Once the students perform all of the appropriate maneuvers required by the instructor, the dystocia mode can be deactivated by clicking on the “Turn OFF Dystocia” button. Once the dystocia mode is off, the fetal traces and labor warp factor will adjust to the previous settings, and the labor will continue resulting in delivery of the baby.

It is *very important* that the students are aware of the “Turtle Signs”. If, for any reason, the students fail to recognize the proper corrective procedures required, the labor can be stopped completely and set up again. The instructor can then add an unsatisfactory note to the log of the providers’ actions.

Normally, the fetus is retained by the delivery mechanism so that it can be rotated but not delivered. The facilitator can either turn off the dystocia mode to allow the baby to be delivered in the normal fashion, or press the “Release Baby” button on the Labor tab. This action unlocks the baby allowing students to pull the baby through the birth canal.

Cesarean Delivery

Cesarean birth is the delivery of the fetus through an abdominal and uterine incision. A Cesarean delivery, also called a C-section, may be performed as a result of breech presentation, pre-term or dysfunctional labor, fetal distress, prolapsed umbilical cord, placenta previa, placental abruption, or a variety of other abnormalities.

Demonstrate a C-section using NOELLE by unfastening the snaps just above the pubic bone and birthing the baby between the tummy cover and the pubic bone. An optional abdominal cover is available if the Instructor wishes to demonstrate midline or “bikini” incisions.

Delivery mechanism fully retracted and inflatable cushion inserted:

NOELLE C-section delivery using abdominal cover with “bikini” incision. P/N S575.029

WARNING: Do not enable the motorized birthing mechanism while performing this exercise

Prolapse of the Umbilical Cord

Prolapse of the umbilical cord is a dangerous complication which involves the presence of the umbilical cord in the birth canal in front of the presenting fetal part. This condition may occur as a result of breech presentation, transverse lies, a small fetus, an overly long cord, a placenta placed low in the uterus, or other abnormalities.

If the cord is observed in the birth canal ahead of the presenting part, gloved fingers should be inserted and the presenting part lifted off the cord to relieve pressure from the cord. This procedure must be maintained until the prolapse has been resolved, either by termination of the compression of the cord, or until delivery of the fetus by C-section.

Placenta Previa

Placenta previa is a condition in which the placenta is in the lower half of the uterus, located near to or covering the cervical os. There are three types of placenta previa: Total, partial and marginal.

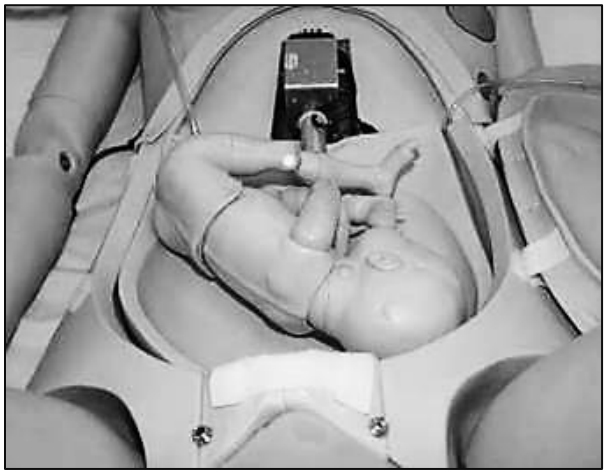
- Total placenta previa is when the placenta completely covers the cervical os.
- Partial placenta previa is when the cervical os is partially covered by the placenta.
- Marginal placenta previa is when the edge of the placenta extends to the internal os where the uterus opens into the vaginal canal.

To simulate placenta previa with NOELLE, place the placenta in the desired position to simulate the condition with the maternal side against the uterine wall, or the cervical os. Then position the fetus within the uterine cavity with the presenting part closest to the placenta.

External Version

Version may be attempted by the care provider to rotate the fetus from a breech position into one permitting normal vertex presentation. To practice "version" remove the abdominal cover and the fetus, retract the delivery mechanism fully and insert the inflatable cushion. Thoroughly lubricate the inside surface of the abdominal cover, the fetus, and the inflatable cushion.

Place the lubricated fetus onto the lubricated inflatable cushion and snap the lubricated abdominal cover into place. Inflate the cushion lifting the fetus anteriorly. Inflate the cushion at the base of the pelvic cavity to position fetus.



Confirm the breech position and attempt to manually turn the fetus within the uterus by trans-abdominal manipulation.

Breech Birth

Breech birth occurs when either the buttocks or lower extremities of the fetus are the presenting part. There are three types of breech birth: frank, complete and incomplete, or footling.

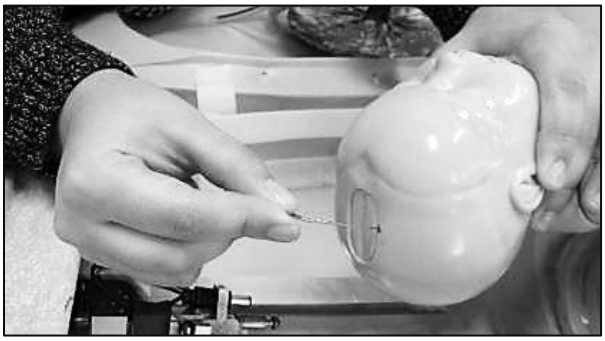
- Frank breech occurs when the buttocks are the presenting part and the legs of the fetus are extended up toward the baby's head.
- Complete breech occurs when the buttocks are the presenting part and the baby's legs are flexed along the lower torso.
- Footling or incomplete breech occurs when one or both of the legs are the presenting part.

There are many differences in labor between the breech presentation and the vertex presentation. During the descent, the posterior hip encounters the pelvic floor and internal rotation takes place, allowing the anterior hip to move beneath the pubic arch. The anterior hip then delivers, followed by the posterior hip, the legs and the feet. External rotation allows the shoulders to move into the maternal pelvis and internal rotation allows the shoulders to deliver. Downward traction allows the delivery of the anterior shoulder, with a finger inserted into the birth canal to free the arm. Upward traction allows the posterior shoulder to deliver and the posterior arm is freed in the same manner. After the delivery of the shoulders, the fetal head delivers in a flexed or heads up position.

Although it is possible for a vaginal delivery of breech presentations, once a breech presentation has been confirmed, a Cesarean is often performed to lower the risk of infant mortality due to cord prolapse or birth asphyxia.

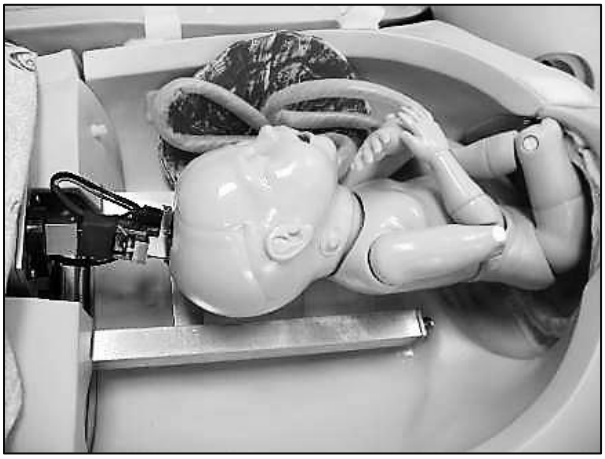
To simulate breech presentations with the NOELLE, retract the birthing mechanism fully, remove the cover in the fetal head, insert the birthing mechanism into the fetal head and place the fetal legs in either an extended position to simulate "footling" delivery or retract the legs for a "frank" delivery.

Remove plug in fetal head for breech delivery:



Removing plug reveals aperture for birthing mechanism:

Attach the fetal head to the birthing mechanism:



Frank delivery

The Pinard or leg-flip maneuver frees one leg then another.

The fetal arms may also require a similar maneuver during delivery.

The fetal arms are delivered and the fetus rotated anteriorly to birth the head.

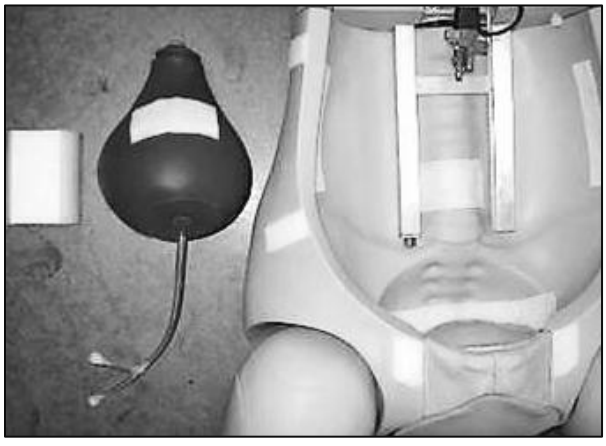
Placenta Delivery

The placenta supplied with NOELLE may be positioned so that it births spontaneously, or requires either modest cord traction or manual removal. In addition, note that the placenta is designed with two removable placental fragments. These fragments are attached to the body of the placenta with Velcro. You may reverse one or both fragments causing one or both to birth with the placenta or remain affixed to the uterine wall.

Students must carefully inspect the birthed placenta to make sure it is complete and that no fragments remain internally. If retained fragments are noted, the student must retrieve them using a gloved hand under appropriate sterile conditions.

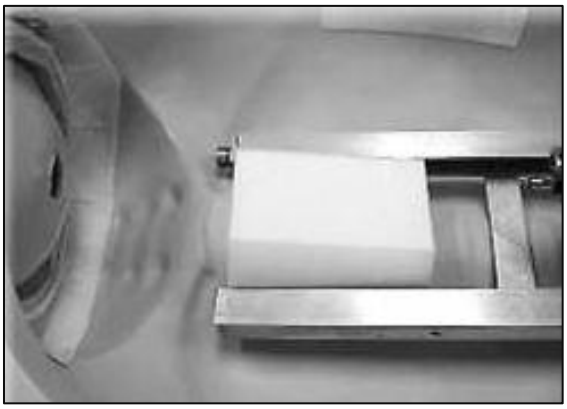
Postpartum Activity

After delivery the uterus normally contracts reducing postpartum bleeding. Under certain conditions contraction does not occur and extensive bleeding may continue. If this condition is not recognized and treated in a timely manner the new mother may go into shock and die. Inadequate uterine contraction may present as a “boggy” or soft uterus assessed through abdominal palpation. Uterine contraction may be augmented using certain drugs and/or uterine massage.



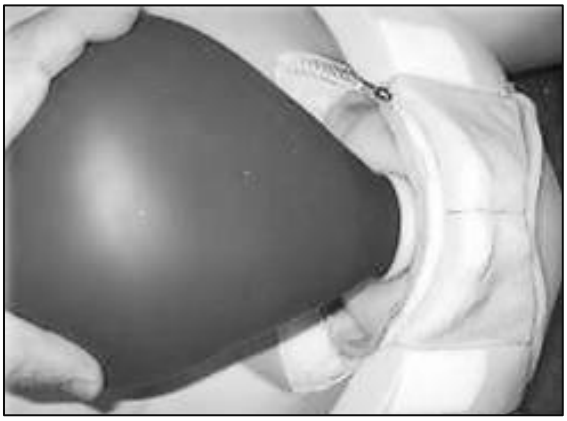
To simulate postpartum activity, follow these simple steps:

1. Connect the white Styrofoam block between the rails of the birth mechanism.



2. Place the uterus over the Styrofoam block lining up the Velcro attachment so that the uterus does not move around, and then insert the tip of the uterus inside the cervix.

The cervix should fit on the ring on the tip of the uterus.



3. Connect the hose on the back of the uterus to the same outlet port the tummy is connected to. Should the instructor wish to use the tummy with the inflatable bladders the tummy can be connected to the extra port on the hose.

4. Once the uterus is in place, the instructor will be able to change the uterus pressure using the “Uterine Pressure” option inside the Details tab, or a palette item that has this setting saved.

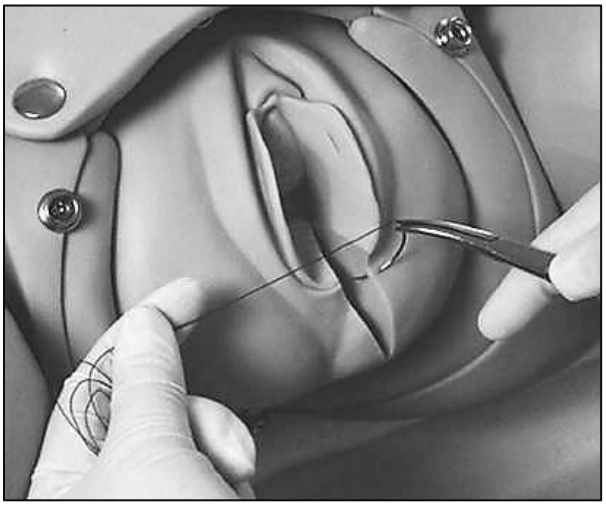
5. Use bimanual massage to shrink the “boggy” uterus into a smaller and firmer condition.

6. For postpartum bleeding, refer to the hemorrhage kit instructions found on page 166.

Episiotomy Repair

Remove the fully dilated vulva used during delivery and select one of the three episiotomy repair modules. Snap a repair module into place. Use a “000” size suture and small curved needle to repair the surgical incision or repair.

Episiotomy repair modules snap into birth canal:



“000” sized sutures are recommended to extend the life of the repair modules.

Systemic

Oxygen Saturation

Use commercially available monitors to read oxygen saturation from the left index finger.

CAUTION: Co-oximeters that in addition to reading oxygen saturation also read carbon monoxide (SpCO) and methemoglobin (SpMet) are not supported and may provide inaccurate readings.

For information on how to calibrate this feature, go to page 165.

Intramuscular injection sites

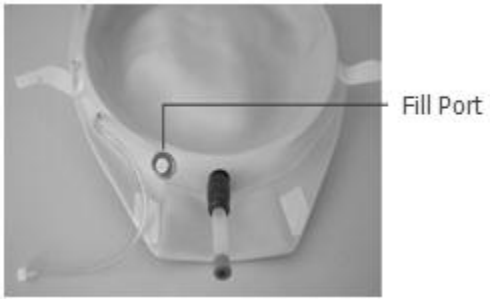
IM sites for placement exercises are located on both deltoids and quadriceps.

WARNING: Do not inject fluids into the IM sites.

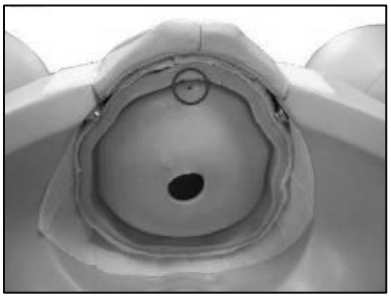
Urinary Catheterization

The bladder in NOELLE is located on the stomach cover. The reservoir can be filled with 240 mL (four syringes), and the fluids can be drained out using a urinary catheter size 18Fr. To set up your NOELLE for urinary catheterization, follow the steps below:

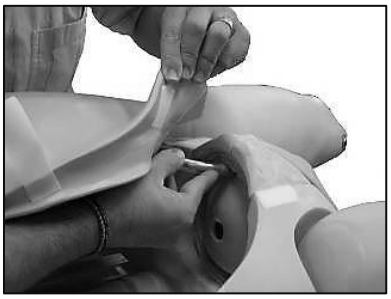
1. Locate the urinary bladder fill port in the stomach cover. Fill the bladder with up to 240 mL of water.



2. Locate the hole on the upper part of the birth canal.



3. Carefully insert the bladder tube (from stomach cover) through the hole in the birth canal as shown below.



4. Make sure that the tube comes out the opposite end of the birth canal.

5. Use urinary catheter size 18Fr to drain out urinary fluids.

Other

Post-Partum Hemorrhage

You can simulate extensive postpartum bleeding and incorporate the feature to work with labor scenarios. Follow the guide below to prepare the hemorrhage feature.

WARNING: Always position the simulator so the postpartum hemorrhage fluid flows away from the birth canal and the simulator itself.

Do not allow postpartum hemorrhage fluid to puddle beneath the simulator or reach the lower back.

Filling the PPH Reservoir

The post-partum hemorrhage fluid reservoir port is located behind the right knee. Fill the PPH reservoir with water or Gaumard simulated blood mix using the **PPH Fill Kit Syringe**.

The hemorrhage reservoir has a maximum capacity of 900 mL or approximately 15 full fill kit syringes.

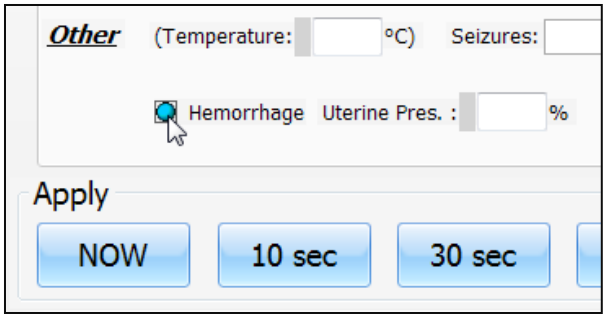
WARNING: Only use Gaumard provided simulated blood. Any other simulated blood brand containing sugar or any additive may cause blockage and/or interruption of the vasculature system.

At the end of every simulation, always flush the system with distilled water to prevent clogging.

To prevent staining or molding, always clean NOELLE using diluted soap and water. Remove the birth canal and clean thoroughly.

Enabling post-partum hemorrhage

To manually enable the PPH feature, first click the hemorrhage icon **blue** to set the control to active. Then, click the apply **NOW button** to start the hemorrhage.

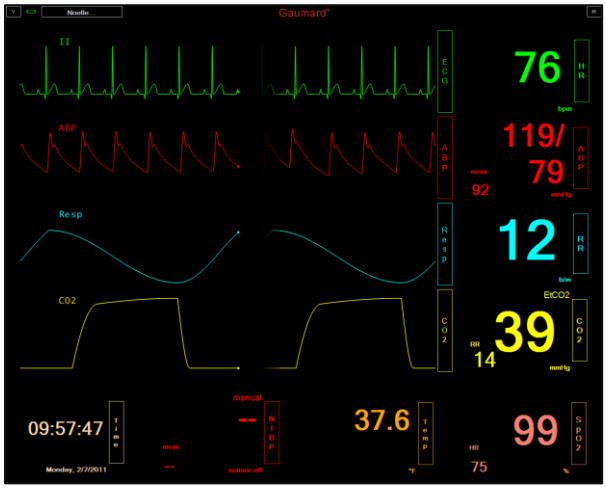


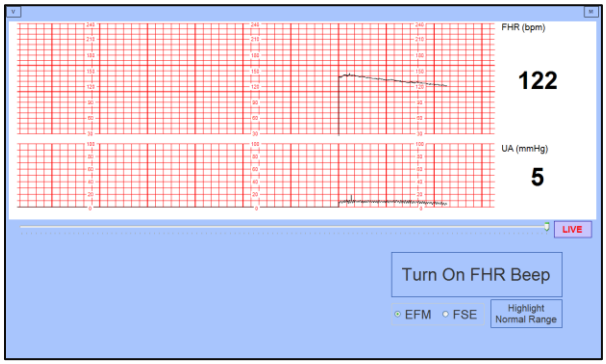
To stop the hemorrhage, click the control icon to black and then click apply **NOW**.

If the hemorrhage control is not shown, navigate to Setup> Options> NOELLE Features and checkmark Use Hemorrhage Kit.

Vital Signs Monitor

The vital signs monitor simulates a vital signs monitor attached to the simulated patient. The vital signs are synchronized through a wireless network between the facilitator's tablet and the computer running the monitor. You can customize each trace independently of each other; users can set alarms, time scales, boundaries and grid options.





For information on how to setup Gaumard Monitors with GUI, please refer to the Appendix.

Appendix

Factory Preset Labor Scenarios

Manual Mode Flowcharts

Quick start Scenarios

	Scenario Name	Labor Type
1	Alice	Normal
2	Alicia	Variations on Normal
3	Amy	Variations on Normal
4	Angelica	Variations on Normal
5	Beth	Variations on Normal
6	Cynthia	Shoulder Dystocia
7	Donna	Breech
8	Elaine	Preeclampsia
9	Francine	Cesarean Delivery
10	Gloria	Cord Prolapse
11	Helen	Hemorrhage
12	Irene	Cesarean Delivery

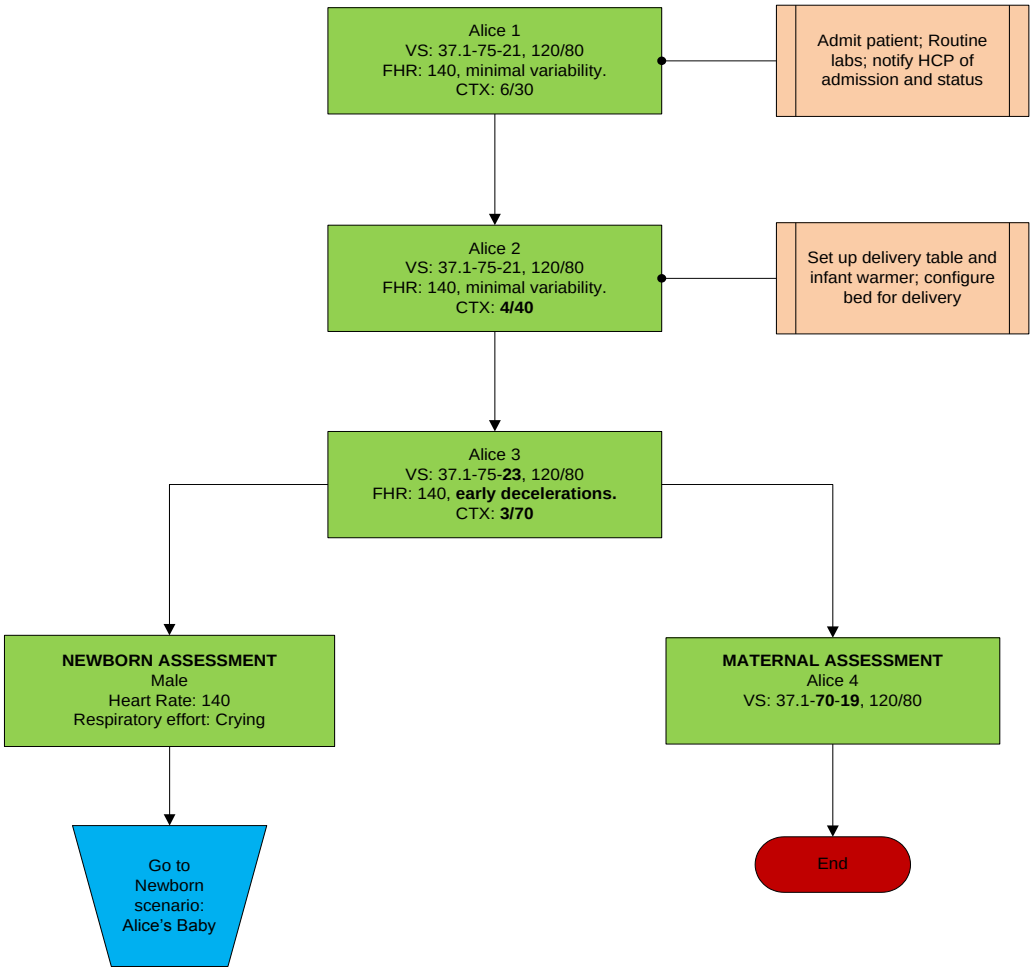
Gaumard®
Simulators for Health Care Education

Noelle® - Labor Scenario

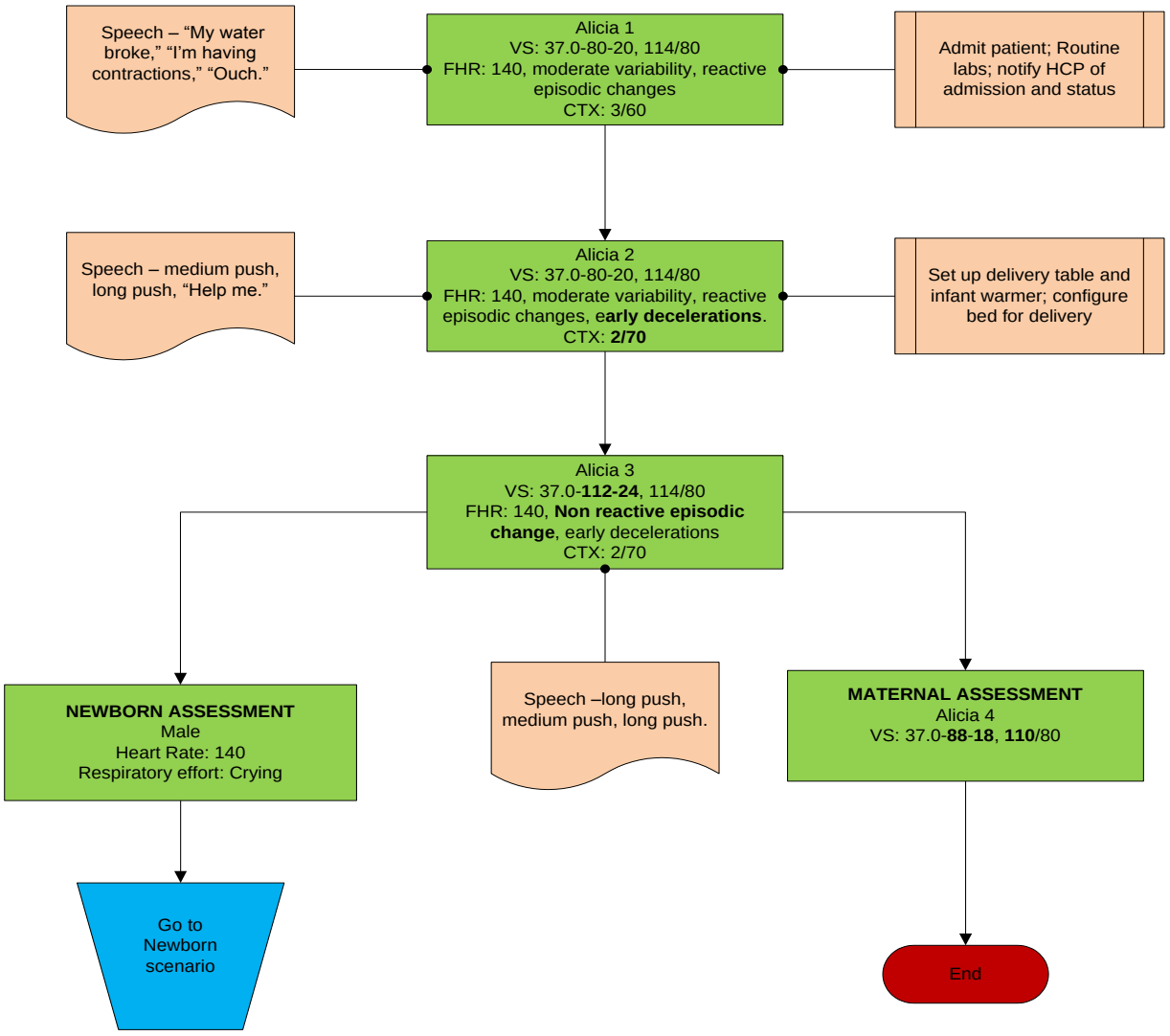
Alice

Normal

Alice is a 24 year old female, weighing 170 pounds. Her OB history shows a gravida of 2 and a term of 1. She is currently 39 weeks pregnant and has one living child. She has had prenatal care. She has not been using medications of any kind. Labor duration: 30 minutes.



Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Alicia** Variations on Normal
Alicia is a 24 year old gravida 2/1 at 39 weeks. She weighs 160 pounds. She has had prenatal care. She has not been using medications of any kind. Labor duration: 20 minutes.	



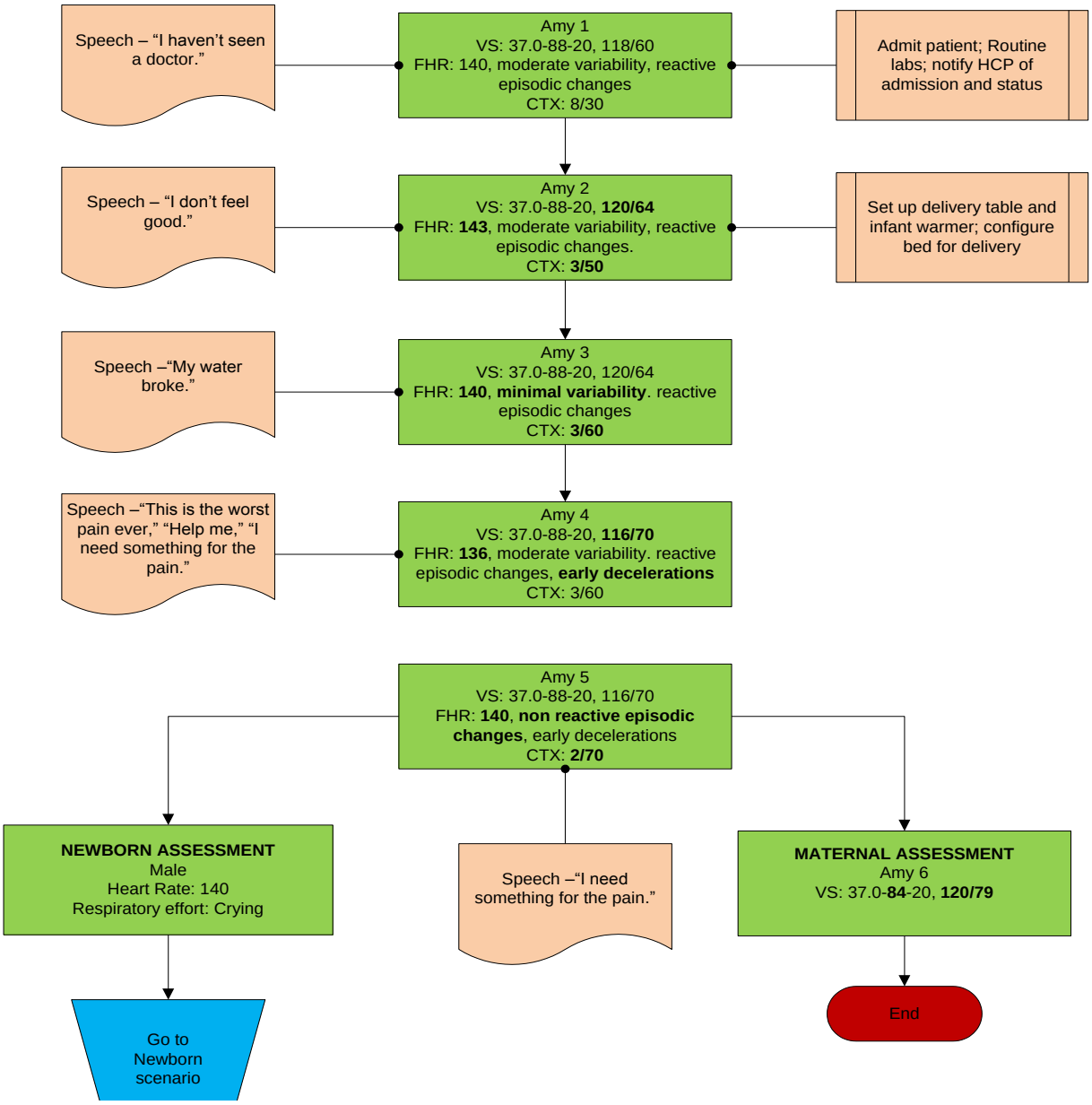
Gaumard®
Simulators for Health Care Education

Noelle® - Labor Scenario

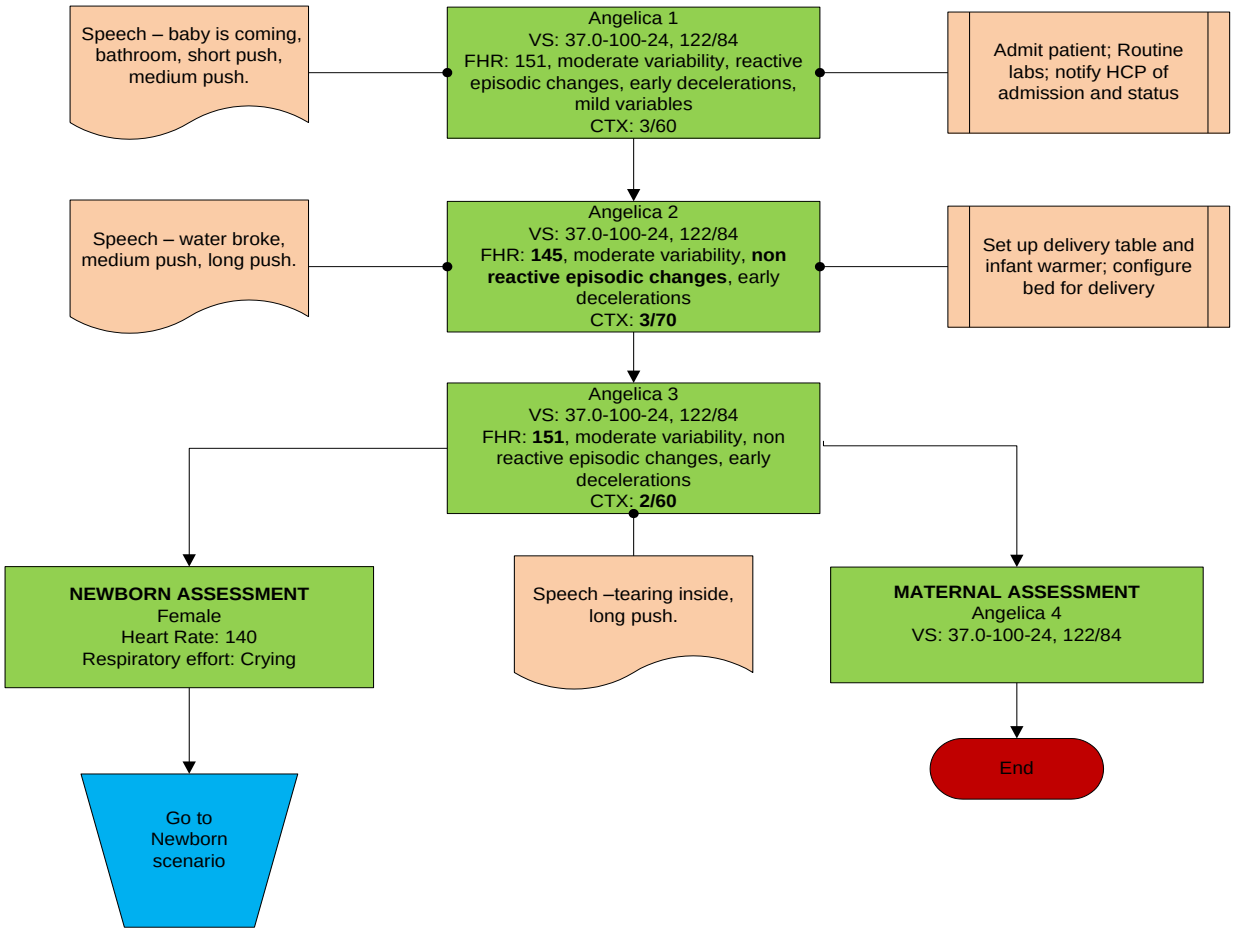
Amy

Variations on Normal

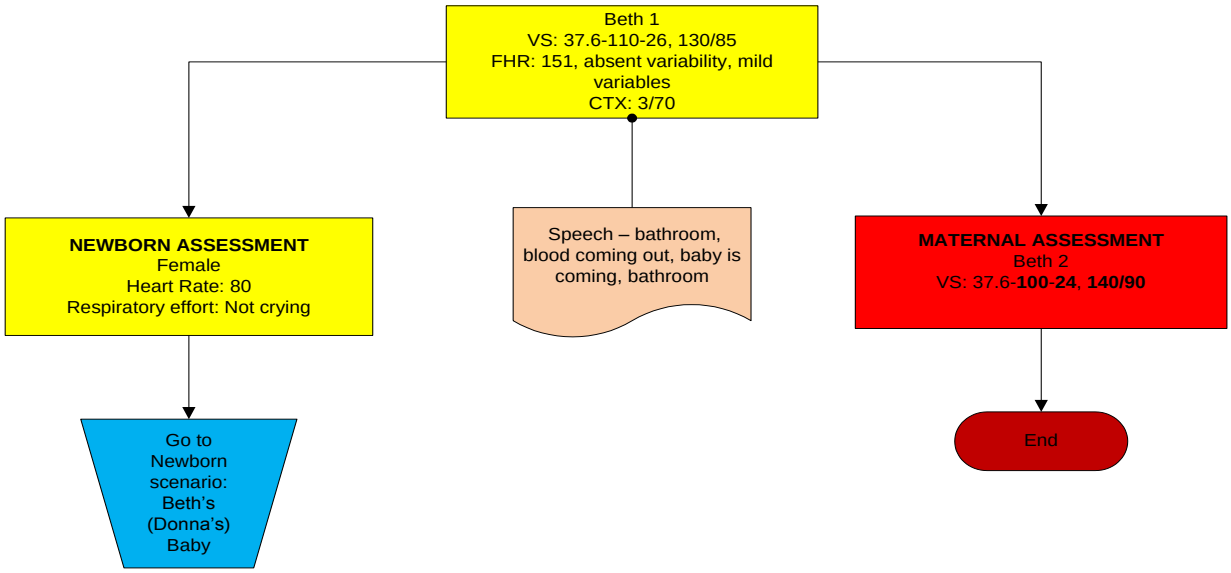
Amy is 19 years and she weighs 160 lbs. Her OB history shows a gravida of 1. She is currently 40 weeks pregnant. She enters LD accompanied by her mother. Labor duration: 30 minutes.



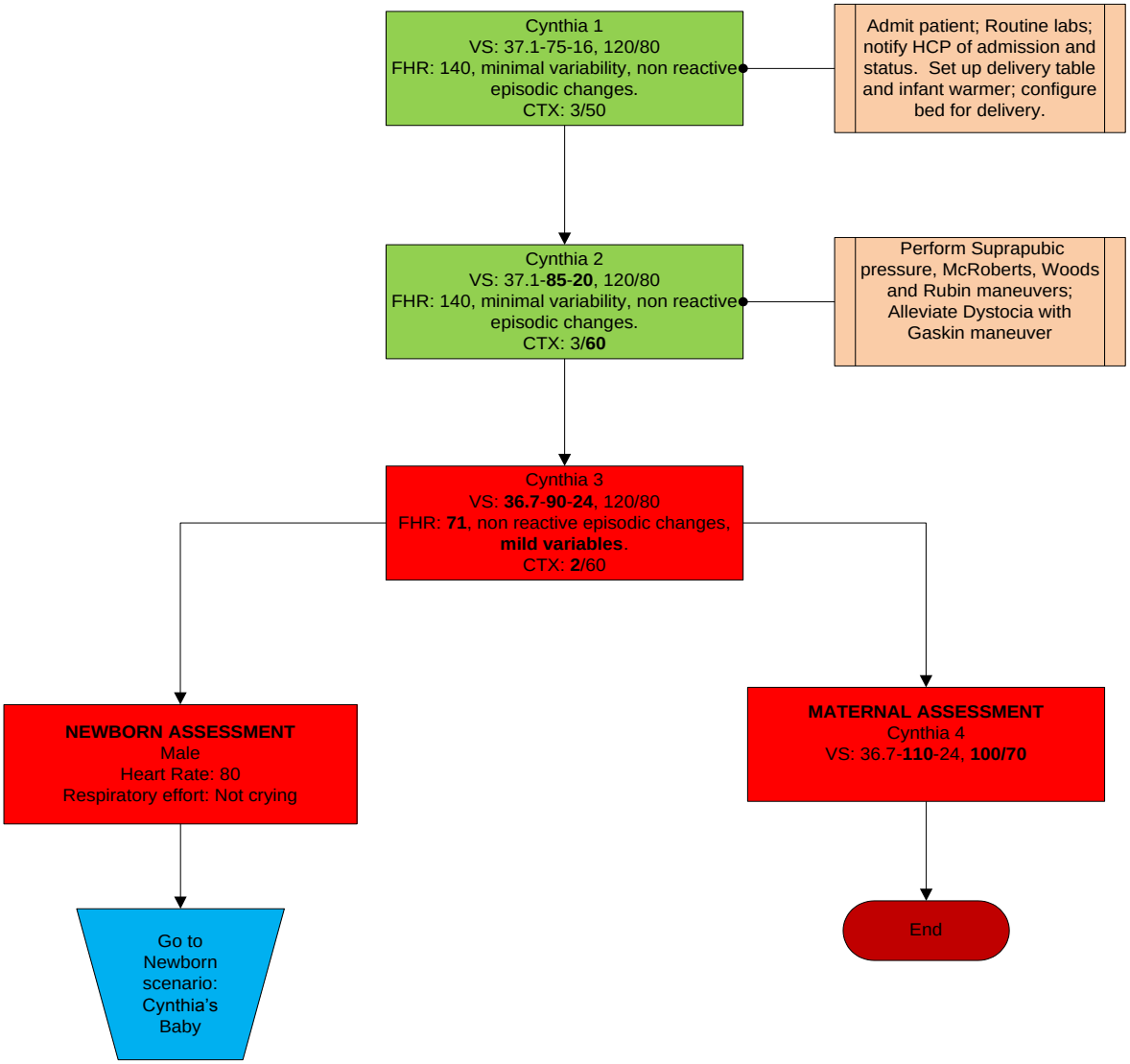
Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Angelica** Variations on Normal
Angelica is a 31 year old gravida 5/3 at 41 weeks. She weighs 160 lbs. She has experienced no prenatal complications and has a history of fast labors. Labor duration: 20 minutes.	



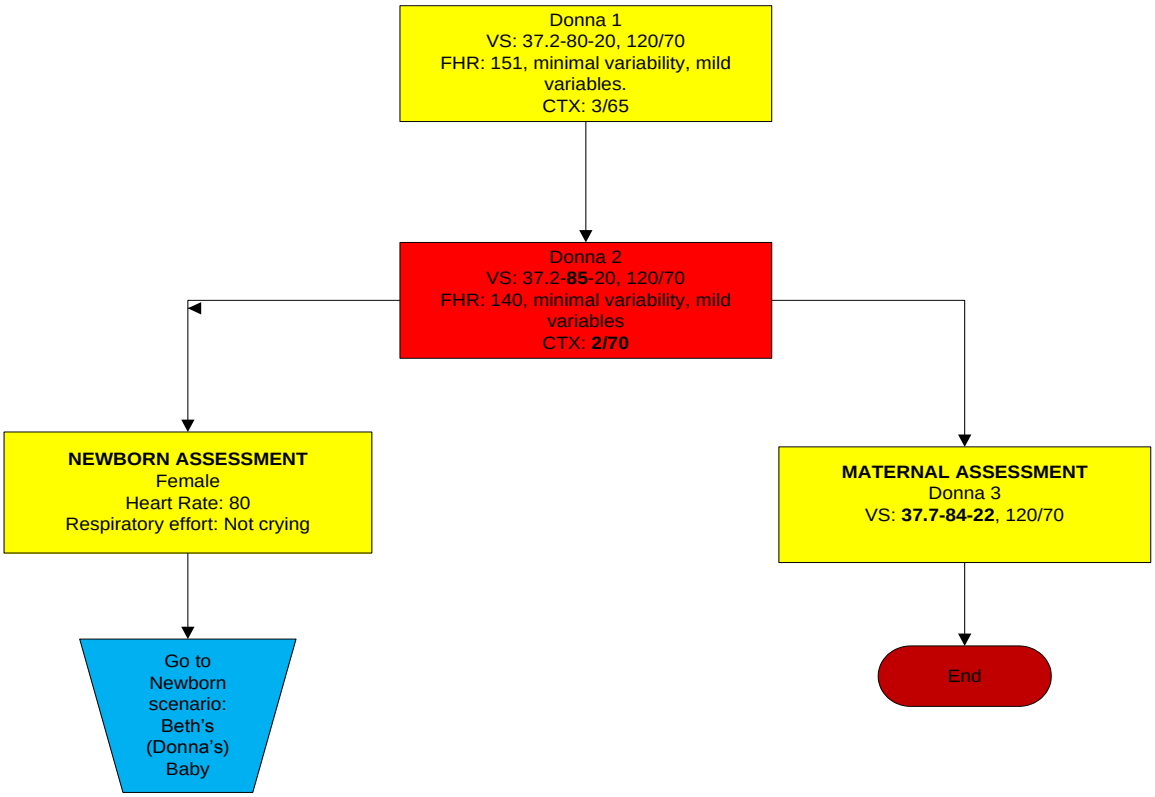
Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Beth** Variations on Normal
Beth is a 16 year old gravida 2/0 at 37 weeks. She has had one elective abortion. She has had prenatal care. Labor duration: 10 minutes.	



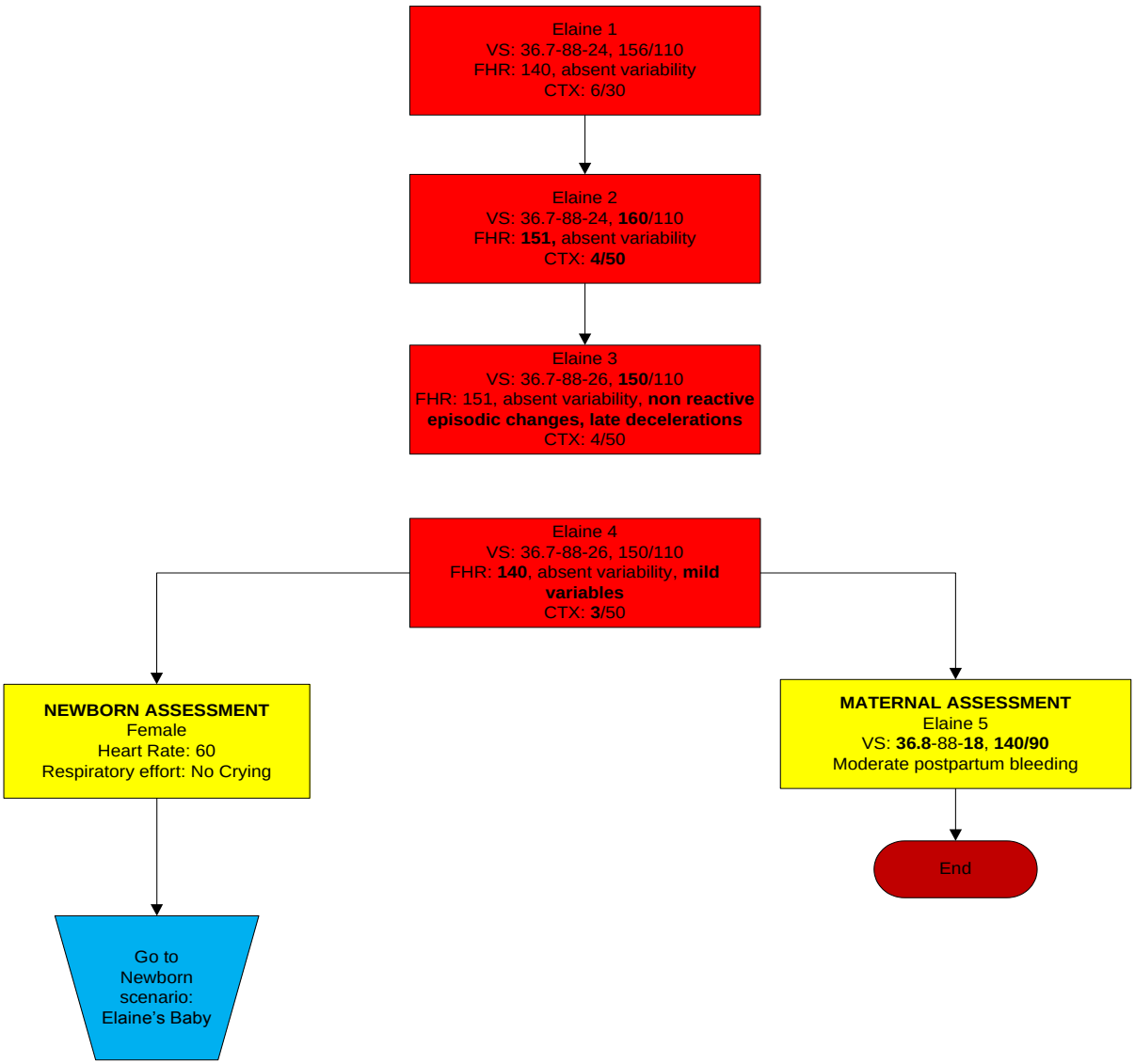
Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Cynthia** Shoulder Dystocia
Cynthia is a 31 year old gravida 3/1 at 41 weeks. She weighs 170 lbs. Labor duration: 30 minutes.	



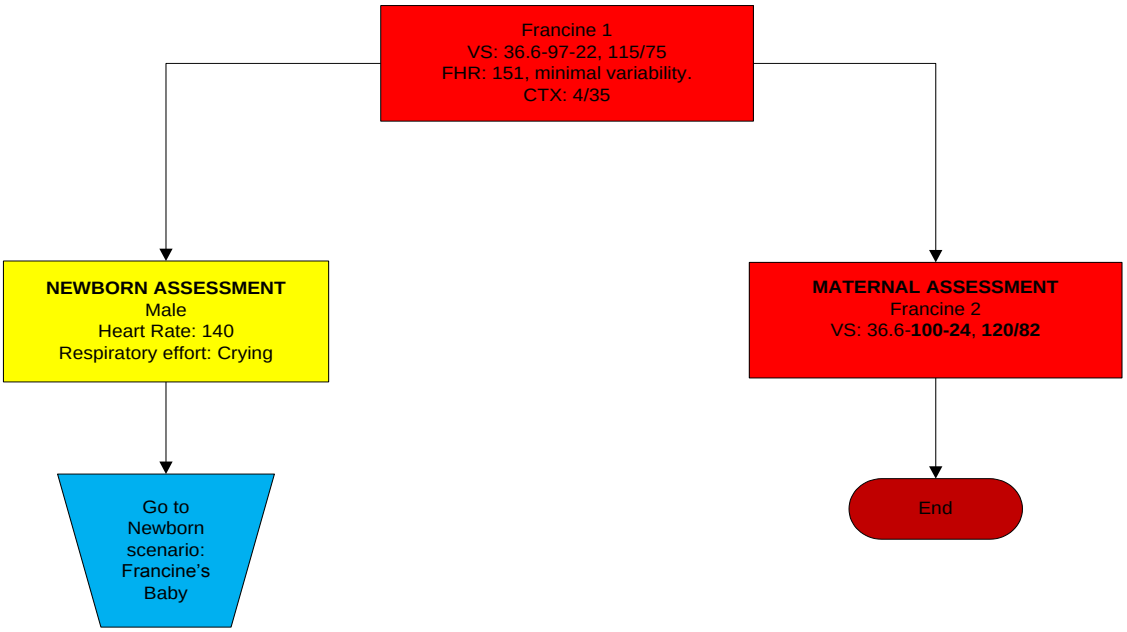
Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Donna** Breech
Donna is a 20 year old gravida 4/2 at 31 weeks. She weighs 180 lbs. She has had one elective abortion. She has had prenatal care. Labor duration: 20 minutes.	



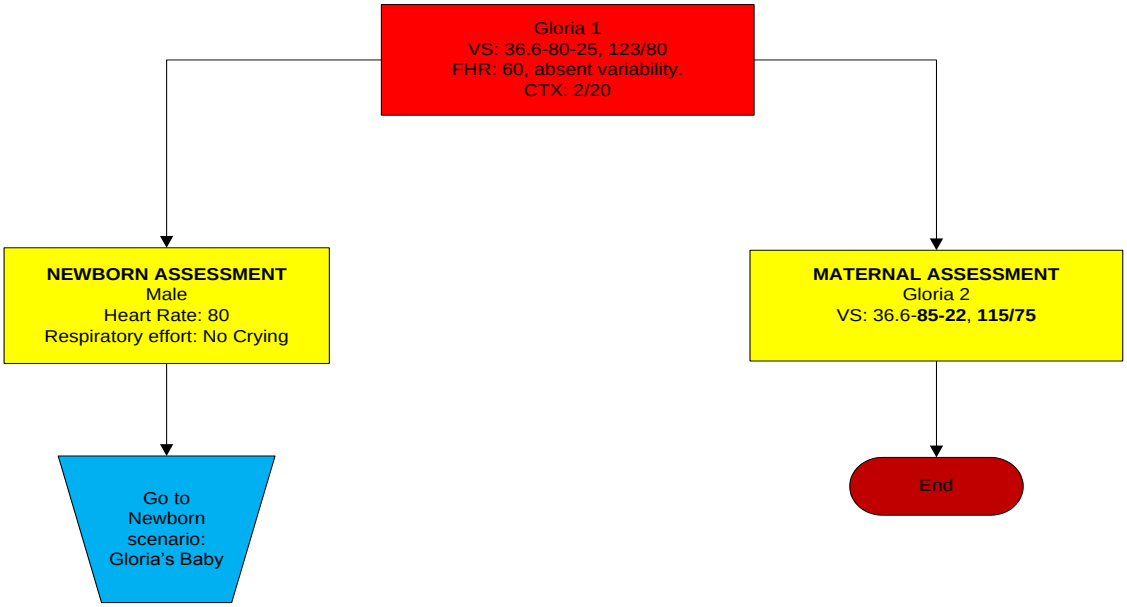
Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Elaine** Preeclampsia
Elaine is a 23 year old gravida 1/0 at 37 weeks. She weighs 140 lbs. She has had prenatal care. She complains of mind frontal headache. 3+tibial edema and 4+ DTRs with 2 beats clonus are noted. Labor duration: 40 minutes.	



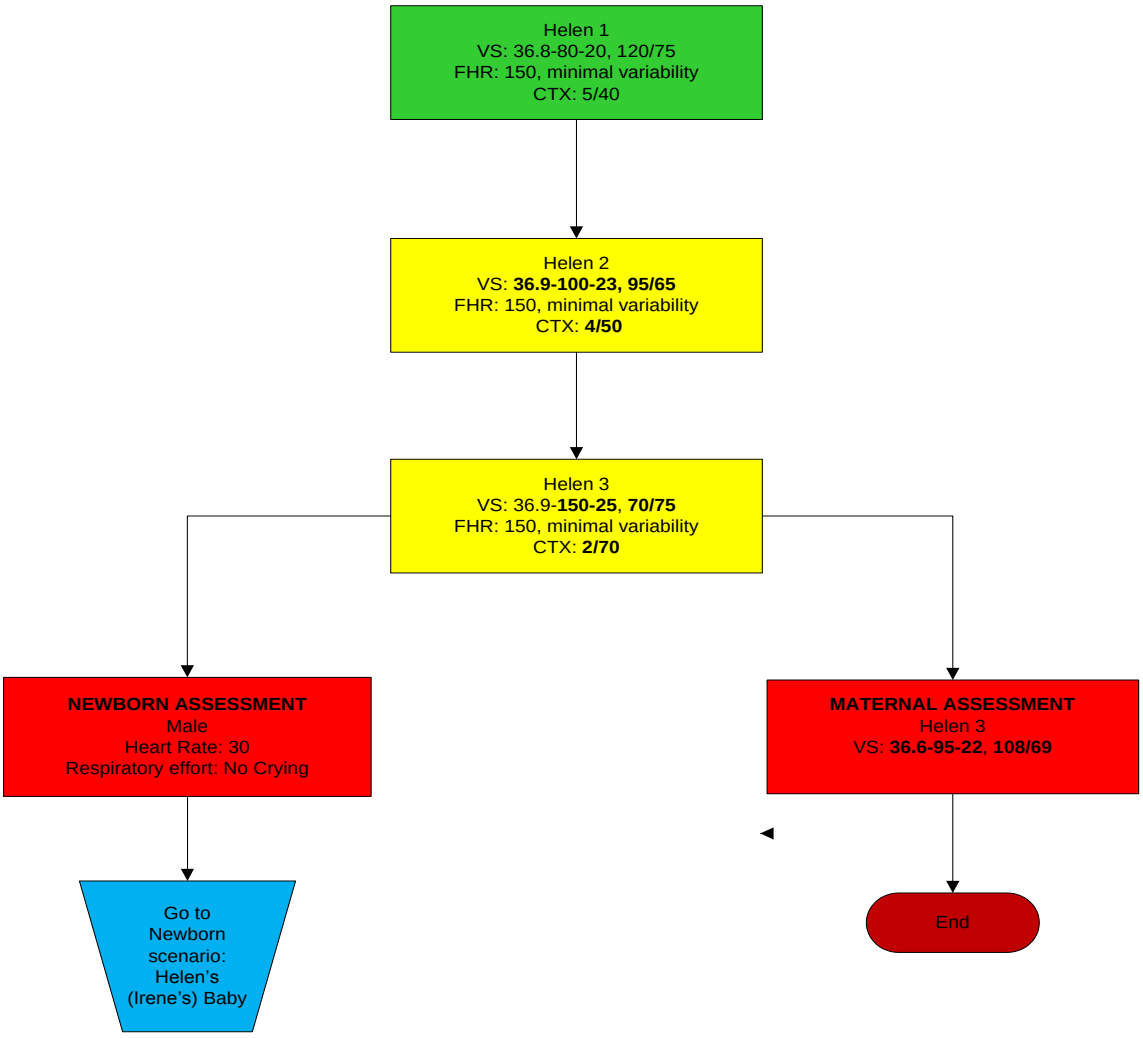
Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Francine** Cesarean Delivery
Francine is a 19 year old female gravida 2/1 at 37 weeks. She weighs 145 lbs. She has had prenatal care. She has STD, Herpes. Labor duration: 10 minutes.	



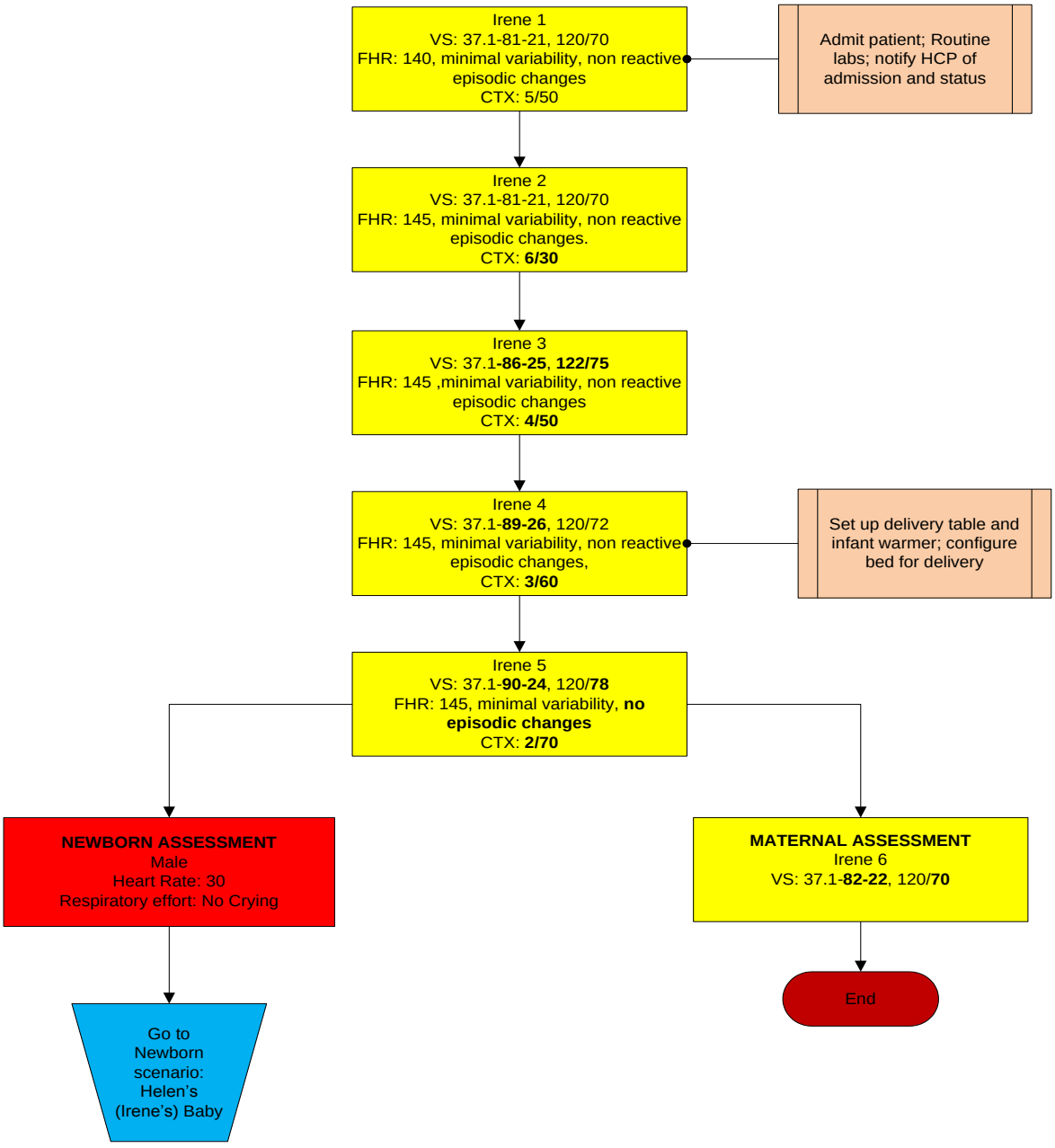
Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Gloria** Cord Prolapse
Gloria is a 34 years old gravida 1/0 at 25 weeks. She weighs 190 lbs. She has had prenatal care. Labor duration: 10 minutes.	



Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Helen** Hemorrhage
Helen is a 25 year old gravida 1/0 at 35 weeks. She weighs 180 lbs. She has had prenatal care. Labor duration: 30 minutes.	



Gaumard® Simulators for Health Care Education	Noelle® - Labor Scenario **Irene** Cesarean Delivery
Irene is a 19 year old gravida 2/0 at 29 weeks. She has had one spontaneous abortion. Labor duration: 45 minutes.	



NOELLE Advanced

	Scenario Name	Labor Type
1	Alyssa	Normal Labor
2	Angela	Normal Labor
3	Becca	Variations on Normal
4	Bianca	Variations on Normal
5	Candice	Shoulder Dystocia
6	Charlotte	Shoulder Dystocia
7	Dana	Breech Presentation
8	Demaris	Breech Presentation
9	Eleanor	Preeclampsia
10	Erin	Preeclampsia
11	Faye	Cord Prolapse
12	Frances	Cord Prolapse
13	Gabriella	Uterine Rupture
14	Gail	Uterine Rupture
15	Heidi	Peripartum Hemorrhage - Previa
16	Haley	Peripartum Hemorrhage - Previa
17	India	Peripartum Hemorrhage - Abruption
18	Inez	Peripartum Hemorrhage - Abruption
19	Janie	Peripartum Hemorrhage/PPH
20	June	Peripartum Hemorrhage/PPH
21	Kelly	Amniotic Fluid Embolism
22	Kimberly	Amniotic Fluid Embolism
23	Madonna	Preterm Labor
24	Maria	Preterm Labor

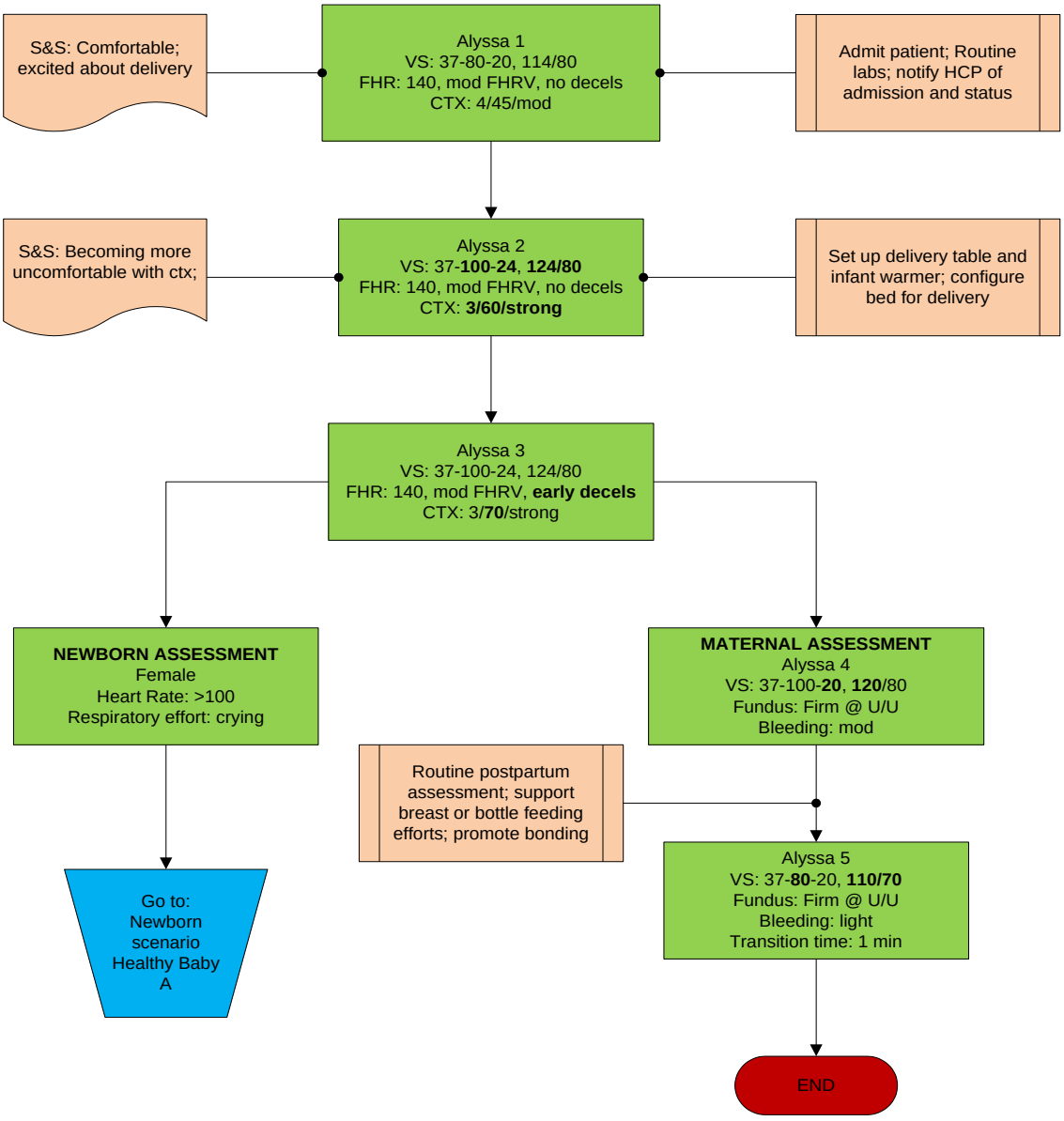
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Alyssa

Normal Labor

Alyssa is a 23 yr old primip at term. Her health is generally good and she has experienced no prenatal complications. She wishes to receive no medications and will have the CNM attending her delivery. Labor duration: 30 minutes.



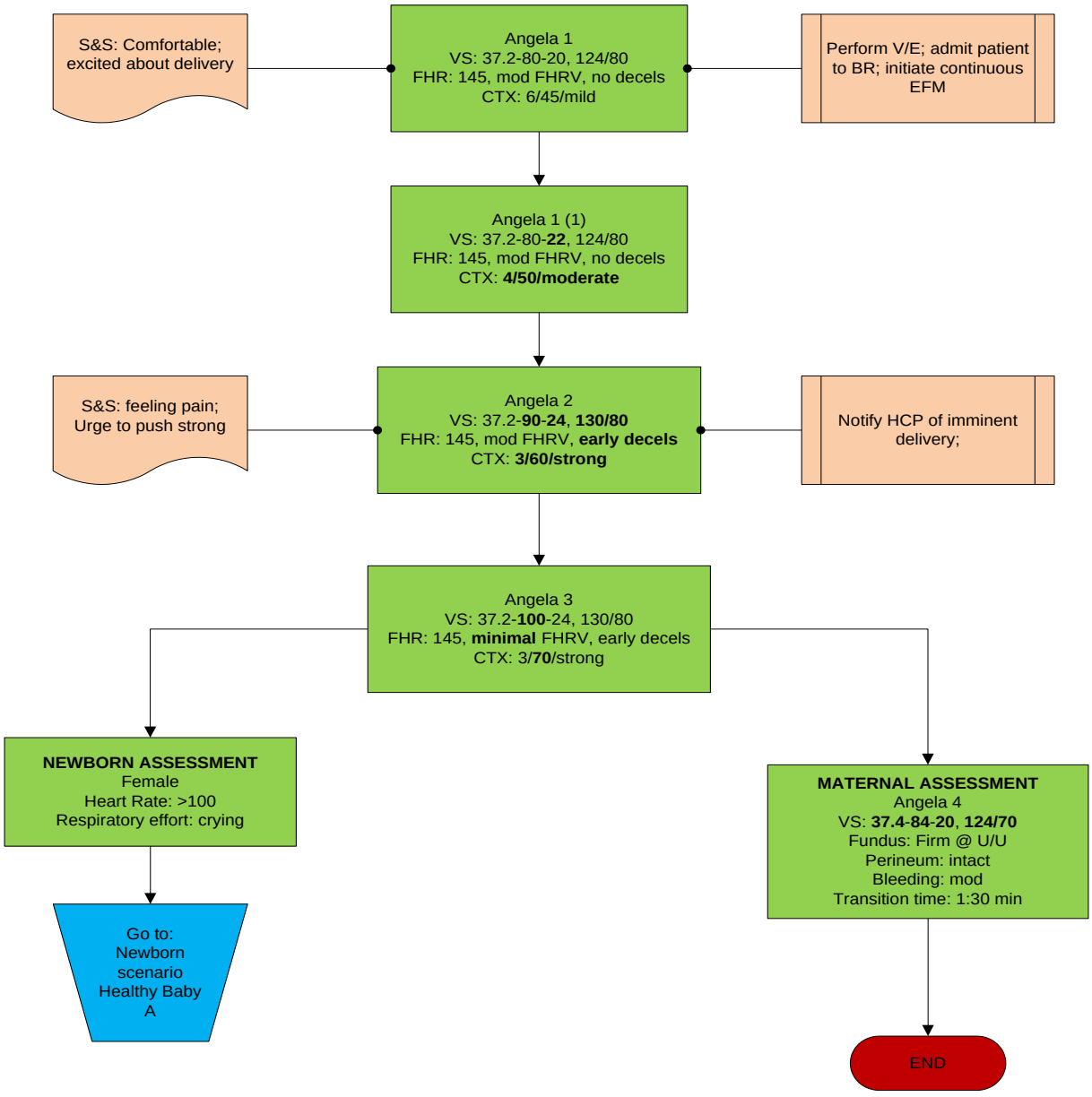
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Angela

Normal Labor

Angela is a 31 yr old grand multip @ term. She tells the triage nurse that even though she has had few contractions she came in because she has a history of rapid labors. Her general health is good and she has had no problems during this pregnancy. V/E shows the cervix to be paper thin and Angela is admitted to birthing room. Labor duration: 30 minutes.



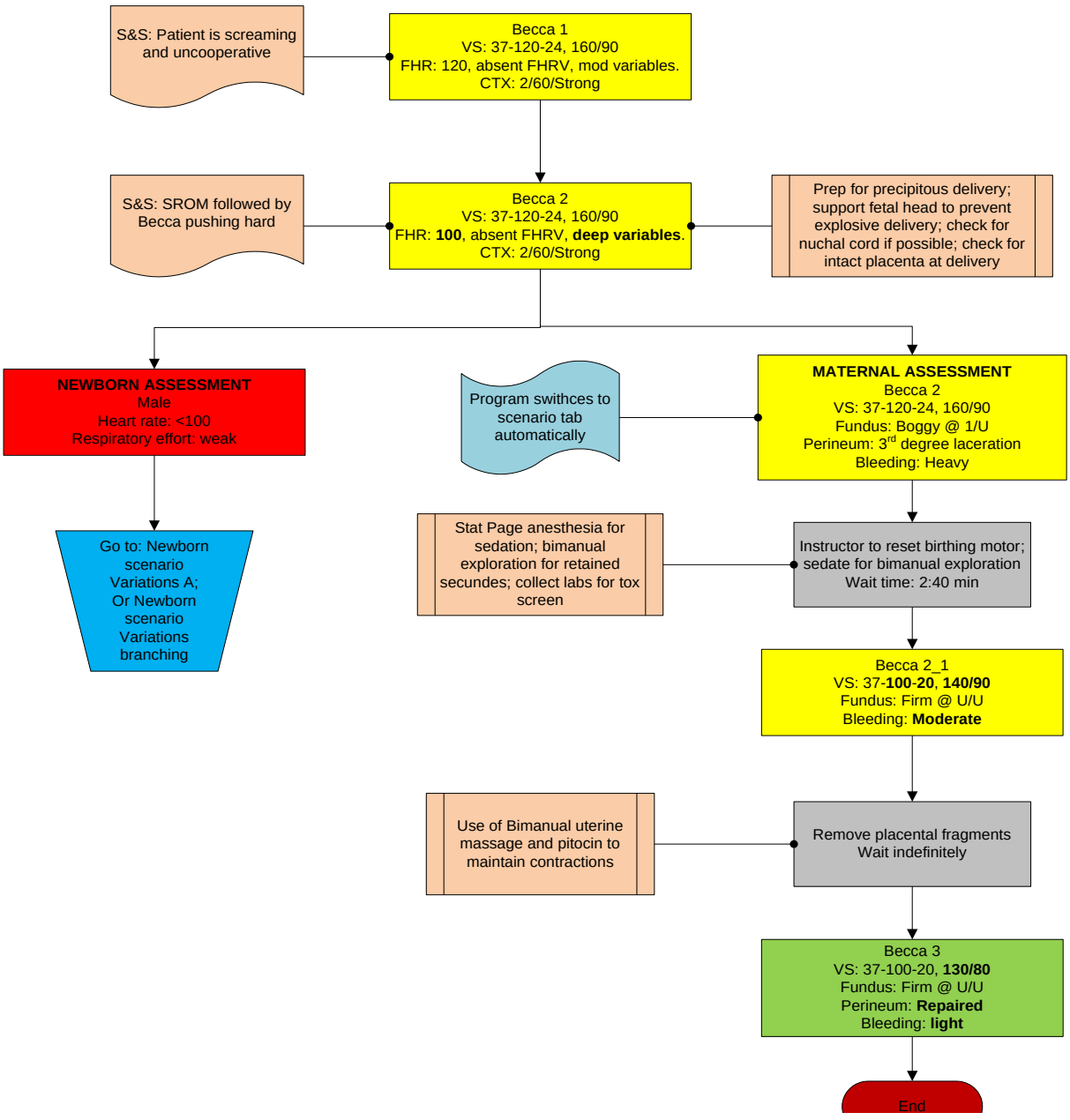
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Becca

Variations on Normal

Becca is a young pregnant teen who is living on the streets. She is a heavy smoker and drug user. She was seen twice in the Adolescent Clinic and referred to Social Services, but she only saw the social worker once and did not go to the follow-up appointment. Labor duration: 18-22 minutes.



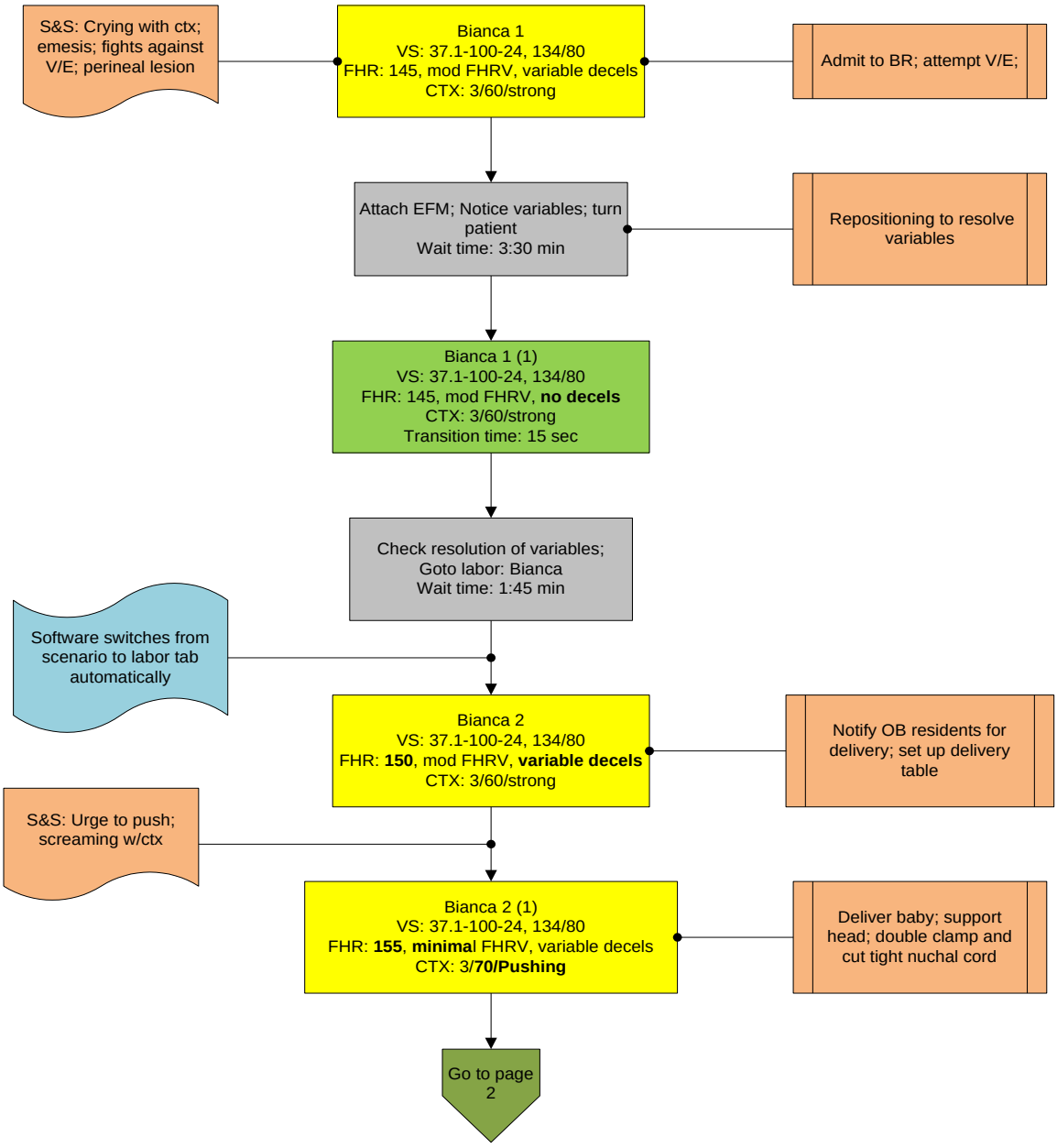
Gaumard®
Simulators for Health Care Education

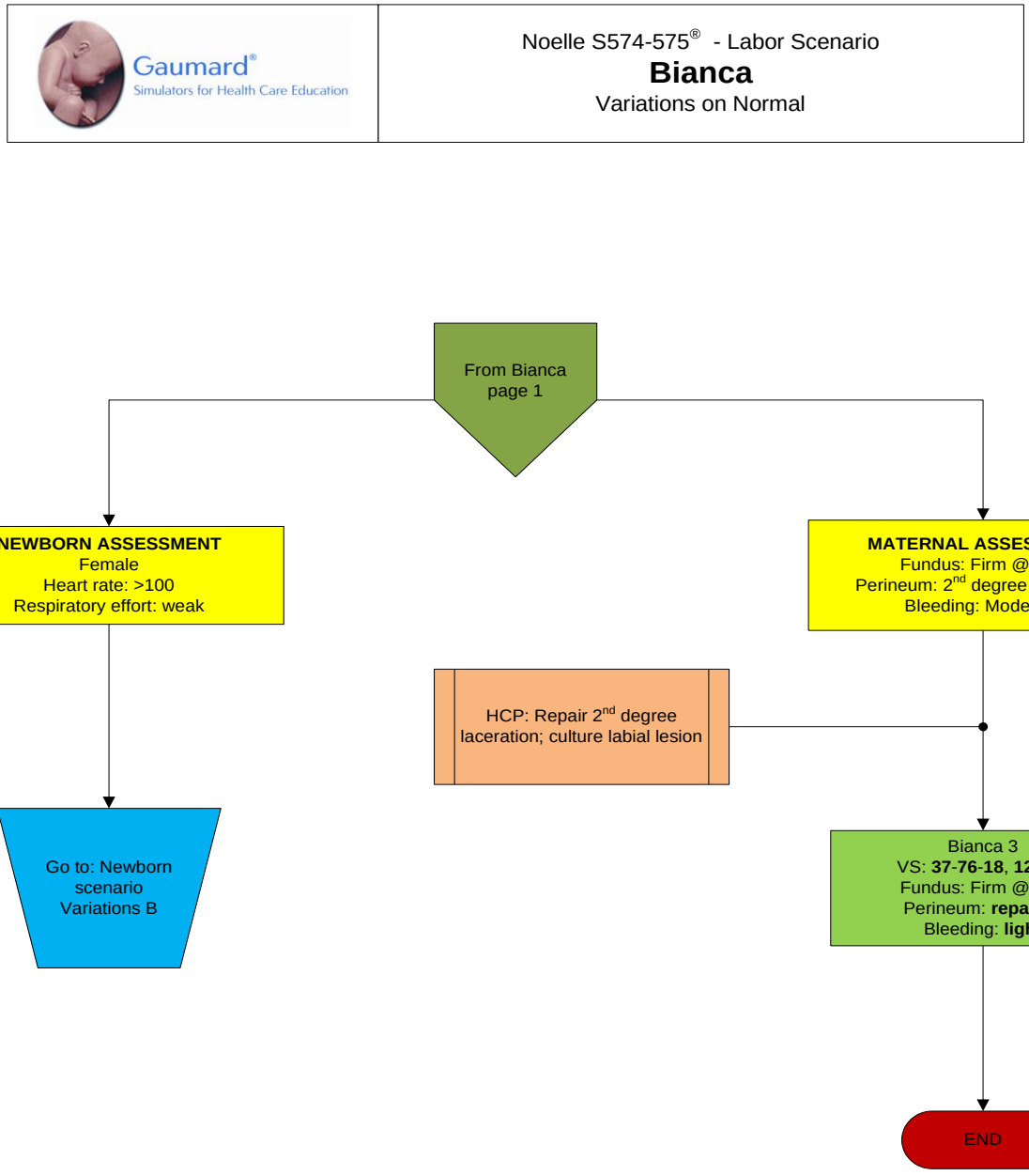
Noelle S574-575® - Labor Scenario

Bianca

Variations on Normal

Bianca is a 16 yr old @ 38 weeks who shows up in L&D in active labor. She had a previous elective AB as a result of incest at age 13. She now lives with her boyfriend and his mother who are both with her at the hospital. Her prenatal visits have been irregular due to transportation issues. She is leaking light meconium fluid and she vomits as she is undressing. Labor duration: 25 minutes. Scenario duration: 30 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Bianca
Variations on Normal
From Bianca page 1
NEWBORN ASSESSMENT
Female
Heart rate: >100
Respiratory effort: weak
MATERNAL ASSESSMENT
Fundus: Firm @ U/U
Perineum: 2nd degree laceration
Bleeding: Moderate
HCP: Repair 2nd degree laceration; culture labial lesion
Go to: Newborn scenario Variations B
Bianca 3
VS: 37-76-18, 125/80
Fundus: Firm @ U/U
Perineum: repaired
Bleeding: light
END

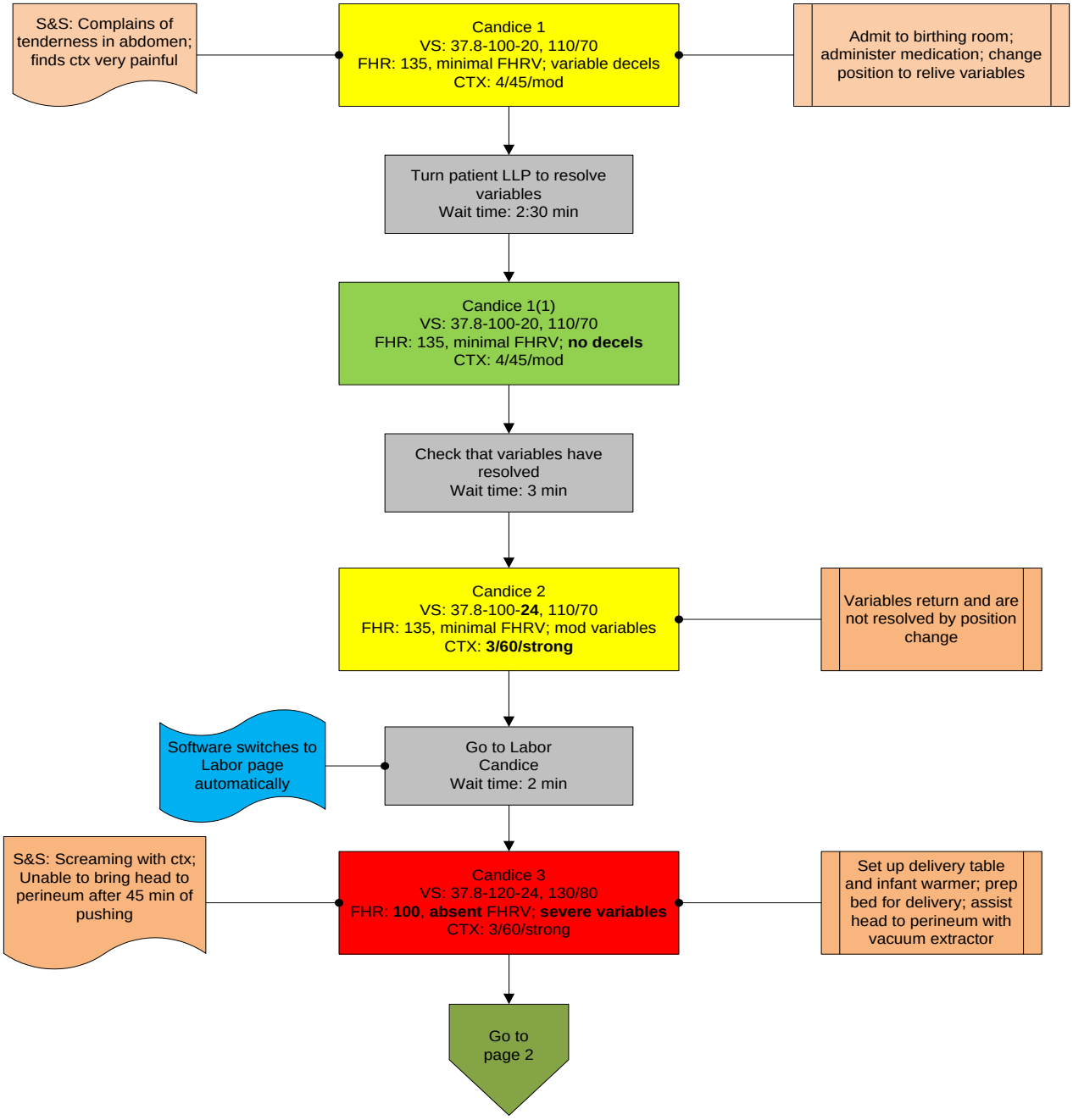
Gaumard®
Simulators for Health Care Education

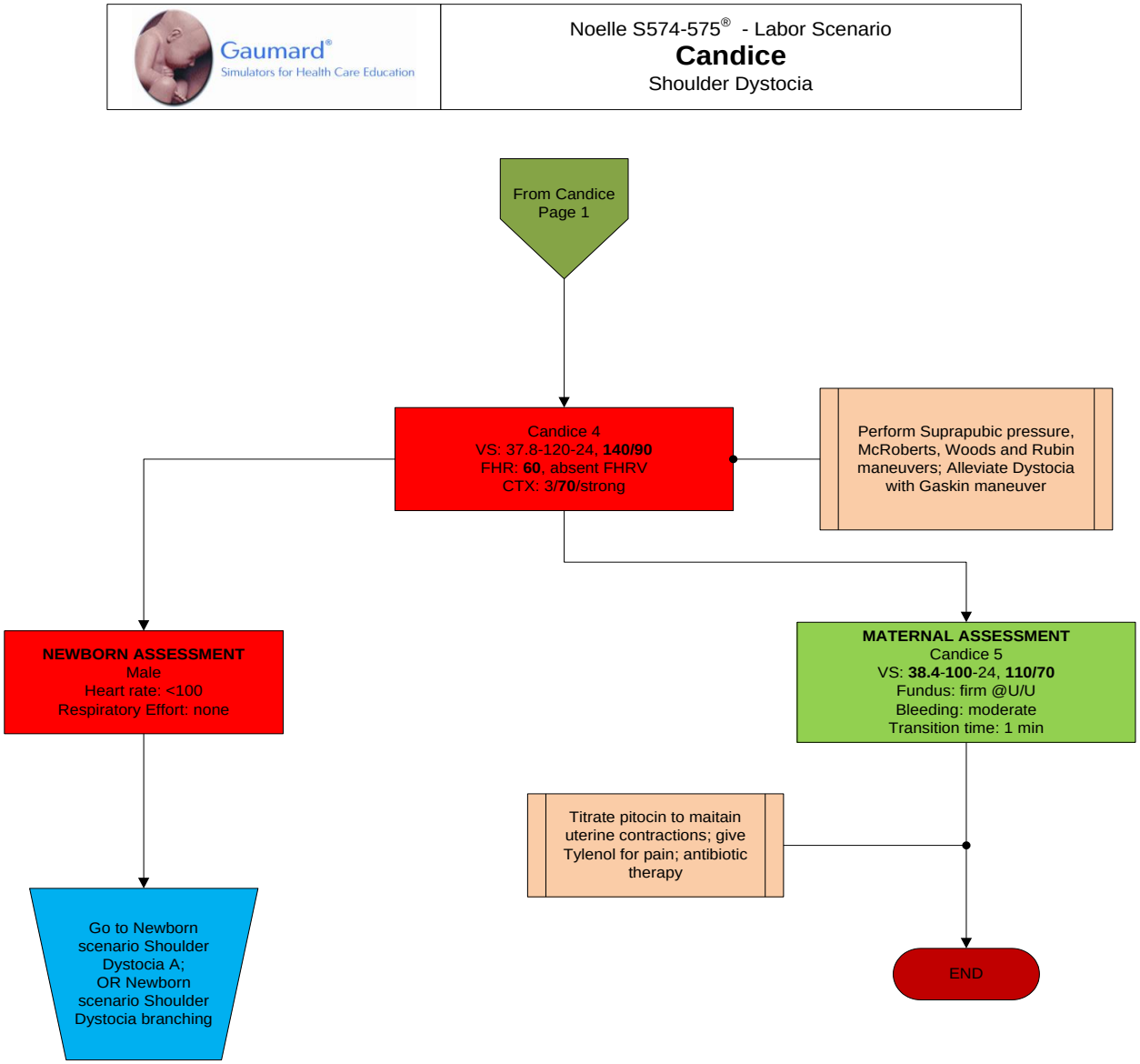
Noelle S574-575® - Labor Scenario

Candice

Shoulder Dystocia

Candice is a 19 r old multip. She, her boyfriend and their 3 yr daughter are homeless living in a car. She has not seen a doctor and believes that she is about 8 months pregnant. Her water broke yesterday and she is leaking moderately thick meconium fluid. An ultrasound is performed to determine position and gestational age. Labor duration: 15 minutes. Full scenario duration: 23-25 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Candice
Shoulder Dystocia
From Candice Page 1
Candice 4
VS: 37.8-120-24, 140/90
FHR: 60, absent FHRV
CTX: 3/70/strong
Perform Suprapubic pressure, McRoberts, Woods and Rubin maneuvers; Alleviate Dystocia with Gaskin maneuver
NEWBORN ASSESSMENT
Male
Heart rate: <100
Respiratory Effort: none
MATERNAL ASSESSMENT
Candice 5
VS: 38.4-100-24, 110/70
Fundus: firm @U/U
Bleeding: moderate
Transition time: 1 min
Titrate pitocin to maitain uterine contractions; give Tylenol for pain; antibiotic therapy
Go to Newborn scenario Shoulder Dystocia A; OR Newborn scenario Shoulder Dystocia branching
END

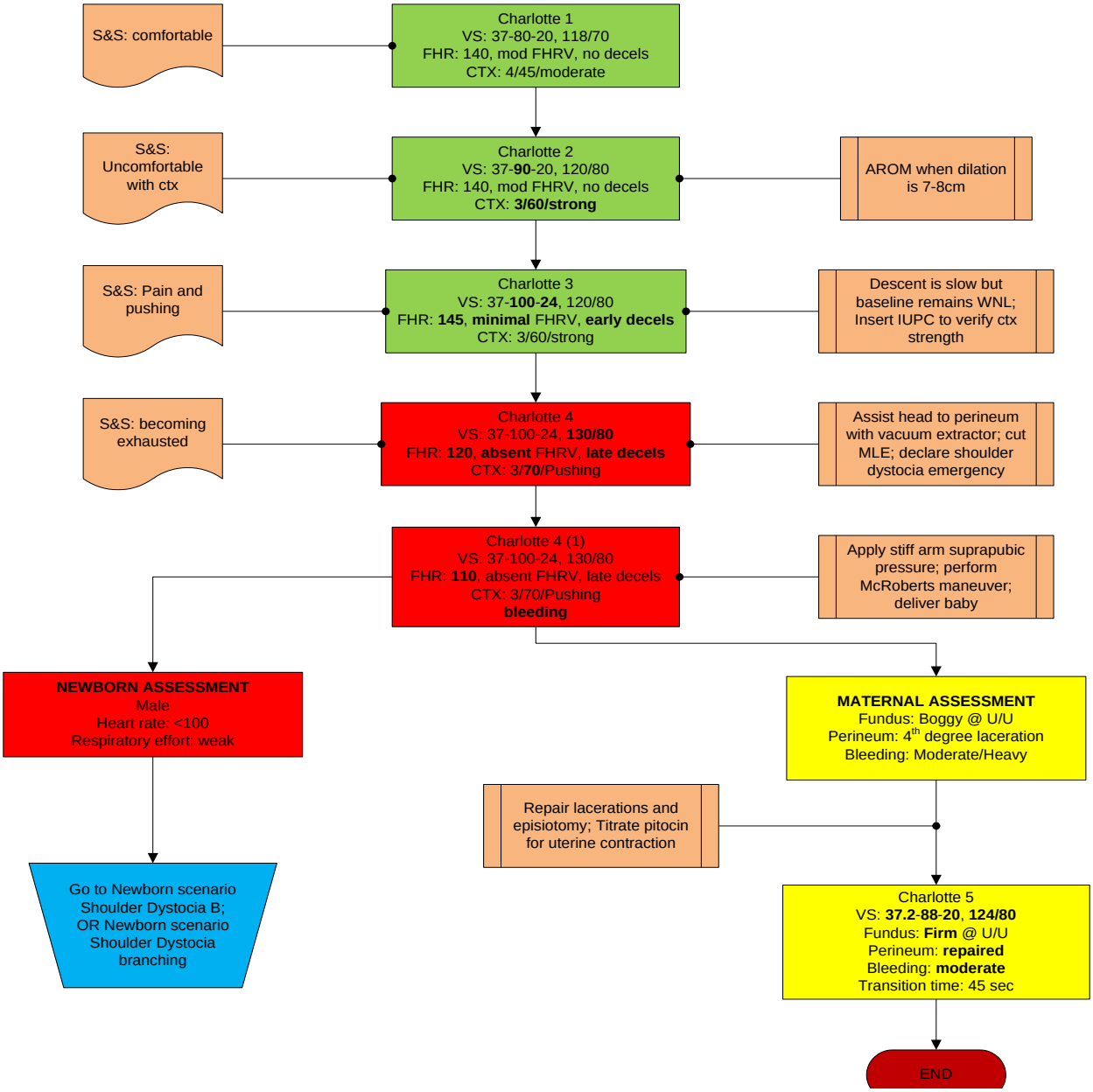
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Charlotte

Shoulder Dystocia

Charlotte is a 31 yr old gravida 3/1 @ 41+ 5/7 weeks. Her physician stripped her membranes yesterday and she began contracting during the night. She is admitted in active labor. Labor duration: 40 minutes.



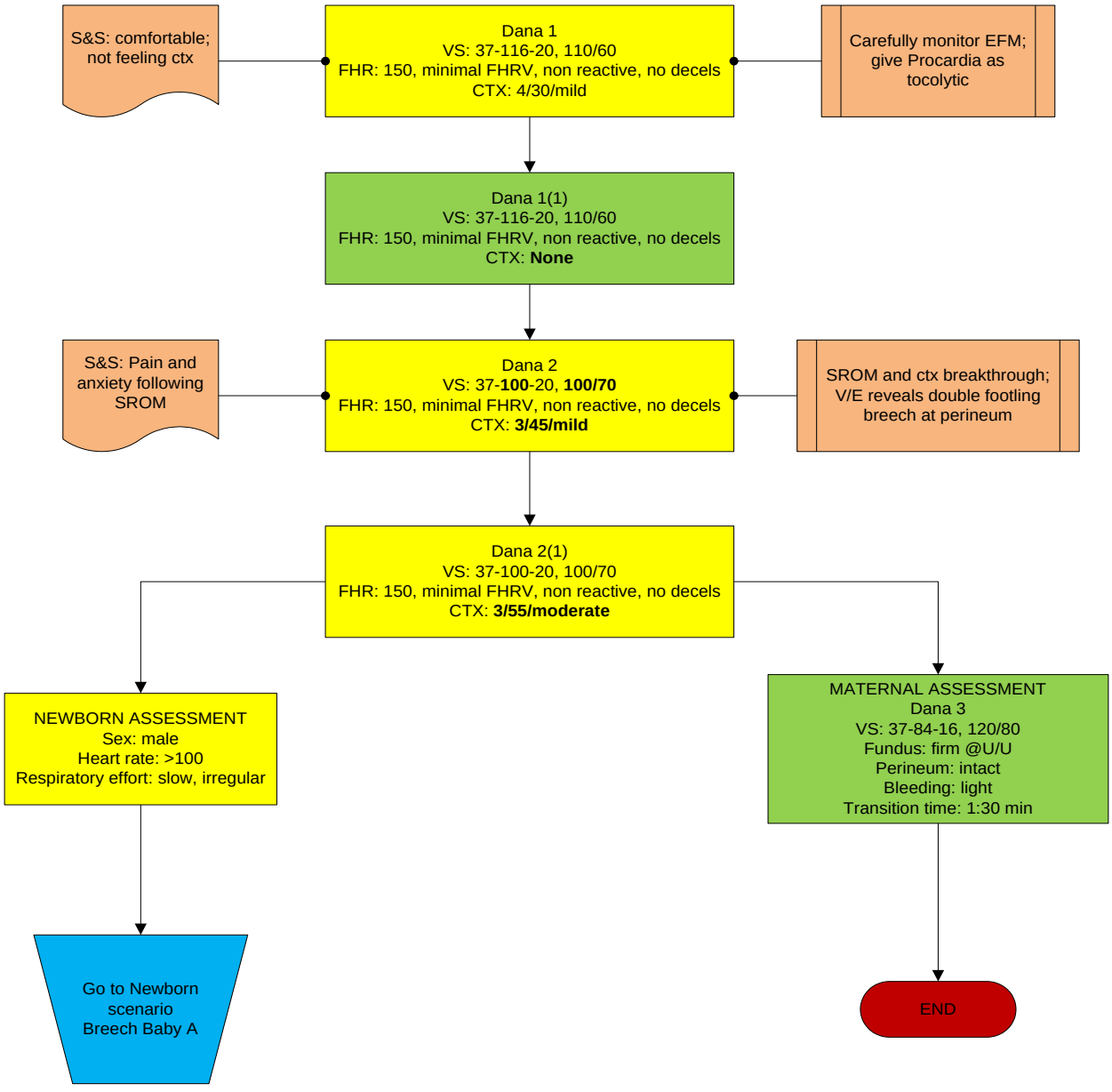
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Dana

Breech Presentation

Dana is a 24 yr old multip @ 29 weeks who was admitted because she began contracting. Upon V/E physician discovers that she is 4-5cm with bulging membranes. She was given Terbutaline subQ and then transported to the regional medical center. Labor duration: 45 minutes.



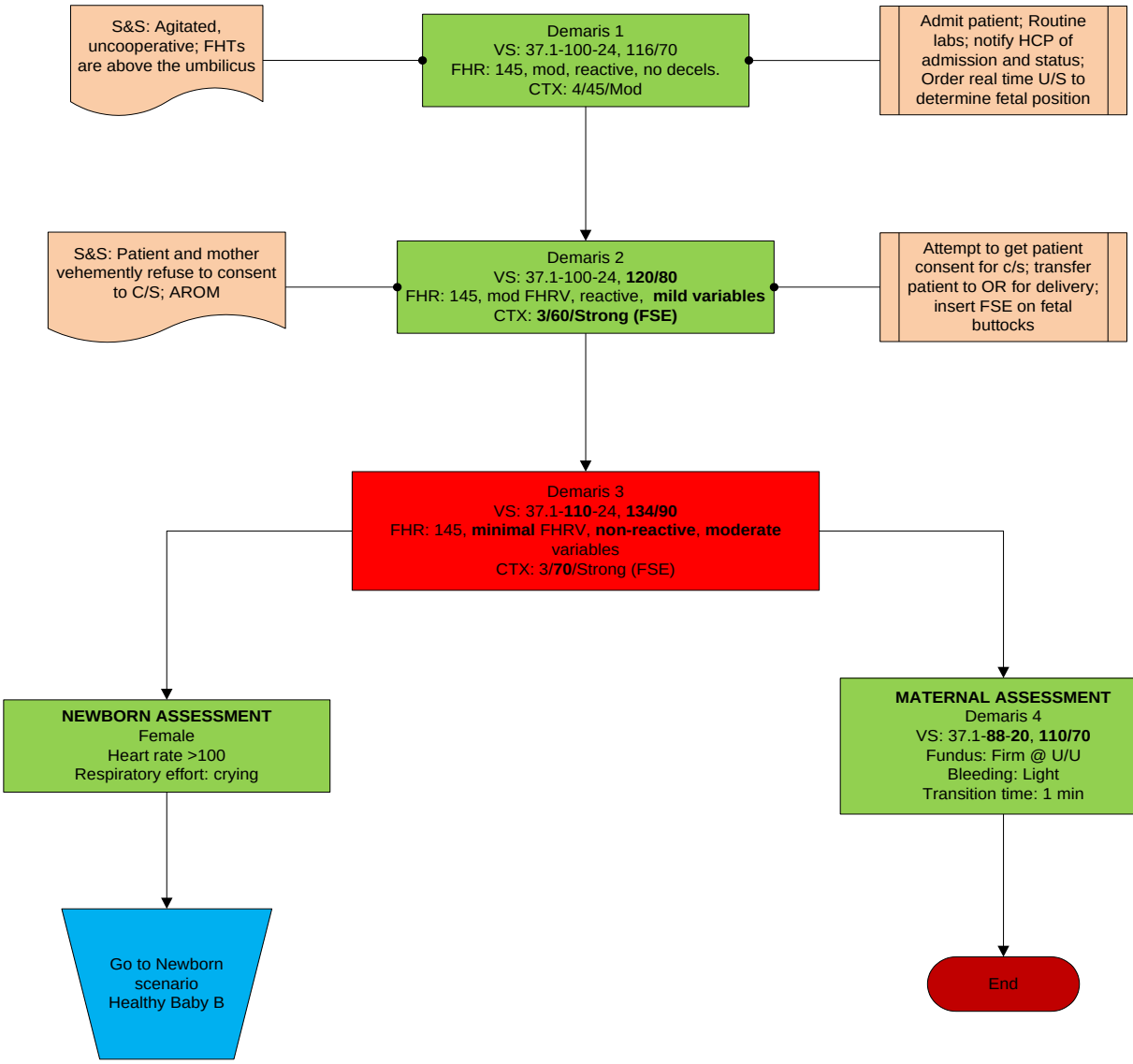
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Demaris

Breech Presentation

Demaris is a young Hispanic teen who has received prenatal care in the Adolescent OB clinic. She kept the pregnancy a secret as long as was possible and did not attend any childbirth classes. Her plan is to return to high school while her mother cares for the baby. The baby's father will not accept any responsibility and does not wish to be involved. Labor duration: 30 minutes.



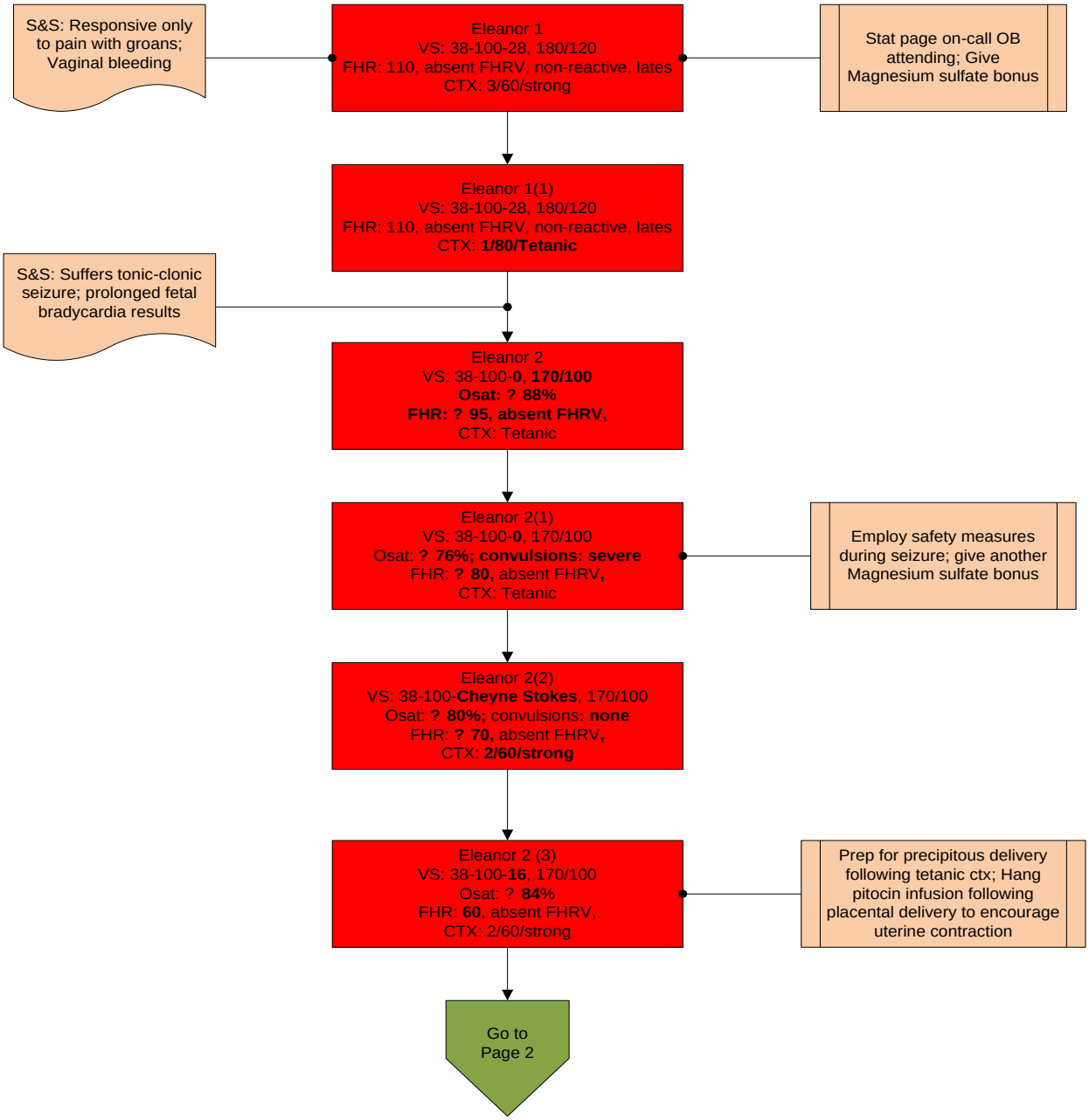
Gaumard®
Simulators for Health Care Education

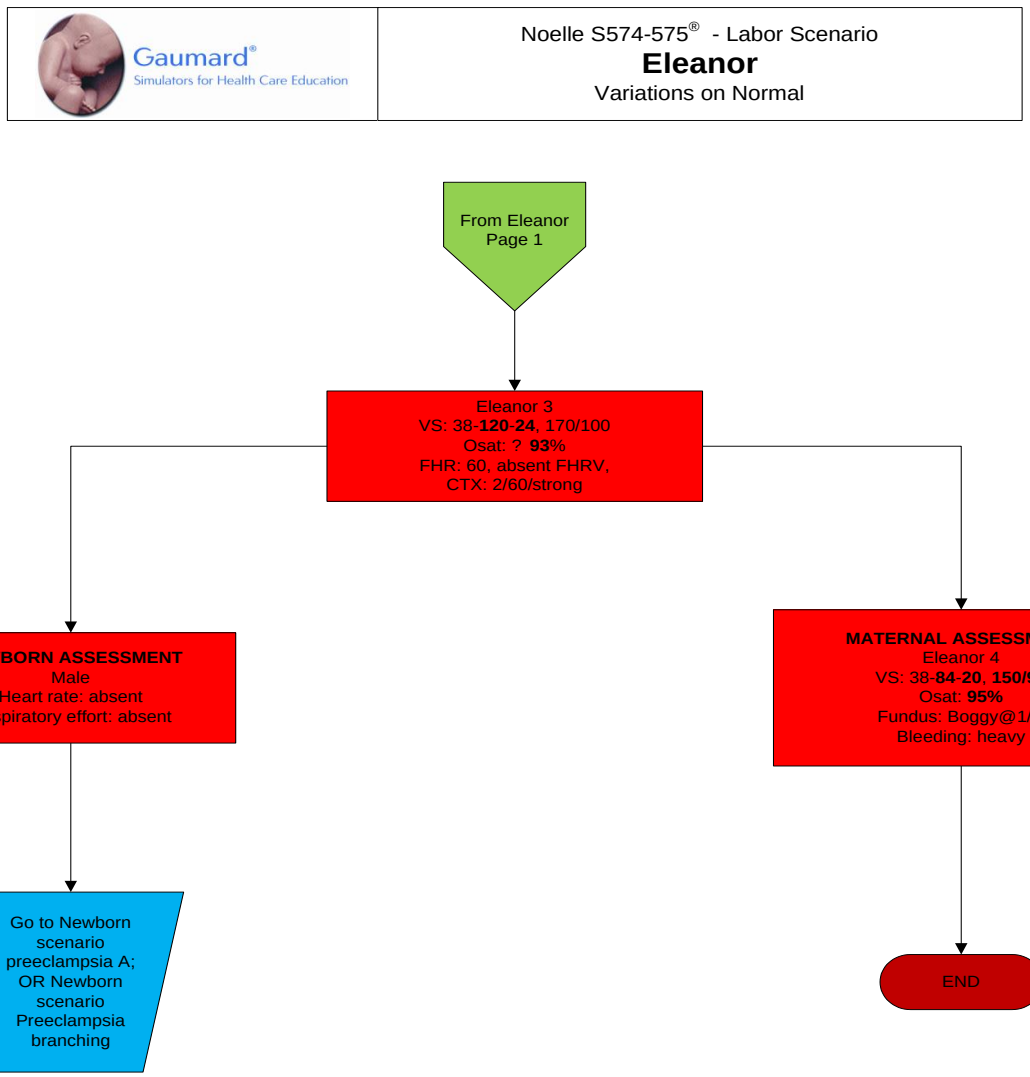
Noelle S574-575® - Labor Scenario

Eleanor

Variations on Normal

Elenor is a 19 yr old post-ictal patient being transferred to the ER by EMS. She was found convulsing in the bathroom. According to relatives she is 8½ months pregnant with her first baby. She has been on an IV during transport and her BP is 180/120. Labor duration: 20 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Eleanor
Variations on Normal
From Eleanor Page 1
Eleanor 3
VS: 38-120-24, 170/100
Osat: ? 93%
FHR: 60, absent FHRV,
CTX: 2/60/strong
NEWBORN ASSESSMENT
Male
Heart rate: absent
Respiratory effort: absent
MATERNAL ASSESSMENT
Eleanor 4
VS: 38-84-20, 150/90
Osat: 95%
Fundus: Boggy@1/U
Bleeding: heavy
Go to Newborn scenario preeclampsia A; OR Newborn scenario Preeclampsia branching
END

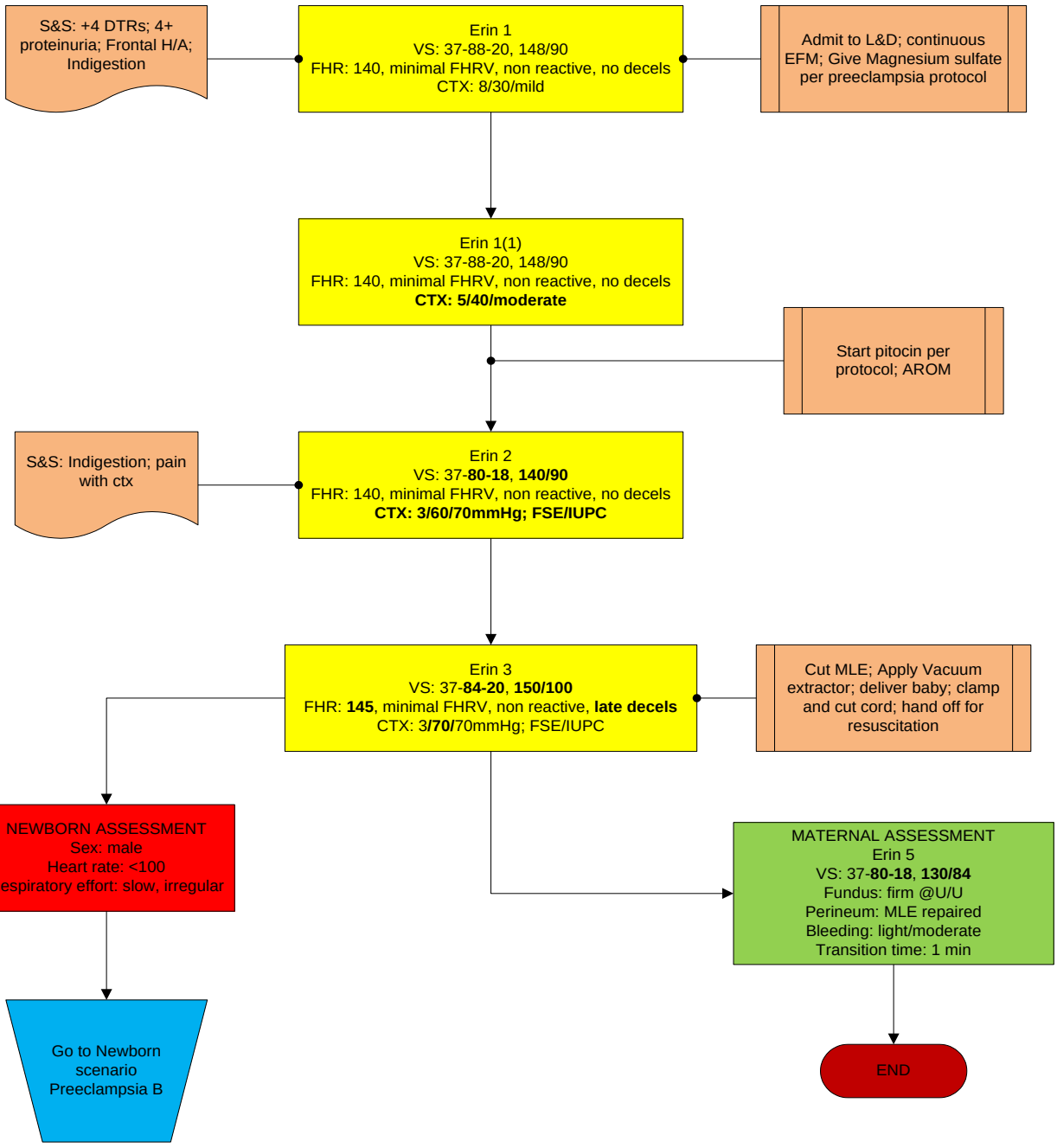
Gaumard®
Simulators for Health Care Education

Noelle S574- 575® - Labor Scenario

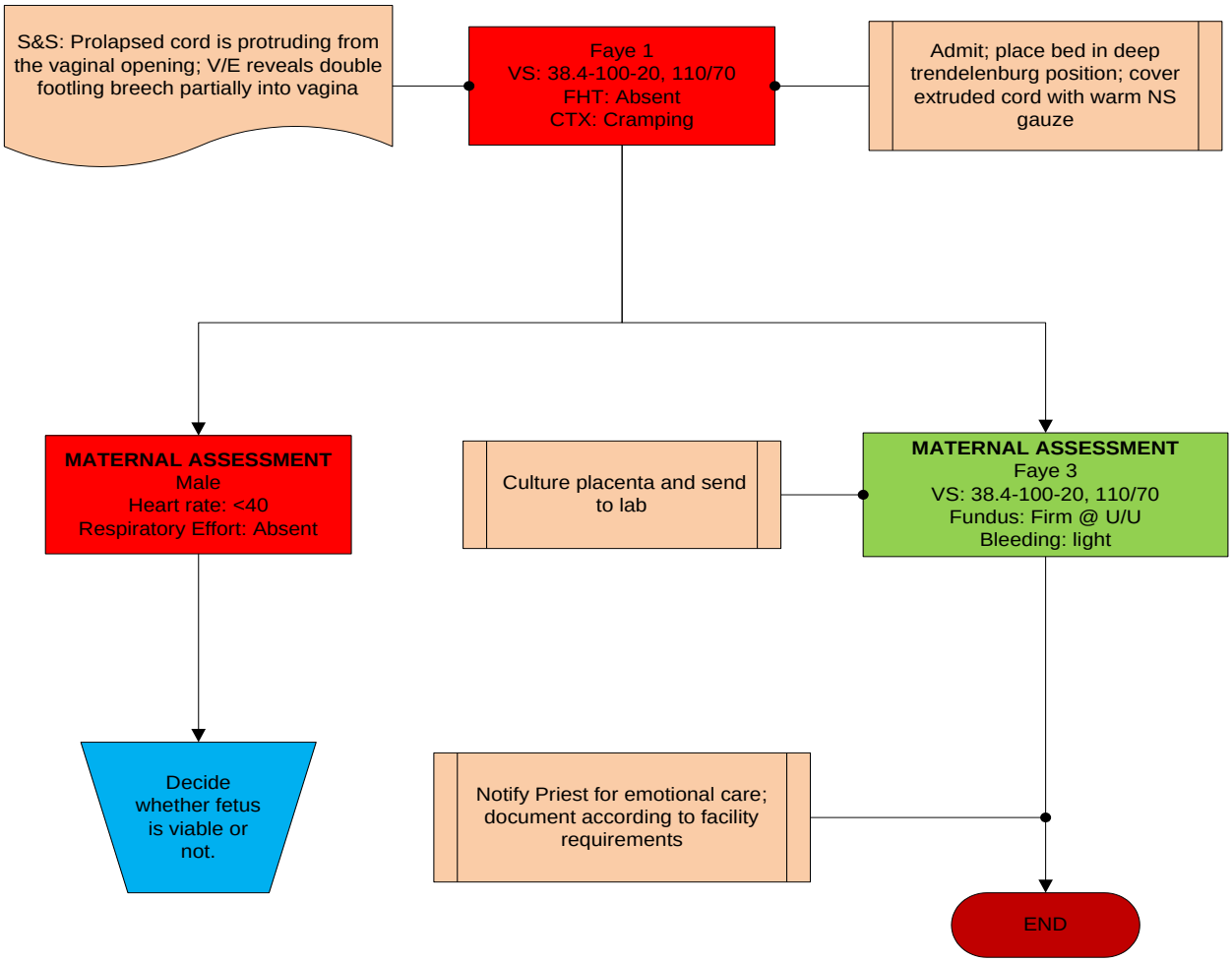
Erin

Preeclampsia

Erin is a 28 yr old @ 38 weeks admitted by her physician for preeclampsia. She is stared on Magnesium sulfate per protocol, induced with pitocin and her membranes are ruptured. Light meconium staining is noted following AROM. Labor duration: 60 minuntes.



Gaumard® Simulators for Health Care Education	Noelle S574-575® - Labor Scenario **Faye** Cord Prolapse
Faye is a 34 yr old gravida 1 @ 25 weeks' gestation. She began cramping about 3 hours ago and decided to drive herself to the hospital. She began leaking clear fluid on the way. An admitting clerk helps her into a wheel chair and takes her to L&D. Labor duration: 20 minutes.	



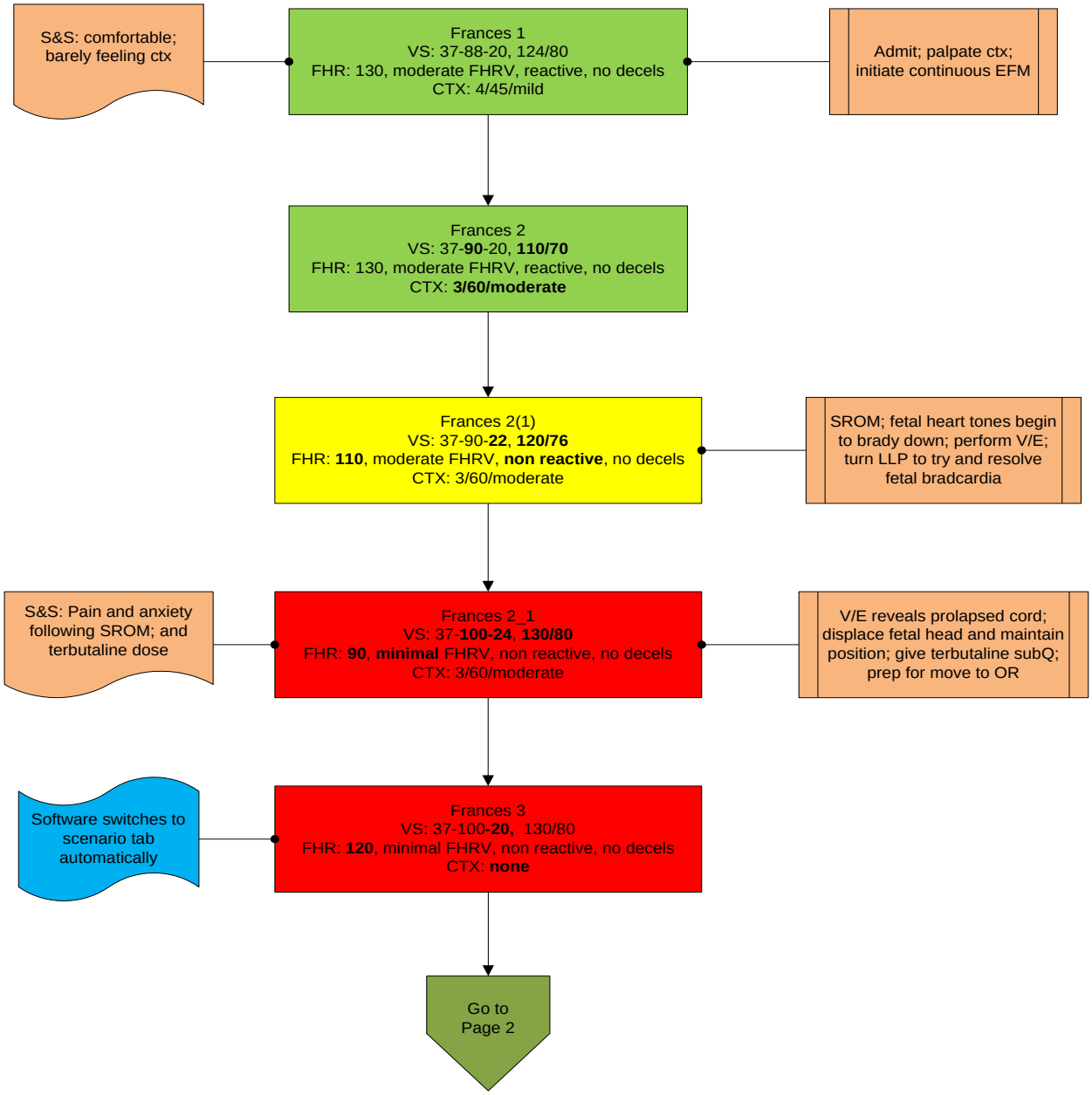
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Frances

Prolapsed Cord

Frances is admitted into a small town hospital due to regular contractions @ 4 minutes apart and bloody show. She labors without problems for about 4 hours and then the fetus starts to brady down after SROM. A V/E reveals a prolapsed coed in the vagina. Labor duration: 20 minutes. Scenario duration: 22-27 minutes.

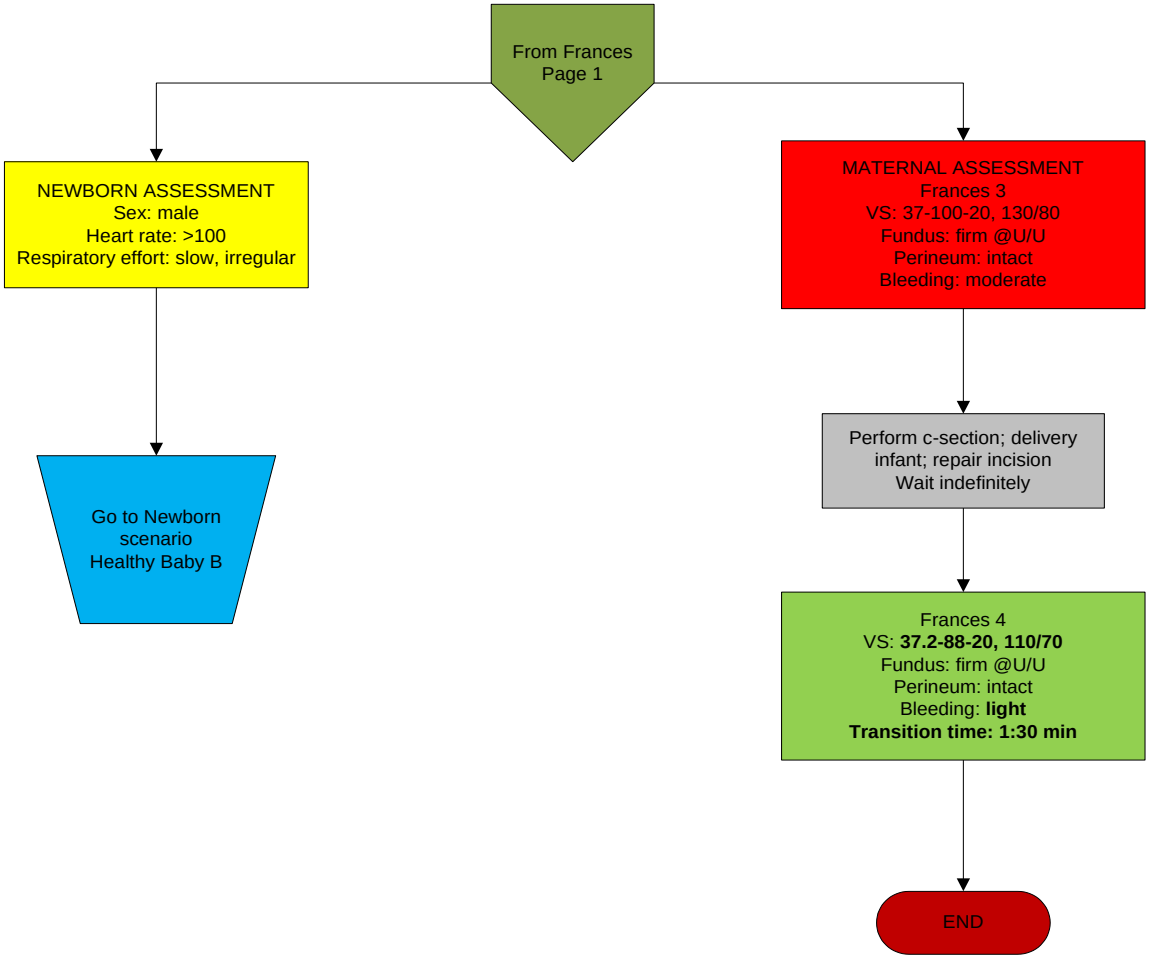


Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Frances

Prolapsed Cord



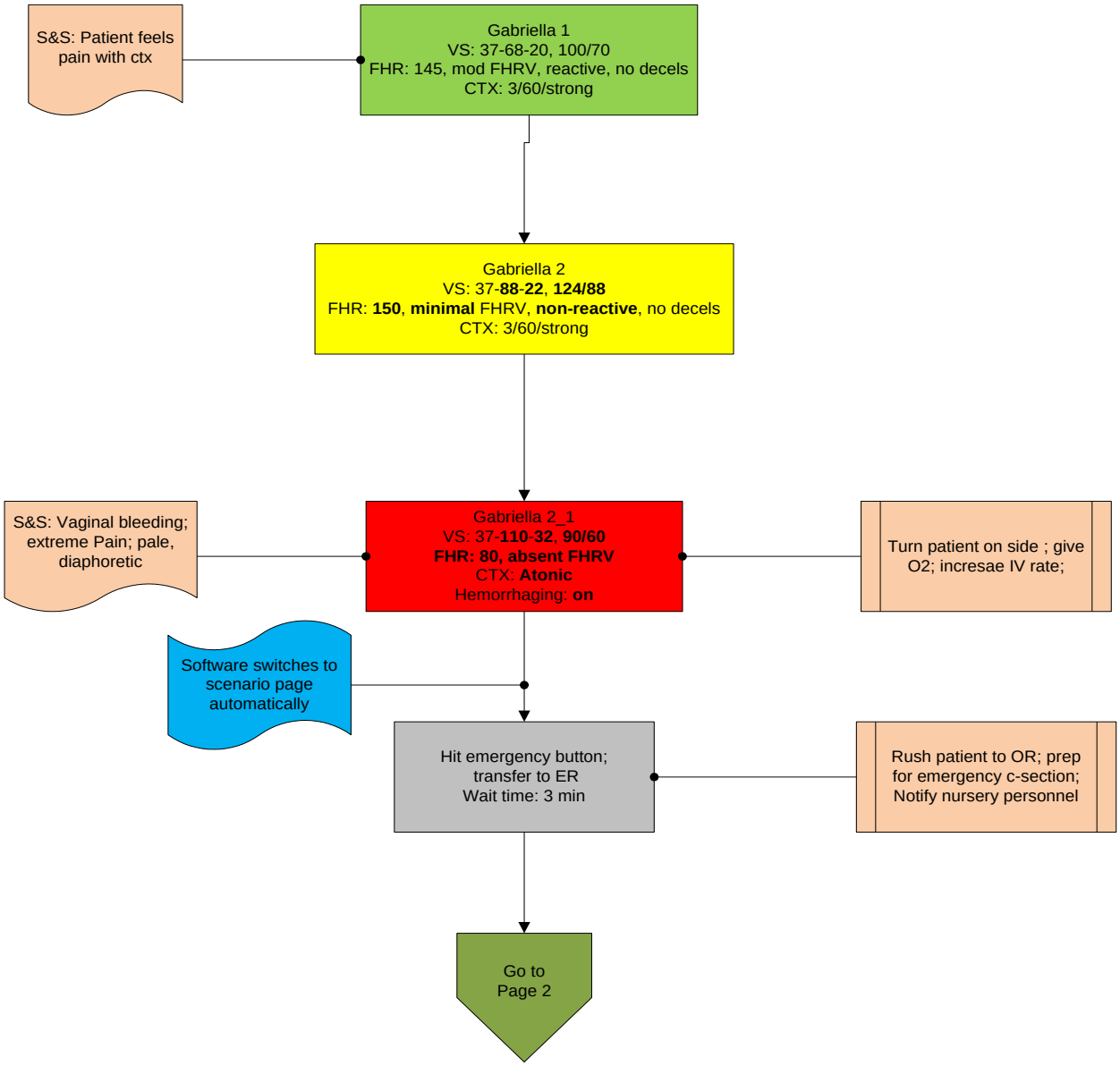
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Gabriella

Uterine Rupture

Gabriella is a young Hispanic woman who presents at a small hospital just across the Mexican border. She appears to be in late pregnancy and in active labor. As the nurse helps her to bed she notices a midline abdominal scar. Gabriella has had one prvious child in Mexico, but shares no more information. Labor duration: 15 minutes. Scenario duration: 25 minutes.

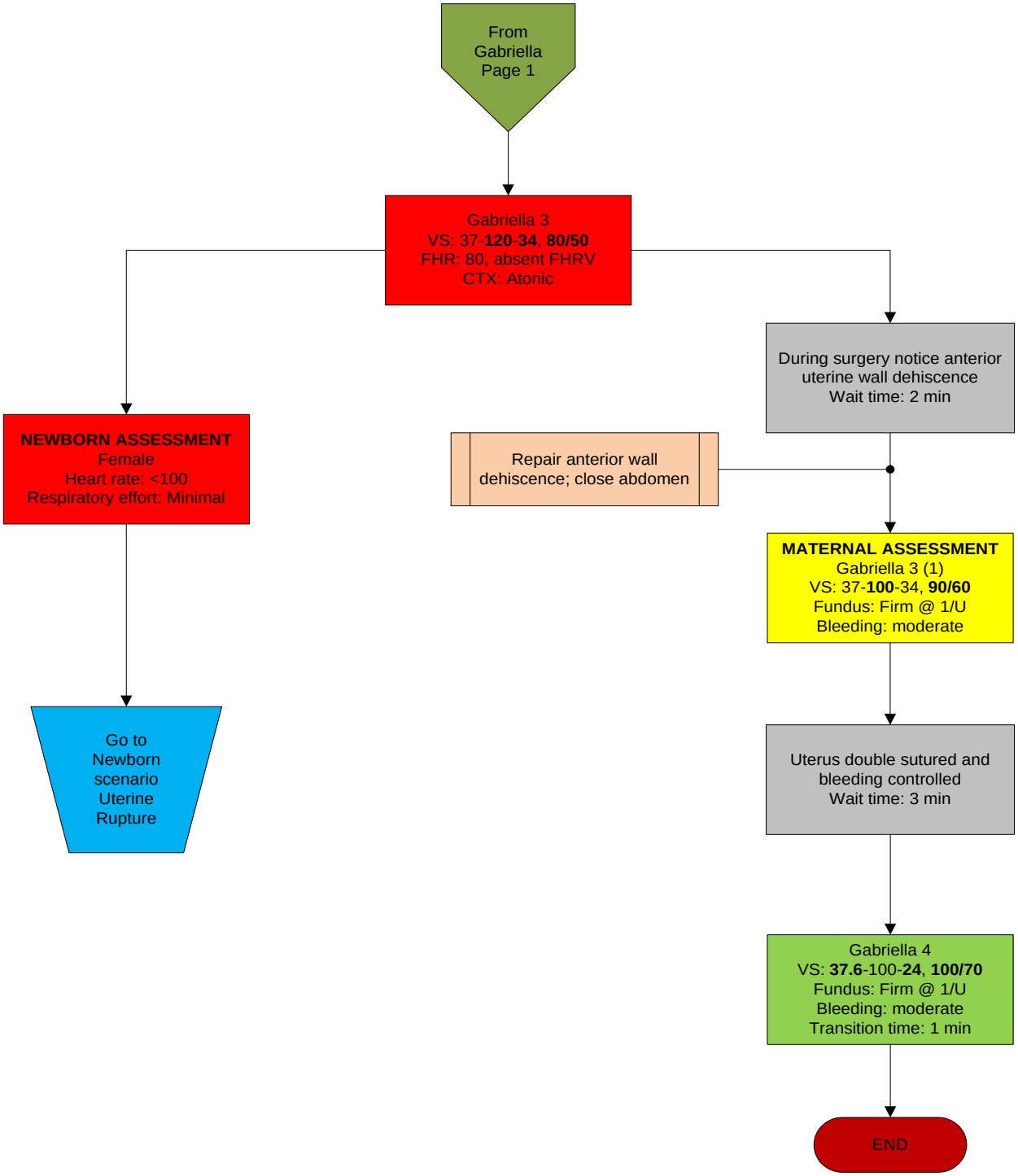


Gaumard®
Simulators for Health Care Education

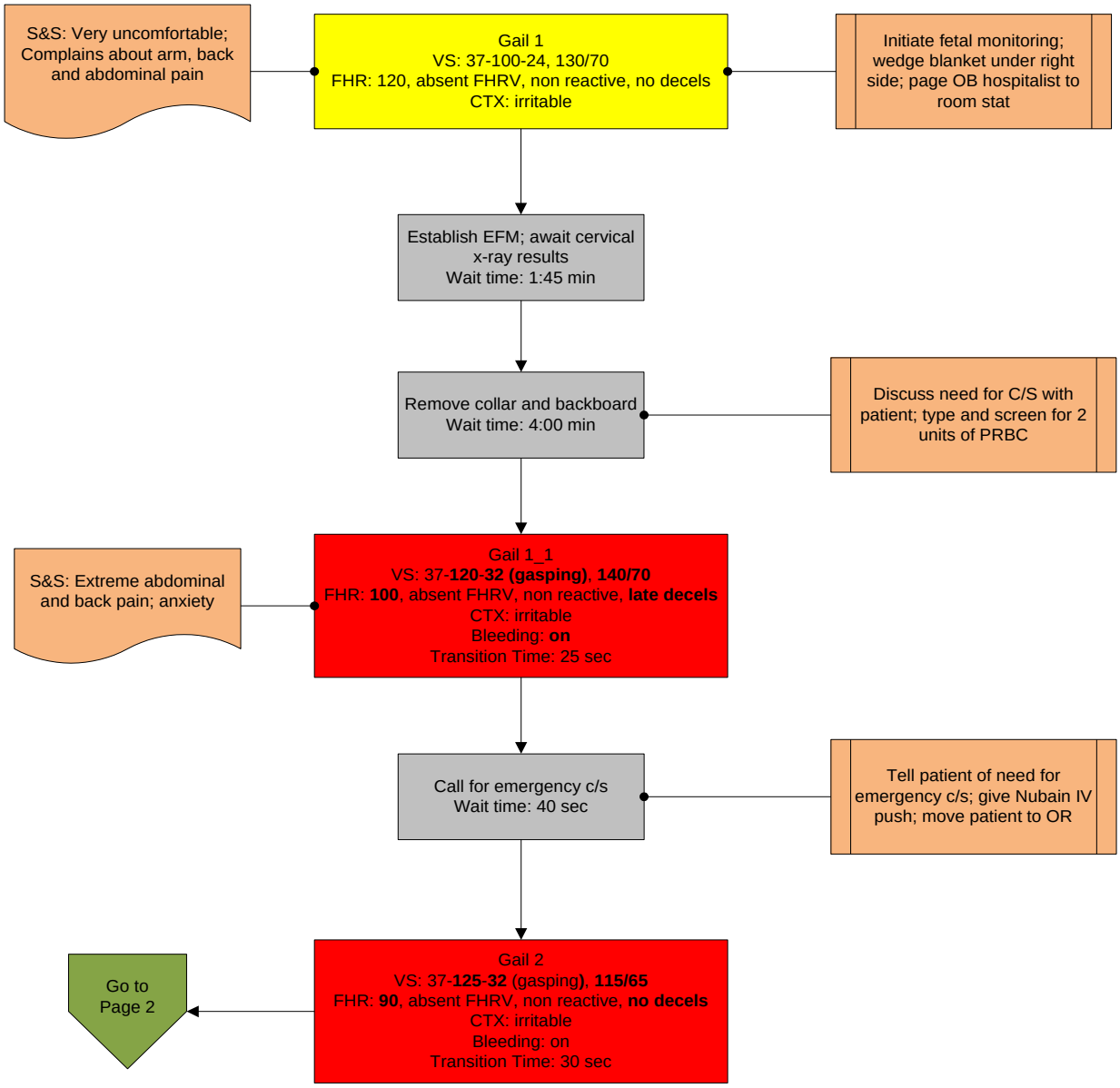
Noelle S574-575® - Labor Scenario

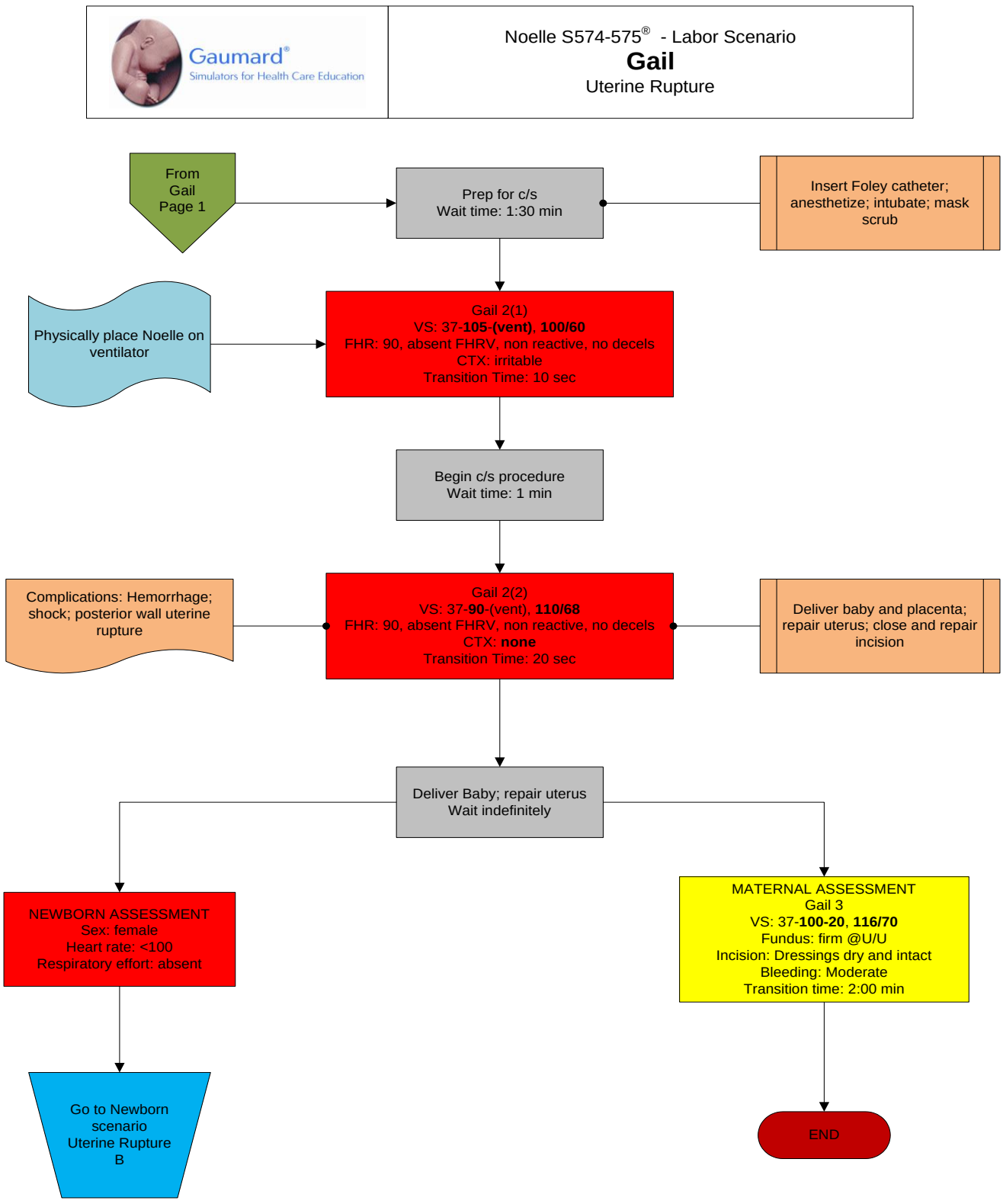
Gabriella

Uterine Rupture



Gaumard® Simulators for Health Care Education	Noelle S574-575® - Labor Scenario **Gail** Uterine Rupture
Gail is a 29 year old primip @ 35 weeks. She was admitted to L&D from the ER after being involved in car accident. Both she and her husband, Alan, were seriously injured and she is on a backboard wearing a c-collar to stabilize the spine. Her right humerus is fractured and seat belt marks are visible across the abdomen. Labor duration: 18-20 minutes.	




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Gail
Uterine Rupture
From Gail Page 1
Prep for c/s
Wait time: 1:30 min
Insert Foley catheter; anesthetize; intubate; mask scrub
Physically place Noelle on ventilator
Gail 2(1)
VS: 37-105-(vent), 100/60
FHR: 90, absent FHRV, non reactive, no decels
CTX: irritable
Transition Time: 10 sec
Begin c/s procedure
Wait time: 1 min
Complications: Hemorrhage; shock; posterior wall uterine rupture
Gail 2(2)
VS: 37-90-(vent), 110/68
FHR: 90, absent FHRV, non reactive, no decels
CTX: none
Transition Time: 20 sec
Deliver baby and placenta; repair uterus; close and repair incision
Deliver Baby; repair uterus
Wait indefinitely
NEWBORN ASSESSMENT
Sex: female
Heart rate: <100
Respiratory effort: absent
MATERNAL ASSESSMENT
Gail 3
VS: 37-100-20, 116/70
Fundus: firm @U/U
Incision: Dressings dry and intact
Bleeding: Moderate
Transition time: 2:00 min
Go to Newborn scenario Uterine Rupture B
END

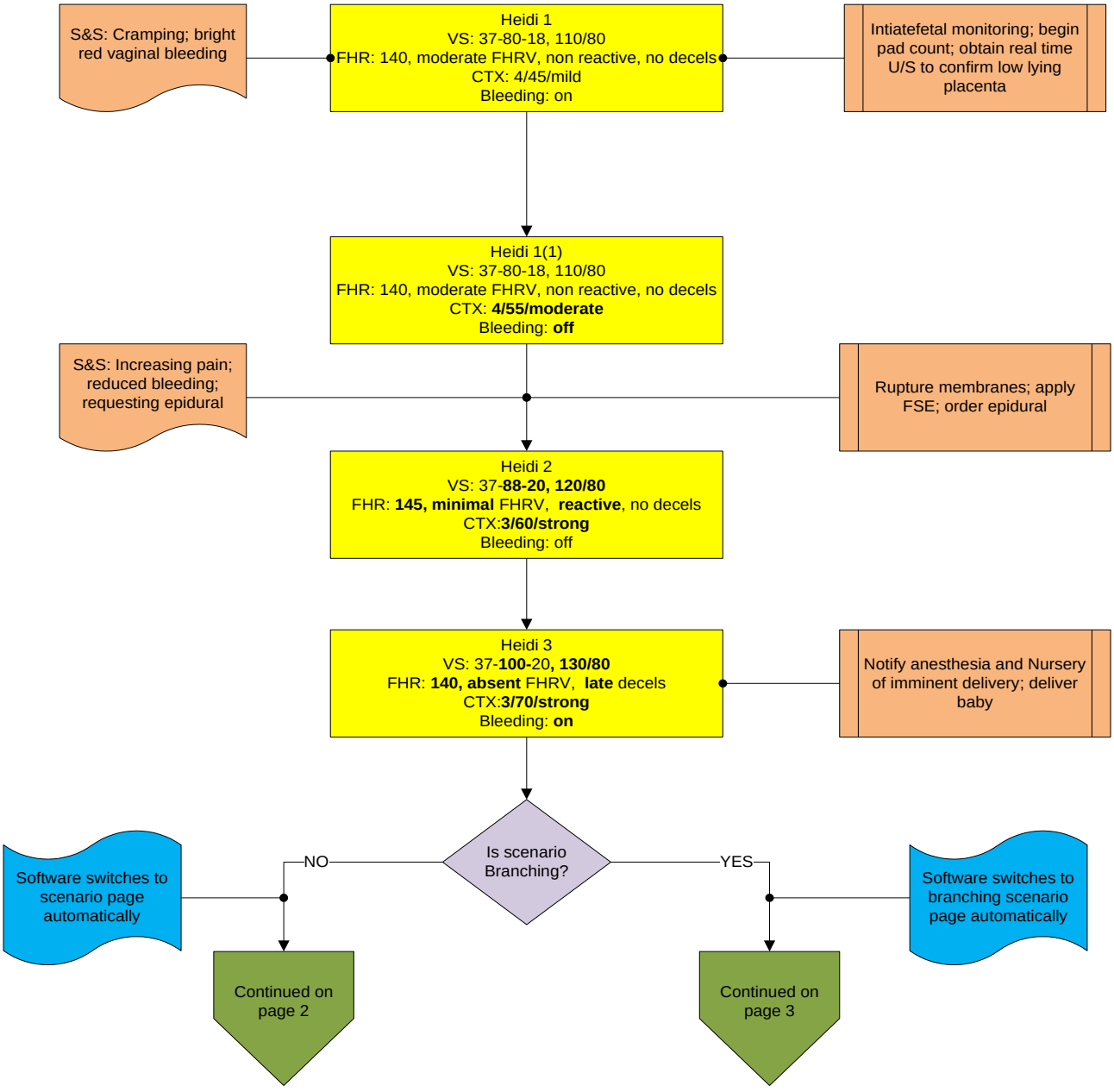
Gaumard®
Simulators for Health Care Education

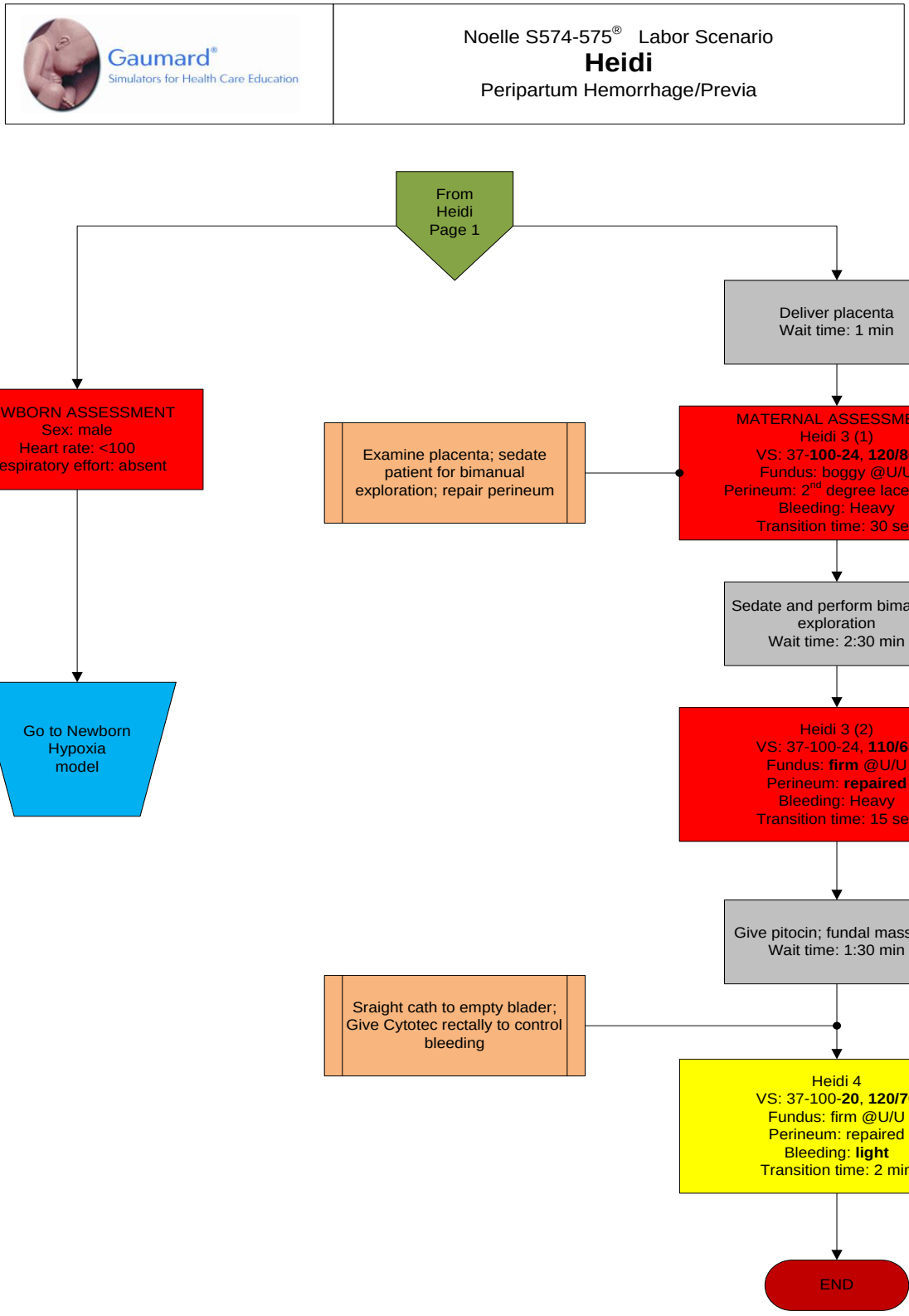
Noelle S574-575® Labor Scenario

Heidi

Peripartum Hemorrhage/Previa

Heidi is a 25 yr old primip @ 35 weeks. She has experienced several mild bleeding episodes during pregnancy and is known to have a low lying placenta. She arrives in L&D complaining of abdominal cramps and has bright red vaginal bleeding. Labor duration: 30 minutes. Labor duration: 35-45 minutes.



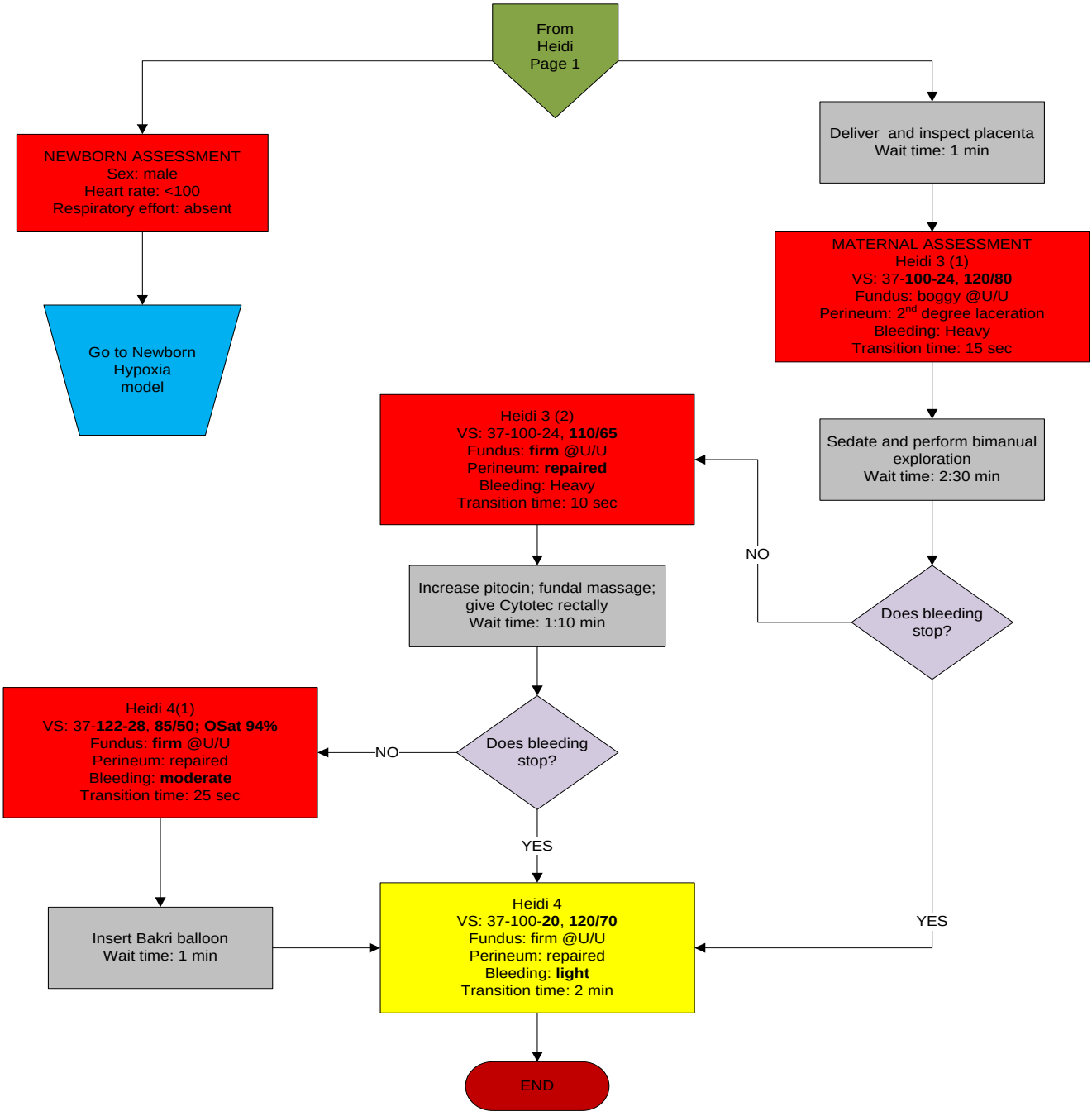

Gaumard®
Simulators for Health Care Education
Noelle S574-575® Labor Scenario
Heidi
Peripartum Hemorrhage/Previa
From Heidi Page 1
Deliver placenta
Wait time: 1 min
NEWBORN ASSESSMENT
Sex: male
Heart rate: <100
Respiratory effort: absent
Examine placenta; sedate patient for bimanual exploration; repair perineum
MATERNAL ASSESSMENT
Heidi 3 (1)
VS: 37-100-24, 120/80
Fundus: boggy @U/U
Perineum: 2nd degree laceration
Bleeding: Heavy
Transition time: 30 sec
Sedate and perform bimanual exploration
Wait time: 2:30 min
Go to Newborn Hypoxia model
Heidi 3 (2)
VS: 37-100-24, 110/65
Fundus: firm @U/U
Perineum: repaired
Bleeding: Heavy
Transition time: 15 sec
Give pitocin; fundal massage
Wait time: 1:30 min
Sraight cath to empty blader; Give Cytotec rectally to control bleeding
Heidi 4
VS: 37-100-20, 120/70
Fundus: firm @U/U
Perineum: repaired
Bleeding: light
Transition time: 2 min
END

Gaumard®
Simulators for Health Care Education

Noelle S574-575® Labor Scenario

Heidi

Peripartum Hemorrhage/Previa



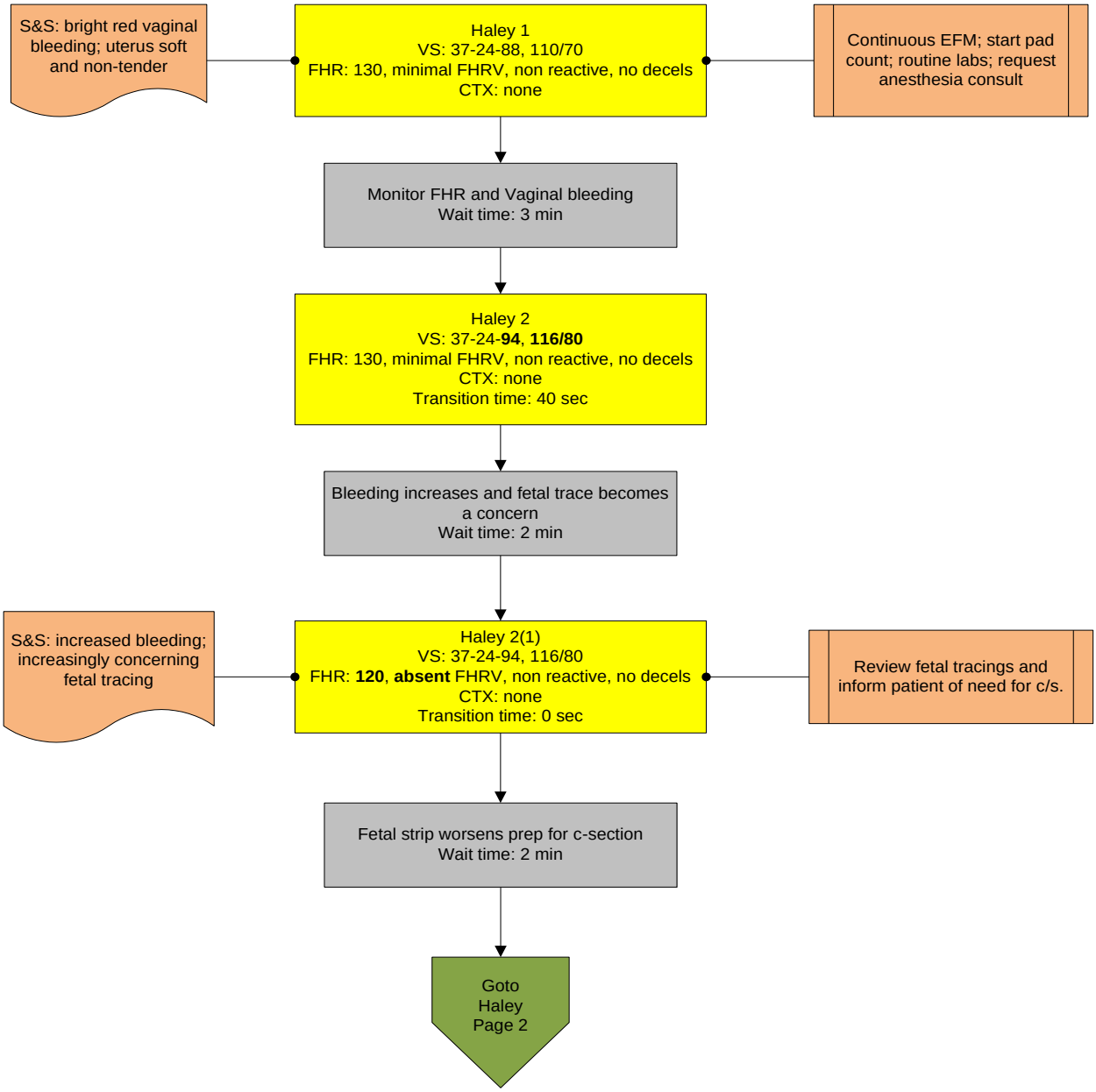
Gaumard®
Simulators for Health Care Education

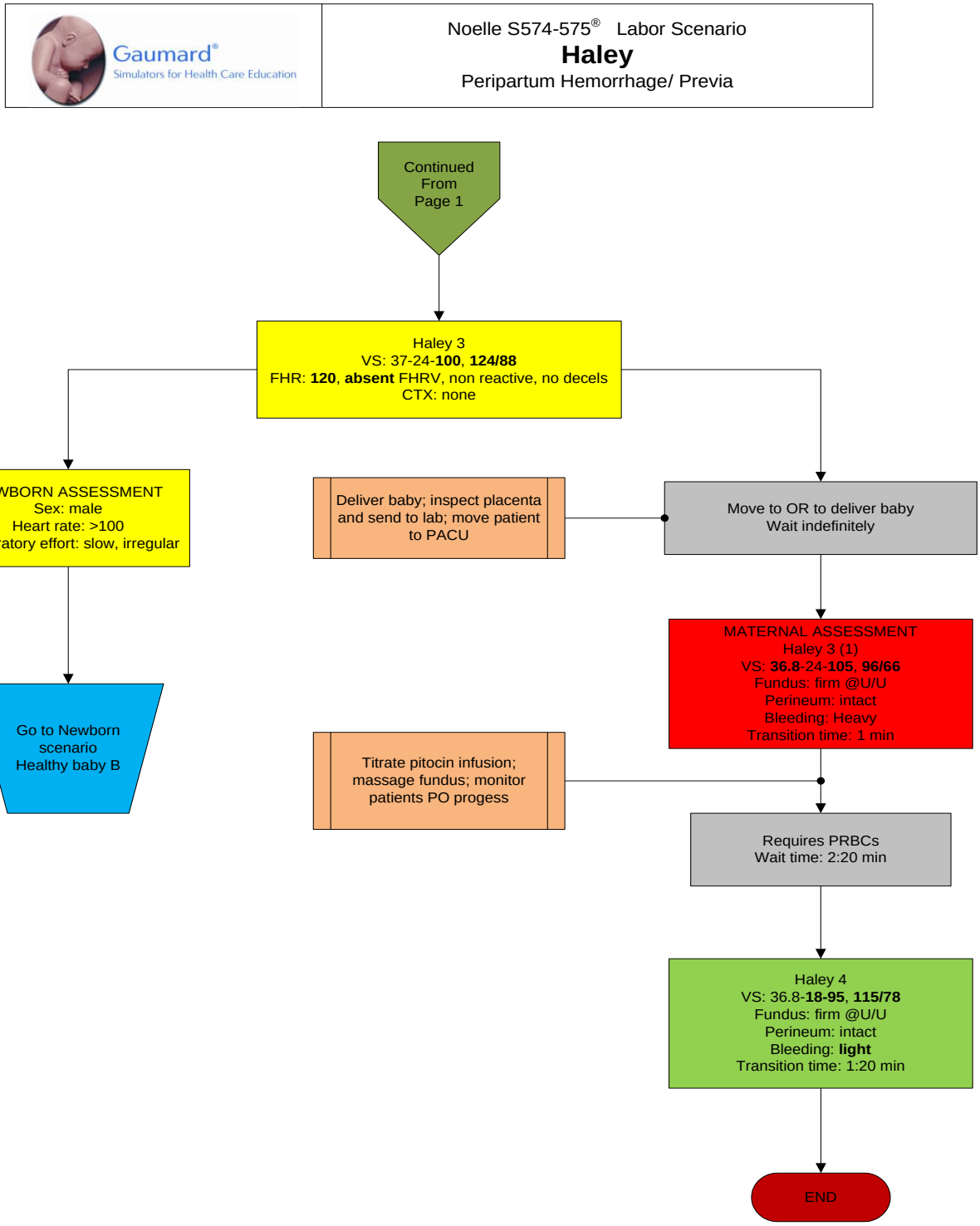
Noelle S574-575® Labor Scenario

Haley

Peripartum Hemorrhage/ Previa

Haley is a 33yr old G2 @ 35 weeks. Previous U/S revealed a low lying placenta and this is the 5th time in 11 weeks she been admitted for bleeding. This time the bleeding is is heavier and is not resolving. Her OB is on the way to the hospital; bimanual palpation shows the uterus to be soft and non-tender. Labor duration: 15 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® Labor Scenario
Haley
Peripartum Hemorrhage/ Previa
Continued From Page 1
Haley 3
VS: 37-24-100, 124/88
FHR: 120, absent FHRV, non reactive, no decels
CTX: none
NEWBORN ASSESSMENT
Sex: male
Heart rate: >100
Respiratory effort: slow, irregular
Deliver baby; inspect placenta and send to lab; move patient to PACU
Move to OR to deliver baby
Wait indefinitely
MATERNAL ASSESSMENT
Haley 3 (1)
VS: 36.8-24-105, 96/66
Fundus: firm @U/U
Perineum: intact
Bleeding: Heavy
Transition time: 1 min
Go to Newborn scenario
Healthy baby B
Titrate pitocin infusion; massage fundus; monitor patients PO progess
Requires PRBCs
Wait time: 2:20 min
Haley 4
VS: 36.8-18-95, 115/78
Fundus: firm @U/U
Perineum: intact
Bleeding: light
Transition time: 1:20 min
END

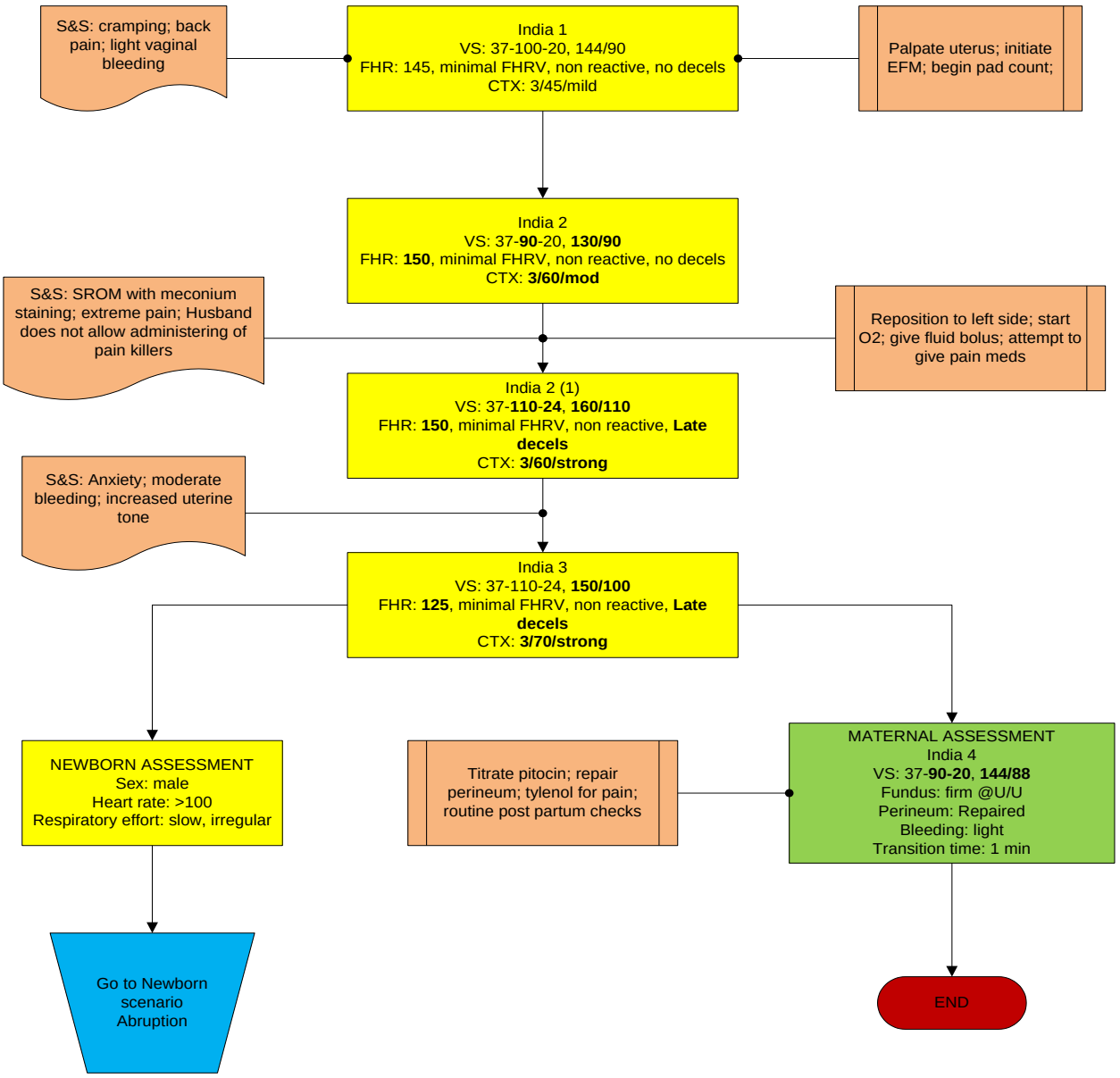
Gaumard®
Simulators for Health Care Education

Noelle S574-575® Labor Scenario

India

Peripartum Hemorrhage/ Abruptio

India is a 19 yr old gravida 2 @ 37 weeks. She arrives at hospital with her husband who says she fell down the stairs and she has been cramping and bleeding for about an hour. During admitting interview husband answers all the questions and India doesn't make eye contact. The nurse palpates uterus, initiates fetal monitoring and starts a pad count. Labor duration: 25 minutes.



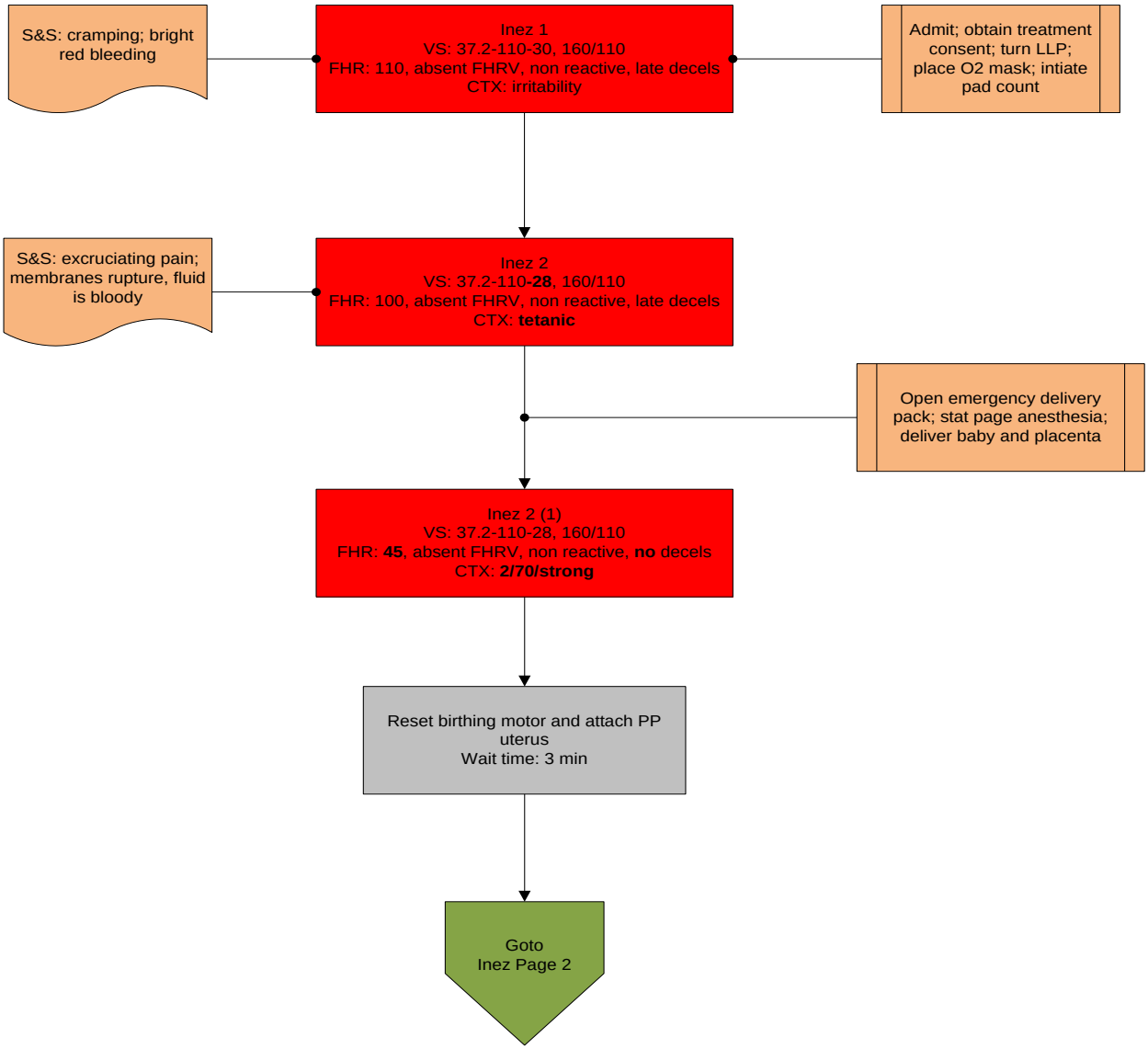
Gaumard®
Simulators for Health Care Education

Noelle S574-575® Labor Scenario

Inez

Peripartum Hemorrhage/Abruption

Inez is a 27 yr old primip @ 35 weeks. She arrives at hospital one evening crying and doubled over in pain. She is admitted to a birthing room and the nurse notices bright red blood on Inez's panties. She is having very intense and close contractions. Labor duration: 10 minutes. Scenario duration: 18 minutes.

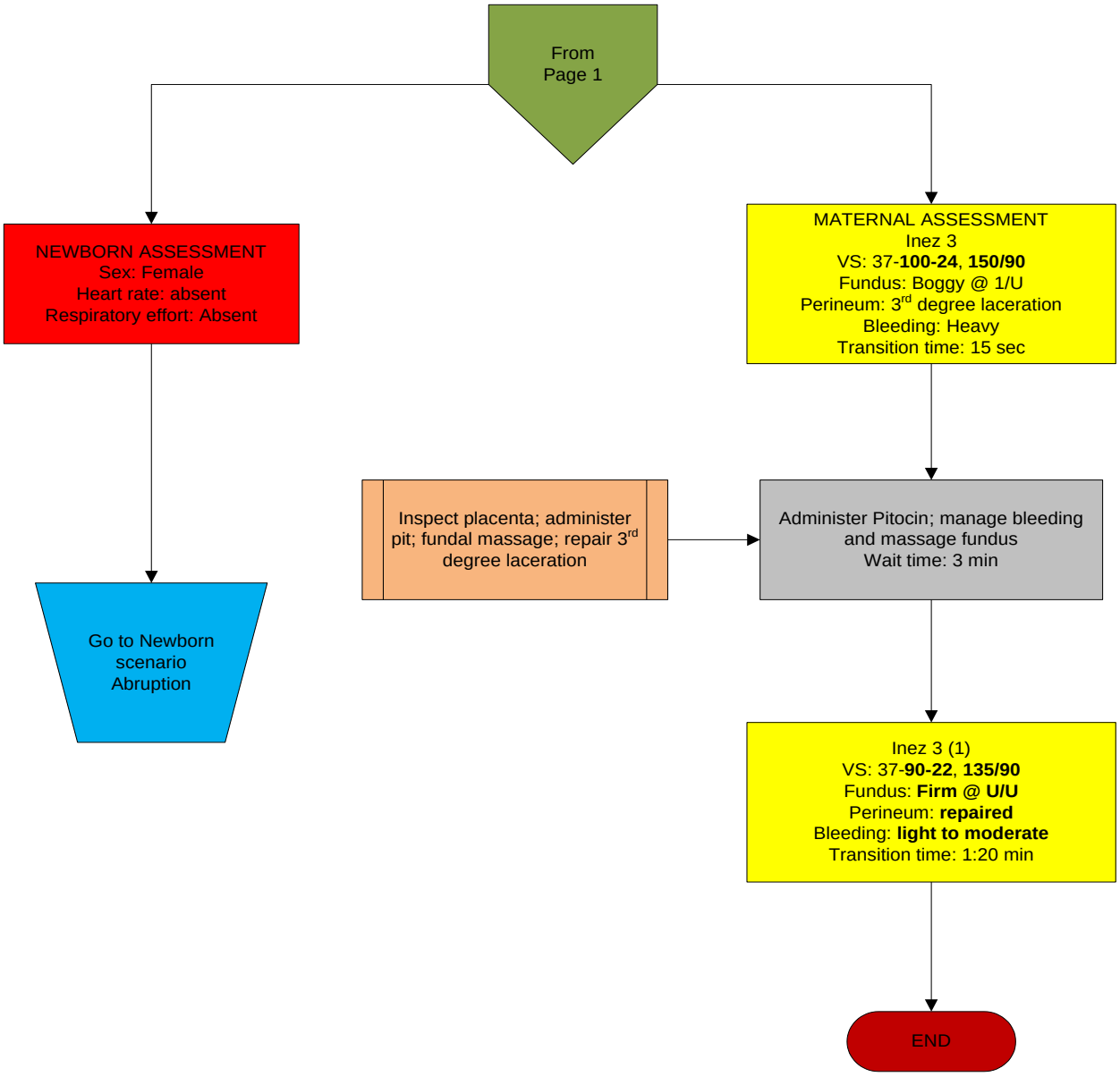


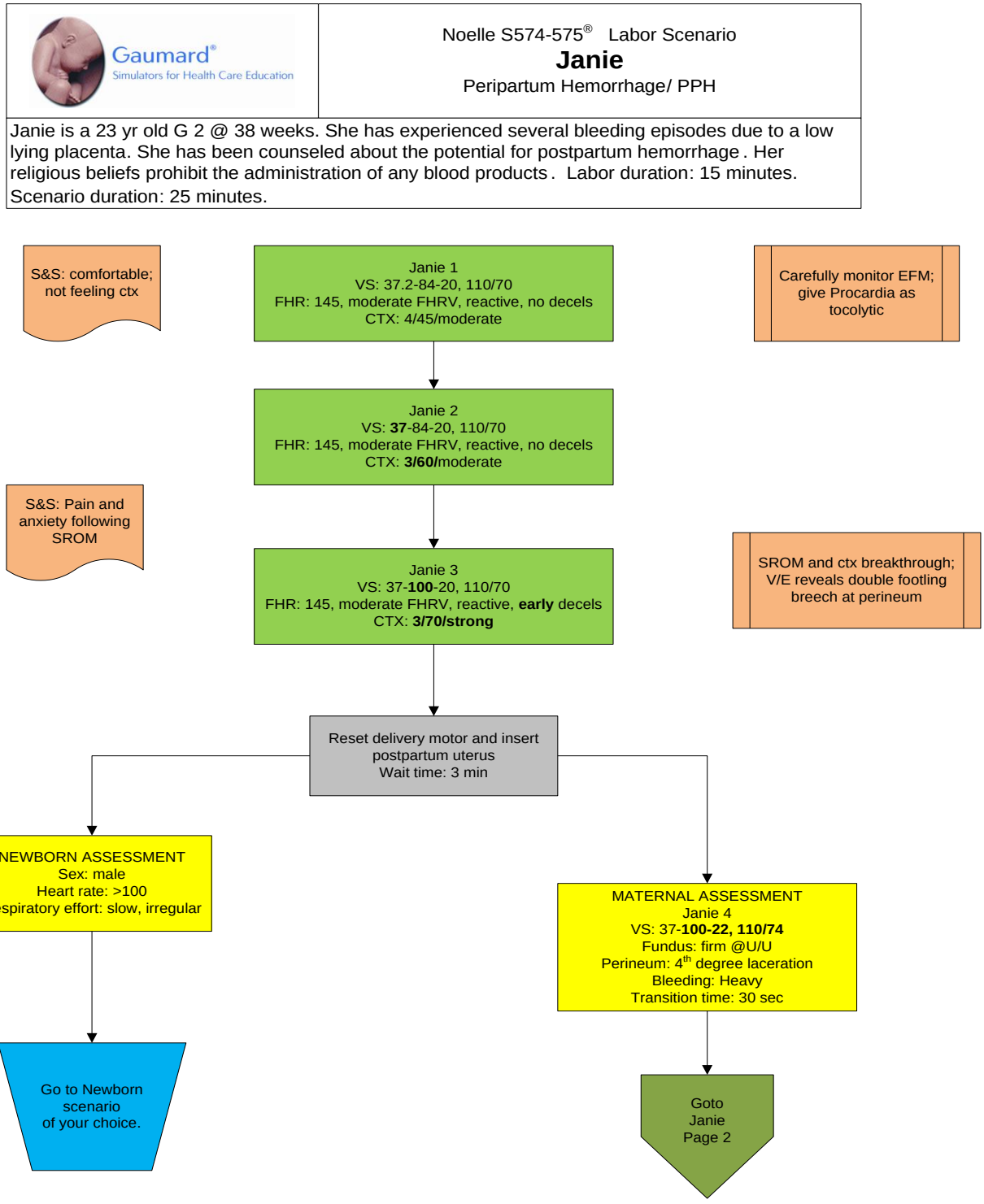
Gaumard®
Simulators for Health Care Education

Noelle S574-575® Labor Scenario

Inez

Peripartum Hemorrhage/Abruption



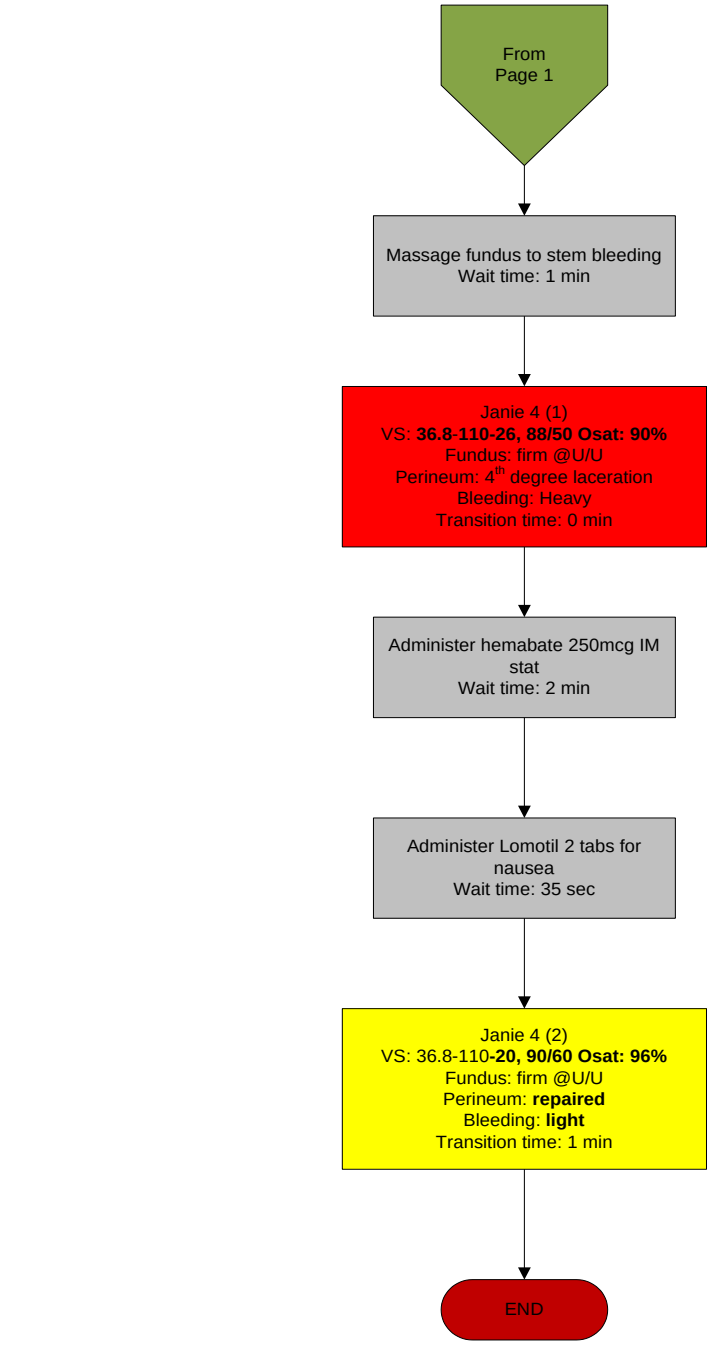

Gaumard®
Simulators for Health Care Education
Noelle S574-575® Labor Scenario
Janie
Peripartum Hemorrhage/ PPH
Janie is a 23 yr old G 2 @ 38 weeks. She has experienced several bleeding episodes due to a low lying placenta. She has been counseled about the potential for postpartum hemorrhage . Her religious beliefs prohibit the administration of any blood products . Labor duration: 15 minutes. Scenario duration: 25 minutes.
S&S: comfortable; not feeling ctx
Janie 1
VS: 37.2-84-20, 110/70
FHR: 145, moderate FHRV, reactive, no decels
CTX: 4/45/moderate
Carefully monitor EFM; give Procardia as tocolytic
Janie 2
VS: 37-84-20, 110/70
FHR: 145, moderate FHRV, reactive, no decels
CTX: 3/60/moderate
S&S: Pain and anxiety following SROM
Janie 3
VS: 37-100-20, 110/70
FHR: 145, moderate FHRV, reactive, early decels
CTX: 3/70/strong
SROM and ctx breakthrough; V/E reveals double footling breech at perineum
Reset delivery motor and insert postpartum uterus
Wait time: 3 min
NEWBORN ASSESSMENT
Sex: male
Heart rate: >100
Respiratory effort: slow, irregular
MATERNAL ASSESSMENT
Janie 4
VS: 37-100-22, 110/74
Fundus: firm @U/U
Perineum: 4th degree laceration
Bleeding: Heavy
Transition time: 30 sec
Go to Newborn scenario of your choice.
Goto Janie Page 2

Gaumard®
Simulators for Health Care Education

Noelle S574-575® Labor Scenario

Janie

Peripartum Hemorrhage/ PPH



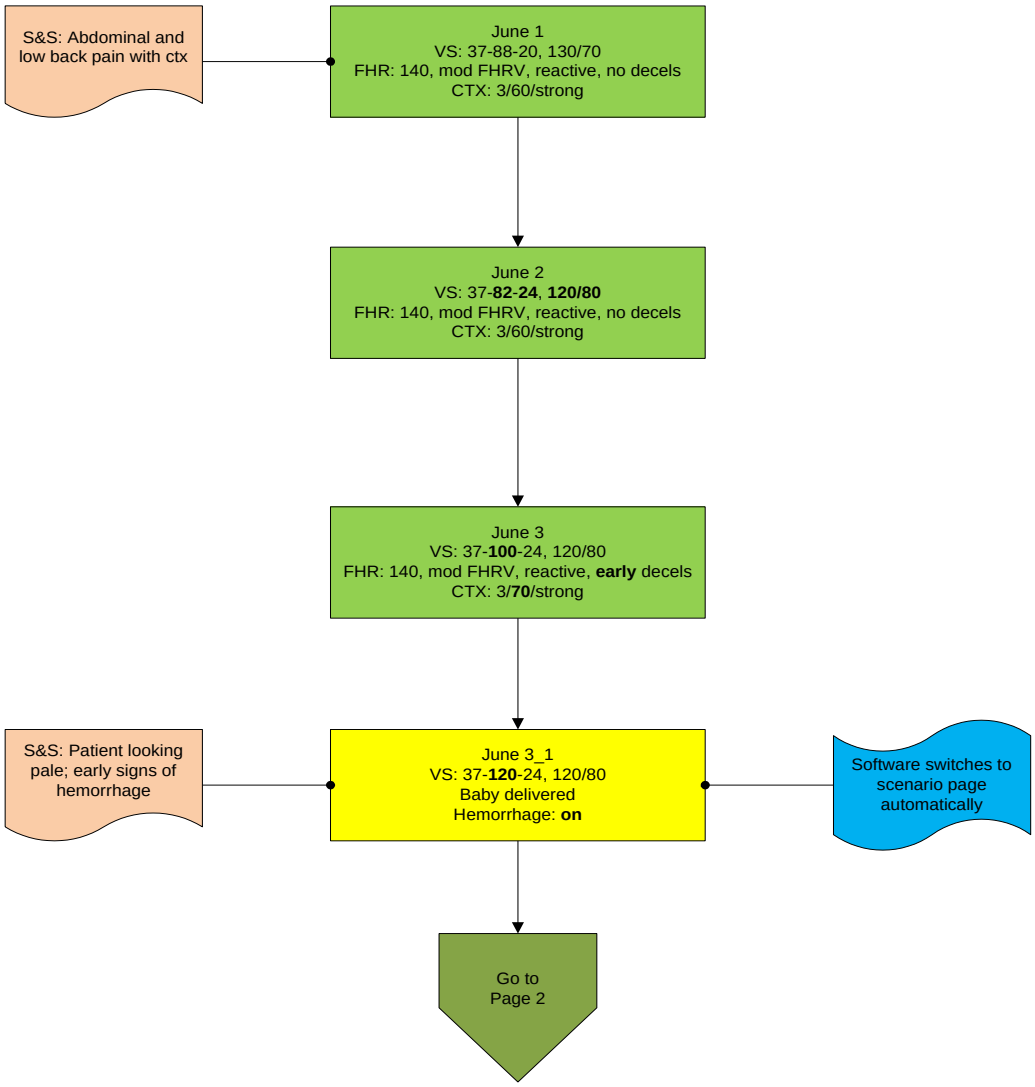
Gaumard®
Simulators for Health Care Education

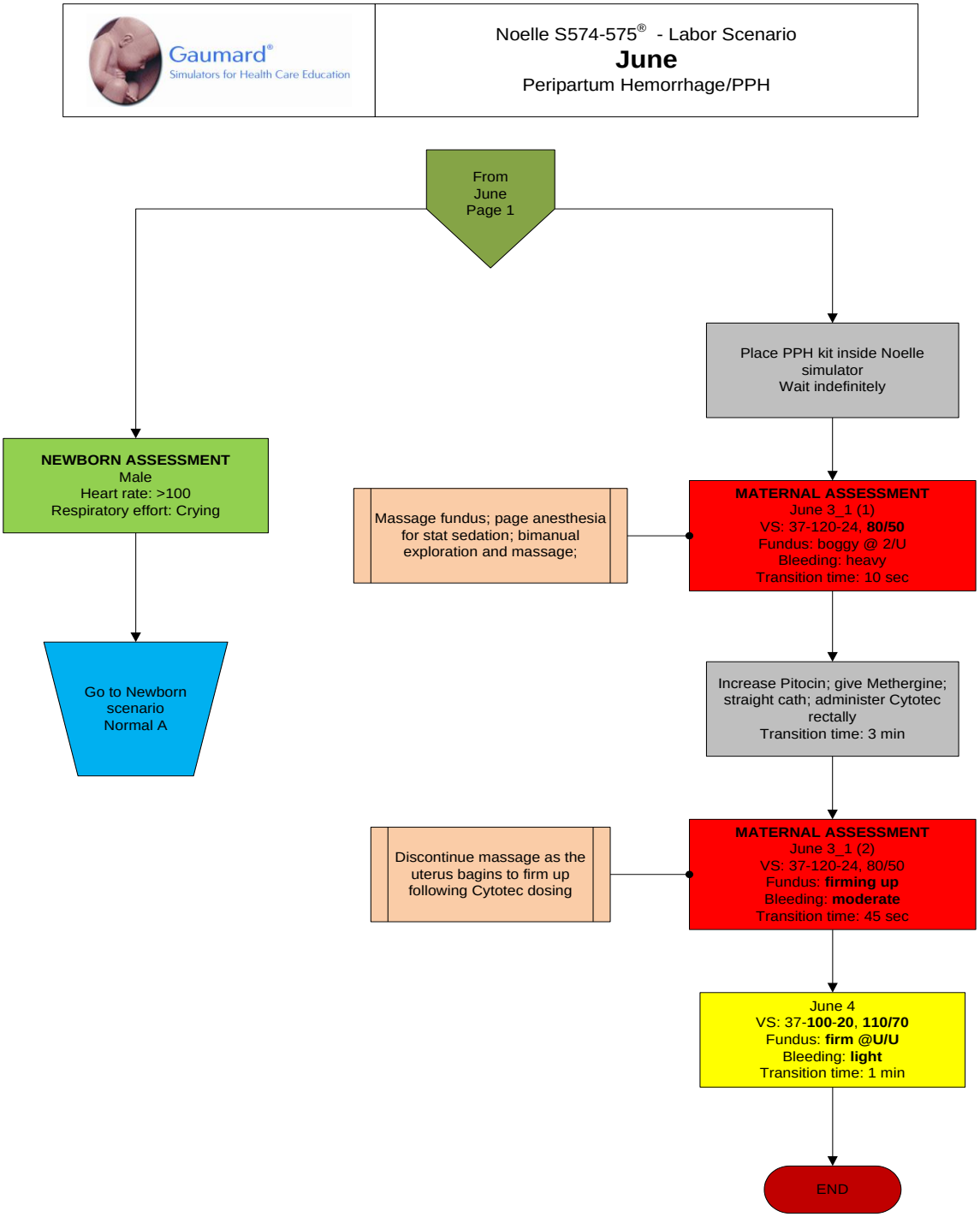
Noelle S574-575® - Labor Scenario

June

Peripartum Hemorrhage/PPH

June is a 31 yr old multip about to have her 5th baby. She has had a normal pregnancy and she is planning natural childbirth. She enters the hospital in active labor. The family is very excited as they know this baby is a boy. Labor duration: 15 minutes. Scenario duration: 22-25 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
June
Peripartum Hemorrhage/PPH
From June Page 1
Place PPH kit inside Noelle simulator
Wait indefinitely
NEWBORN ASSESSMENT
Male
Heart rate: >100
Respiratory effort: Crying
Massage fundus; page anesthesia for stat sedation; bimanual exploration and massage;
MATERNAL ASSESSMENT
June 3_1 (1)
VS: 37-120-24, 80/50
Fundus: boggy @ 2/U
Bleeding: heavy
Transition time: 10 sec
Go to Newborn scenario
Normal A
Increase Pitocin; give Methergine; straight cath; administer Cytotec rectally
Transition time: 3 min
Discontinue massage as the uterus bagins to firm up following Cytotec dosing
MATERNAL ASSESSMENT
June 3_1 (2)
VS: 37-120-24, 80/50
Fundus: firming up
Bleeding: moderate
Transition time: 45 sec
June 4
VS: 37-100-20, 110/70
Fundus: firm @U/U
Bleeding: light
Transition time: 1 min
END

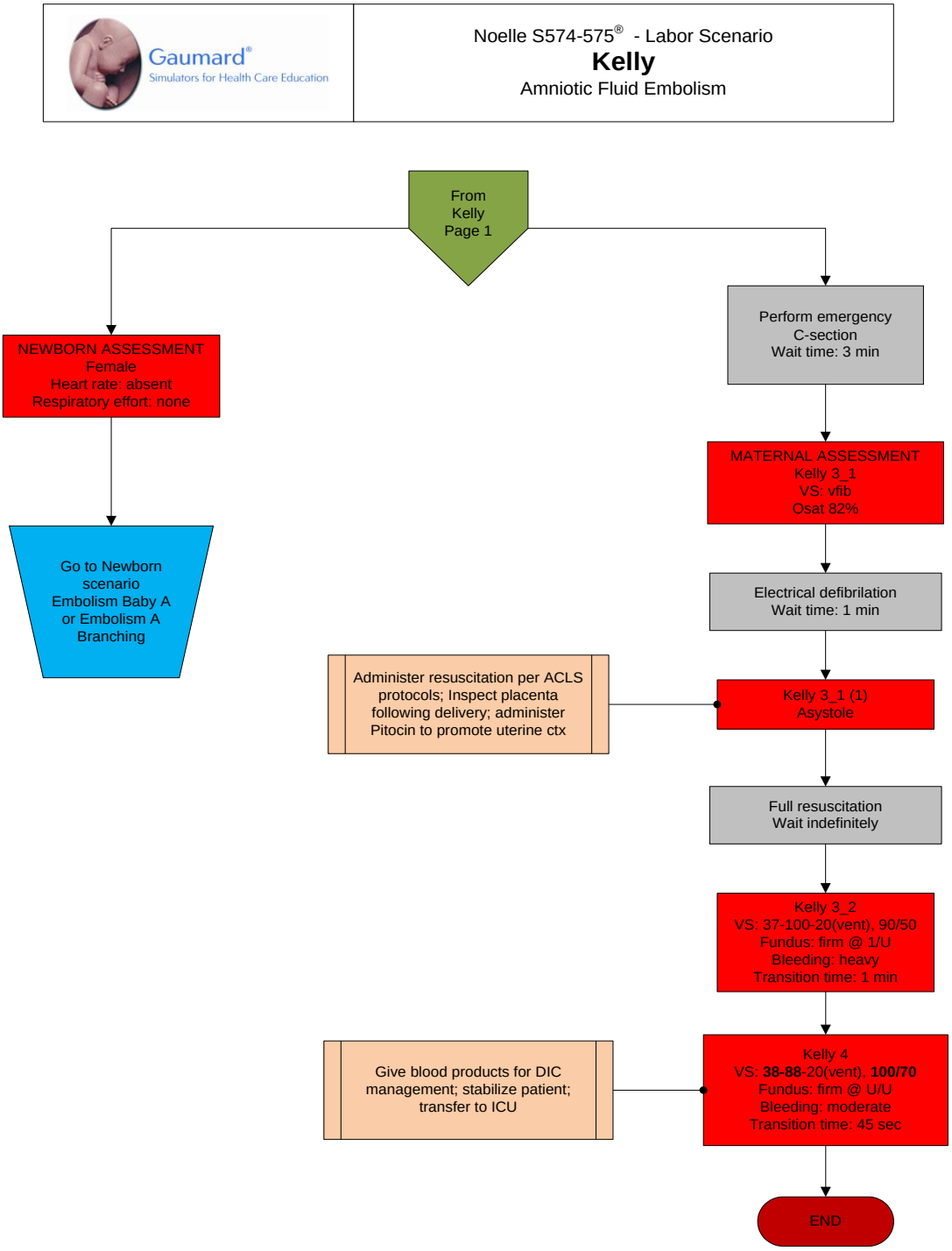
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Kelly

Amniotic Fluid Embolism

Kelly is a 34 yr old gravida 5/2 @ 38 weeks. She is scheduled for induction as her last baby weighed almost 10lbs and she experienced a severe shoulder dystocia with that delivery. She has gained 43lbs with this pregnancy and her GTT is borderline. Labor duration: 25 minutes. Scenario duration: 35-40 minutes.


Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Kelly
Amniotic Fluid Embolism
From Kelly Page 1
NEWBORN ASSESSMENT
Female
Heart rate: absent
Respiratory effort: none
Go to Newborn scenario
Embolism Baby A
or Embolism A
Branching
Perform emergency C-section
Wait time: 3 min
MATERNAL ASSESSMENT
Kelly 3_1
VS: vfib
Osat 82%
Electrical defibrilation
Wait time: 1 min
Administer resuscitation per ACLS protocols; Inspect placenta following delivery; administer Pitocin to promote uterine ctx
Kelly 3_1 (1)
Asystole
Full resuscitation
Wait indefinitely
Kelly 3_2
VS: 37-100-20(vent), 90/50
Fundus: firm @ 1/U
Bleeding: heavy
Transition time: 1 min
Give blood products for DIC management; stabilize patient; transfer to ICU
Kelly 4
VS: 38-88-20(vent), 100/70
Fundus: firm @ U/U
Bleeding: moderate
Transition time: 45 sec
END

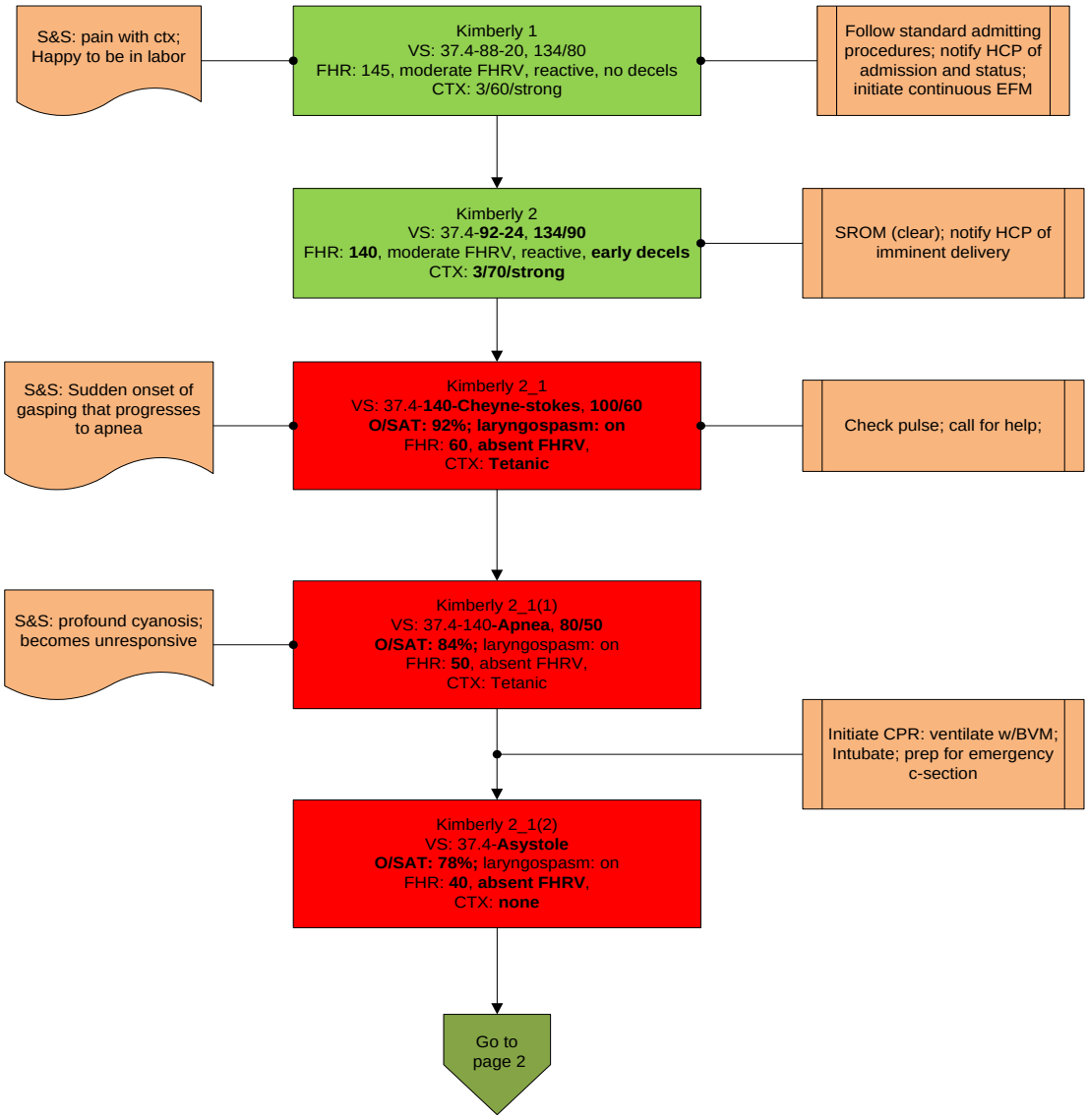
Gaumard®
Simulators for Health Care Education

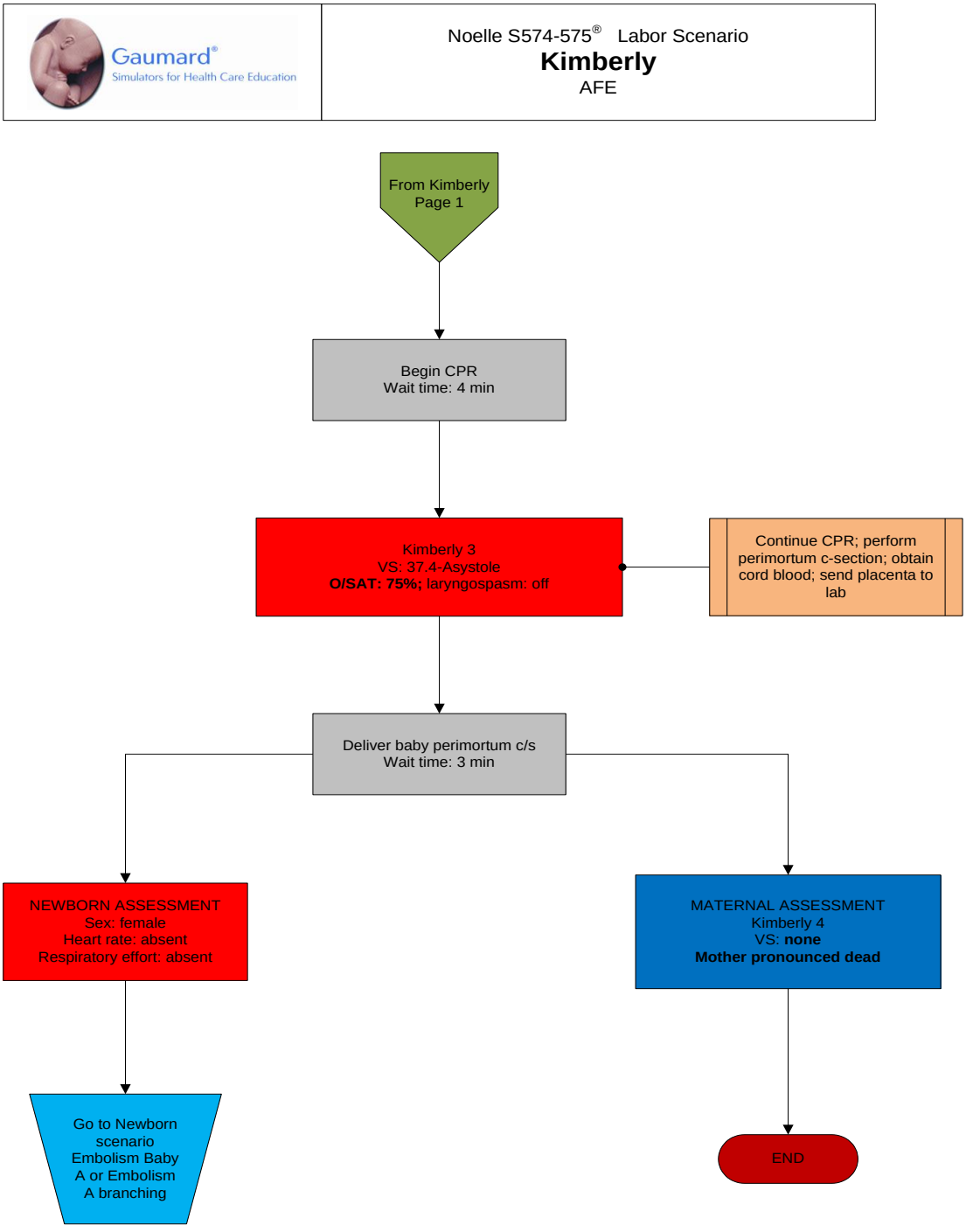
Noelle S574-575® Labor Scenario

Kimberly

AFE

Kimberly is a 27 yr old multip @ 42 weeks. She began having contractions at home and now they are becoming stronger. She is excited to be finally going into labor. By the time the nurse completes admission Kimberly is requesting pain meds as her labor is progressing quickly. Labor duration: 25 minutes. Scenario duration: 30 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® Labor Scenario
Kimberly
AFE
From Kimberly Page 1
Begin CPR
Wait time: 4 min
Kimberly 3
VS: 37.4-Asystole
O/SAT: 75%; laryngospasm: off
Continue CPR; perform perimortum c-section; obtain cord blood; send placenta to lab
Deliver baby perimortum c/s
Wait time: 3 min
NEWBORN ASSESSMENT
Sex: female
Heart rate: absent
Respiratory effort: absent
MATERNAL ASSESSMENT
Kimberly 4
VS: none
Mother pronounced dead
Go to Newborn scenario
Embolism Baby
A or Embolism
A branching
END

Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Madonna

Preterm Labor

Madonna is a 41 yr old multip @ 31 weeks. She has experienced difficult pregnancies and has one Downs Syndrome baby. She has had several episodes of preterm contractions that resolved with LLP bed rest. This time the bed rest and oral hydration are not resolving the contractions; in fact, they seem to be getting worse. Labor duration: 35 minutes.

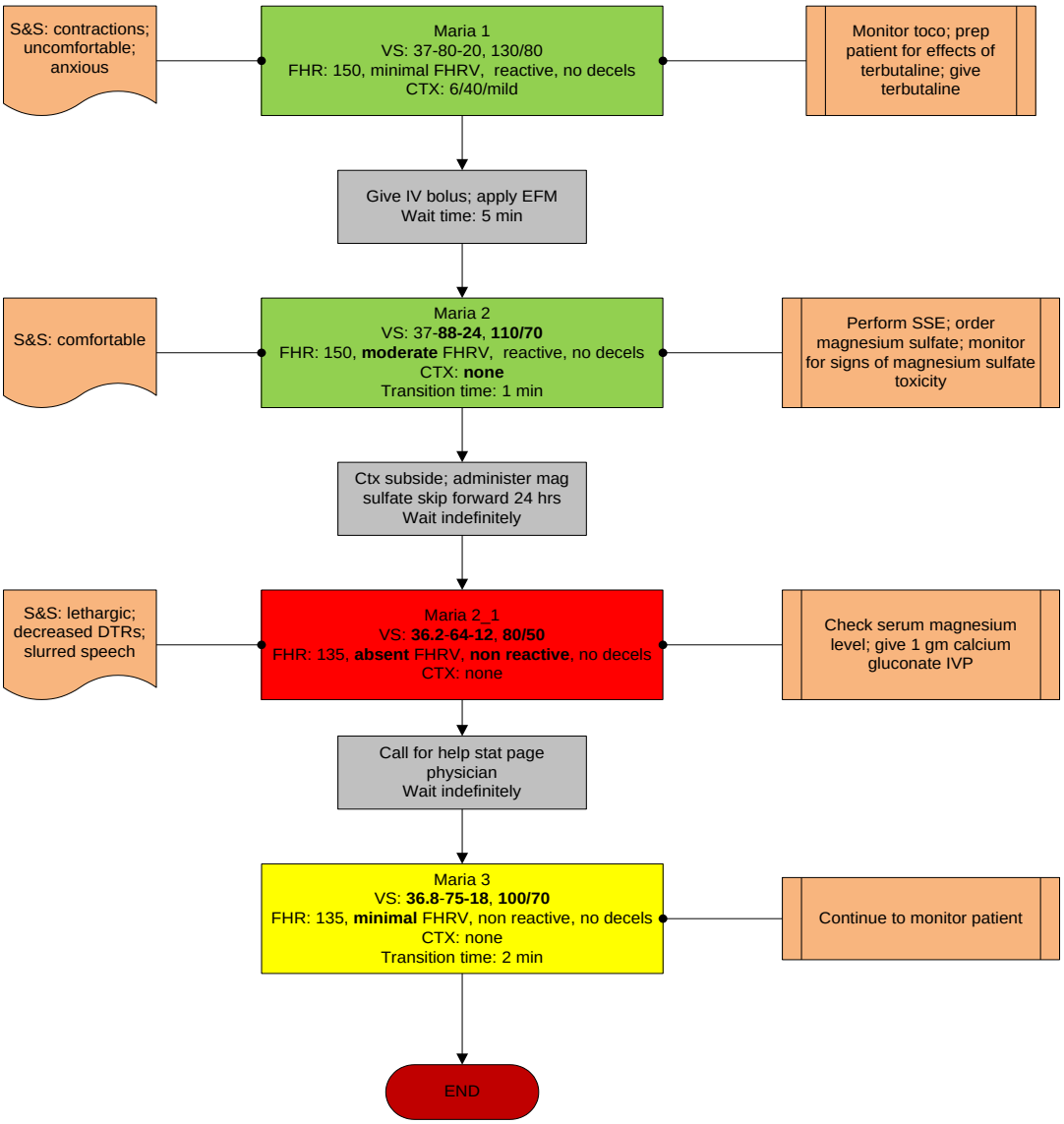
Gaumard®
Simulators for Health Care Education

Noelle S574-575® Labor Scenario

Maria

Preterm Labor

Maria is a 30 yr old multip @ 27 weeks. She has an 11 yr old and has been trying for more children. She has had 2 miscarriages in the last 4 years and she lost both due to an incompetent cervix. This time a McDonalds suture was placed @ 14 weeks. Labor duration: 15 minutes.



Automatic Mode Flowcharts

Quick Start NOELLE Modeling

Values in parenthesis indicate vitals controlled by the Automatic Mode feature. Values in bold, signify changes in the values throughout the stages.

	Scenario Name	Labor Type
1	Alyssa	Normal Labor
2	Becca	Variations on Normal
3	Candice	Shoulder Dystocia
4	Demaris	Shoulder Dystocia
5	Eleanor	Preeclampsia
6	Faye	Cord Prolapse
7	Frances	Cord Prolapse
8	Gabriella	Uterine Rupture
9	June	Peripartum Hemorrhage/PPH
10	Kelly	Amniotic Fluid Embolism
11	Madonna	Preterm Labor
12	Maria	Preterm Labor
13	NOELLE®	Preterm Labor

Gaumard®
Simulators for Health Care Education

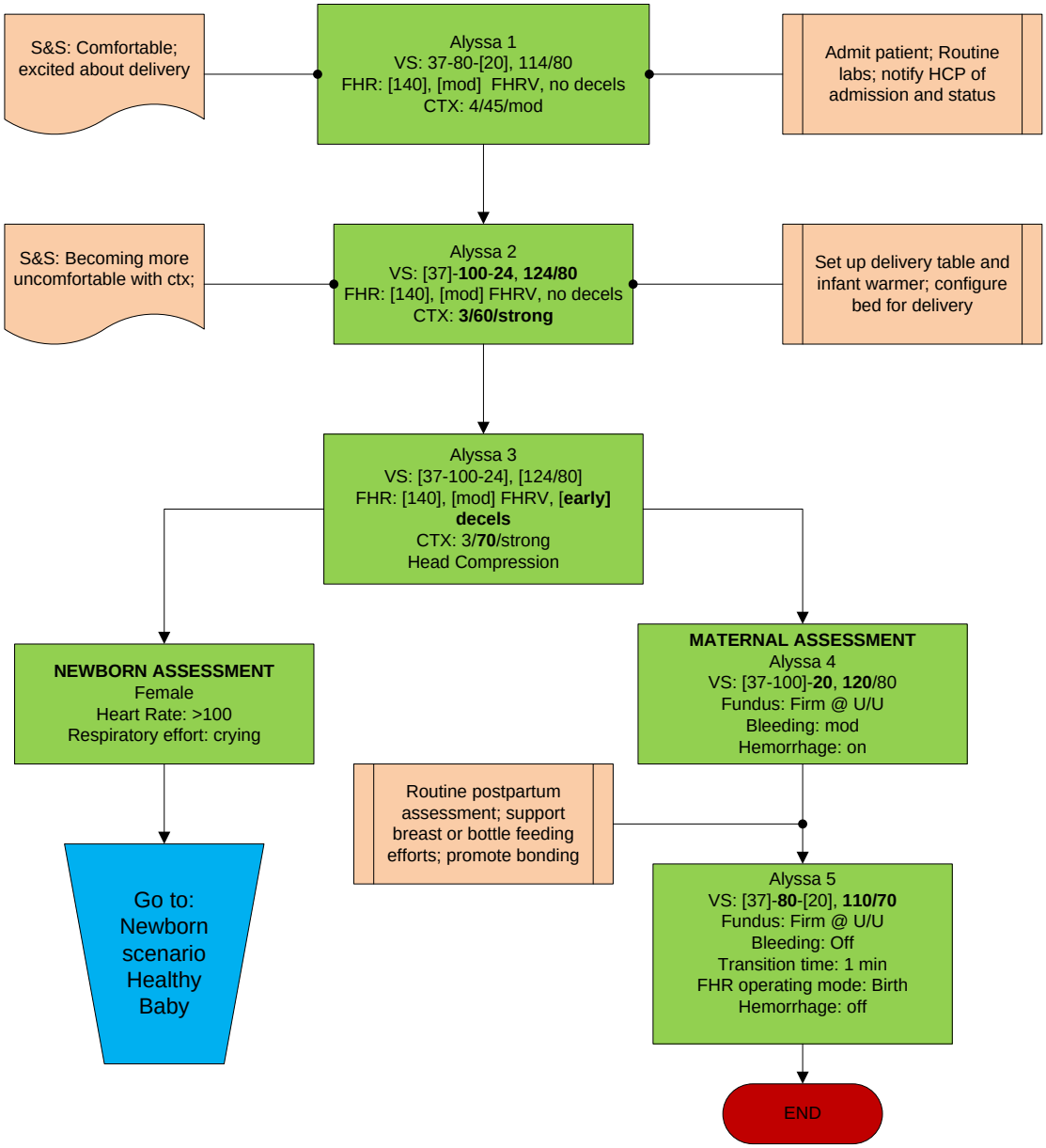
Noelle S574-575® - Labor Scenario

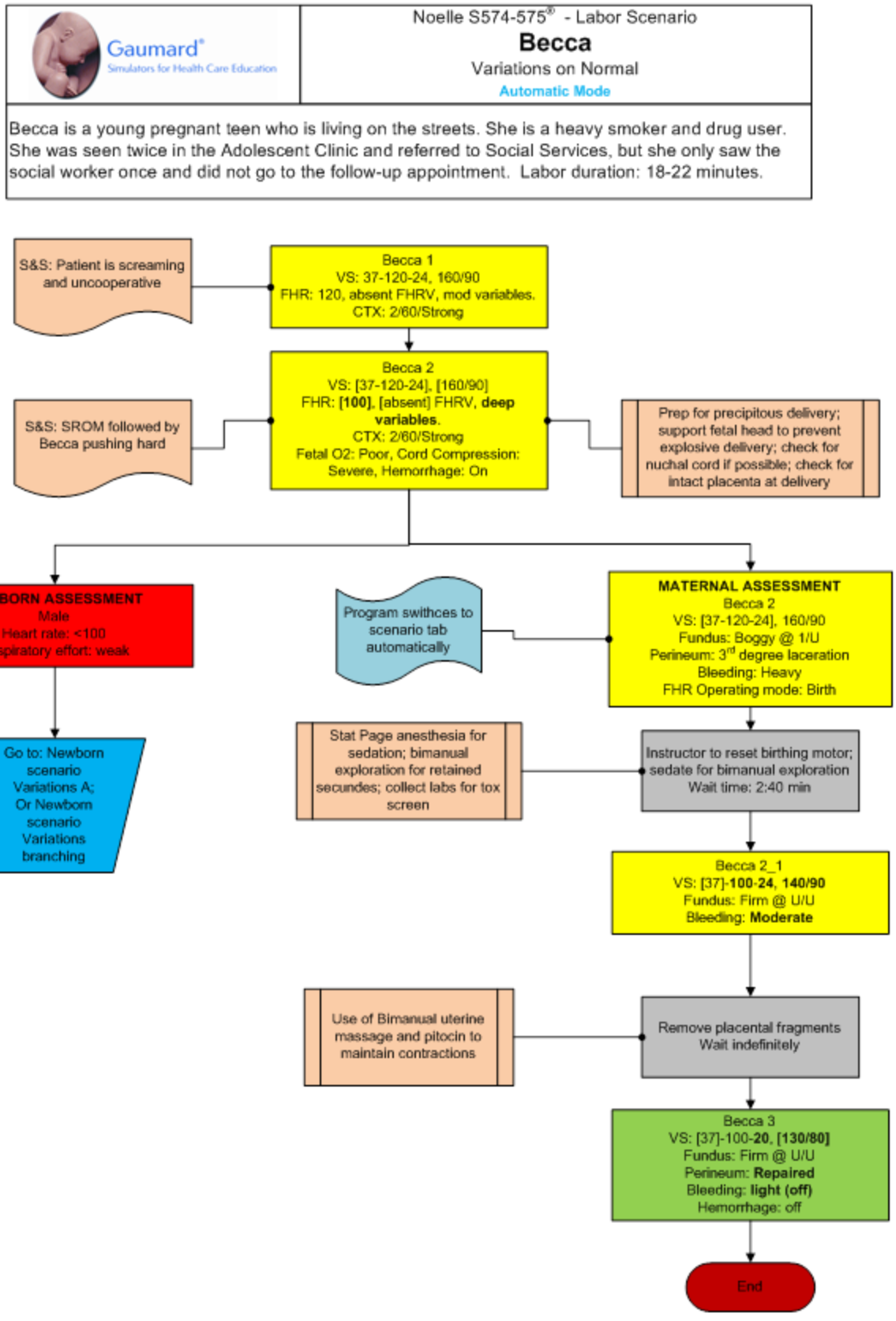
Alyssa

Normal Labor

Automatic Mode

Alyssa is a 23 yr old primip at term. Her health is generally good and she has experienced no prenatal complications. She wishes to receive no medications and will have the CNM attending her delivery. Labor duration: 30 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Becca
Variations on Normal
Automatic Mode
Becca is a young pregnant teen who is living on the streets. She is a heavy smoker and drug user. She was seen twice in the Adolescent Clinic and referred to Social Services, but she only saw the social worker once and did not go to the follow-up appointment. Labor duration: 18-22 minutes.
S&S: Patient is screaming and uncooperative
Becca 1
VS: 37-120-24, 160/90
FHR: 120, absent FHRV, mod variables.
CTX: 2/60/Strong
Becca 2
VS: [37-120-24], [160/90]
FHR: [100], [absent] FHRV, deep variables.
CTX: 2/60/Strong
Fetal O2: Poor, Cord Compression: Severe, Hemorrhage: On
S&S: SROM followed by Becca pushing hard
Prep for precipitous delivery; support fetal head to prevent explosive delivery; check for nuchal cord if possible; check for intact placenta at delivery
NEWBORN ASSESSMENT
Male
Heart rate: <100
Respiratory effort: weak
Go to: Newborn scenario Variations A; Or Newborn scenario Variations branching
Program swithces to scenario tab automatically
MATERNAL ASSESSMENT
Becca 2
VS: [37-120-24], 160/90
Fundus: Boggy @ 1/U
Perineum: 3rd degree laceration
Bleeding: Heavy
FHR Operating mode: Birth
Stat Page anesthesia for sedation; bimanual exploration for retained secundes; collect labs for tox screen
Instructor to reset birthing motor; sedate for bimanual exploration
Wait time: 2:40 min
Becca 2_1
VS: [37]-100-24, 140/90
Fundus: Firm @ U/U
Bleeding: Moderate
Use of Bimanual uterine massage and pitocin to maintain contractions
Remove placental fragments
Wait indefinitely
Becca 3
VS: [37]-100-20, [130/80]
Fundus: Firm @ U/U
Perineum: Repaired
Bleeding: light (off)
Hemorrhage: off
End

Gaumard®
Simulators for Health Care Education

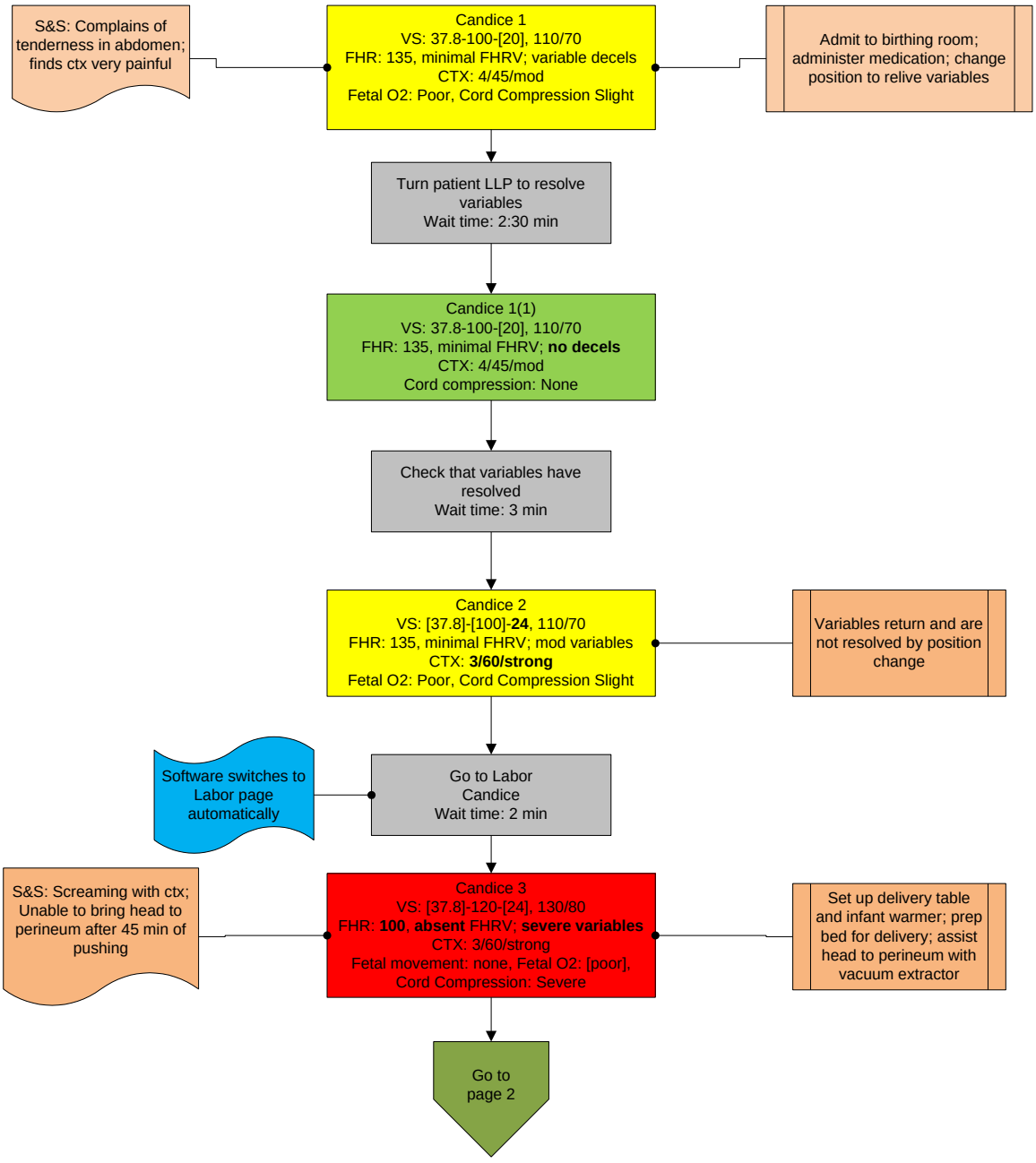
Noelle S574-575® - Labor Scenario

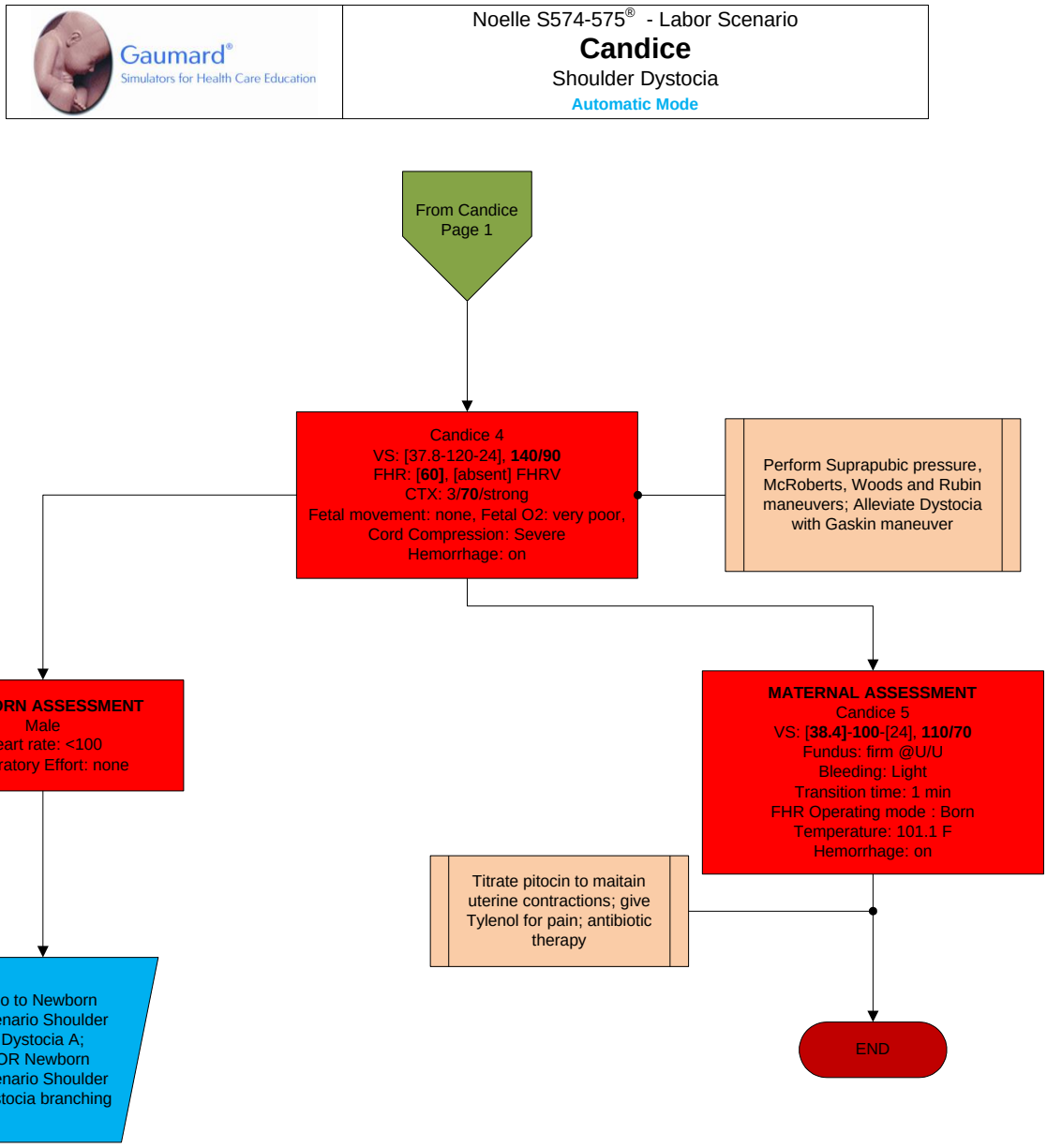
Candice

Shoulder Dystocia

Automatic Mode

Candice is a 19 r old multip. She, her boyfriend and their 3 yr daughter are homeless living in a car. She has not seen a doctor and believes that she is about 8 months pregnant. Her water broke yesterday and she is leaking moderately thick meconium fluid. An ultrasound is performed to determine position and gestational age. Labor duration: 15 minutes. Full scenario duration: 23-25 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Candice
Shoulder Dystocia
Automatic Mode
From Candice Page 1
Candice 4
VS: [37.8-120-24], 140/90
FHR: [60], [absent] FHRV
CTX: 3/70/strong
Fetal movement: none, Fetal O2: very poor,
Cord Compression: Severe
Hemorrhage: on
Perform Suprapubic pressure, McRoberts, Woods and Rubin maneuvers; Alleviate Dystocia with Gaskin maneuver
NEWBORN ASSESSMENT
Male
Heart rate: <100
Respiratory Effort: none
MATERNAL ASSESSMENT
Candice 5
VS: [38.4]-100-[24], 110/70
Fundus: firm @U/U
Bleeding: Light
Transition time: 1 min
FHR Operating mode : Born
Temperature: 101.1 F
Hemorrhage: on
Titrate pitocin to maitain uterine contractions; give Tylenol for pain; antibiotic therapy
Go to Newborn scenario Shoulder Dystocia A; OR Newborn scenario Shoulder Dystocia branching
END

Gaumard®
Simulators for Health Care Education

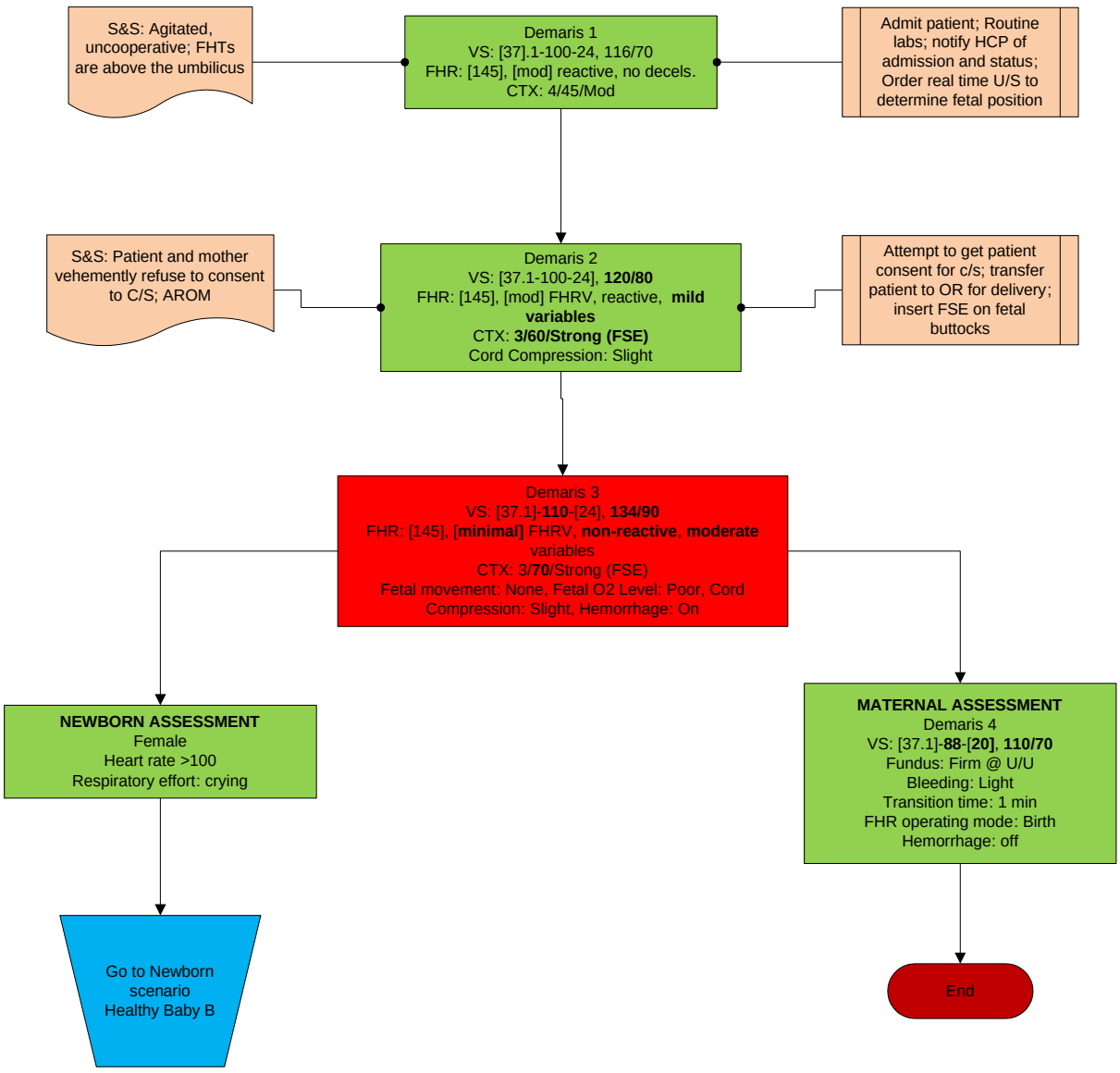
Noelle S574-575® - Labor Scenario

Demaris

Breech Presentation

Automatic Mode

Demaris is a young Hispanic teen who has received prenatal care in the Adolescent OB clinic. She kept the pregnancy a secret as long as was possible and did not attend any childbirth classes. Her plan is to return to high school while her mother cares for the baby. The baby's father will not accept any responsibility and does not wish to be involved. Labor duration: 30 minutes.



Gaumard®
Simulators for Health Care Education

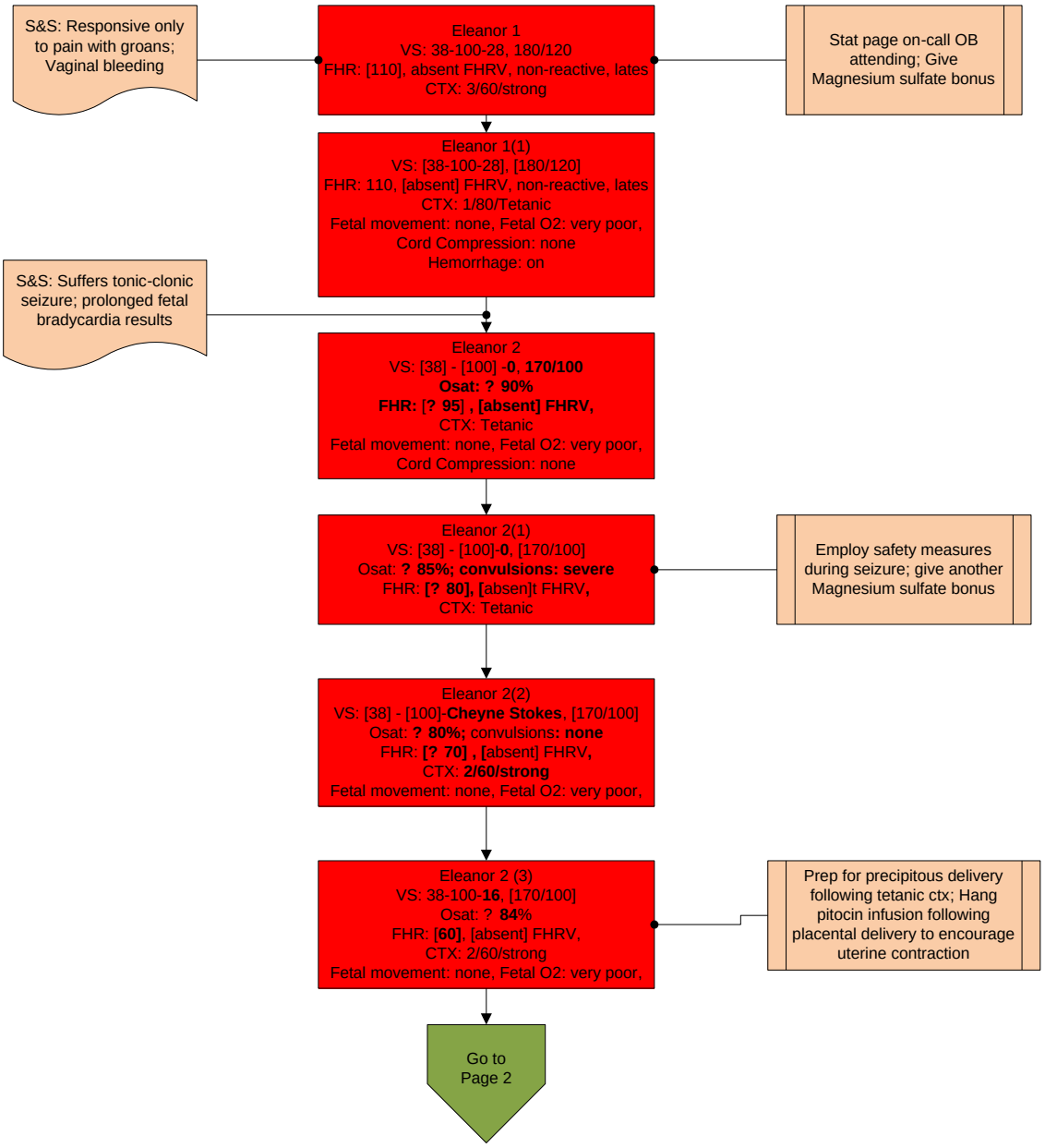
Noelle S574-575® - Labor Scenario

Eleanor

Variations on Normal

Automatic Mode

Elenor is a 19 yr old post-ictal patient being transferred to the ER by EMS. She was found convulsing in the bathroom. According to relatives she is 8½ months pregnant with her first baby. She has been on an IV during transport and her BP is 180/120. Labor duration: 20 minutes.



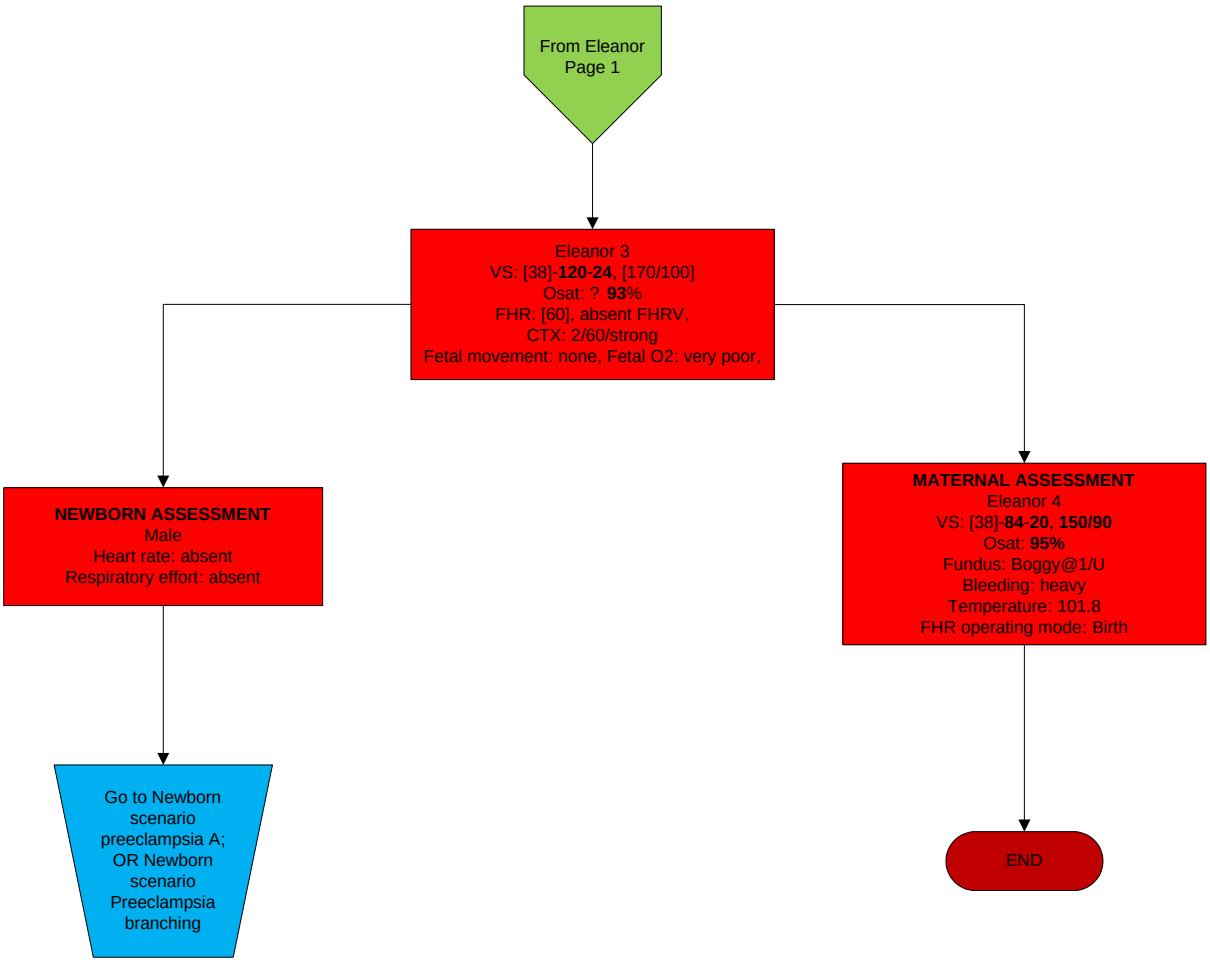
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

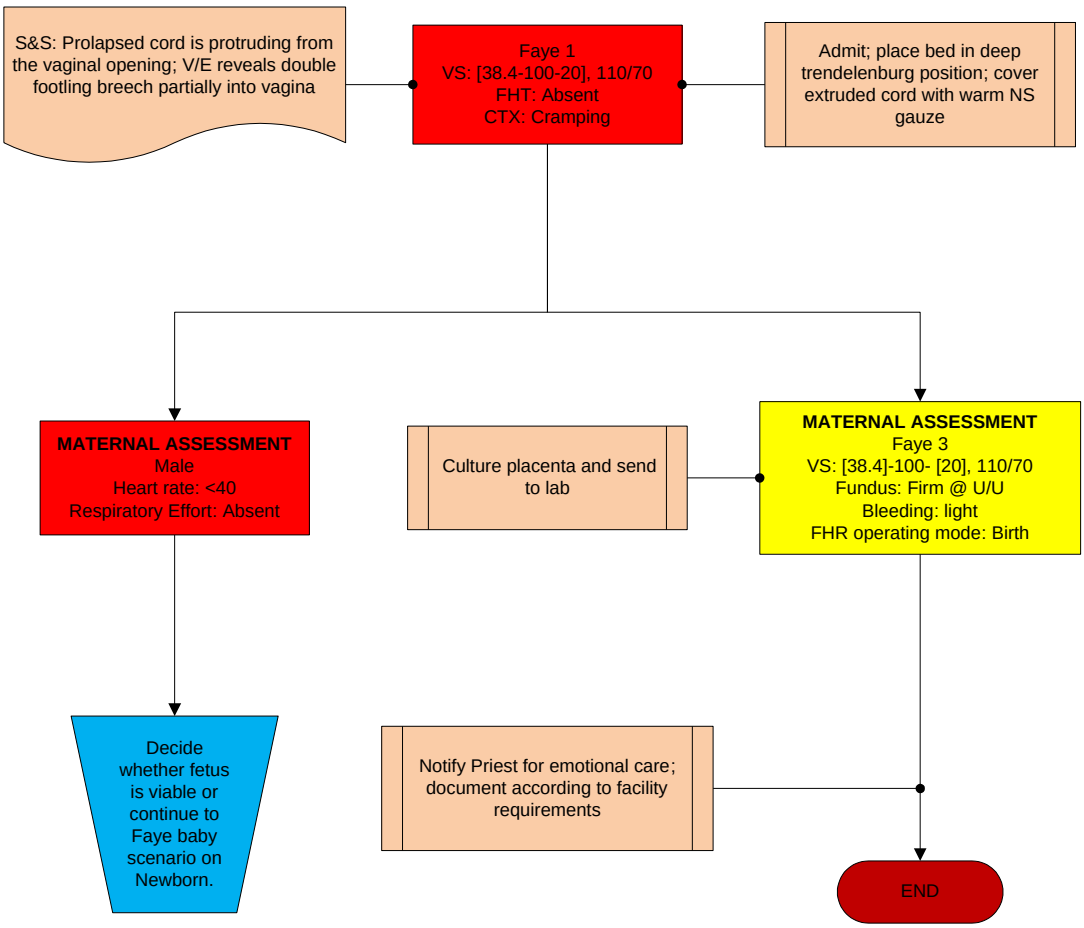
Eleanor

Variations on Normal

Automatic Mode



Gaumard® Simulators for Health Care Education	Noelle S574-575® - Labor Scenario **Faye** Cord Prolapse **Automatic Mode**
Faye is a 34 yr old gravida 1 @ 25 weeks' gestation. She began cramping about 3 hours ago and decided to drive herself to the hospital. She began leaking clear fluid on the way. An admitting clerk helps her into a wheel chair and takes her to L&D. Labor duration: 20 minutes.	



Gaumard®
Simulators for Health Care Education

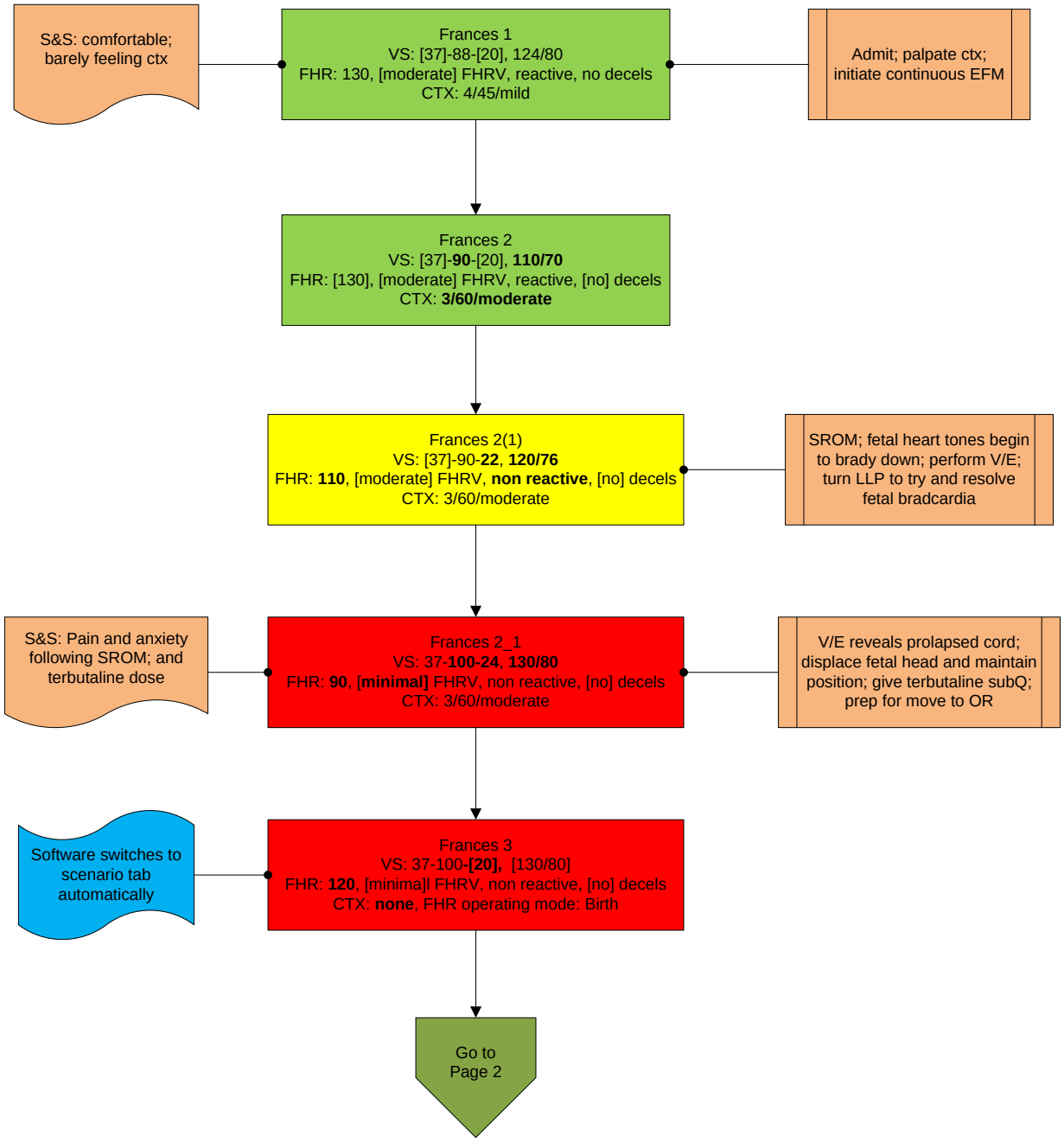
Noelle S574-575® - Labor Scenario

Frances

Prolapsed Cord

Automatic Mode

Frances is admitted into a small town hospital due to regular contractions @ 4 minutes apart and bloody show. She labors without problems for about 4 hours and then the fetus starts to brady down after SROM. A V/E reveals a prolapsed coed in the vagina. Labor duration: 20 minutes. Scenario duration: 22-27 minutes.



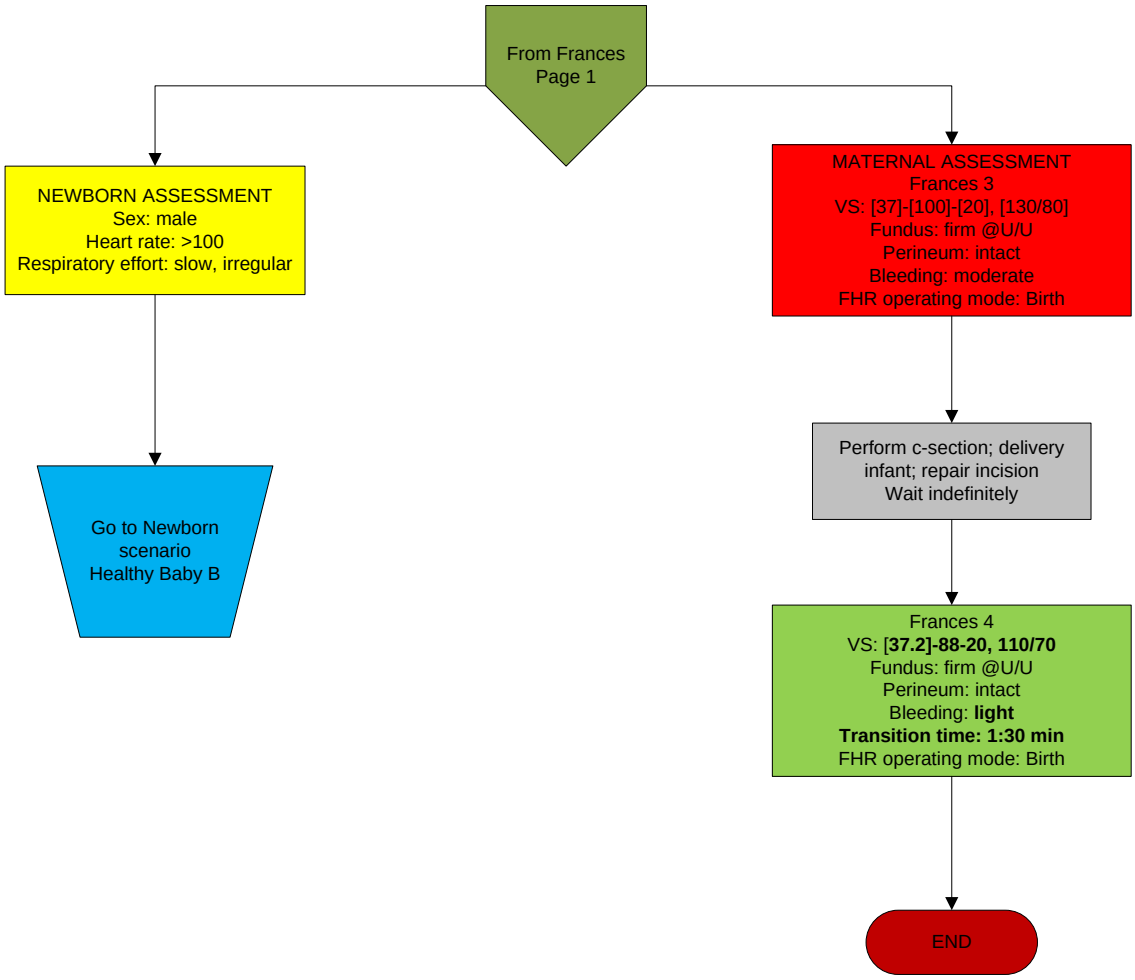
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

Frances

Prolapsed Cord

Automatic Mode



Gaumard®
Simulators for Health Care Education

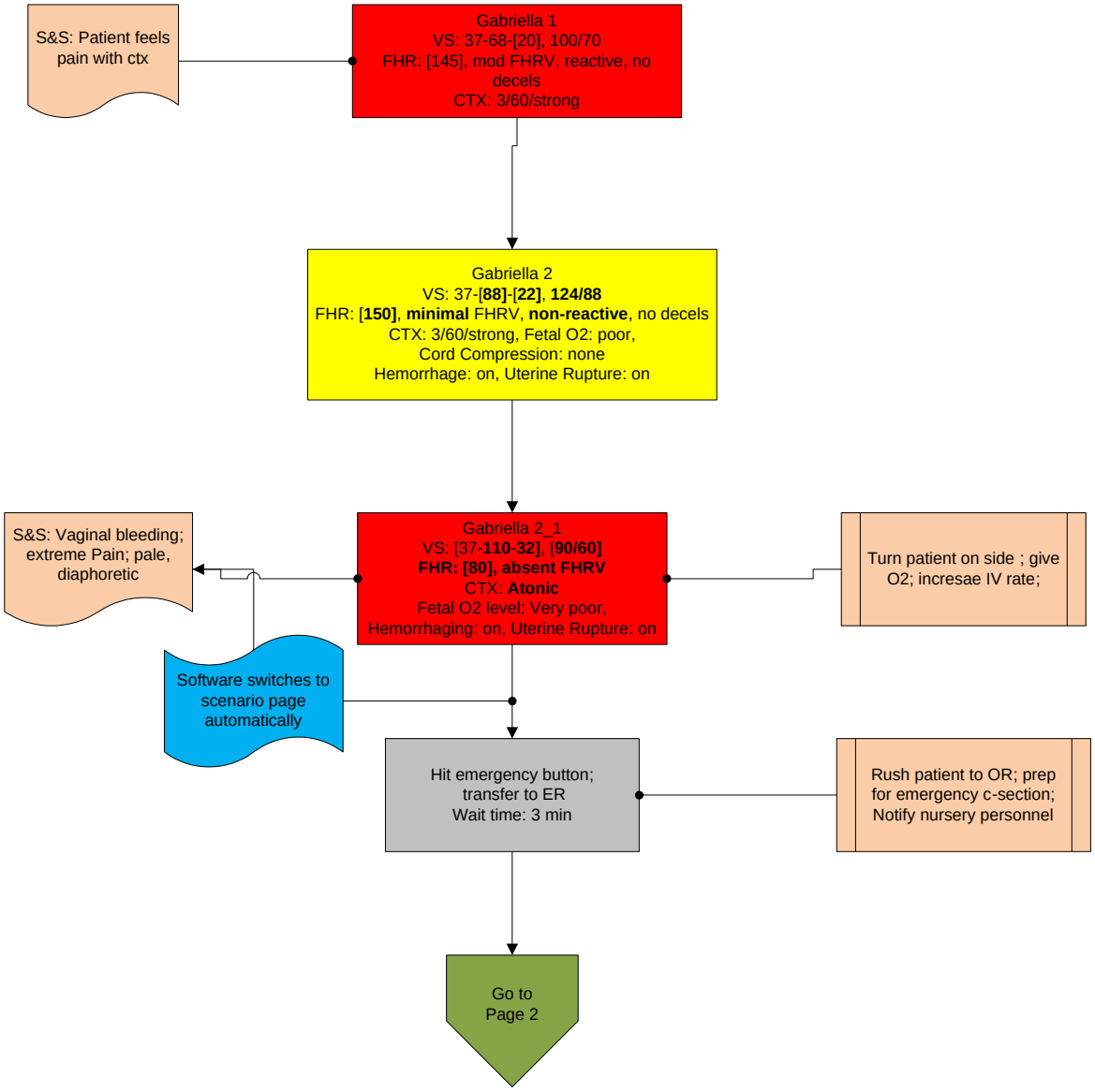
Noelle S574-575® - Labor Scenario

Gabriella

Uterine Rupture

Automatic Mode

Gabriella is a young Hispanic woman who presents at a small hospital just across the Mexican border. She appears to be in late pregnancy and in active labor. As the nurse helps her to bed she notices a midline abdominal scar. Gabriella has had one prvious child in Mexico, but shares no more information. Labor duration: 15 minutes. Scenario duration: 25 minutes.



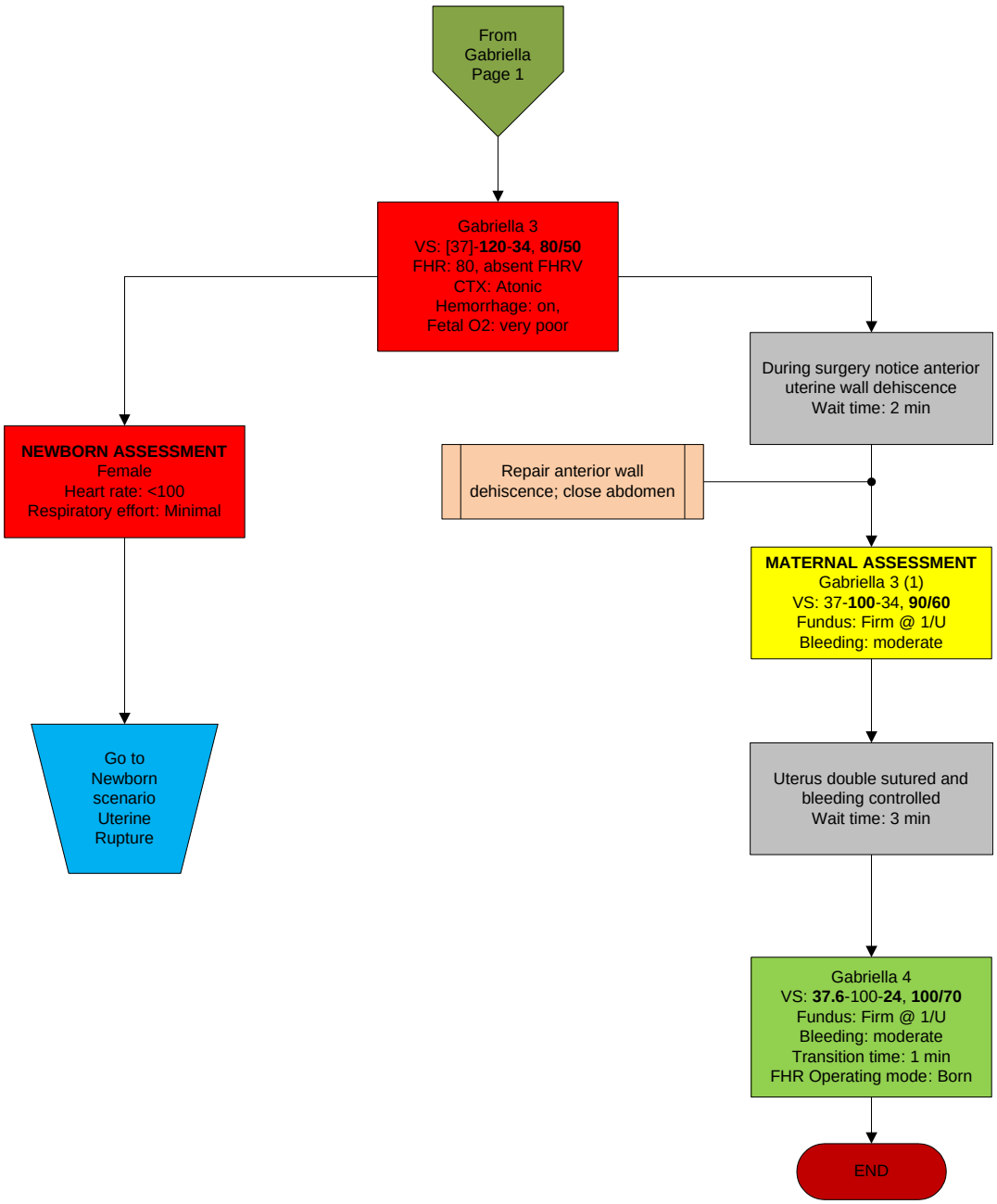
Gaumard®
Simulators for Health Care Education

Noelle S574-575® - Labor Scenario

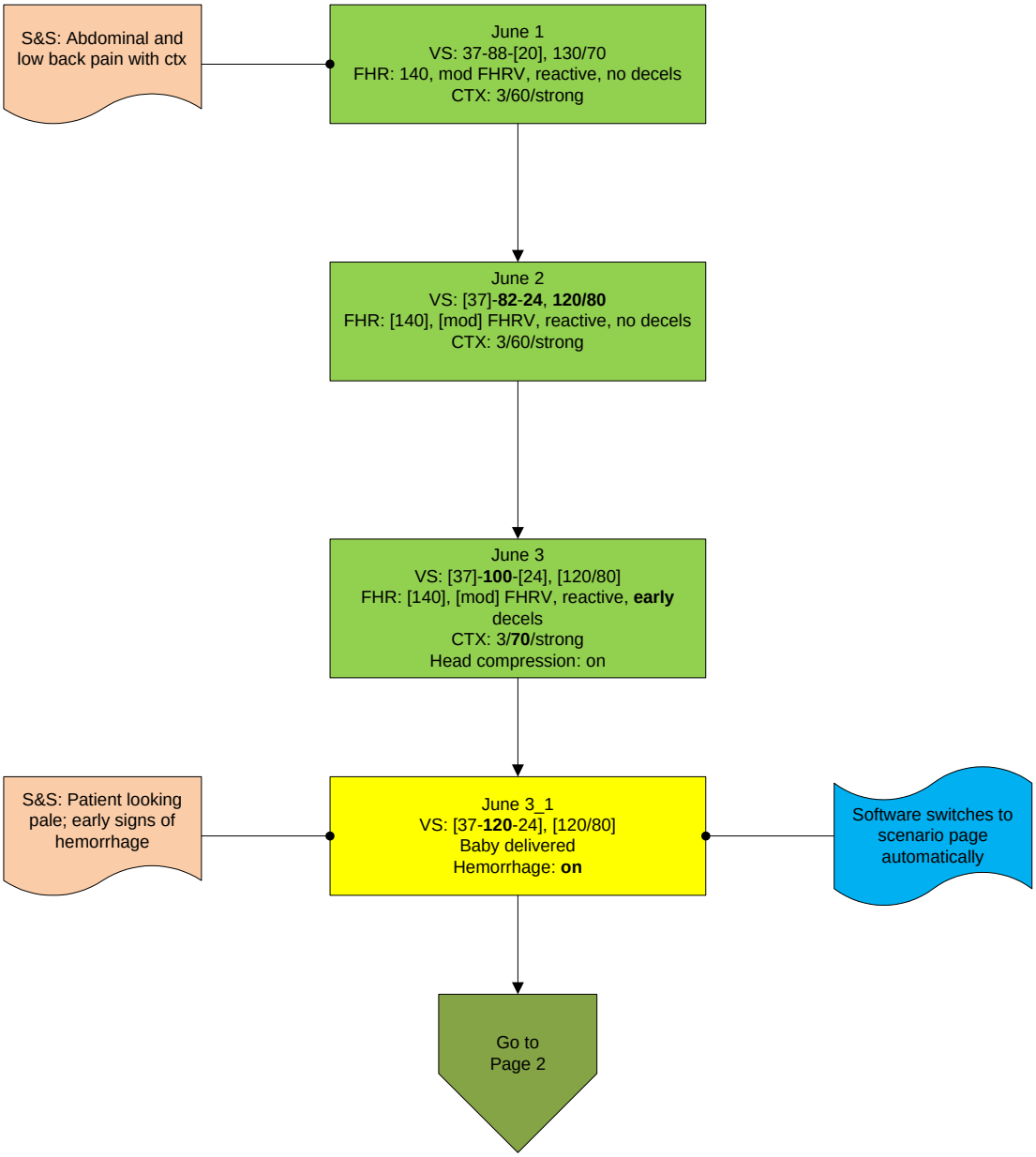
Gabriella

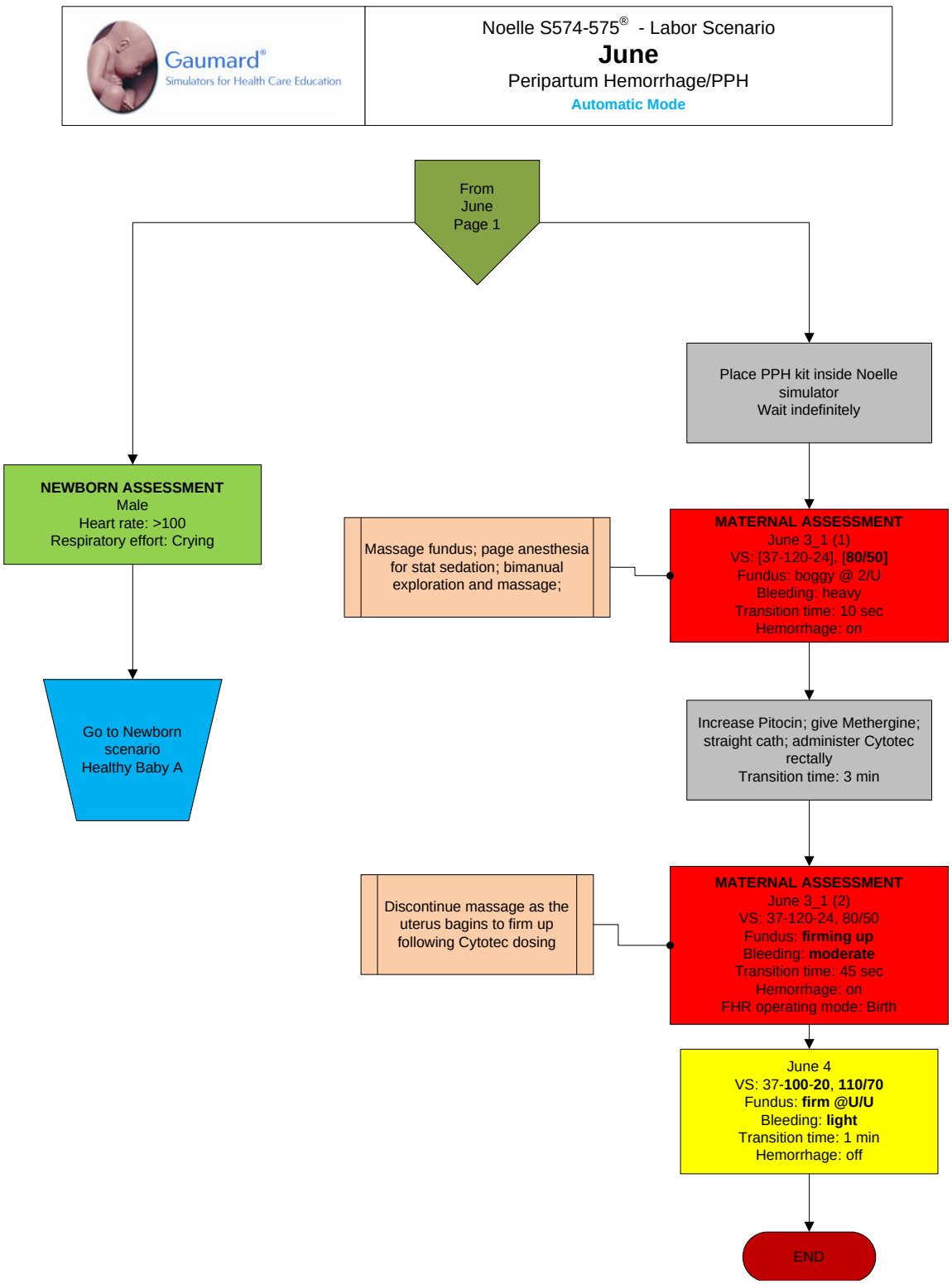
Uterine Rupture

Automatic Mode



Gaumard® Simulators for Health Care Education	Noelle S574-575® - Labor Scenario **June** Peripartum Hemorrhage/PPH **Automatic Mode**
June is a 31 yr old multip about to have her 5th baby. She has had a normal pregnancy and she is planning natural childbirth. She enters the hospital in active labor. The family is very excited as they know this baby is a boy. Labor duration: 15 minutes. Scenario duration: 22-25 minutes.	




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
June
Peripartum Hemorrhage/PPH
Automatic Mode
From June Page 1
Place PPH kit inside Noelle simulator
Wait indefinitely
NEWBORN ASSESSMENT
Male
Heart rate: >100
Respiratory effort: Crying
Massage fundus; page anesthesia for stat sedation; bimanual exploration and massage;
MATERNAL ASSESSMENT
June 3_1 (1)
VS: [37-120-24], [80/50]
Fundus: boggy @ 2/U
Bleeding: heavy
Transition time: 10 sec
Hemorrhage: on
Go to Newborn scenario
Healthy Baby A
Increase Pitocin; give Methergine; straight cath; administer Cytotec rectally
Transition time: 3 min
Discontinue massage as the uterus bagins to firm up following Cytotec dosing
MATERNAL ASSESSMENT
June 3_1 (2)
VS: 37-120-24, 80/50
Fundus: firming up
Bleeding: moderate
Transition time: 45 sec
Hemorrhage: on
FHR operating mode: Birth
June 4
VS: 37-100-20, 110/70
Fundus: firm @U/U
Bleeding: light
Transition time: 1 min
Hemorrhage: off
END

Gaumard®
Simulators for Health Care Education

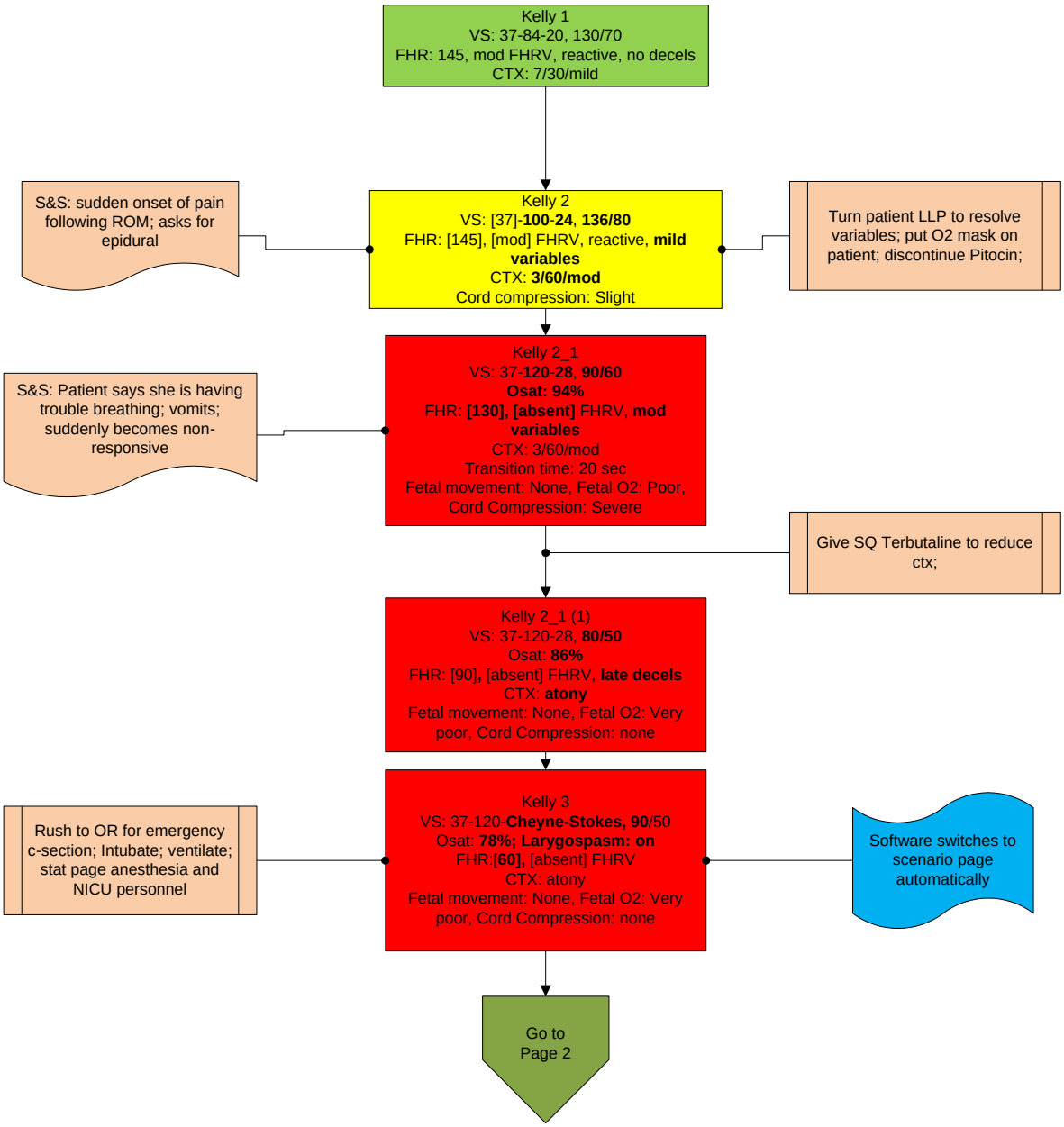
Noelle S574-575® - Labor Scenario

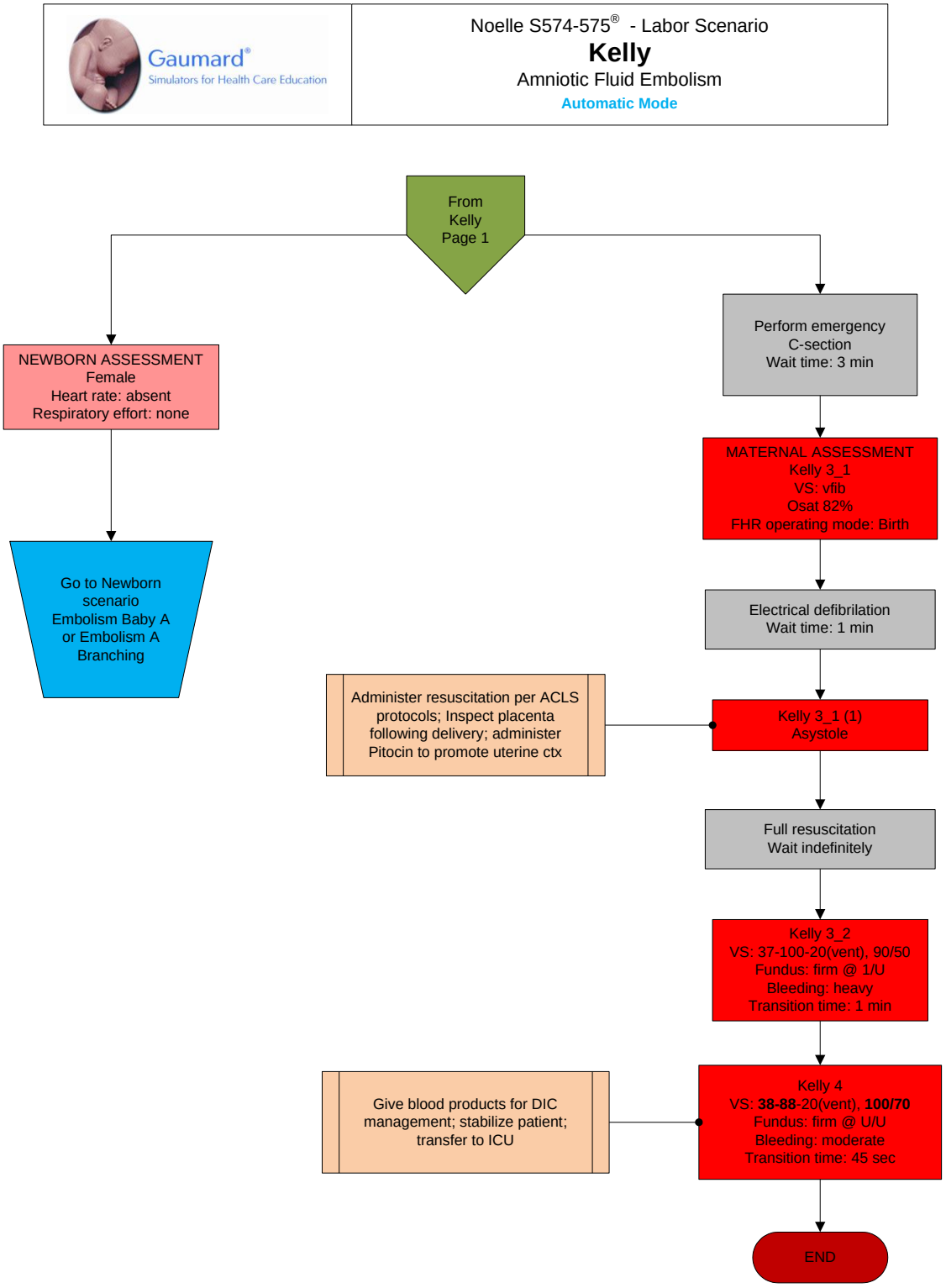
Kelly

Amniotic Fluid Embolism

Automatic Mode

Kelly is a 34 yr old gravida 5/2 @ 38 weeks. She is scheduled for induction as her last baby weighed almost 10lbs and she experienced a severe shoulder dystocia with that delivery. She has gained 43lbs with this pregnancy and her GTT is borderline. Labor duration: 25 minutes. Scenario duration: 35-40 minutes.




Gaumard®
Simulators for Health Care Education
Noelle S574-575® - Labor Scenario
Kelly
Amniotic Fluid Embolism
Automatic Mode
From Kelly Page 1
NEWBORN ASSESSMENT
Female
Heart rate: absent
Respiratory effort: none
Go to Newborn scenario
Embolism Baby A
or Embolism A
Branching
Perform emergency C-section
Wait time: 3 min
MATERNAL ASSESSMENT
Kelly 3_1
VS: vfib
Osat 82%
FHR operating mode: Birth
Electrical defibrilation
Wait time: 1 min
Administer resuscitation per ACLS protocols; Inspect placenta following delivery; administer Pitocin to promote uterine ctx
Kelly 3_1 (1)
Asystole
Full resuscitation
Wait indefinitely
Kelly 3_2
VS: 37-100-20(vent), 90/50
Fundus: firm @ 1/U
Bleeding: heavy
Transition time: 1 min
Give blood products for DIC management; stabilize patient; transfer to ICU
Kelly 4
VS: 38-88-20(vent), 100/70
Fundus: firm @ U/U
Bleeding: moderate
Transition time: 45 sec
END

Gaumard®
Simulators for Health Care Education

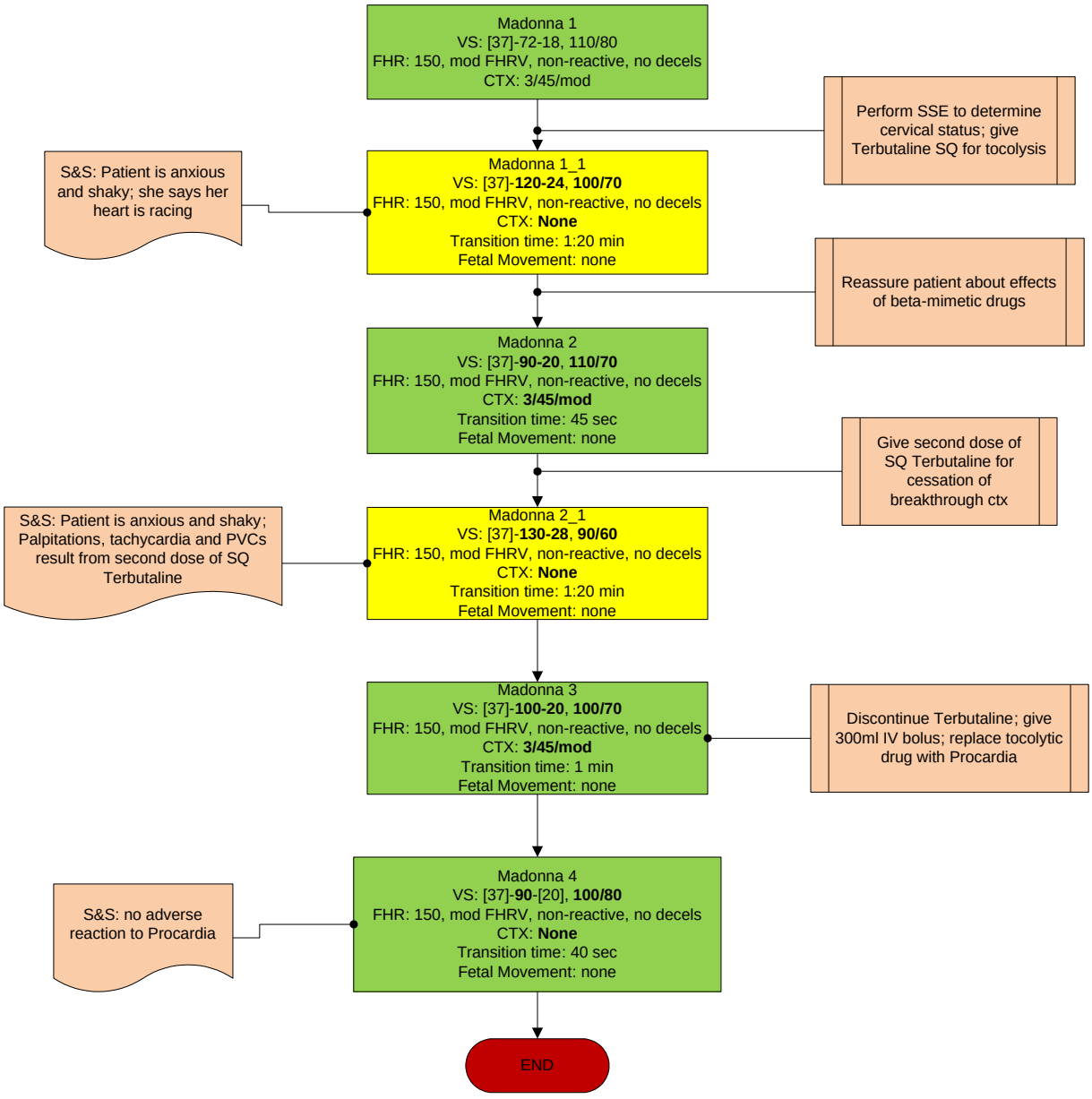
Noelle S574-575® - Labor Scenario

Madonna

Preterm Labor

Automatic Mode

Madonna is a 41 yr old multip @ 31 weeks. She has experienced difficult pregnancies and has one Downs Syndrome baby. She has had several episodes of preterm contractions that resolved with LLP bed rest. This time the bed rest and oral hydration are not resolving the contractions; in fact, they seem to be getting worse. Labor duration: 35 minutes.



Gaumard®
Simulators for Health Care Education

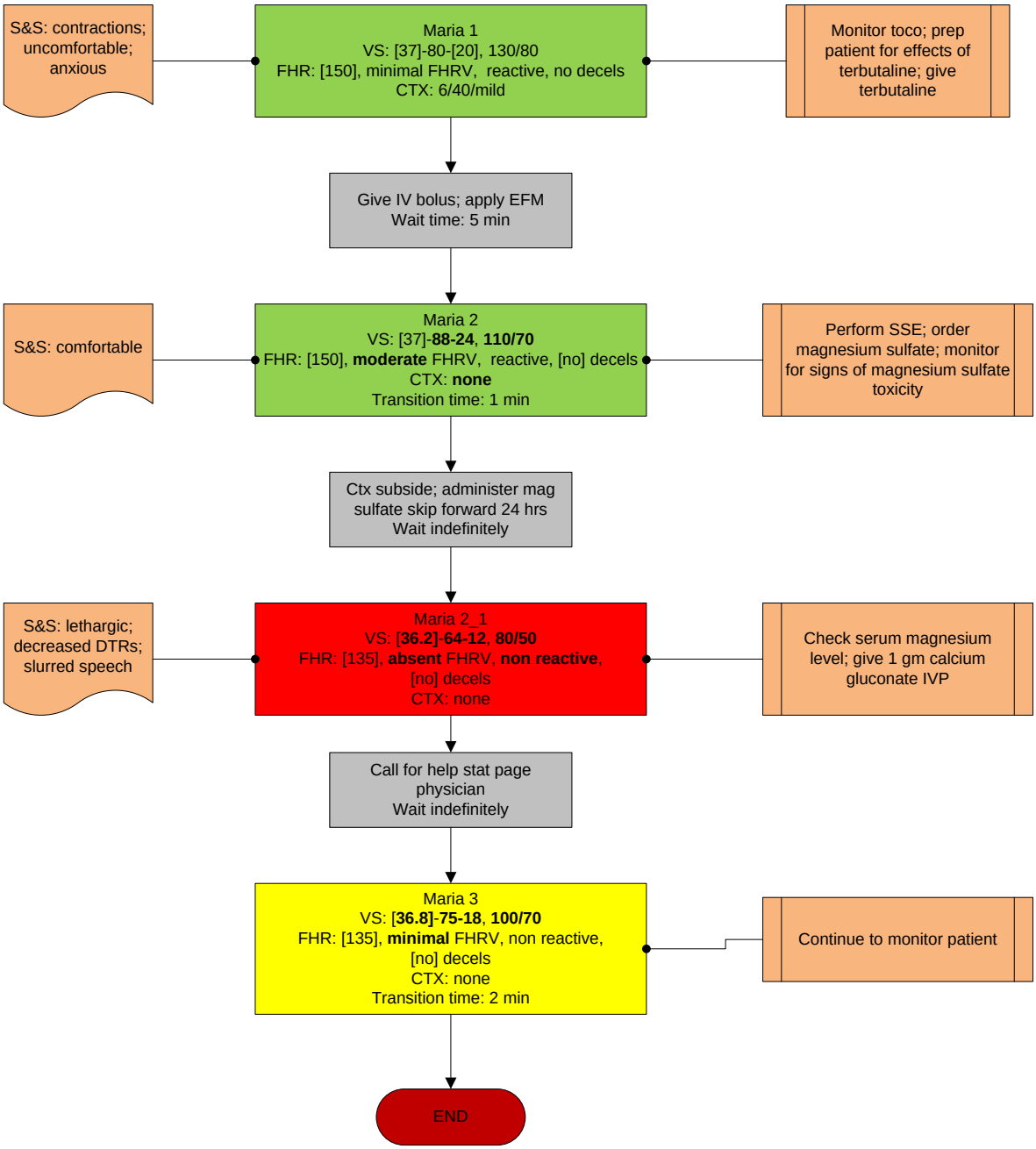
Noelle S574-575® Labor Scenario

Maria

Preterm Labor

Automatic Mode

Maria is a 30 yr old multip @ 27 weeks. She has an 11 yr old and has been trying for more children. She has had 2 miscarriages in the last 4 years and she lost both due to an incompetent cervix. This time a McDonalds suture was placed @ 14 weeks. Labor duration: 15 minutes.



Tips on Creating Scenarios

Thinking in Terms of Palette Items

As described previously, Palette items represent complete or partial groups of settings that have been stored as a single item. We learned how applying partial states will hold constant all settings that are left unspecified.

Not only does it take time to customize the palette, but a very large palette becomes difficult to navigate. So, it is desirable to minimize the number of Palette Items in each Profile. To accomplish this, an experienced facilitator tries to create items that are as generally applicable as possible and can, thus, be applied to a wide range of scenarios. The key is to only include in your Palette Items the settings that are directly related to the physiological event represented by that Palette Item.

Smart Scenarios

After reading the Details, Palette, and Scenarios sections of this guide, it should be clear how to build a scenario. You may have already tried building your own or modifying some of the factory presets. The following four guidelines will refine your ability to build the best possible scenarios.

1. How will the scenario begin?

The first thing to consider is the initial condition of the patient. Create a Palette Item to describe this condition. Make sure that this first step in the scenario is a complete state. That is, indicate some selection for each and every available setting on the Details page. Remember that only the settings you specify will cause a change in **NOELLE,** and all other settings will remain constant. So, by starting with a complete state, NOELLE's condition will always be the same when the scenario starts, regardless of what he was doing previously.

Likewise, the "transition duration" of the first step in the scenario should be zero, indicating that changes are applied immediately.

There is one point that can cause confusion and warrants further explanation. It is an extension of the above discussion of partial states. The issue is best illustrated through the following example:

> Suppose that you are creating a Palette Item to start your scenario. In this case, you have decided that the patient will be apneic. The question is, "How should the lung sounds be set?"
>
> Most people's first inclination is to set the lung sounds to "none." This is incorrect, despite apnea. Obviously, no lung sounds should be heard during apnea, but since you have already set respiratory rate to zero, none will be. (Sounds are synchronized to the breathing cycle.)
>
> What you are really setting here when you choose a lung sound is the condition of the lungs, given respiratory drive. That is, if the patient's respiratory rate were changed from zero, what sound would be heard? Assuming that the lungs themselves are normal in this scenario, you would choose "normal" for the lung sound setting.
>
> Then, as the scenario progresses, if the patient starts breathing, there will be no need to set the lung sound again. It will already be set. The same principle applies to the heart sound and other settings.

2. Include notes to guide the facilitator during the simulation.

It is common for scenario designers, especially those who act as facilitators, to neglect the importance of notes in the scenario. They think that they will remember the learning objectives, patient history, and other details at the time they are ready to conduct the simulation. They usually don't, especially when revisiting a scenario months after creating it.

When you add "Wait" and "Wait Indefinitely" steps to a scenario, you have an opportunity to edit the item description. Use this description field to hold notes to the facilitator. Typically, scenario designers put notes there to indicate what the provider(s) or facilitator should be doing at that point.

Further, when saving the scenario, you may edit the scenario description. This is the best place to put patient history and any other longer notes and instructions.

3. Assume that providers will do the right thing.

Usually, you should create a scenario with the assumption that the providers will perform correctly. As long as they do, the scenario can simply be allowed to continue.

Naturally, you must be prepared for what might happen to NOELLE when providers deviate from expectations. The consequences of such deviations can sometimes be included in the scenario, punctuated by "Wait Indefinitely" items. In other cases, the simulation will require more direct control by the facilitator via either the Palette or Details page.

4. Choose auto-response settings based on the scenario content and the objectives.

As you've seen, auto-responses can be used to free the facilitators attention. They also enhance realism by presenting instant reactions to the care providers. On the other hand, sometimes it is not possible or desirable to determine the responses before the simulation begins. Different environments and applications call for different settings.

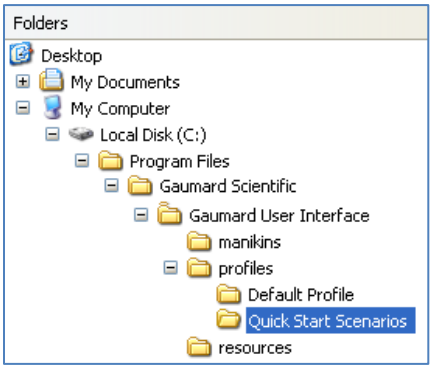
Loosely structured teaching and practice is usually best done with the auto-response settings in Prompt mode. Responses must be triggered by a vigilant facilitator. Though it is slower and requires more attention, the benefit of Prompt over other modes is that the simulation can be allowed to go in any direction, and it will be possible to choose the response on a case-by-case basis.

Tightly structured teaching and assessment requires a higher degree of automation. For such applications, most facilitators choose Auto mode for the auto-response settings. The key issue is standardized timing of symptom presentation. A consistent, repeatable simulation is essential for fair assessment of that care provider in relation to others and for the broader interpretation of results in the context of training validation studies.

When in doubt, it is best to choose *Prompt* mode, in which the facilitator will be given direct control of the responses as events are detected.

File Structure

Advanced users may find it helpful to understand the GaumardUI directory structure. With direct file manipulation, one can easily move palette items and scenarios between profiles, as well as move entire profiles from one computer to another.



Profiles

In the GUI program folder is the “profiles” sub-folder (e.g. “C:\Program Files\Gaumard Scientific\Gaumard User Interface\profiles\”). All user information is saved there, and it is the only folder that should be modified manually. In the example shown, notice that there are two profiles in this installation, “Default Profile,” and “Quick Start Scenarios”.

Palette Items

Saved as “*.plt” files, palette items in each profile are located at the top-level of each profile folder. To copy palette items from one profile to another, simply copy the .plt file found in the source profile folder.

Scenarios

Scenarios are stored as sub-folders within profile directories. Scenarios can also be transferred between profiles by copying the scenario folder and its contents.

NEVER...

- modify files in the “resources” directory or those at the top-level of the “Gaumard User Interface” directory.
- manipulate files or folders while the GaumardUI software is running.
- modify or delete “*.dll”, “*.scn” or “*.sys” files.

Troubleshooting

General Troubleshooting Guide

Use the following table to find causes and solutions to a number of possible problems.

Symptom	Possible Cause	Solution
Communication never gets established or is lost **(blinking communication indicator is consistently red)**	**Battery is discharged**	**Make sure battery is charged. If NOELLE®'s battery is completely discharged, connect the AC Adapter and wait 20 minutes to power on the simulator. Leave the simulator connected while in use.** **NOELLE should always be plugged in while being operated. The birth mechanism is power intensive and will drain the battery quickly.**
	Computer is too far away from simulator	**Minimize the distance between simulator and the tablet.**
	Interference	**Maintain line of sight with the simulator and maintain the RF module in an upright position directed at the simulator.**
	Trying to communicate with a different simulator	**Make sure to select the right simulator when opening the software.** **In a multiple simulator environment, make sure to enter the right Serial Number under Setup>Options>Environment - Multiple.**
	Starting more than one simulator with its own tablet	**Select different channels for each of the simulators, and then turn them on one at a time, meaning: Wait until a link has been established between the tablet and the simulator (the yellow dialog box goes away).** **Only after that, start running the GaumardUI software in the second tablet, and so on for the rest of the simulators. To do so, go to menu Setup → Options → Environment → Select "Auto change to channel: #" (# = number from 1 – 11).**
	RF driver	**Perform a full shutdown of the tablet.**
	Disconnected power plug	**The power plug must be connected in order to turn NOELLE on, and it should be connected while being operated. Still it can be disconnected if the simulator has to be taken to a different location while the simulation is still running. Note: see section "Start the system" on User's Manual**
	All others	**Close the GaumardUI software and unplug the RF module for at least 5 seconds, then plug it back in.** **Disconnect one terminal from the battery and reconnect after 5 seconds.** **Restart the software and wait for initialization**

Symptom	Possible Cause	Solution
Simulator doesn't run for the time specified on the manual	Battery not charged properly	Make sure that LED indicator on AC adapter goes through the sequence described in its label, usually red or orange after plugging it, and then green when charge is completed. If LED does not go through label's indications, then: Check plug connection making sure it is all the way in. NOELLE should always be plugged in while being operated. The birth mechanism is power intensive and will drain the battery quickly. Make sure you are using the appropriate AC adapter, labeled with its simulator name
Simulator doesn't respond to any command even that blinking communication indicator is consistently green	The computer is properly communicating with a simulator, but not necessarily the one you intend to control	If you have more than one simulator in your facility, make sure that your computer is properly set-up to control the simulator that you wish to control. Go to Options... on the Setup pull-down menu and check the Environment preferences. Set the Environment to multiple and match the serial to the simulator.
Commands are taking longer than usual to take effect or simulator is not reporting every action (blinking communication indicator is consistently yellow)	Distance between computer and simulator is reaching its limit *or* there are too many obstructions between (walls, etc.)	Get simulator closer to computer or move away from obstructions. Maintain clear line of site between the RF module and simulator. Keep the RF module in an upright position.
	There's too much RF interference either from another Gaumard tetherless simulator in the vicinity or an RF radiator.	Try changing the RF channel by going to the menu for Setup → Options → Environment → Select "Auto change to channel: #" (# = number from 1 – 11).
Sound quality while streaming is poor.	Noise channel or another Gaumard tetherless simulator is nearby	Select a different channel (see "Options and more" section). When more than one simulator is in the vicinity, assign one channel for each
	Computer is located too far away from the simulator.	Streaming audio can't reach as far as normal data, having a range of up to 150 ft. line of sight between simulator and PC. Keep Tablet PC as steady as possible with a clear line of sight to simulator to get the best possible range. Keep RF module in a Upright position.
	Sound is too low or too loud.	Sound volume at PC side is managed from PC's volume control. Simulator sound volume is managed from PC's Microphone gain control. Adjust microphone gain until simulator voice level equals user's voice intensity. Always talk as close as possible to the microphone in order to improve quality. Using a headset is recommended.
	Respiration and other undesirable sounds are heard by instructor.	Since simulator's microphone has high sensitivity in order to capture the voice of providers, it also captures all surrounded noises on or around the simulator. This is normal and it is not a malfunction.

Symptom	Possible Cause	Solution
Streaming audio does not work	"Single" simulator is checked under "Setup/Options" menu	Make sure to select multiple simulator environment (Setup→Options→Environment tab), and enter the Serial Number of the simulator you are using. Warning: Streaming audio does not work when "Single" simulator is checked. Streaming audio is an optional feature in NOELLE.
GaumardUI has set the power mode to STAND-BY automatically	The battery on the simulator is depleted	Plug AC adapter into the simulator. Verify LED light on charger indicates "charging" status. NOELLE should always be plugged in while being operated. The birth mechanism is power intensive and will drain the battery quickly.
"RF module not found" message is displayed when GaumardUI is started	RF module not connected	Connect the RF module to any USB port.
	RF module not identified by the computer	Close the software and try disconnecting the RF module for at least five seconds, then plug it back in and restart the software
	Drivers not properly loaded	Perform a full shutdown procedure on the tablet.
Chest compressions are not properly detected or not detected at all	Is the communication indicator panel consistently yellow?	See solution above in section making reference to "blinking communication indicator is consistently yellow"
	Is the respiratory rate set to "0 / min"? Chest compressions are only detected when the respiratory rate is set to 0 per minute (0 / min). Otherwise they are ignored	Set respiration rate to zero
	Simulator is not connected	Verify connection to the simulator.
	All others	See "Calibration Wizard" section inside User's Manual
Artificial ventilations are not properly detected or not detected at all	Is the communication indicator panel consistently yellow?	See solution above in section making reference to "blinking communication indicator is consistently yellow"
	Simulator is not connected	Verify connection to the simulator.
	All others	See "Calibration Wizard" section inside User's Manual
Korotkoff sounds do not match systolic and/or diastolic set values	BP sensors are offset	Recalibrate BP cuff sensors on the simulator as per "Calibration Wizard" on User's Manual
	Wrong placement of BP Cuff (only for simulators with tetherless BP cuff feature)	See correct cuff placement under section "Simulator Features – Circulation"
	Weak RF signal	Verify connection strength.
Simulator's chest does not rise with	Simulator not running	Simulator must be powered on and respiratory rate set at 0.

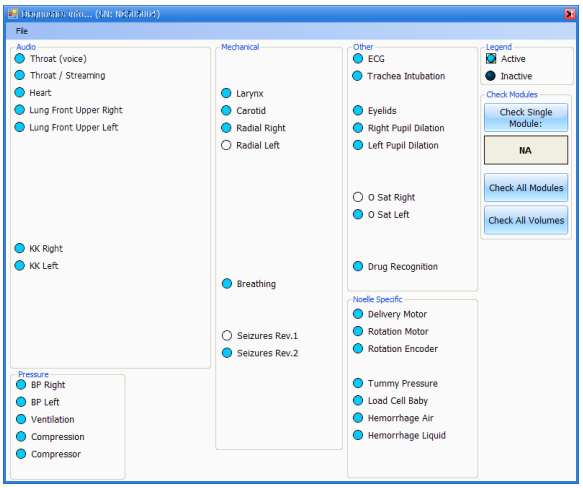
Symptom	Possible Cause	Solution
artificial ventilation (e.g. BVM)	Disable lung/s	Enable the lungs from “Detail” page on the GaumardUI software
Low chest rise (or no chest rise at all) while breathing	Wrong settings or disabled lungs	Make sure lungs are enabled and both respiration rate and inspiration percent are different from “0”. If problem persist, shut down the simulator and restart the tablet. Turn on the system then verify connection, battery and lung settings.
NOELLE®’s delivery baby is disengaged prematurely	Wrong force sensor reading	When baby is pulled with more than 35 lbs. of force, to avoid damage, the baby is released. If user is not pulling the baby it means that “Force Sensor” is offset. See the “Calibration Wizard” section inside User’s Manual and reset the force sensor to its default value (“Reset to Default Force” button)
NOELLE®’s delivery baby does not release at delivery end when user is pulling the baby	Wrong force sensor reading	Try manual “Release” from button located on the left hand site corner under “Delivery” tab. If baby releases, then calibrate “Force Sensor”. See the “Calibration Wizard” section inside User’s Manual and reset the force sensor to its default value (“Reset to Default Force” button)
	Dystocia is “ON”	When “Dystocia On” button is checked, the baby is not released until checking “Dystocia Off”
NOELLE®’s delivery mechanism doesn’t come to its initial position when using the “Reset” button under the “Labor” tab, or it makes a grinding noise when reaching the end of the rails	Motor is “disoriented”	Reset the delivery motor by going to “Setup/Options/” menu, “NOELLE Features” tab, and then click on “Labor Motor” under “Reset…” tab. If delivery mechanism is at the very beginning in a way that it is compressing the rubber boots, the grinding noise won’t go away for a minute or so. Should that be the case either let it go (it won’t break) or simply move motor forward a few turns, and then reset.
Loss of brachial pulse	Brachial pulses disabled	Make sure to enable brachial pulse on “Details” tab page
	Wrong reading of corresponding BP sensor	Brachial pulse is cut off when BP cuff is above Systolic. If it is not connected, then recalibrate BP cuff sensors on the simulator as per “Calibration Wizard” on User’s Manual
Reporting Intubation when it is not	Wrong sensor reading	Reset “ET Tube” sensor on simulator as per “Calibration Wizard” on User’s Manual. Don’t ever turn on (or power cycle) the simulator while being intubated, that can cause a false reading
Pre-built scenarios do cannot be loaded		Select “Quick Start Scenarios” when starting the software. To change profiles from within the GaumardUI. Go to “File/Profile” menu and then select “Modeled Scenarios”

Symptom	Possible Cause	Solution
A sound is absent or is not heard at desired volume level	Volume not set to user's criterion.	Every sound has a volume control. Adjust the volume control located on the status panel to reach the desired level.
Cyanosis intensity is too much or too little	Cyanosis intensity not set to user's criterion.	Set Cyanosis level to a desired level by playing with the "Set Max cyanosis level" control.
Pupils (either one or both) dilating either while blinking or when not supposed to	Wrong dilation calibration	Set pupil dilation level properly by following procedure described in the manual under section "Options and more…" (see Tolerances Tab)
Pupils constricting-dilating constantly	This might happen either when the simulator is under intense light or it has been improperly calibrated.	Try the "Set to Ambient Light" feature under "Options/Tolerances" (see Manual section "Options and more…"). If it doesn't work, then try increase/decrease sensitivity feature (under same tab)
Pulse oximeter is not functioning correctly (if Oxygen Saturation feature is factory installed)	Using a different oximeter / sensor for which the simulator was calibrated	The simulator must be calibrated with the oximeter instrument that is going to be used (including the Pulse Oximeter Sensor). Oximeter sensors *cannot* be swapped even with oximeters of the same brand and model. An oximeter that includes carbon monoxide and/or methemoglobin sensing is being used. These will not work with NOELLE. Oximeter has been placed on the Drug Recognition arm. This arm does not have the Oxygen Saturation feature.
	Pulse Oximeter Sensor not properly placed	Make sure to slide the pulse oximeter probe all the way into the simulator's finger. Ensure the emitter part (the red light) of the probe is on the nail side of the finger. If it is believed that the probe is properly placed, it means that it was not properly placed when calibration was performed and re-calibration is necessary. See O_2Sat calibration section for more info.
	Offset value within ±2	A ±2 discrepancy between value set and oximeter reading for O_2Sat values above 80%, and ±3 below 80%, should be expected.
	Incorrect readings after calibration	While calibrating, wait 5-10 seconds for values to stabilize on the oximeter. Then click next to calibrate the next value. If simulator is equipped with bilateral O_2Sat arms, select the left arm from the calibration menu and place the oximeter on the left finger.
Drug ID is not being read	Syringe has not been programmed	Program syringe as per manual's instructions
	Syringe is not in the field of the RFID reader	This could happen when injecting the cephalic vein close to the hand and having the syringe sideways to the plane of the forearm.

Symptom	Possible Cause	Solution
Drug amount registered is not correct	Wrong calibration	Calibrate the drug arm as per calibration instructions
	Injecting too fast	Maximum injection rate is 9999 ml/hr. This rate won't be exceeded when injecting into the veins using a 22 g needle.
	Not reading the syringe ID	If RFID tag on syringe is not read, the system tends to read fewer amounts than actually injected. This could happen when infusing the drug thru the side port on the arm. When doing so, place a tagged syringe on the syringe holder. See troubleshooting section "Drug ID is not being read" too.
	Fluid reservoir is full	The maximum amount of fluid injected properly read before purging the internal reservoir is 50 cc. Make sure to purge the reservoir or permanently connect a purging line (see instructions)

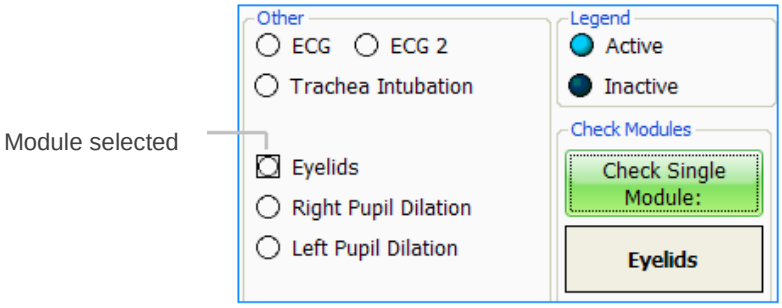
Diagnostics

The Diagnostics window can be accessed by going to the Help menu and selecting “Diagnostics”. This window is very useful for troubleshooting because it gives the user feedback on all of the working modules inside the simulator. The user can click on the button that says "Check All Modules" and the software checks which modules are responding.



Also check individual modules by clicking on the module to highlight. Notice that the name of the module is displayed on the right column.

Now click on the "Check Single Module" button:

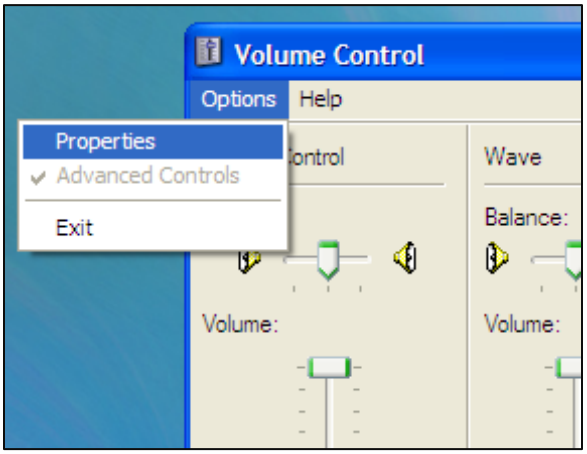


Active modules report light blue, and inactive modules report black. If there is a specific module that fails to respond please contact customer support (ensure that the module that is unresponsive is not specific to an Add-On feature that is not installed on your simulator).

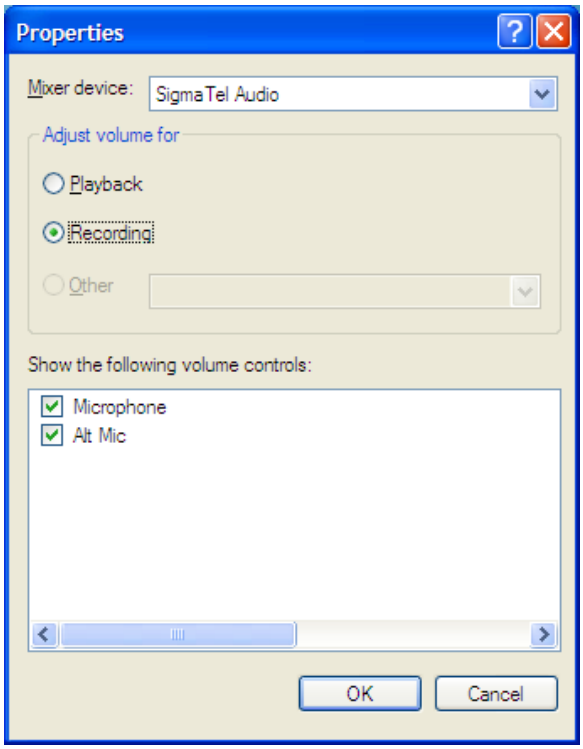
Microphone Boost for Streaming Audio

Use the instructions below to increase the streaming audio volume: Double click on the speaker icon found in the tablet's task bar in the lower right corner.

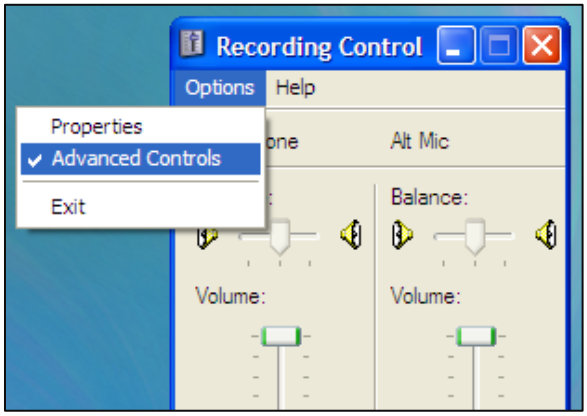
The Volume Control dialog box is displayed. Click on the Option menu, and select Properties.



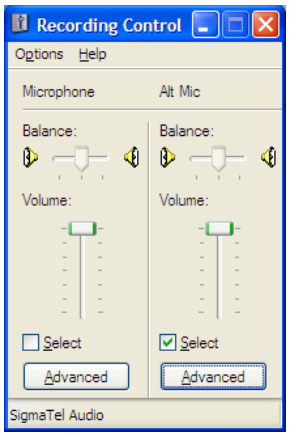
The Properties dialog box is displayed. Under "Adjust volume for", select the Recording option and click "OK".



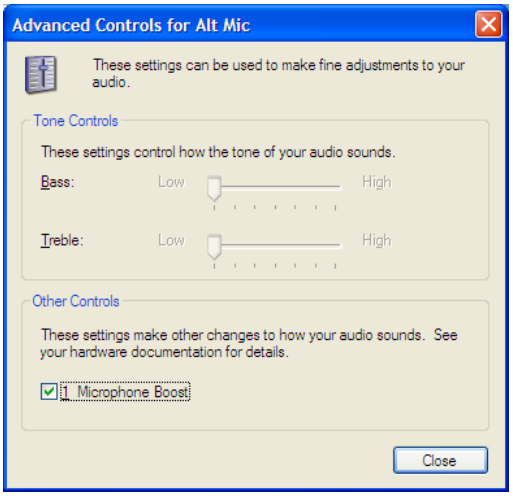
The Recording Control dialog box is now displayed. Make sure that the Advanced Controls option is checked in the Options menu.



Click on the **Advanced** button under the "Alt Mic" volume control.



The Advanced Controls for Alt Mic window is displayed. Select "Microphone boost" under the "Other Controls" section. Click "Close".



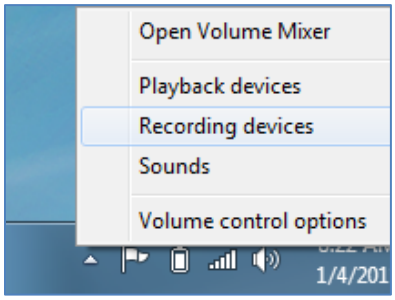
This should improve the volume of the microphone used for streaming audio.

Microphone Boost (Windows® 7)

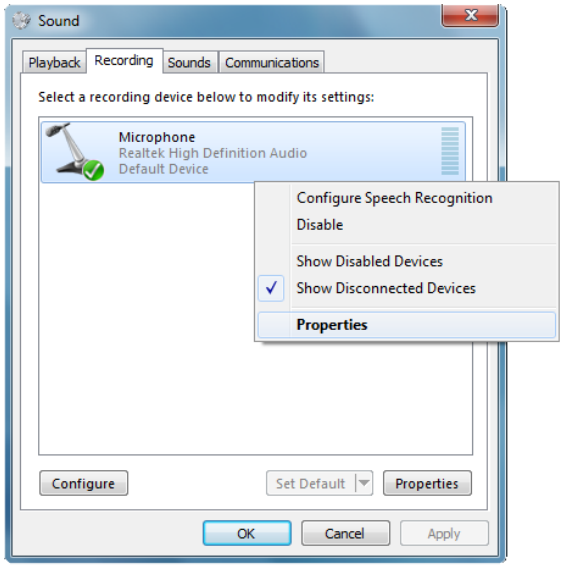
Use the instructions below to increase the streaming audio volume. The Headset must be connected to the tablet in order to adjust the microphone volume properties. In addition, adjust the recording control on the headset's physical control to high.

1. Right click on the speaker icon located on the bottom right corner of the laptop's taskbar.

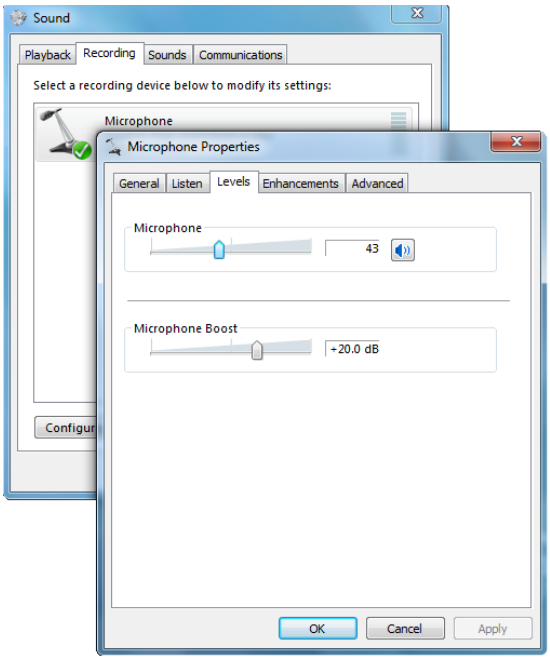
2. The speaker menu is displayed. Click on the recording devices option.



3. The sound properties window and recording tab are displayed. Right-click the microphone option and select properties.



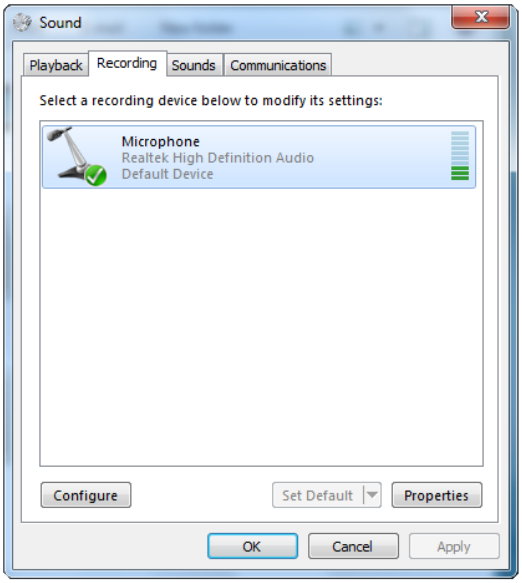
4. From the microphone properties sub menu, select the Levels tab. Use the microphone control to decrease and increase the recording volume. For an additional increase in recording volume, use the microphone boost control.



Microphone boost increases volume and saturation which can decrease overall clarity. For optimal clarity, adjust the microphone volume to 100 and the microphone boost to +10.

5. Click OK to save the changes to the volumes on the microphone properties menu.

6. Click OK to close the Sound properties window.



7. It might be necessary to re-adjust the microphone settings to accommodate environment noise.

Connecting to the Gaumard Monitors

To establish a connection between the Gaumard Virtual Monitor software and GaumardUI, both computers must be connected to the same network **ad-hoc network**. The section below describes in detail how to configure the ad-hoc wireless settings and establish a connection between the Gaumard computer systems. Follow the guide when troubleshooting connection issues.

Vital sign information is sent and updated from the GaumardUI software via Wi-Fi ad-hoc network connection, and not from the simulator or the RF communication module.

Procedure overview for each computer

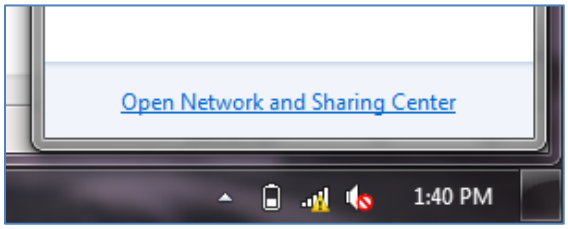
- Configuring Static IP addresses
- Configuring the Network SSID name
- Verifying the ad-hoc connection

Configuring the computer static IP

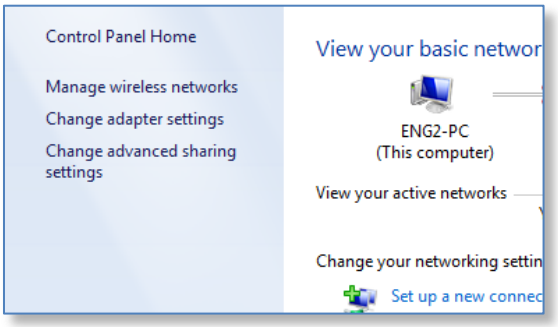
Perform the steps below to assign a static IP addresses to the Gaumard Virtual Monitor computer and the GaumardUI tablet. Please note that each computer requires a unique static IP address. For information on creating a network and configuring a static IP on Windows XP systems, go to page 254.

1. Locate the **wireless connection icon** on the bottom right corner of the computer screen.

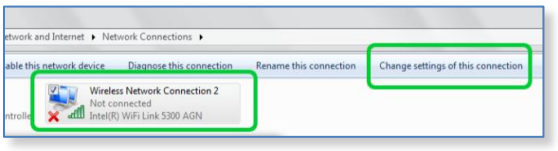
2. Click the wireless icon and select **Open Network and Sharing Center** from the options on the menu.



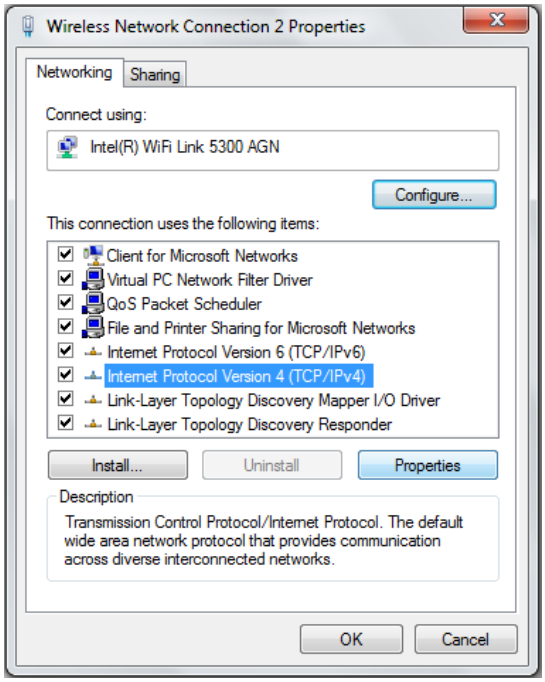
3. In the **Network and Sharing Center** window, click **Change adapter settings** from the left-hand panel.



4. Click on the **Wireless Network Connection** icon to select it, and then click **Change settings of this connection** on the menu panel. The Properties window for the connection will be shown.

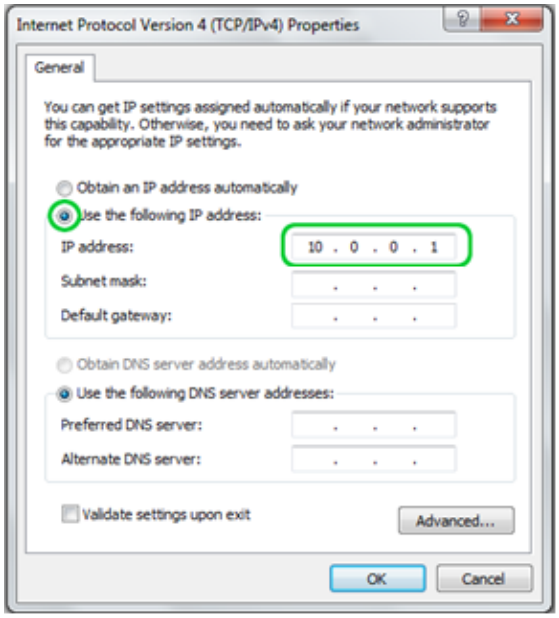


5. Select **Internet Protocol Version 4 (TCP/IPv4)** to highlight it, and click Properties.



6. Configure both computers with static IP addresses and subnet masks following the IP address convention below. Each computer in the ad-hoc network must be configured with the same first three octets and only differ on the last.

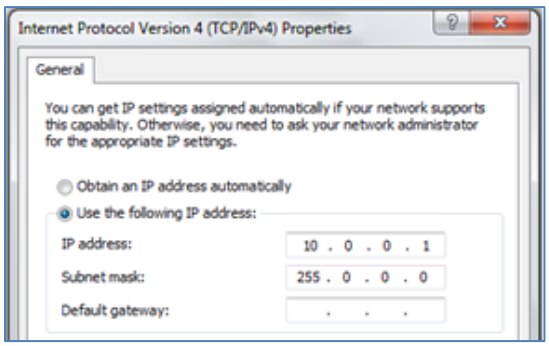
Computer	IP address	Subnet Mask	SSID Network Name
Tablet 1 NOELLE	1.0.0.**1**	255.0.0.0	GaumardNet
Tablet 2 Newborn HAL	1.0.0.**2**	255.0.0.0	GaumardNet
Virtual Monitor Computer	1.0.0.**3**	255.0.0.0	GaumardNet



Example of IP addresses that will NOT communicate with each other:

Tablet 1 - 1.0.**10**.1 VM Computer - 1.0.**0**.3
Tablet 1 - **50**.0.10.1 VM Computer - **1**.0.10.3
Tablet 1 - 10.10.10.**1** VM Computer - 10.10.10.**1**

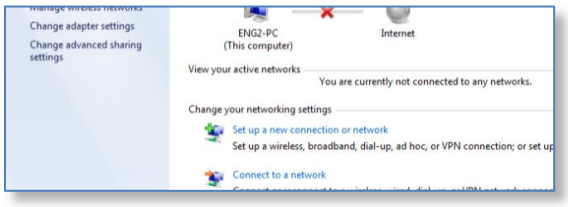
7. Click once in the **subnet mask** field to auto populate the correct address. Leave all other fields blank and click **OK** to save the changes and return to **the Network and Sharing Center** window.



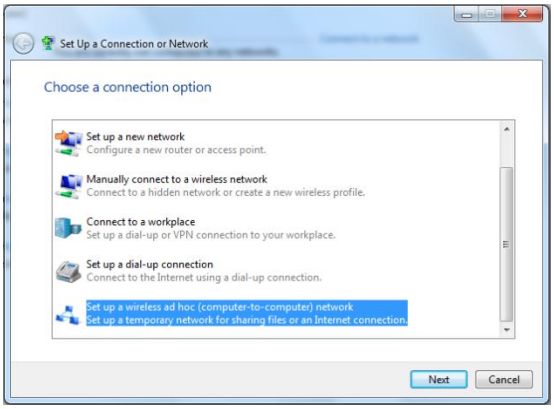
Configuring the Wireless ad-hoc Network

After each computer is configured with a unique static IP address, follow the steps below to create the **ad-hoc wireless network**. The following steps are performed identically on the GaumardUI tablet and the virtual monitor computer.

1. On Network and Sharing Center and select **Set up a new connection or network**.

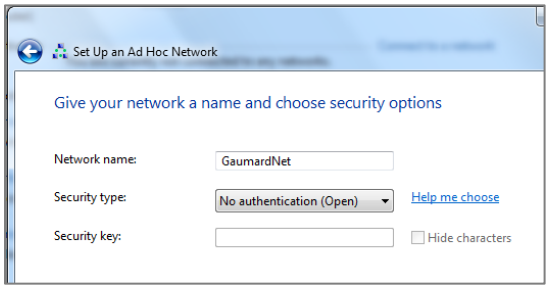


2. Select **Set up a wireless ad hoc (computer-to-computer) network** and click **Next** to continue.

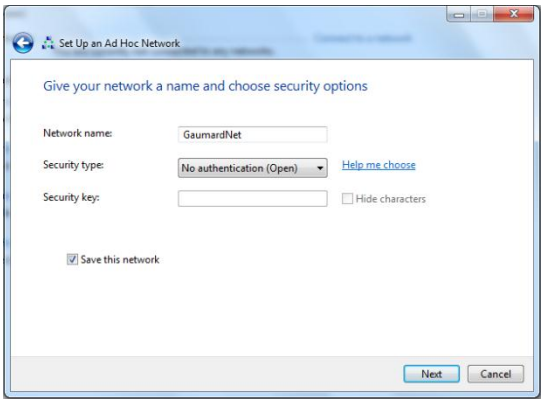


3. The next screen provides some information about the ad hoc connection, click **Next.**

1. In the **Network name (SSID)** field, type **GaumardNet**. Network names are **case-sensitive** and must be typed identically on all the computers that will belong to this ad-hoc network.

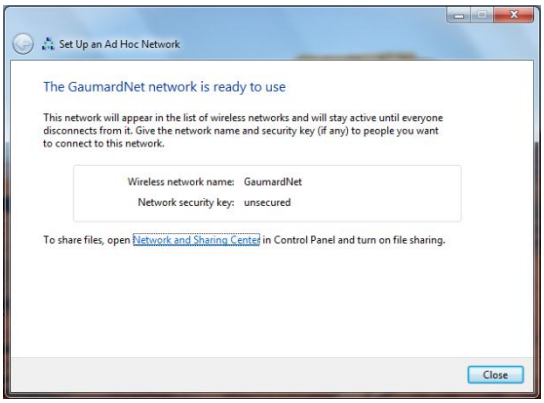


2. Ensure the security type is **No authentication**. Checkmark **Save this network**, then click **Next**.



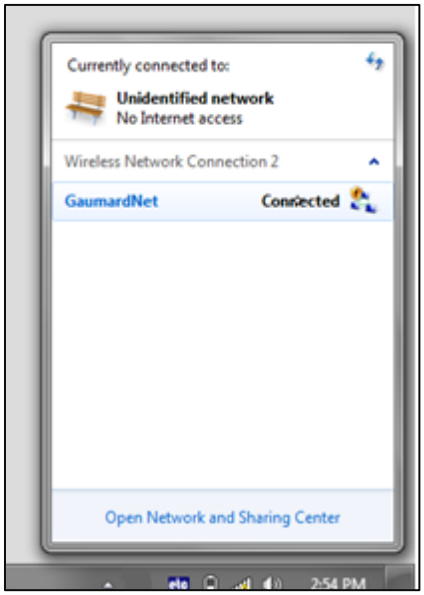
If the system warns of another network with the same name, simply power down any other computer configured with the same network name during this step and try again.

4. Windows® will advise if the network is successfully completed by displaying a ready message and a summary of the network's properties. Click "Close" and restart the computer.



Verifying the ad-hoc wireless connection

Window 7 systems do not automatically connect at startup. To establish a connection to the ad-hoc wireless network, navigate to the wireless icon located at the bottom right corner of the screen, select the ad-hoc network name and click connect. Because the computers are connecting to each other, both systems must be powered on

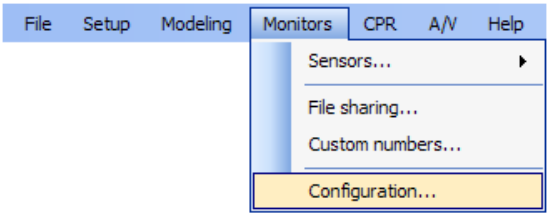


Connecting GaumardUI to the Gaumard Monitors software

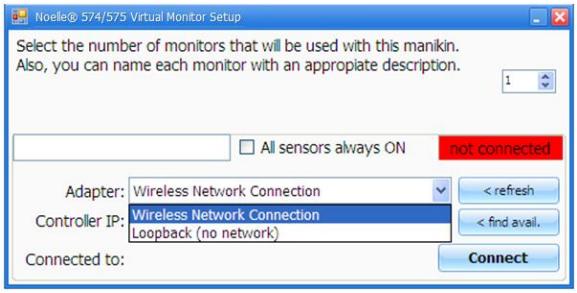
GaumardUI sends all the vital signs information to the Gaumard Monitor software **over** the wireless ad-hoc connection configured in the previous section. Follow the guide below to establish the connection between the programs.

CAUTION: To avoid connection issues, always establish the ad-hoc wireless connection between the computers before activating the GaumardUI and Gaumard Monitors program.

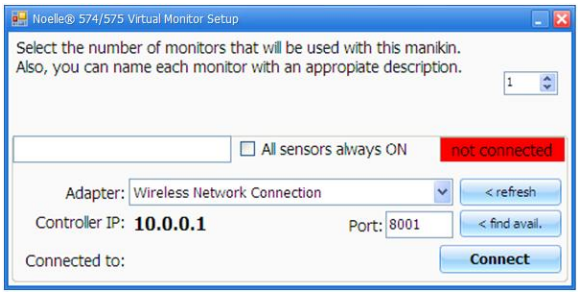
1. On the tablet computer, start the **GaumardUI** software and navigate to **Monitors>Configuration**.



2. In the **NOELLE® Virtual Monitor Setup** window, access the **Adapter** dropdown menu and select **Wireless Network Connection**. If the adapter is inaccessible, click the stop button first.



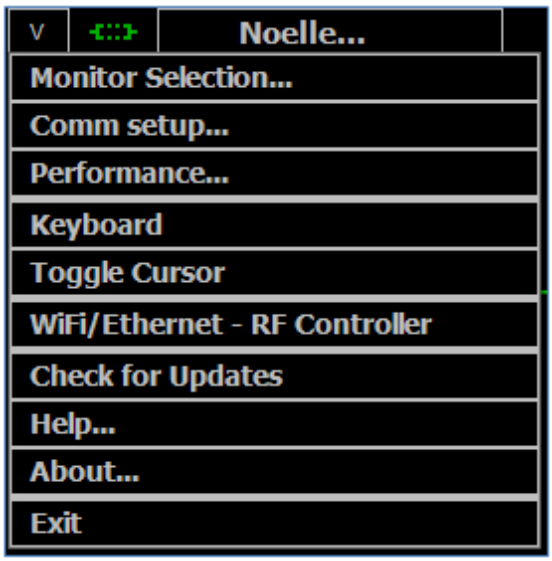
3. The controller IP shown is the static IP address previously configured.



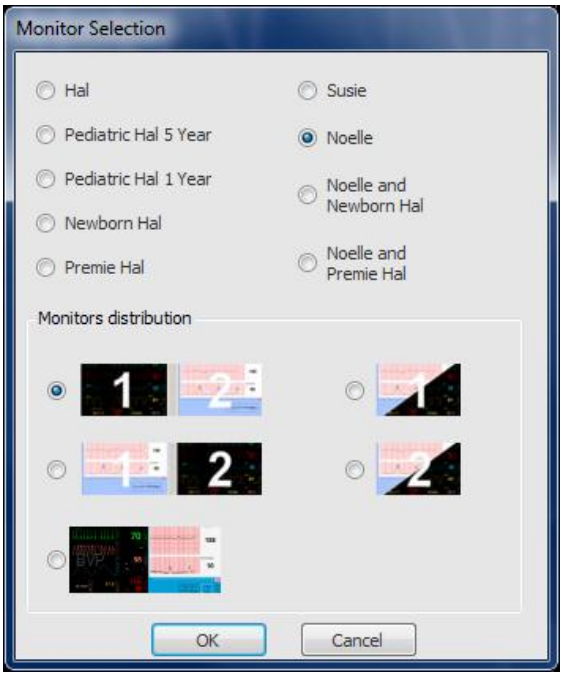
4. Click **Connect** and take note of the controller IP address and port number. This information will be used on the following steps. The status icon will read **connecting** until the Gaumard Monitor software is configured.

5. Activate the Gaumard Monitors software on the Virtual monitor computer.

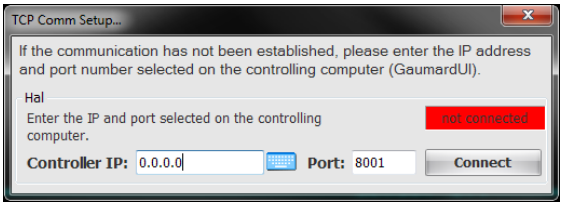
6. Click on the menu labeled **V** located on the upper left corner and click **Monitor Selection.**



7. From the **Monitor Selection** menu, select the applicable simulator screen and click **OK** to save the settings.

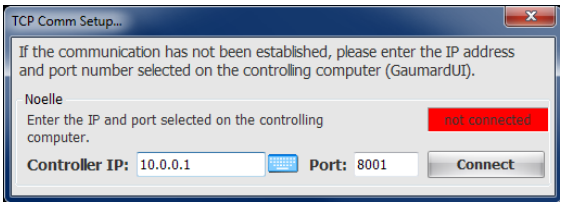


8. Return to the **V** menu and select **Comm… setup** option to access the **TCP Comm Setup…** window.

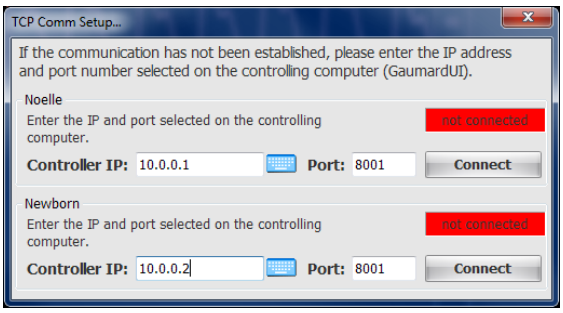


9. Input the **Controller IP** address and **port number** as previously noted on GaumardUI's **Virtual Monitor Setup** window.

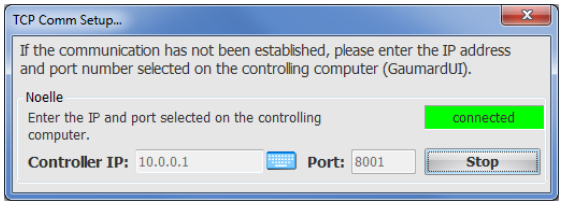
Monitor selection - NOELLE



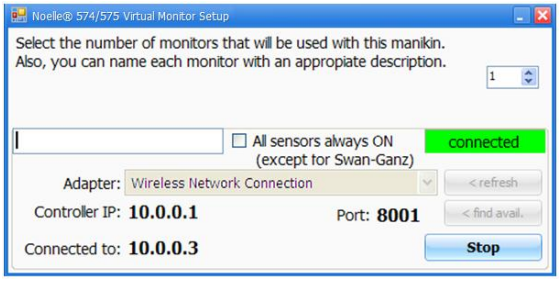
Monitor Selection – NOELLE and Newborn HAL



10. Click **Connect** to finalize the connection.



11. On GaumardUI's **Virtual Monitor Setup** window the connection status will also display connected.

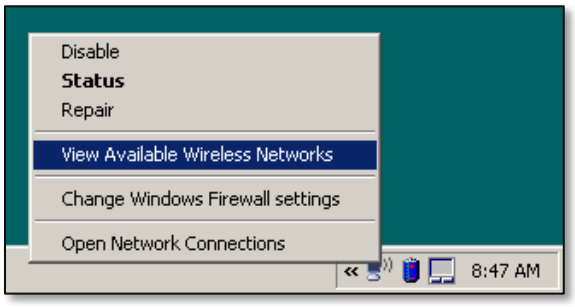


Wireless Ad-hoc Connection Settings Windows® XP

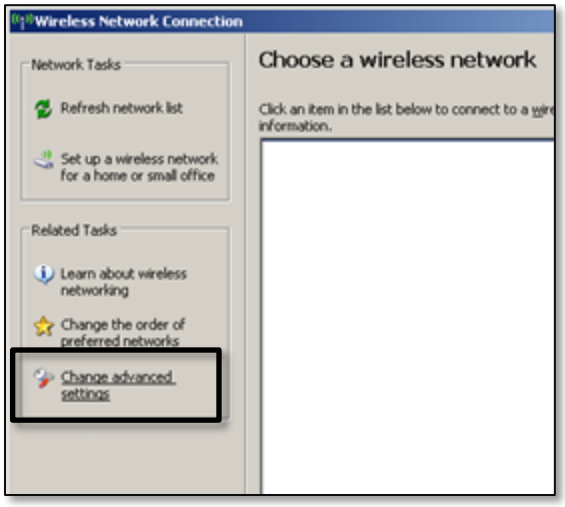
Follow the steps below to create an ad-hoc network and configure static IP addresses on Windows XP computers.

1. Locate the wireless connection icon on the bottom right corner of your desktop.

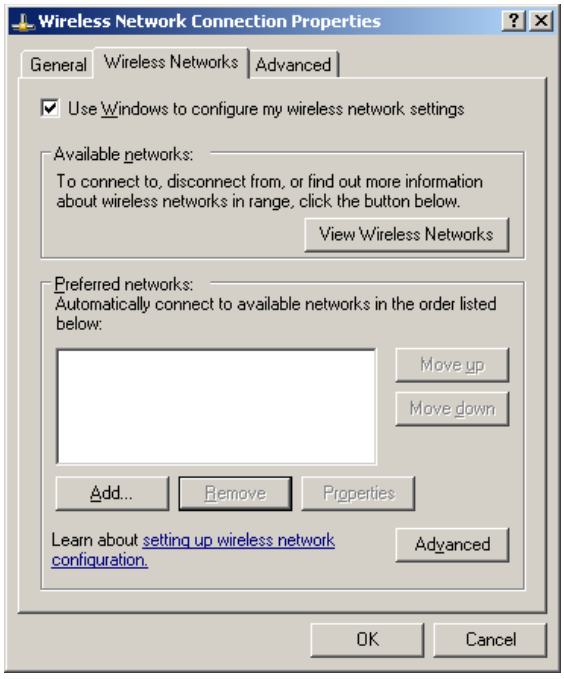
2. Right-click over the icon. A menu appears. Select "View Available Wireless Networks" from the options on the menu.



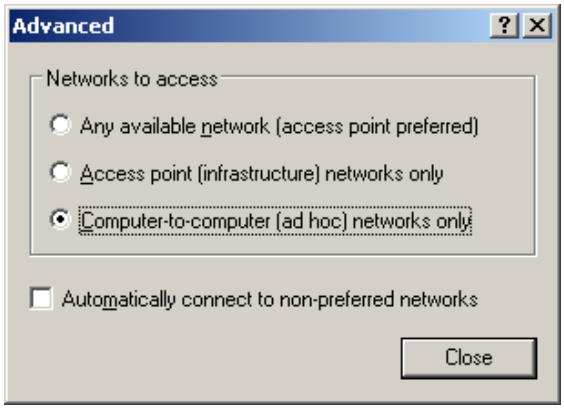
3. The "Wireless Network Connection" dialog box opens. Select the link that says, "Change advanced settings" (located on the bottom left of this dialog box). This will open a new dialog box.



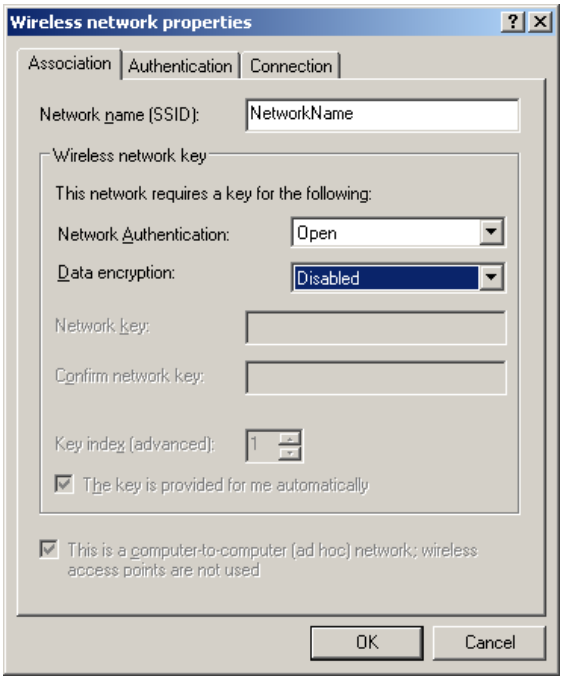
4. When the "Wireless Network Connection Properties" dialog box is displayed, select the "Wireless Networks" tab. Locate the "Advanced" button located on the lower right and click it.



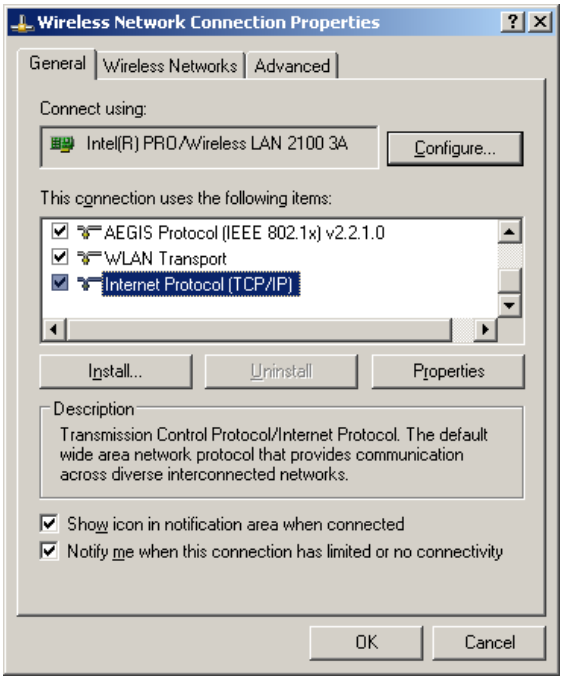
5. In the "Advanced" dialog box, select "Computer-to-computer (ad hoc) networks only." Make sure the check box on the bottom is NOT selected. By selecting this option the computer will not try to connect to and access point within the facility, but the computer will only try to connect to registered ad hoc connections. Click "Close".



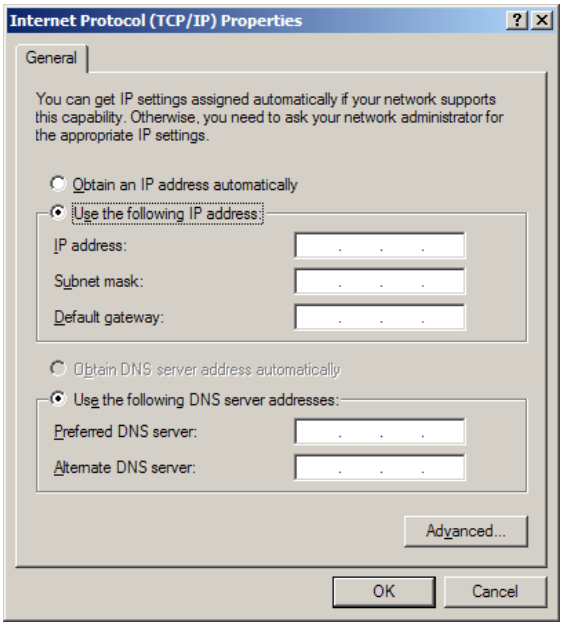
6. Click "Add" on the "Wireless Network Connection Properties" window. The "Wireless network properties" window is displayed. Here is where the wireless network will be created. On the "Network name (SSID):" type the desired network name. Network names are case sensitive, so ensure it is typed exactly the same on any computer to which connection is attempted. Example network names: "HalNet", "NOELLENet", "GaumardNet". Ensure the "Network Authentication" is "Open" and the "Data encryption" is "Disabled." Click "OK."



7. The new network now appears on the "Wireless Network Connection Properties" dialog box under "Preferred networks". Find the "Internet Protocol (TCP/IP)" inside the selection box labeled "This connection uses the following items." Highlight it and click the "Properties" button.



8. The “Internet Protocol (TCP/IP) Properties” window is displayed. Select “Use the following IP address” to write in a static IP address.



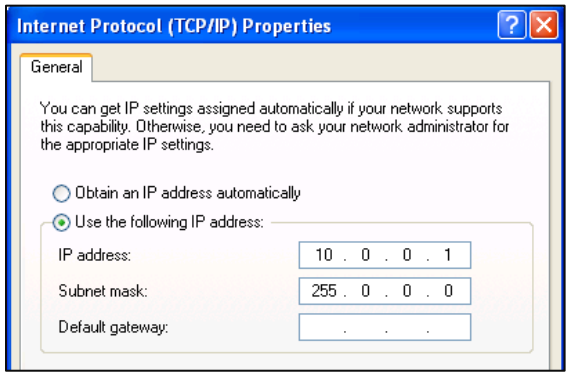
9. Configure both computers with static **IP addresses** and **subnet mask** following the addressing convention below.

Computer	IP address	Subnet Mask
Tablet 1 NOELLE	10.0.0.1	255.0.0.0
Tablet 2 - Newborn	10.0.0.3	255.0.0.0
Virtual Monitor	10.0.0.3	255.0.0.0

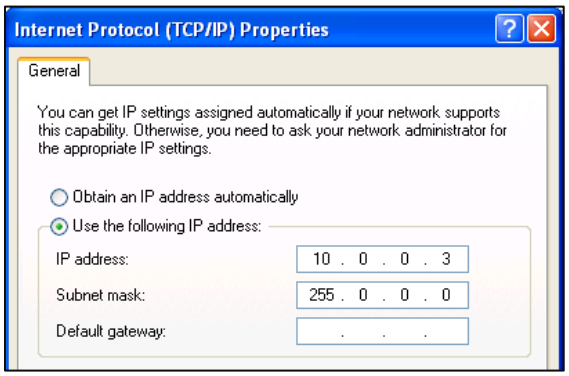
10. Click once in the **subnet mask** field to auto populate the correct address. Leave all other fields blank and click **OK** to save the changes.

Each computer must be configured with the same first three IP address octets and only differ on the last. The subnet mask value is the same on all computers.

NOELLE control tablet static address



Virtual Monitor computer static address



Example of IP addresses that will NOT communicate with each other:

Computer 1 - 1.0.10.1 Virtual Monitors - 1.0.0.3

Computer 1 - 50.0.10.1 Virtual Monitors - 1.0.10.3

Computer 1 - 10.10.10.1 Virtual Monitors - 10.10.10.1

11. Click **OK** in the Internet Protocol dialog box to save the address settings. Then, click **Close** on the Wireless Network Connection Properties to save all the changes.

12. Restart both computers.

On startup, both computers will automatically connect to each other via ad-hoc. Continue to page 252 to establishing a connection between GaumardUI and the Virtual Monitor software.

Selected Consumables and Replacements Parts

Selected Parts List

Contact Gaumard Scientific for a **complete list** of consumables and replacement parts and their prices.

Item ID	Name	Type	Description
S575.001	A/C Virtual Monitor	R	A/C Powered 17" Touch Screen monitor and desktop
S575.002	D/C Virtual Monitor	R	D/C Powered 12" Touch Screen Mobile Monitor with stylus
S575.004L.L	Lower Left Arm Skin Cover	M	Lower left arm skin cover; light color
S575.004R.L	Lower Right Arm Skin Cover	M	Lower right arm skin cover; light color
S575.007.L	C-Section Abdominal Cover	C	NOELLE stomach cover for C-Section Exercises; light color
S575.008.L	Abdominal Cover	R	NOELLE light stomach cover with contraction and urinary reservoir
S575.011	Battery Charger	R	Battery charger with label
S575.013	Birthing Mechanism	R	Automatic Birthing Mechanism
S575.016.L	Birth canal	C	Light color
S575.019	Placenta	R	Placenta with Velcro
S575.020	Umbilical Cord Set	R	Umbilical cords with clamp
S575.023L.L	Lower Left Arm	C	Lower left IV arm; light color
S575.023R.L	Lower Right Arm	C	Lower right IV arm; light color
S575.030.L	Postpartum Perineal Insert	R	Light color
S575.031	Manual Boggy Uterus	R	Boggy Uterus for manual PPH
S575.032	Automatic Boggy Uterus	R	Boggy Uterus for automatic PPH
S575.033	Episiotomy Trainer Set	R	Episiotomy Trainer set with vulva insert
S575.040.L	Articulating baby	R	Articulating Fetus; light color
S575.048	Adult IV Injection Kit	A	Fluid dispensing syringe with filling tube
S575.060	Simulator Transport Case	R	Soft storage and transport case with wheels
S575.061	Simulator Transport Case	A	Hard storage and transport case with wheels
S575.080	Simulated Blood Concentrate	C	
S575.081	Silicone Oil	R	Oil-based Silicone lubricant
S575.087	Wireless Streaming Audio	R	

Item ID	Name	Type	Description
	Headset		
S575.200	Audio & Video Recording System	A	
S575.206	RF Module	R	Radio Frequency Module with USB connector
S575.300.U	Wireless Streaming Audio Upgrade	U	Wireless streaming audio upgrade
S575.400R.U.L	Automatic Drug Recognition System	U	Automatic drug recognition feature (includes physiologic model)
S575.401R.L	Automatic Drug Recognition Arm	R	Automatic drug recognition right arm replacement; light color
S575.600	Automatic Physiologic Control	A	Physiologic modeling feature for NOELLE
S575.EXW	Two Year Extended Warranty	A	Extended warranty for years Two AND Three
S575.INST	In-Service Training	A	Day of in-service training and installation

C=Consumables; R=Replacements; A=Accessories; U=Upgrades; M=Replace in Miami Factory ONLY

Replacing Common Consumable and Replacement Parts

Birth Canal

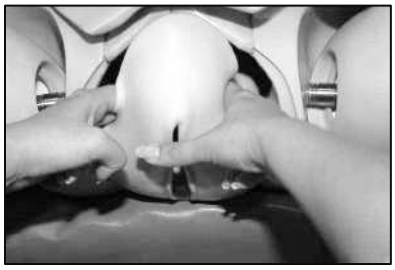
Follow the instructions below to replace the birth canal. You may also use the steps below in case the birth canal has to be removed temporarily to adapt the episiotomy kit.

Remove birth canal:

1. Insert your left hand at the 9 o'clock position, between the lower torso and the birth canal insert. Slowly push inward.

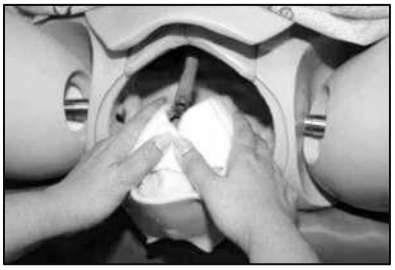
WARNING: Do not pull the birth canal to remove.

2. Repeat instructions in step 1 with right hand at the 3 o'clock position.



3. Push inward on the birth canal insert. Then place your thumbs on the top of the birth canal insert and push downward.

4. Slowly pull the birth canal insert towards you. When the urine catheter tube is visible, detach from the birth canal insert.



5. Finally, after removing the urine catheter tube, gently remove the birth canal insert.

Attach the birth canal

1. Place birth canal insert into polythene bag and ensure the bag covers the Velcro on the outer wall of the insert as shown in picture.

2. While first inserting the plastic bag through the birth canal opening on the mannequin, gently position the birth canal insert with the approximate final alignment to the opening.

3. Push the birth canal insert into position. Place your hands on the lower half of the insert with your fingers holding the bag in place. Steady the front of the insert with your thumbs. Without removing the plastic, orient the birth canal insert so that it is properly aligned with the opening on the lower torso of the mannequin.

4. Gently begin to remove the polythene bag with one hand while holding the insert in place with the other, as pictured below. It is easier to start at the top, then work down the sides towards the bottom.

5. Place one hand towards the bottom of the birth canal insert when pulling out the bottom portion of the polythene bag.

6. With the birth canal insert in place, pull the post-partum hemorrhage tube through the hole in the bottom of the birth canal insert as shown in the picture. This is to position the hemorrhage tube in the correct location. The birth canal insert is now ready for normal use.

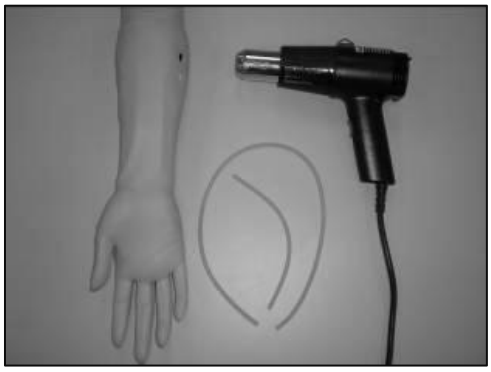
Replacing Common Consumables

Antecubital Veins in Drug Recognition Arm

WARNING: Vein tubing contains latex which may cause allergic reactions. Users allergic or sensitive to latex should avoid contact. Discontinue use of this product and seek medical attention if an allergic reaction occurs.

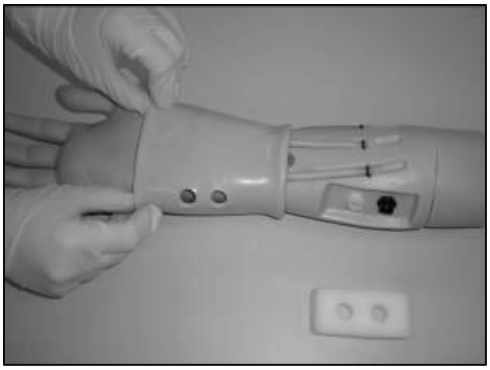
To replace the veins used in drug recognition arm, follow the instructions below:

- Gather the following items:
- Replacement antecubital vein set
- Silicone oil
- Heat gun or blow dryer
- Tape
- Gloves (optional)
- Hemostat (optional)

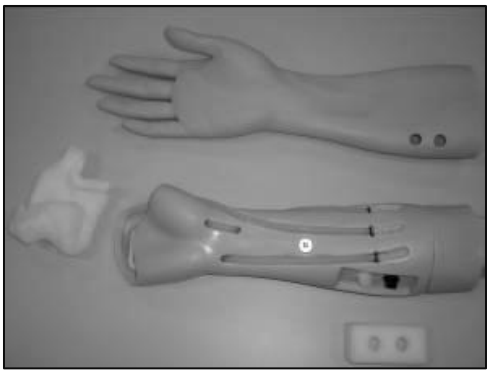


1. If currently turned on, exit the software on the tablet PC to turn off the simulator.
2. Gently heat the arm skin. Recall that the drug recognition feature is available only on the right arm.

3. Pull back the skin from the arm and remove it completely.

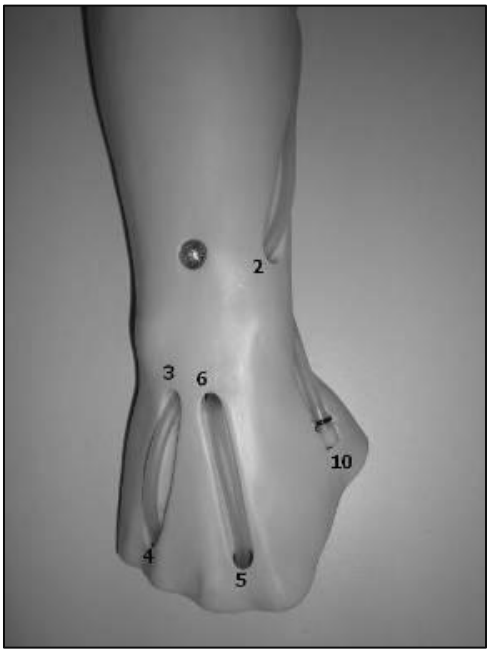


4. The antecubital veins are exposed

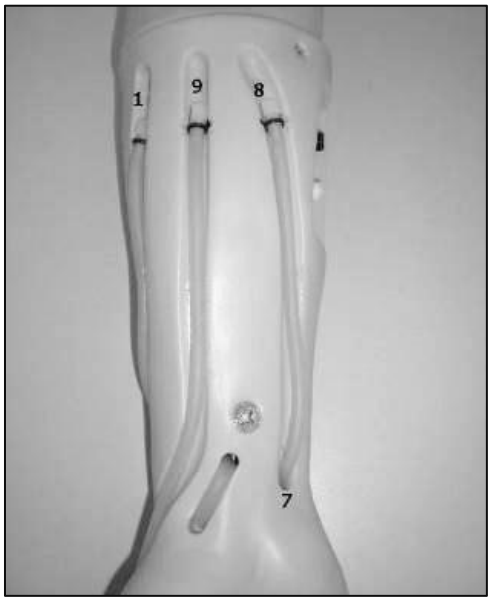


5. Label each hole in the arm as shown in the pictures below:

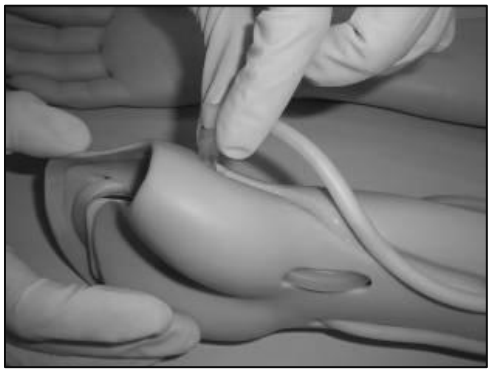
Posterior forearm



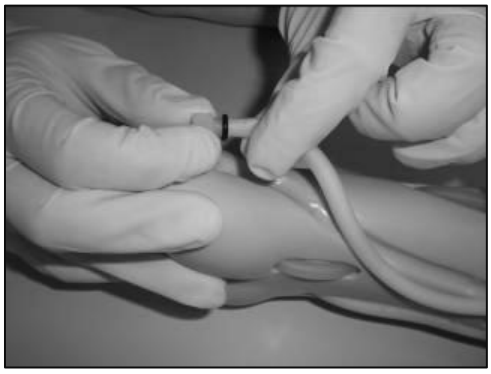
Anterior foreman



6. Gently pull out the white connector in hole 10.



7. Hold the white connector with one hand, and hold the latex tube with the other.



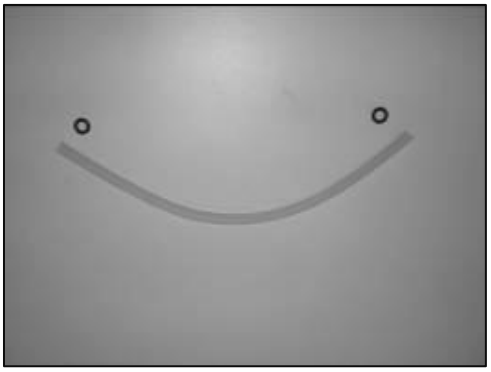
8. Pull out the latex tube from the connector.

9. Now pull up the white connector in hole 9.

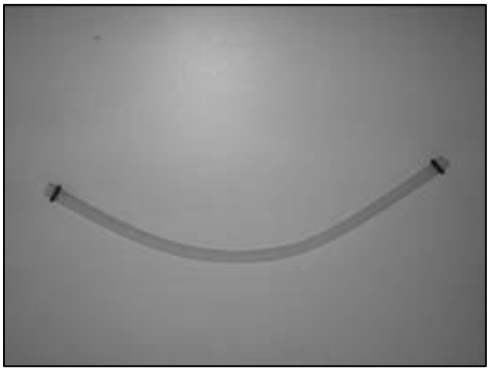
10. Hold the connector with one hand and the latex tube with the other hand. Pull the latex tube off the white connector.

11. Remove both black rings on the tube and place them on the replacement antecubital vein as shown below.

12. Use the shortest piece of tubing in the replacement antecubital vein kit.

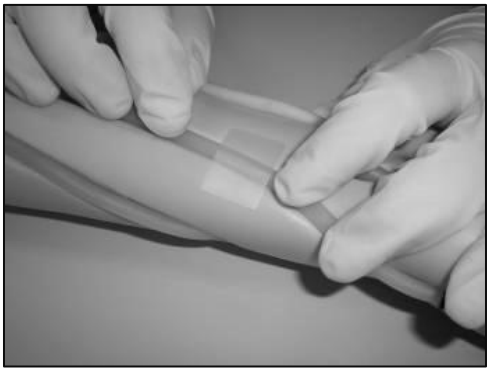


13. You will be using the same black rings to secure the new vein in place.

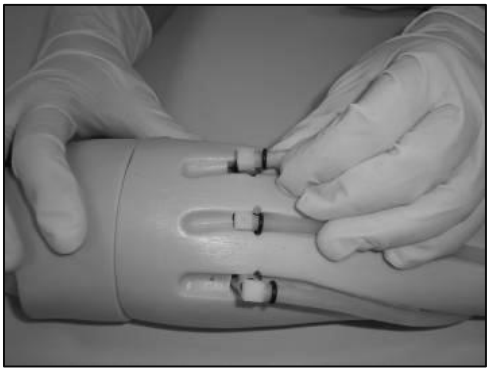


14. Connect one end of the tube to the white connector in hole 9 and the other end of the tube to the white connector in hole 10. Gently push down the connectors on both ends so they sit tightly on each hole.

15. Place a small piece of tape over the vein. The tape will help keep the vein in place when you slide the skin back on the arm.

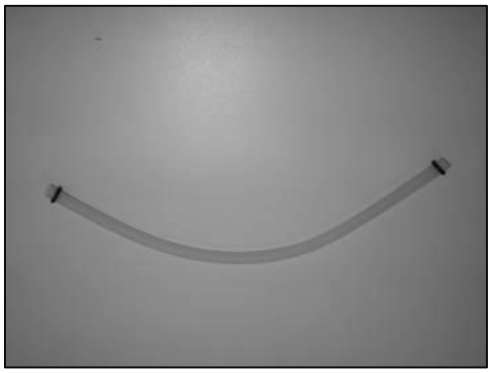


16. Now pull up the connectors in holes 1 and 8.

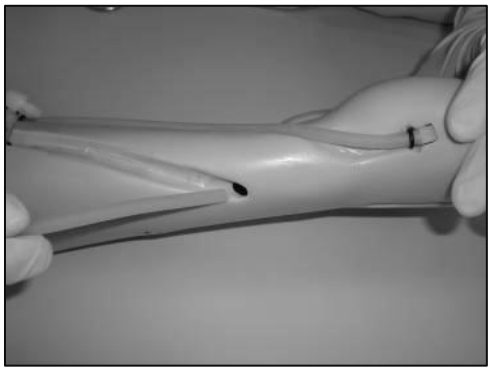


17. Disconnect the tubes from the connectors in holes 1 and 8.

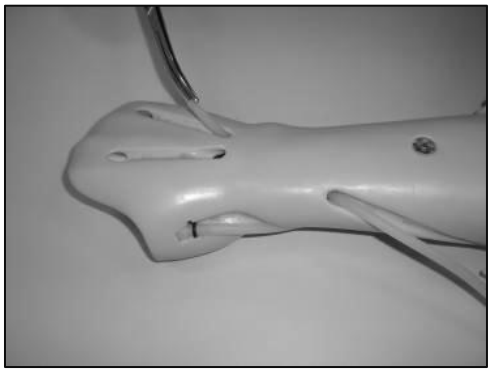
18. Remove the black rings and place one on one end of the replacement tube from the antecubital vein kit; reserve the second ring for placing after threading the latex tube through the arm.



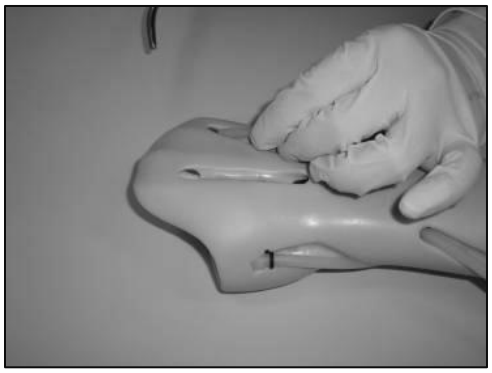
19. Now insert one end of the replacement tube in hole 2.



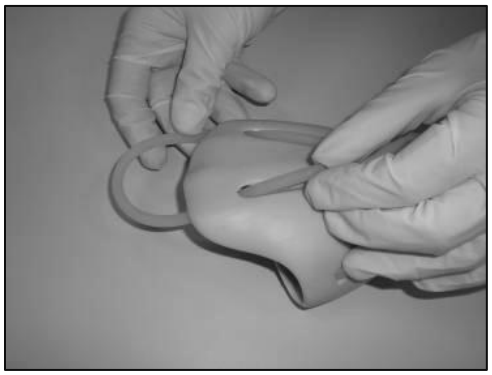
20. Feed the tube through hole 3. You may use a hemostat to help you pull out the tube.



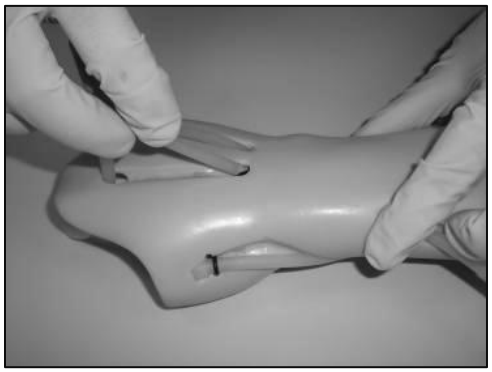
21. Now insert the tube in hole 4.



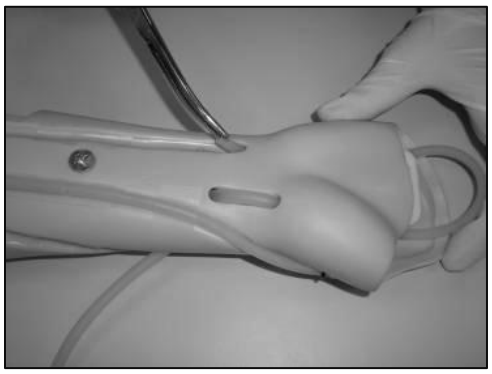
22. Insert the tube in hole 5 as shown below.



23. Insert tube in hole 6. Make sure the tube is not tight.



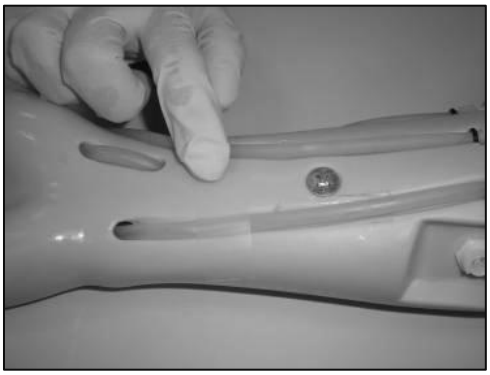
24. Turn the arm so the anterior part is facing up, and feed the tube through hole 7 as shown below.



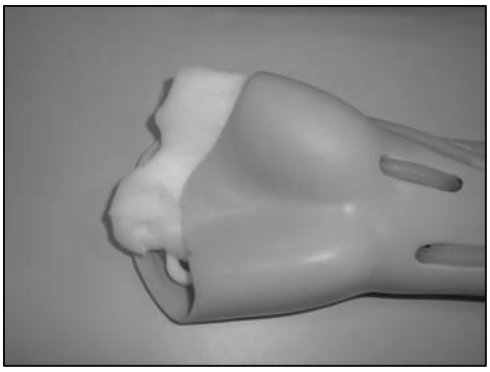
25. Place a black ring on the end of the tube, and connect the tube to the white port in hole 8.

26. Place a black ring on the other end of the tube and connect it to the white connector in hole 1. Push the white connectors down to make sure they are flushed with the holes as shown in the picture below.

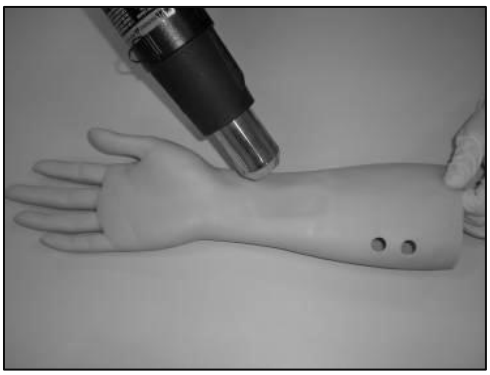
27. Put a small piece of tape to hold the vein in place in the segments from holes 1 to 2 and holes 7 to 8.



28. Insert foam inside the hand.

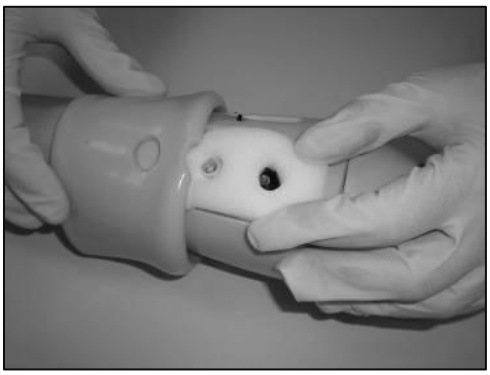


29. Heat the skin.

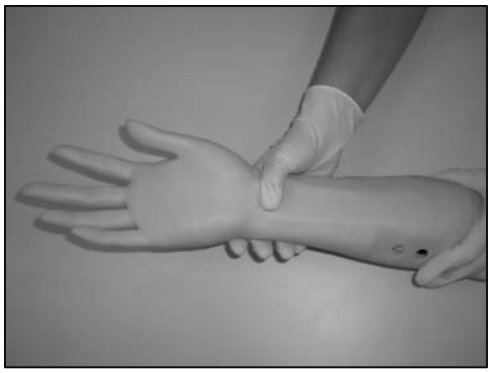


30. Apply small amounts of silicone oil on the forearm to aid the skin placement.

31. Place the skin over the hand. Stop half way and insert the foam covering the IV fill and drainage ports.



32. Pull the skin all the way up.



Warranty

EXCLUSIVE ONE-YEAR LIMITED WARRANTY

Gaumard warrants that if the accompanying Gaumard product proves to be defective in material or workmanship within one year from the date on which the product is shipped from Gaumard to the customer, Gaumard will, at Gaumard's option, repair or replace the Gaumard product.

This limited warranty covers all defects in material and workmanship in the Gaumard product, except:

1. Damage resulting from accident, misuse, abuse, neglect, or unintended use of the Gaumard product;
2. Damage resulting from failure to properly maintain the Gaumard product in accordance with Gaumard product instructions, including failure to property clean the Gaumard product; and
3. Damage resulting from a repair or attempted repair of the Gaumard product by anyone other than Gaumard or a Gaumard representative.

This one-year limited warranty is the sole and exclusive warranty provided by Gaumard for the accompanying Gaumard product, and Gaumard hereby explicitly disclaims the implied warranties of merchantability, satisfactory quality, and fitness for a particular purpose. Except for the limited obligations specifically set forth in this one-year limited warranty, Gaumard will not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory regardless of whether Gaumard has been advised of the possibilities of such damages. Some jurisdictions do not allow disclaimers of implied warranties or the exclusion or limitation of consequential damages, so the above disclaimers and exclusions may not apply and the first purchaser may have other legal rights.

This limited warranty applies only to the first purchaser of the product and is not transferable. Any subsequent purchasers or users of the product acquire the product "as is" and this limited warranty does not apply.

This limited warranty applies only to the products manufactured and produced by Gaumard. This limited warranty does not apply to any products provided along with the Gaumard product that are manufactured by third-parties. For example, third-party products such as computers (desktop, laptop, tablet, or handheld) and monitors (standard or touch-screen) are not covered by this limited warranty. Gaumard does not provide any warranty, express or implied, with respect to any third-party products. Defects in third-party products are covered exclusively by the warranty, if any, provided by the third-party.

Any waiver or amendment of this warranty must be in writing and signed by an officer of Gaumard.

In the event of a perceived defect in material or workmanship of the Gaumard product, the first purchaser must:

1. Contact Gaumard and request authorization to return the Gaumard product. Do NOT return the Gaumard product to Gaumard without prior authorization.
2. Upon receiving authorization from Gaumard, send the Gaumard product along with copies of (1) the original bill of sale or receipt and (2) this limited warranty document to Gaumard at 14700 SW 136 Street, Miami, FL, 33196-5691 USA.
3. If the necessary repairs to the Gaumard product are covered by this limited warranty, then the first purchaser will pay only the incidental expenses associated with the repair, including any shipping, handling, and related costs for sending the product to Gaumard and for sending the product back to the first purchaser. However, if the repairs are not covered by this limited warranty, then the first purchaser will be liable for all repair costs in addition to costs of shipping and handling.

Extended Warranty

In addition to the standard one year of coverage, the following support plans are available:

- Two-Year Extension (covers second and third years)
- Call for pricing (USA only)

Contact Us

E-mail Technical Support: support@gaumard.com

E-mail Sales and Customer Service:sales@gaumard.com

Phone:

Toll-free in the USA: (800) 882-6655

Worldwide: 01 (305) 971-3790

Fax: (305) 667-6085

Before contacting Tech Support **you must**:

1. Have the simulator's Serial Number (located in the left leg under the IM site)
2. Be next to the simulator if troubleshooting is needed.

Post: Gaumard Scientific

14700 SW 136 Street

Miami, FL 33196-5691

USA

Office hours: Monday-Friday, 8:30am - 4:30pm EST (GMT-5, -4 Summer Time)

Always dispose of this product and its components in compliance with local laws and regulations.