

# CodeBlue III<sup>®</sup>

## Mobile Team Trainer

### User's Guide



**Gaumard<sup>®</sup>**  
Simulators for Healthcare Education  
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# *Thank you*

for choosing CODEBLUE

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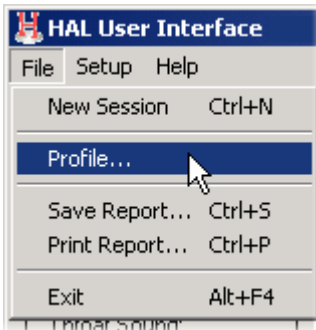
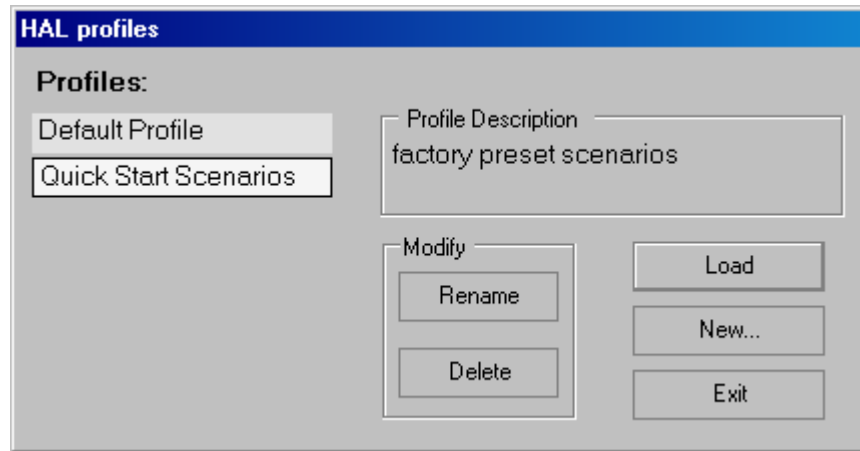




**USE**

# Profiles

When starting the CODEBLUE III software, one must first select a Profile.



To access the Profiles window at any time, select Profiles from the File pull-down menu. Profiles are used to organize and protect software settings. As you begin to customize CODEBLUE, 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 CODEBLUE 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.

**When starting out with CODEBLUE**, it is recommended that you use the *Quick Start Scenarios* profile, which was created in conjunction with experienced healthcare instructors and working medical professionals. Quick Start Scenarios instantly turn you into a simulation expert. See the Factory Preset Profiles appendix for detailed description of the Quick Start Scenarios profile.

One can also choose the *Default* profile, which has a generally applicable Palette that is useful for simulating common medical emergencies. For many applications, the Default profile is a convenient starting point that can be customized to fit your particular simulation objectives.

Notice that there are a number of options when creating a new profile. You may choose to include the contents of the "Default" or "Quick Start Scenarios" profiles or to copy the contents of an existing profile. For security, you can enable PIN protection, which will require the user to enter a 4-digit key before loading that profile. For more detail on manually manipulating profiles with Windows Explorer, advanced users should refer to the File Structure appendix at the end of this guide.

**Create New Profile...**

**Profile Name:**

**Profile Description:**

**PIN**

Enable PIN security

Enter PIN :

Re-Enter PIN :

Include contents of Default Profile

Include contents of Quick Start Scenarios


- OR -

Include contents from loaded profile (Default Profile)

# Status


## The Status Panel

### Status

**Breathing** 

Resp. Pattern:  
**normal**

Resp. Rate: **13** /min  
% Inspiration: **33**  
[O2-Sat : **98** %]  
[EtCO2 : **40** mmHg]

**Circulation** 

Cardiac Rhythm:  
**Sinus**

Heart Rate: **75** bpm  
Blood Pressure:  
**120 / 80** mmHg

[Temperature: **37.5** °C]

At all times, the *Status* panel will be visible along the left edge of the CODEBLUE III window. The vital signs and other details of the simulated patient are shown here. Most important are the battery and communication indicators at the top of the Status panel, which are discussed below.

- **Airway**

The Airway section displays the state of the difficult airway actuators and the sound being played at the throat. An empty box means that the actuator is off, and a checked box indicates that it is active.

- **Breathing**

The Breathing section shows detailed information related to respiration. Note that O2-saturation is in parentheses, because it is only a 'virtual' vital sign that cannot be evaluated on the manikin. This information serves as a reference for the facilitator.

- **Circulation**

The Circulation section displays CODEBLUE's cardiac parameters.

# Details

It is best to think of controlling the CODEBLUE simulator in terms of three levels of complexity: firstly Details, then the Palette, and finally Scenarios. The **Details** page is the first of the tab-pages found in the main area of the CODEBLUE III window. This is the most simple form of control available to the facilitator. Note that, for each item in the Status panel, there is a corresponding field or control on the Details page.

**Details** Palette Scenario Log

Clear Settings Load Palette Item... Save as Palette Item...

Legend  
● On ● Off

**Breathing** Respiratory Pattern: [dropdown]  
Respiratory Rate  
[input] ● breaths / min  
○ % change  
Inspiratory Time: [input] %  
(O2Sat: [input] %)  
(EtCO2: [input] mmHg)

**Circulation** Cardiac Rhythm: [dropdown]  
Heart Rate  
[input] ● bpm  
○ % change  
Blood Pressure  
Systolic / Diastolic  
[input] / [input] ● mmHg  
○ % change

**Other** (Temperature: [input] °C)

**Apply**  
NOW 10 sec 30 sec 1 min 2 min 5 min 10:00 Edit...

Simply choose the settings you wish to change from the available fields and click one of the *Apply* buttons below. New settings will be applied over the time period indicated by the button's label. Click the *NOW* button to change CODEBLUE's condition instantly, or click one of the other *Apply* buttons to create a trend.

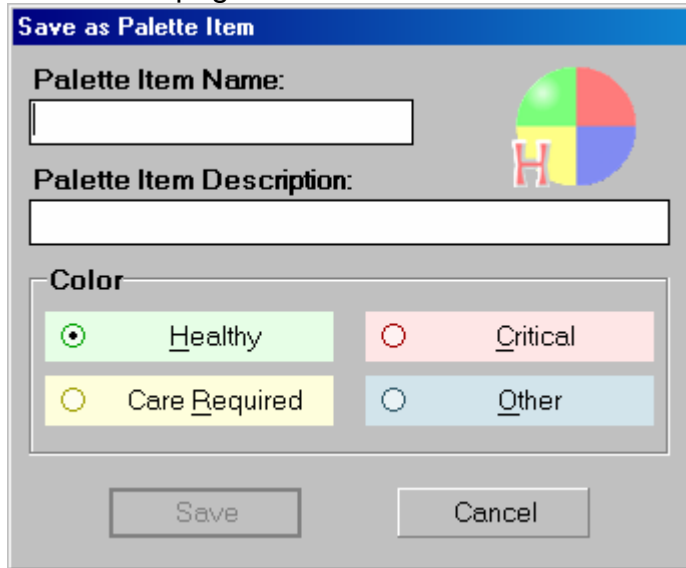
Some settings always get applied immediately, such as cardiac rhythm and breathing pattern, while numerical settings, such as heart rate and respiratory rate, can be easily made to transition gradually (linearly) from their current values to any target you specify. The right-most button can be customized to any transition time you require by clicking the part of the button labeled *Edit*.

As transitions are applied, the time remaining in the transition is displayed in the Clocks panel at the bottom of the CODEBLUE III window.

It is very important to note that those settings that you do not specify will remain unchanged.

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.

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. 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 and describe the item and to assign it one of four color-codings for easier identification.



The collection of all Palette Items *in this profile* are displayed on the Palette page, the next topic of this guide.

# 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.

**Palette**

Name	Description
1st deg AVB	85 bpm, BP 100/60
99% O2-Sat	
Anthony	asystole
Asystole	no electrical activity, apneic
Atrial Flutter	3:1 response, 80 bpm, RR 15/min, BP 110/45
BP +40%	40% increase in blood pressure
BP -10%	10% reduction in blood pressure
BP -30%	30% reduction in blood pressure
Brent	V. Tach. 180bpm, BP 70/40
Christian	supraventricular tachycardia
Darrell	ventricular fibrillation
Evan	sinus bradycardia, shallow breathing
Frank	atrial fib. 180bpm, RR 22/min, BP 90/50, O2-Sat 93%
Healthy Resting	normal vitals
HR drop	HR -40%, BP +20%
HR spike	HR +50%, BP -30%
Multifocal PVC's	50% chance of PVC each cardiac cycle, BP -30%
Recover BP & Resp	BP 110/60, RR 20/min

**View**

Sort by Name

Healthy

Care Required

Critical

Other

**Selected Item**

Edit...

Delete

Properties

**Apply**

NOW 10 sec 30 sec 1 min 2 min 5 min 00:20 Edit...

Apply Palette Items using the buttons at the bottom of the page, exactly as changes to CODEBLUE's condition are applied on the Details page. Change CODEBLUE's vital signs and symptoms instantly by clicking to select a Palette Item and clicking the *NOW* button. Or, 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, 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.

# Scenario

The most advanced method of controlling the CODEBLUE 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 CODEBLUE III 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.

The screenshot shows the 'Scenario' window in the CODEBLUE III software. At the top, there are buttons for 'Clear', 'Load Scenario...', 'Save Scenario...', and 'Scenario Auto-Responses...'. Below these, a patient profile for 'Brent' is shown with a description: '55-year old male complains of substernal chest pain radiating to the jaw. Patient is diaphoretic, trembling, and has a waxing and waning mental status.' To the right of the profile is an 'Add to Scenario...' button.

Name	Transition	Description
Brent	00:00	V. Tach. 180bpm, BP 70/40
BP -30%	03:00	30% reduction in blood pressure
Wait Indefinitely	...	electrical therapy expected
1st deg AVB	00:15	85 bpm, BP 100/60
Wait	01:00	No changes are made to HAL
V Tach, stable	00:15	RR 16/min, HR 120bpm, BP 100/50
Wait Indefinitely	...	drug therapy expected
Healthy Resting	00:25	normal vitals

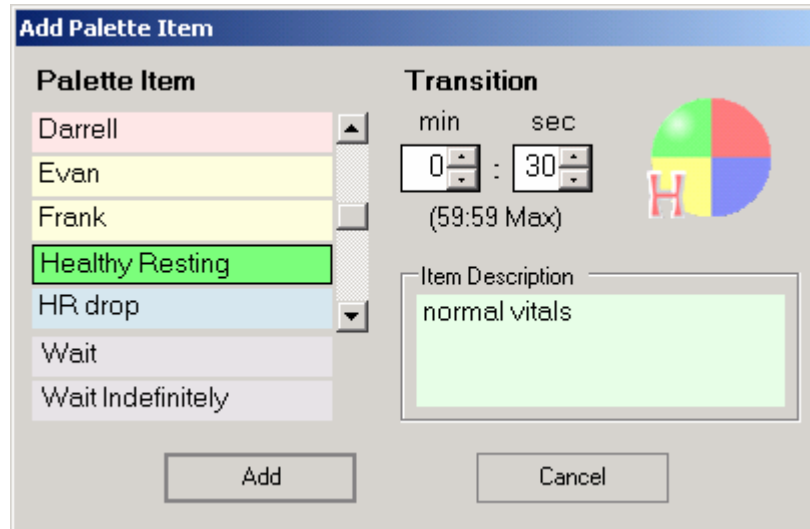
To the right of the table is a 'Selected Item' panel with a 'Move' button (up and down arrows) and buttons for 'Edit Transition...', 'Insert...', 'Remove', 'Duplicate', and 'Properties'. At the bottom, there are playback controls: a pause button, a stop button, a previous button, a play button, and a next button. A status box on the right indicates 'Playing : BP -30%'.

Scenarios let the facilitator automate most of the changes to CODEBLUE'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.



## Building Scenarios

Building a scenario is very simple. Simply click the *Add to Scenario...* button on the right side of the page. You will be presented with a list of all the Palette Items in the active Profile and a field for setting the transition time. When running a scenario, this transition time functions just as the time on the *Apply* buttons on the Details and Palette pages.



From the Add Item window, 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 at that point until the facilitator manually advances to the next item.

One can manipulate the scenario items with the *Selected Item* group of buttons on the right side of the page. Most of these functions are also available by right-clicking on scenario items. (When using the stylus, hold the stylus button and tap the screen to do a "right-click.")

## Scenario Control

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 Buttons



Play is one of the states of what will be called the Control button. When clicked, the scenario will play the item to which the scenario position indicator is pointing.



Pause is the other state of the Control button. It is only active when the scenario is playing and pauses it on the current state. It is disabled when a 'Wait indefinitely' item is playing since, functionally speaking, 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 advanced 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.

- The Scenario Position Indicator



An unfilled triangle means that the scenario is stopped. When the Play button is clicked, the item that the indicator is pointing to will be played.



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



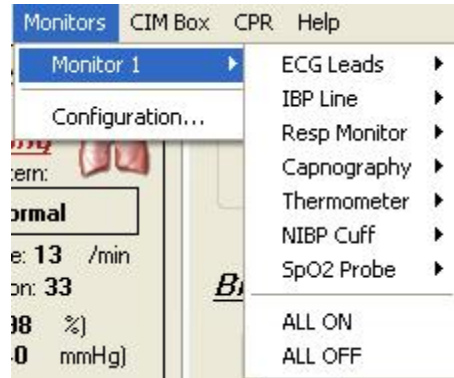
A slowly blinking triangle means that the scenario is paused at the item to which the indicator is pointing.

For more information on building your own scenarios, see the Tips on Palette Item and Scenario Creation section of the appendix at the end of this guide.

# Vital Signs Monitor

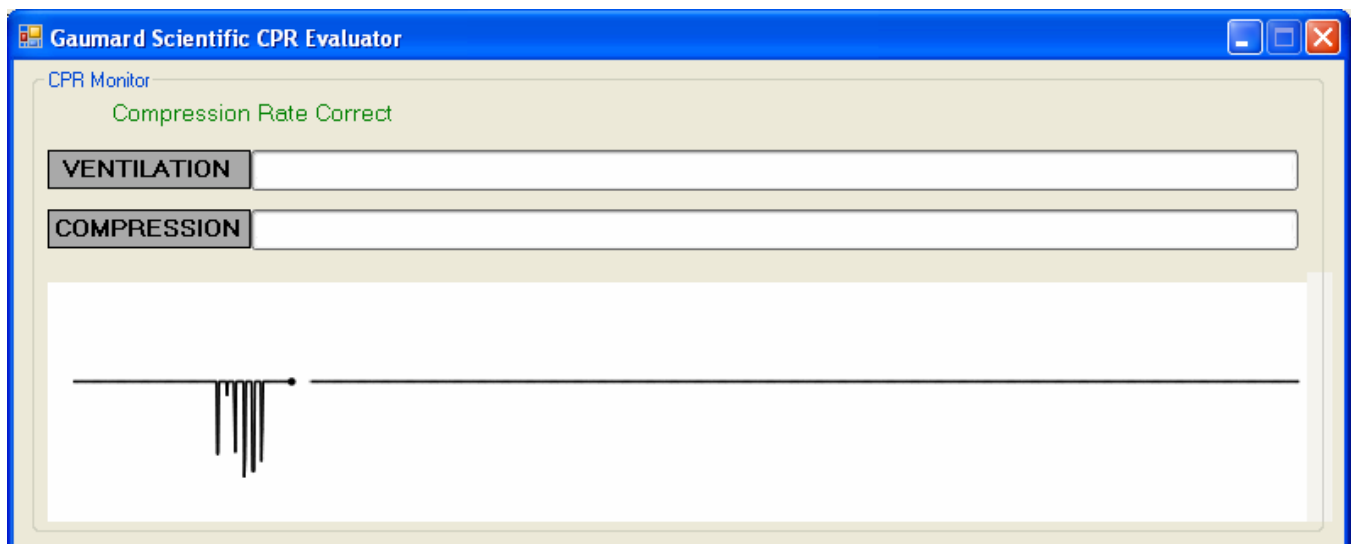
Vital signs are displayed in a second monitor attached to the controlling laptop and configured as an Extended Desktop Display.

Vital sign traces need to be enabled on the Vital Signs Monitor, as well as in the instructor-side controller in order to be displayed.



## CPR

### CPR Evaluator



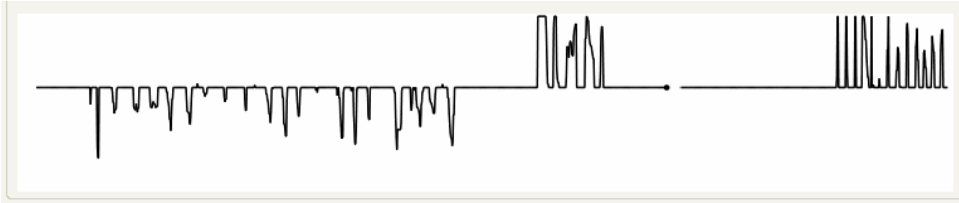
#### Compression / Ventilation intensity meters

These meters evaluate the intensity of detected compressions and ventilations. The labels on each slider bar will change color from yellow (too weak); to green (correct); to red (too strong) to indicate the intensity of the detected event.

When the user has entered a calibration for compressions and ventilations, the range on the slider bars will adapt to reflect the new values, if there is no calibration present, the values will default to peaks of 45 mmHg for maximum ventilation and 225 mmHg for peak compression intensity.

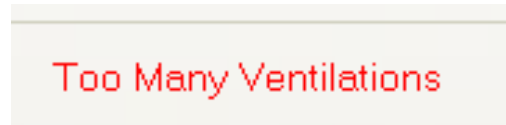
#### Compression / Ventilation trace history

This plot displays a history of the detected compressions and ventilations. Compressions move the trace downward, while ventilations move the trace upward.



### Compression / Ventilation rate evaluation labels

These labels will display the evaluation of compression rate (or ventilation rate if “only ventilations” is selected in the CPR Options), compression count and ventilation count. The labels will be displayed in green when the relevant rate or count is correct, and in red when these values are out of range.



### CPR Trainer

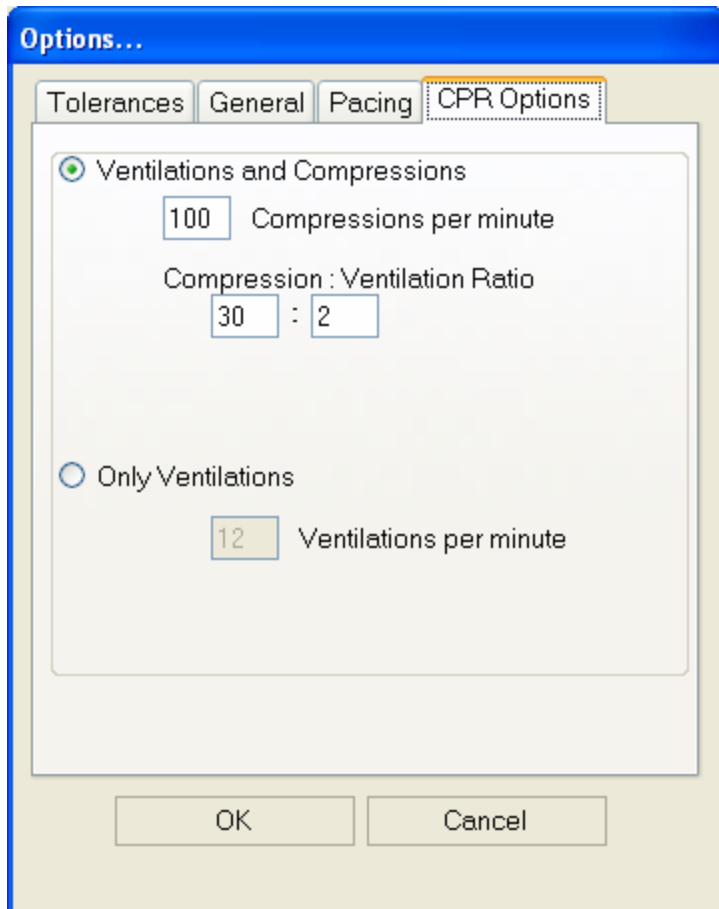
The CPR Trainer, found under the CPR pull down menu displays visual and auditory cues for compressions and ventilations according to the preferences set in the Calibration and Options sections. The Evaluation features are still available during Training Mode.



### CPR Setup Options

The CPR Options window contains the parameters accessible to the user for configuration. These parameters include tolerances for compression and ventilation magnitude and rate, along with the appropriate values for compressions per minute, compression to ventilation ratio, and ventilations per minute.

The CPR Trainer will retain the options, tolerances and calibration data last entered.

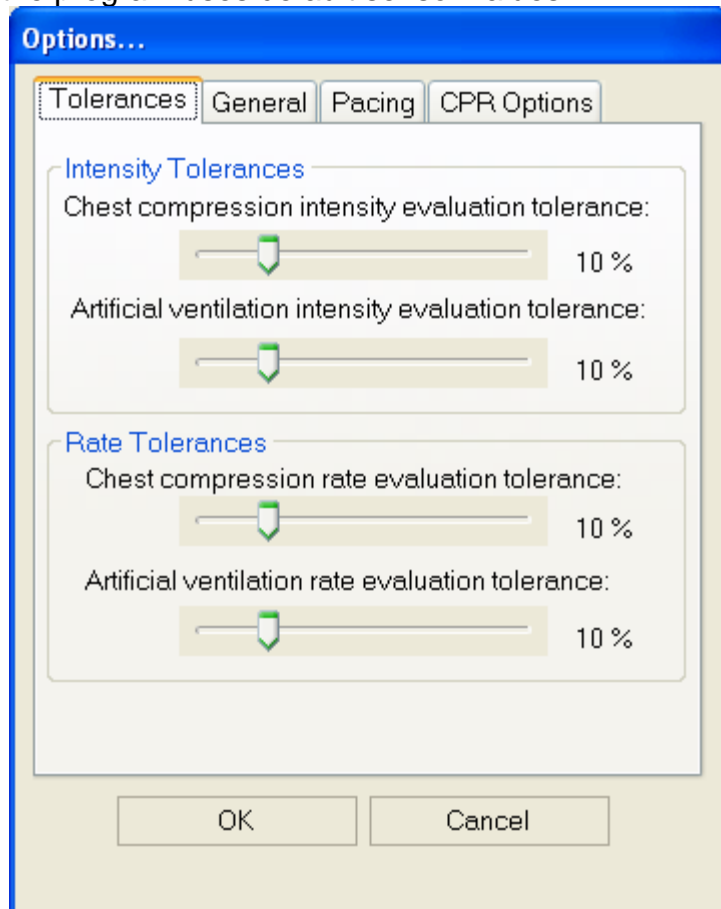


### **Intensity Tolerances**

These parameters change the percentage deviation permitted while evaluating a compression or ventilation.

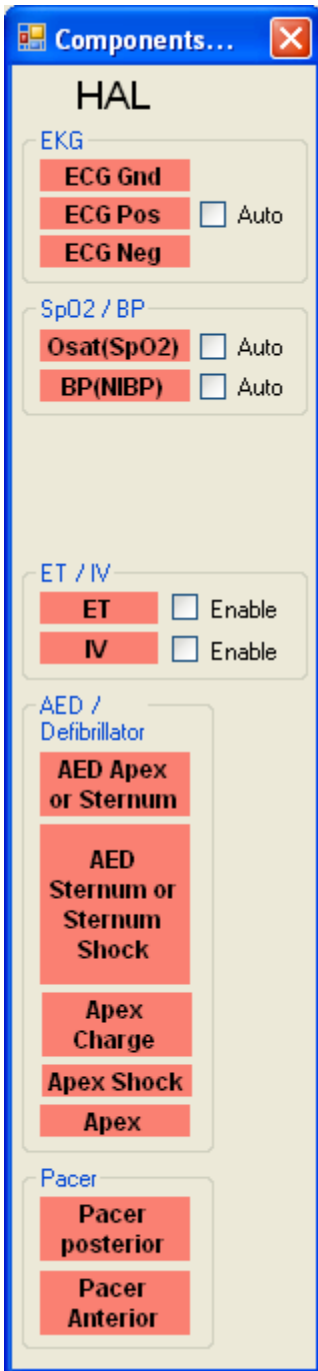
If the user has calibrated the software, these tolerances represent permissible deviation from the compressions or ventilations entered during the calibration procedure, otherwise

the program uses default sensor values.



# Virtual Instruments Panel

Certain manikins, such as the Code Blue® III series have Virtual Instruments that enable the simulated use of EKGs, AEDs, defibrillators, pacers, O2 saturation meters and BP cuffs, as well as ET tube and IV sensors. If the CPR Trainer is connected to a manikin with this option, the current status of the instruments will be displayed in the Virtual Components window found under the CIM Box pull down menu of the main window.



# Simulation Log

The Log page allows the facilitator to keep track of every event during a session. It automatically creates an entry whenever a detected event occurs as well as every time there is a change on the patient condition. Also, the facilitator can log provider actions with a simple click.

The screenshot shows the 'Log' page of a simulation software. At the top, there are tabs for 'CPR' and 'Log'. Below the tabs, there are input fields for 'Session Title' and 'Facilitator'. A 'Providers:' section includes an 'Add' button and a 'TEAM' button. The main area is divided into several functional sections: 'Basic' (Assess responsiveness, Call for assistance), 'Trauma Care' (Spinal stabilization, Manage bleeding), 'Airway' (Determine patency, Open airway, Intubation eval., Sellick's, OLEM / BURP, Airway management, Intubation check, Ventilate, FBAO), 'Breathing' (Assess breathing, O2 device, O2 flow), and 'Circulation' (Vagal maneuver, Attach electrodes, Check for pulses, Interpret rhythm, Establish IV). Below these is a 'Medication' section with dropdowns for 'Drug', 'Dose', 'Units', and 'Route', and an 'Administered' button. At the bottom, a text log displays a list of time-stamped entries: '00:06:56 Detected (chest compression): strong.', '00:06:57 Detected (chest compression): weak.', '00:06:58 Detected (ventilation): weak.', '00:06:59 Detected (chest compression): strong.', '00:06:59 Evaluation (ventilation count): ventilation count short [1 ventilations detected]', '00:07:01 Detected (chest compression): weak.', '00:07:02 Detected (chest compression): too shallow.', '00:07:03 Detected (chest compression): weak.', and '00:07:09 Detected (chest compression): strong.'

The Log page is subdivided in four different functions: the header, team logging, provider actions, and the text log.

The text log consists of the white area on the lower part of the Log Page, containing all the time-stamped text entries. Every event on a session is reflected as an entry in the Text Log. The different types of entries are classified as Actions, Applied Changes, Detected Events, Evaluations, Speech, and Notes.

## Actions

Actions refer to those performed by one of the providers in the session. The facilitator can quickly log actions from the Provider Actions section and make the entry more specific using the Team Logging feature. The following is an example of an Action entry:

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

## Detected Events

Every time one of the various sensors in the manikin 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. The following example shows an entry after a provider administers a chest compression:

"00:05:36 Detected (chest compression): too weak"

**Note:** the logged evaluations provide a quantitative measure if qualitative criteria for compressions and ventilations have not been entered in the calibration.

## Evaluations

The facilitator adds evaluations by clicking on the 'Satisfactory' or 'Unsatisfactory' buttons on the Evaluation page. Team Logging allows the facilitator to evaluate individual providers with a single click. For example, if provider Charles Parker did a correct procedure, the Evaluation entry would be:

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

"00:05:42 Evaluation (ventilation count): ventilation count short [1 ventilations detected]"

## Notes

Notes can be entered directly from the Evaluation panel or by right-clicking on the text log and adding a note. 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 page. It allows the facilitator to accurately keep track of provider actions. The buttons are grouped into 6 groups: Basic, Trauma Care, Airway, Breathing, Circulation, and Medication. Anytime the facilitator clicks one of the buttons, a time-stamped log entry is generated with that particular 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

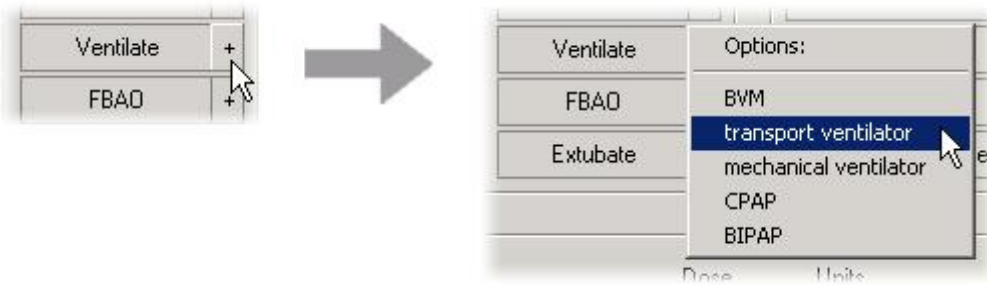
There are special buttons that add additional functionality to the provider actions section.



The first special button, '+', lets the facilitator be a little more specific on the provider action he/she wants to log. For example, if the button 'Ventilate' is clicked, the following entry is created:

"00:01:28 Action (Ventilate)"

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, 'transport ventilator'...



and the following entry is added:

"00:01:28 Action (Ventilate): transport ventilator"

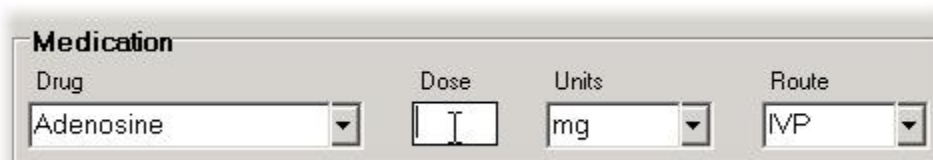
## Medications

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



The facilitator will quickly learn the short-hand (1, 2 or 3 letters) needed to enter any of the drugs on the list. For example: "is" brings Isoproterenol, "li" brings Lidocaine, and so on.

After a drug has been selected, just clicking on the 'dose' text input automatically fills the dose units and route with the default values for that particular drug.



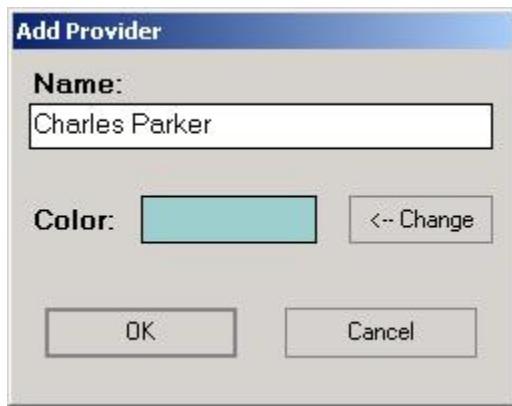
The facilitator then enters the dose and clicks on the 'Administered' button and a log entry is created (let's say the dose entered was '6'):

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

## Team Logging

The Team Logging feature allows the facilitator to easily log the actions of a specific provider in a team. The Team Logging section is right above the <jump=provider

actions>Provider Actions</jump> section. First, the facilitator should add all providers in the team by clicking on the 'Add' button and filling the 'Add Provider' window.



The image shows a dialog box titled "Add Provider". It has a light blue header bar. Below the header, there is a "Name:" label followed by a text input field containing the text "Charles Parker". Below the name field, there is a "Color:" label followed by a light blue color selection box and a "<-- Change" button. At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

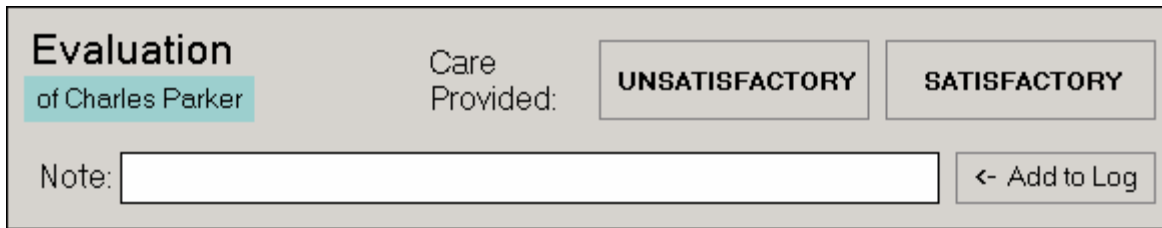
Up to six providers or teams may be added.

## Header

The Header section consists of the 'Session Title' and 'Facilitator' fields at the top of the Log page. It serves record keeping purposes when a report is saved or printed.

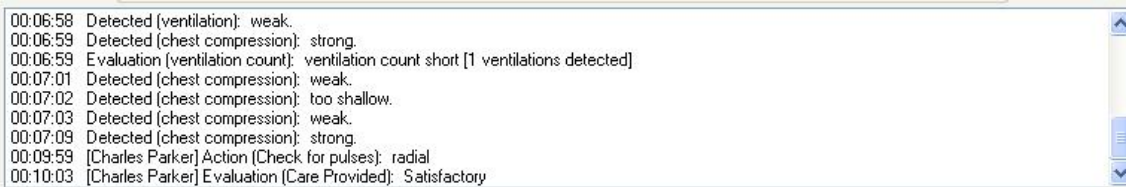
# Evaluation

The Evaluation panel, always visible at the bottom of the CODEBLUE III window, allows the facilitator to insert standard evaluations or arbitrary notes into the log. The stylus device and hand-writing recognition technology makes annotating in real-time very fast and convenient.



The screenshot shows the 'Evaluation' panel for 'Charles Parker'. It features a 'Care Provided:' section with two buttons: 'UNSATISFACTORY' and 'SATISFACTORY'. Below this is a 'Note:' field with a text input box and a '<- Add to Log' button.

Standard evaluations are given context by their position in the log relative to detected and observed provider actions. The following example illustrates this idea.



The screenshot shows a log with the following entries:

- 00:06:58 Detected (ventilation): weak.
- 00:06:59 Detected (chest compression): strong.
- 00:06:59 Evaluation (ventilation count): ventilation count short [1 ventilations detected]
- 00:07:01 Detected (chest compression): weak.
- 00:07:02 Detected (chest compression): too shallow.
- 00:07:03 Detected (chest compression): weak.
- 00:07:09 Detected (chest compression): strong.
- 00:09:59 [Charles Parker] Action (Check for pulses): radial
- 00:10:03 [Charles Parker] Evaluation (Care Provided): Satisfactory

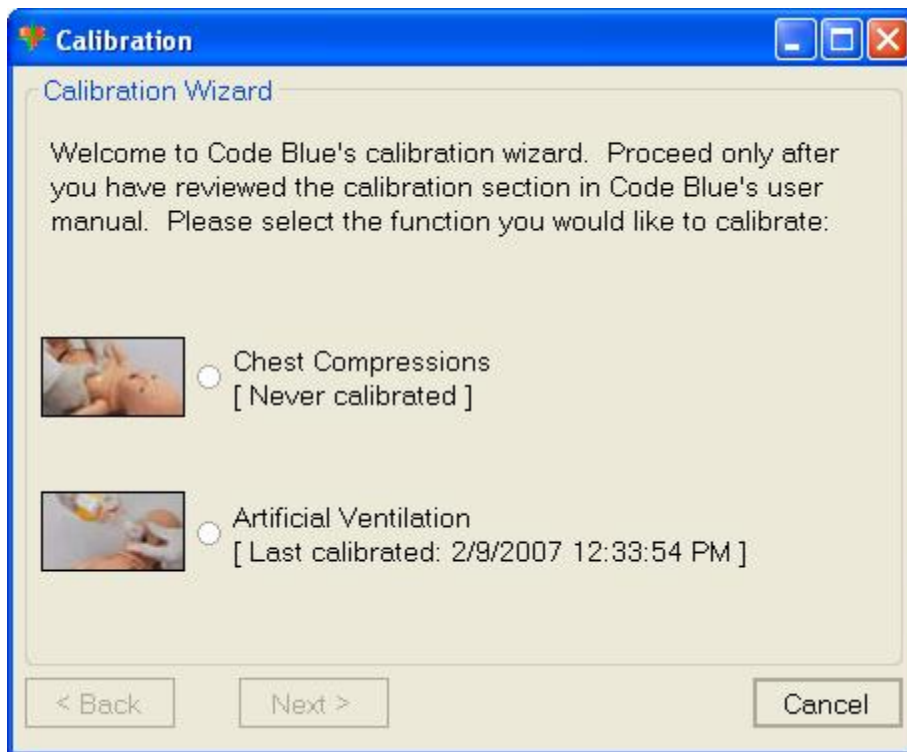
Note above that the provider "Charles Parker" checked the patient's radial pulse and was then evaluated on that action.

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 include the provider's name. For more information on Team Logging, see the previous section of this guide on Logging.

# Calibration

The Calibration Wizard allows the user to easily calibrate the sensors inside the manikin. It can be accessed from the Setup pull-down menu in the Gaumard CPR Trainer. As shown in the picture, first choose what function you would like to calibrate among chest compressions and artificial ventilations. The procedures for each function are described in the following sections.

Calibrating provides qualitative criteria against which to evaluate the detected compression or ventilation events. Without this criteria the log entries created will display the quantitative measure of the event: peak (mmHg), integral (mmHg\*seconds), and duration (seconds).



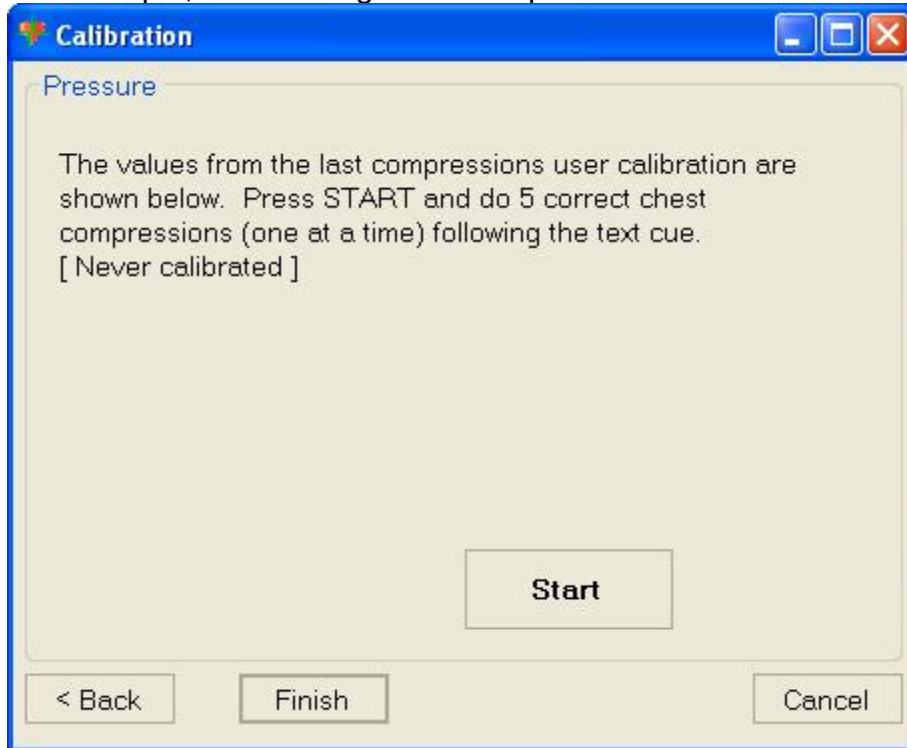
## **Chest Compressions / Artificial Ventilations**

The user will be calibrating the functions to your specific criteria, in other words, you will be telling the system what a correct chest compression or artificial ventilation is. Providers will be evaluated by the system based on this criterion. Please refer to the User Calibration section below for detailed instructions.

### **User calibration**

User calibration trains the CPR Trainer software to evaluate providers based on the facilitator's criteria. In this mode, the software will ask the facilitator to perform a number of 'correct' procedures (chest compressions or artificial ventilations). The facilitator should follow the text cue on the screen and perform just ONE procedure at a time, until prompted for the next one.

For example, if calibrating chest compressions:



- The wizard prompts the facilitator with a '#1'.
- The facilitator performs one correct chest compression.
- A green filled oval indicates that the chest compression was successfully recorded.
- The wizard prompts the facilitator with a '#2'.
- The facilitator performs one correct chest compression.
- A green filled oval indicates that the chest compression was successfully recorded.
- ...and so on.



At the end of the calibrating session, the wizard shows the average peak, depth, and duration values for the procedure. If the facilitator feels he/she performed the procedures correctly, then click the 'Save' button. Otherwise, press the 'Back'

# APPENDIX I

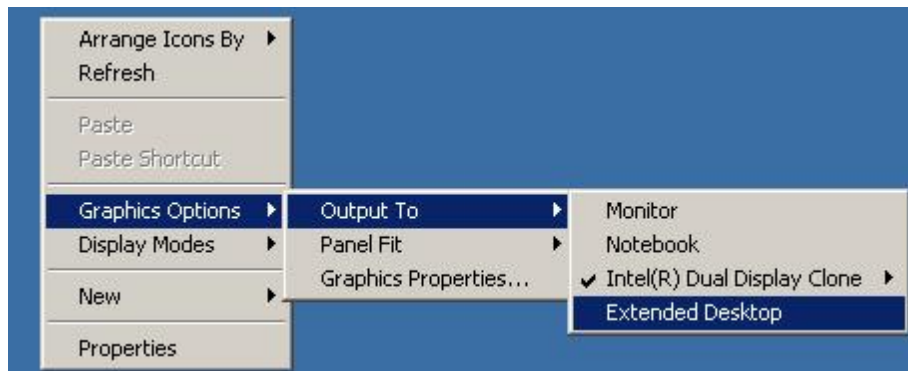
## Adding an Extended Desktop display

To upgrade an existing Code Blue III system, it is necessary to install the software and add an Extended Display monitor.

To add an Extended Display monitor, shut down the controlling laptop and connect a standard display monitor to the VGA output in the back of laptop.

### LAPTOP PIC

Turn on the laptop, once Windows XP has booted completely, right click on the Windows Desktop and select the following option:



The Windows Desktop should now extend into the secondary display, which will be used to display the vital signs monitor.

# Contact Us

If you have read this user's guide and still require assistance, it's easy to reach us.

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