DART SIM

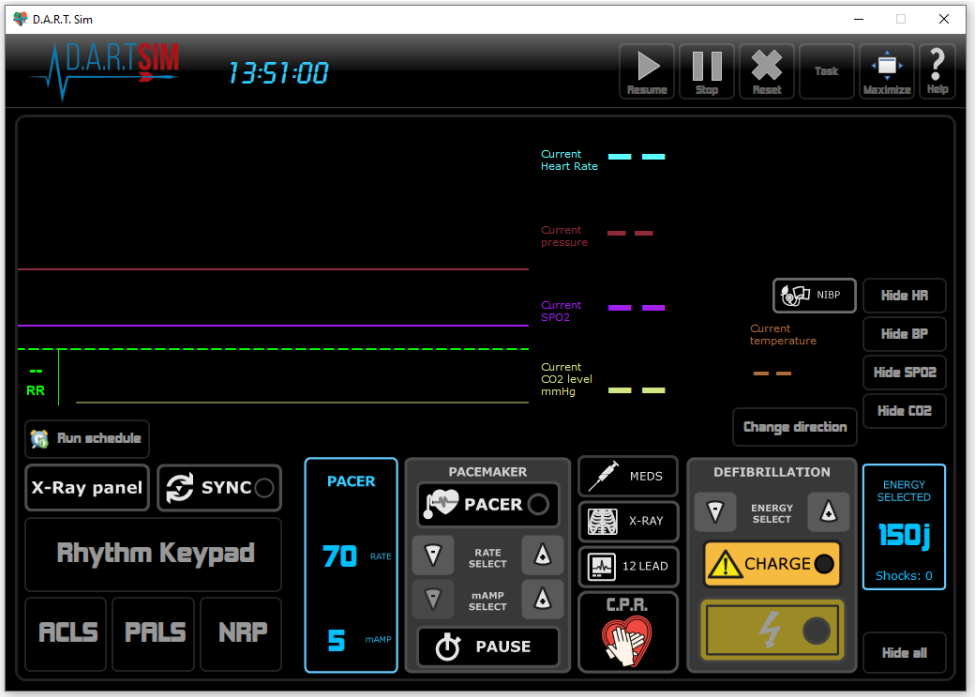
Defibrillator and Rhythm Training Software

Instructor User Manual

DART is the acronym for Defib and Rhythm Training Simulator. **DART Sim** is an ECG (electrocardiogram) and Defibrillator simulator software that can be used on a PC and tablet. It simulates a defibrillator and ECG Rhythm Simulator. It is, designated for use in various training courses- programs included are Advanced Cardiovascular Life Support (ACLS), Pediatric Advanced Life Support (PALS), Neonatal Resuscitation Program (NRP), Electrocardiogram (ECG), paramedic, and nursing programs.

DART Sim focuses mainly on AHA Guidelines. There are over 100 editable scenarios. Free lifetime updates when available. Practice capnography, defibrillation, 12 LEAD, synchronized cardioversion, X-Rays, transcutaneous pacing, and much more.

After installing the software by following the ***Software Installation Manual***, open the software by clicking the shortcut icon on your desktop, or by opening the software at **C:\Program Files (x86) > D.A.R.T. Sim > DARTSim.exe**.



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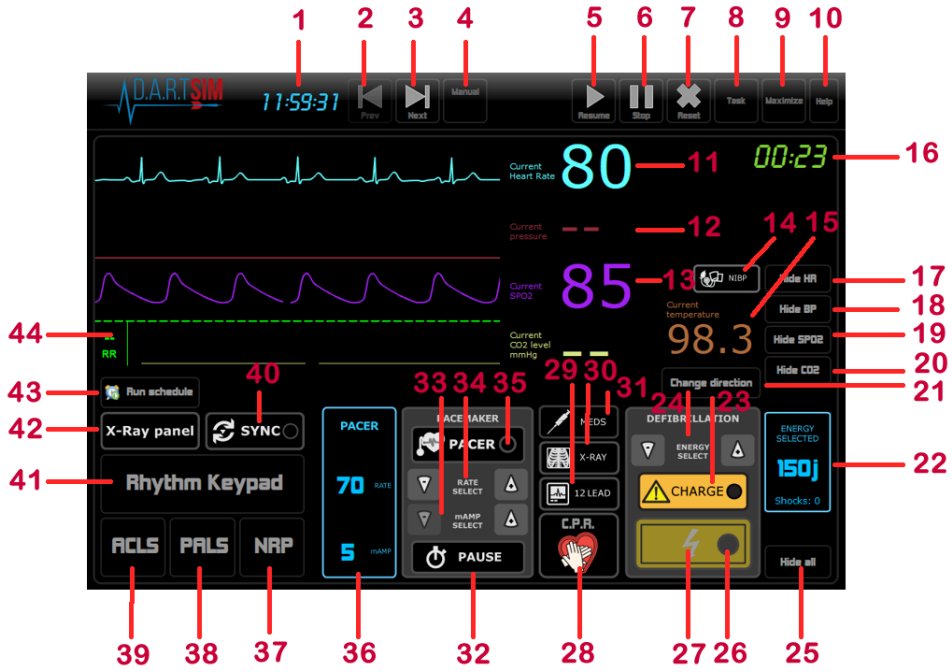


1	Realtime clock	16	Scenario countdown timer	31	Opens a list of selectable medications & CodeTrack
2	Returns to a preset or custom scenario	17	Hides heart rate data	32	Pauses the pacemaker energy
3	Skips to the next preset or custom scenario	18	Hides blood pressure data	33	Selects the mAMP setting
4	Stops or starts the current scenario	19	Hides SPO_2 data	34	Selects the pacemaker rate
5	Starts/resumes a scenario	20	Hides CO_2 data	35	Activates the pacemaker
6	Stops/pauses a scenario	21	Reverses the direction of ECG	36	Displays the current the pacemaker settings
7	Resets/removes all scenarios	22	Displays the defibrillator settings	37	Neonatal Resuscitation scenarios
8	Task/scenario builder	23	Charges the defibrillator	38	Pediatric Advanced Life Support scenarios
9	Maximizes the window	24	Selects the defibrillator energy (joules)	39	Advanced Cardiac Life Support scenarios
10	Opens Keyboard Shortcuts list	25	Hides all settings; shows traces only	40	Marks the R wave for synchronized cardioversion
11	Current heart rate	26	Defibrillator stand-clear warning light	41	Displays the rhythm generator choices
12	Current pressure	27	Delivers the defibrillator charge	42	Opens a list of selectable x-rays
13	Current SPO_2	28	Displays a CPR waveform	43	Runs the selected schedule
14	NIBP blood pressure cuff	29	Displays a 12-lead trace of the selected rhythm	44	Sets respiratory rate alarm and displays $EtCO_2$ waveforms
15	Current patient temperature	30	Displays the selected X-ray from the panel list		

Navigating & Selecting Features

The top navigation buttons have the following functions:

Resume a scenario

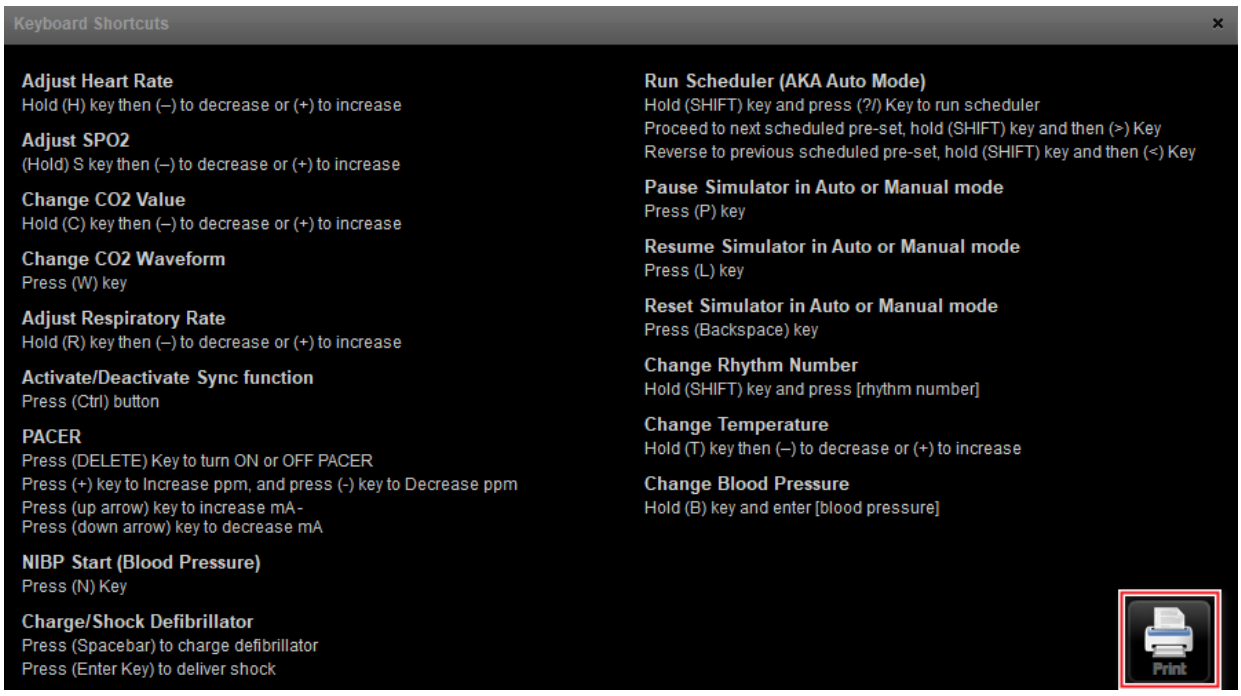
Stop/pause a scenario

Reset/remove all

Task/Scenario Builder (described later in this Manual)

Maximize the window

Help opens **Keyboard Shortcuts & Rhythm Key**

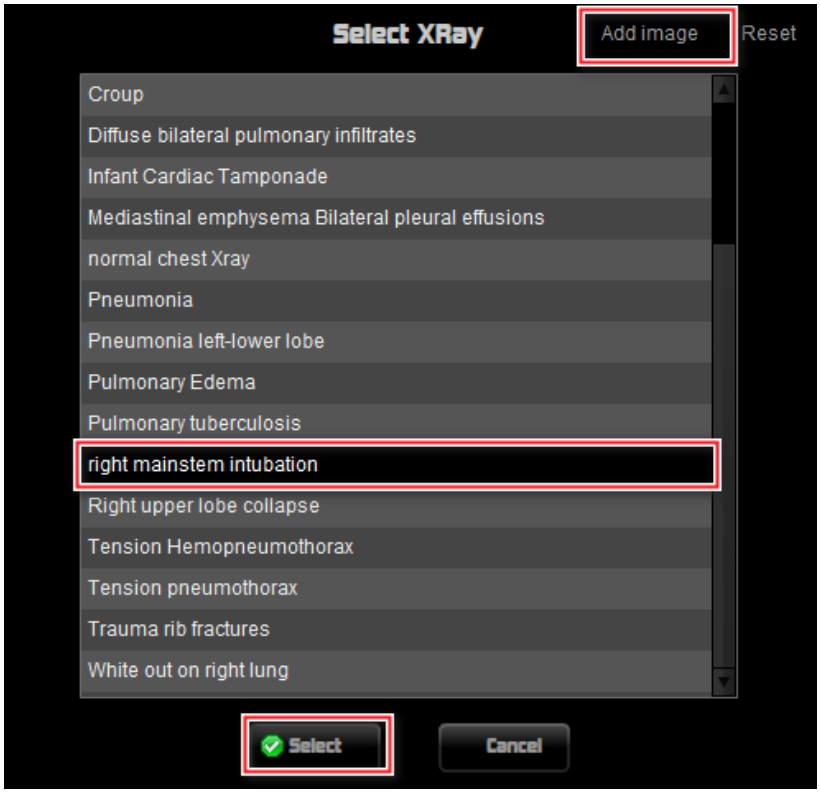


Click **Print** to print the list.

X-Ray panel

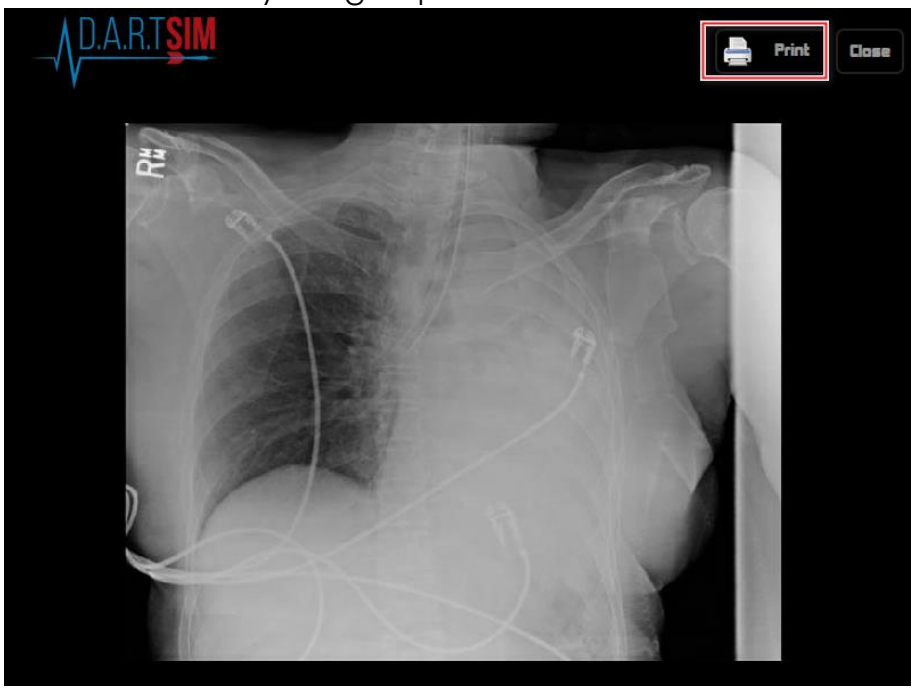
1. Click the **X-Ray panel** button.

The **Select X-Ray** panel opens.

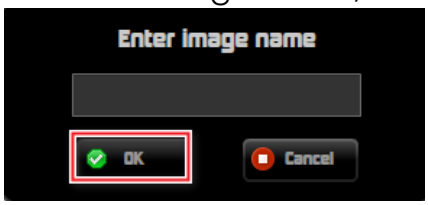


2. Choose an X-Ray from the list.
3. Click Select.
4. Click the X-RAY button to show selection.

The associated X-Ray image opens.



5. Click **Print** to print the image if you like.
6. To upload a new image, click **Add image**. You can add ANY Radiology images. Any image files can also be added.
7. Enter the image name, then click **OK**.



8. Find that image file on your computer and select it. *(You can also add images from Google or any other search application)*
9. Find that image on your computer and select it.

The next time you select an image in the **XRAY Panel** list, it will be there.

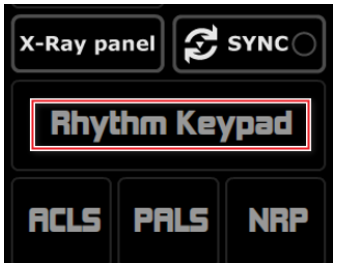
SYNC

1. Select a waveform using the **Rhythm Keypad or start an ACLS/PALS/NRP Scenario**
2. Click the **SYNC** button.
   When clicked, it marks the R wave for synchronized cardioversion.

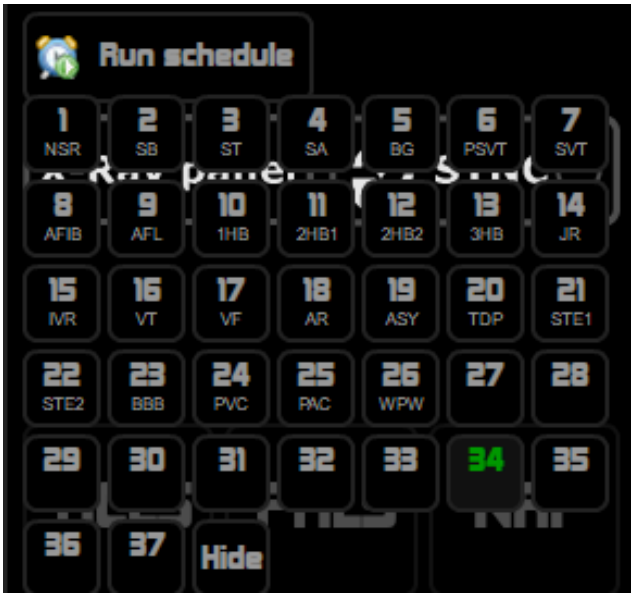
Rhythm Keypad

DART Sim allows you to select a variety of cardiac conditions.

1. Select Rhythm Keypad.



A panel of rhythm choices opens.



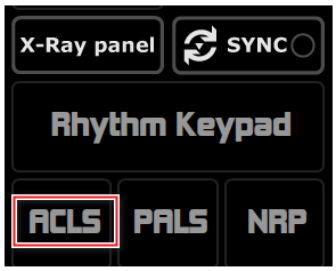
2. Select any rhythm scenario in the panel to opens cardiac waveforms and other data. A list of the rhythms is shown below. Rhythms 27-37 are not labeled. (To hide their identity from the student)

Rhythms			
1	**NSR** - Normal Sinus Rhythm	20	**TDP** – Torsades De Pointes, a Rare Form of Tachycardia
2	**SB** - Sinus Bradycardia	21	**STE1** – ST Elevation HR120
3	**ST** – ST Segment	22	**STE2** – ST Elevation HR60
4	**SA** - Sinus Arrhythmia	23	**BBB** – Bundle Branch Block
5	**BG** – Brugada Syndrome	24	**PVC** – Premature Ventricular Contraction
6	**PSVT** – Paroxysmal Supraventricular Tachycardia	25	**PAC** – Premature Atrial Contraction
7	**SVT** – Supraventricular Tachycardia	26	**WPW** – Wolff-Parkinson-White Syndrome
8	**AFIB** – Atrial Fibrillation	27	Normal Rhythm with T-Wave Inversion
9	**AFL** – Atrial Flutter	28	Normal Rhythm with LBB
10	**1HB** – First Degree Heart Block	29	Tamponade - Electrical Alternans
11	**2HB1** – Second Degree Type 1 Heart Block	30	Low Voltage
12	**2HB2** – Second Degree Type 2 Heart Block	31	Peaked T-Waves
13	**3HB** – Third Degree Heart Block	32	Prolonged Qt Interval
14	**JR** – Junction Rhythm	33	Normal Sinus with Short QT Interval
15	**IVR** – Idioventricular Rhythm	34	TCA Overdose ECG
16	**VT** – Ventricular Tachycardia	35	Atrial Flutter
17	**VF** – Ventricular Fibrillation	36	Osborne Wave
18	**VR** – Agonal Rhythm	37	Torsades
19	**ASY** – Asystole		

For example, selecting **8 (AFIB)** opens this waveform:

ACLS/PALS/NRP Scenarios

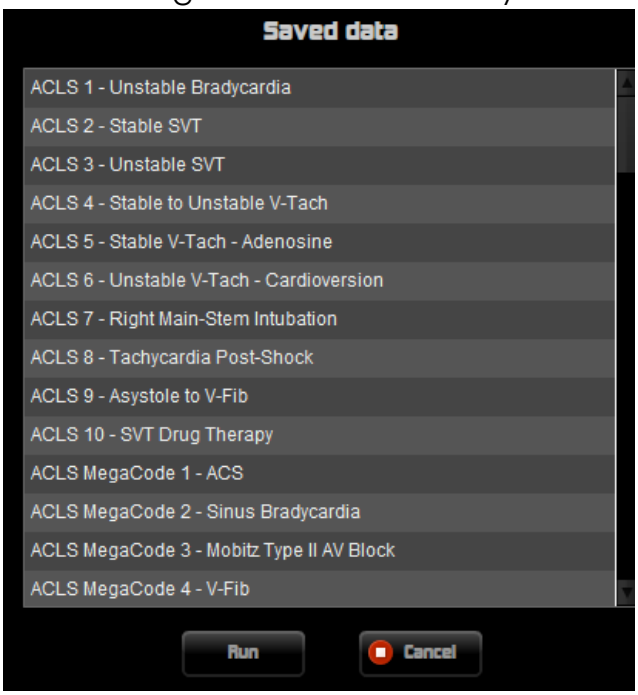
1. Select desired ACLS, PALS, or NRP course scenarios.
   For example: **ACLS** as shown below.



   A list of ACLS scenarios opens.

   NOTE: ***"The scenarios follow American Heart Association Guidelines. Scenarios may or may not match exactly to the Instructor Manuals but are AHA Compliant and follow the required algorithms."***

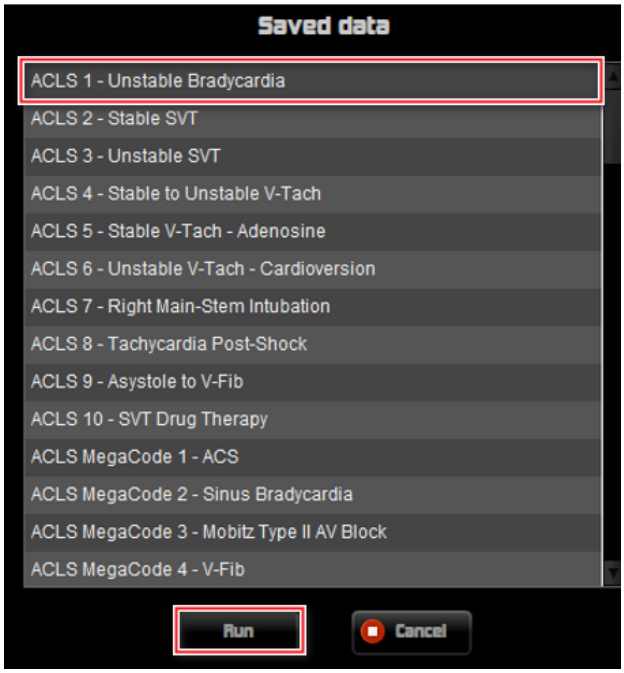
2. Scroll through the list and select your desired scenario.



For Example: Below we will select **ACLS 1 – Unstable Bradycardia**

ACLS Case 1 Unstable Bradycardia

1. Select **ACLS 1 – Unstable Bradycardia**.

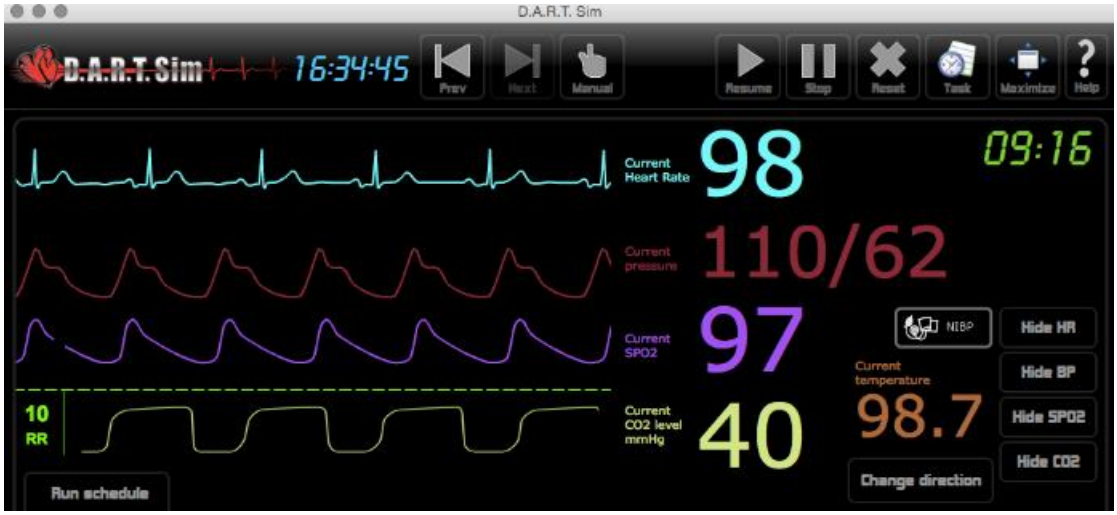


2. Select **Run** or **Cancel**.
3. Select **Yes** or **No**

TIP: If **No** is selected, it will still load the selected scenario. This will allow the instructor to verbally announce an optional "lead in/patient information." Then run the selected scenario when ready by clicking on the "Run Schedule" button that appears above the X-Ray Panel button. See below:

4. Click the **Run schedule** button to start the scenario.

   Active Display:



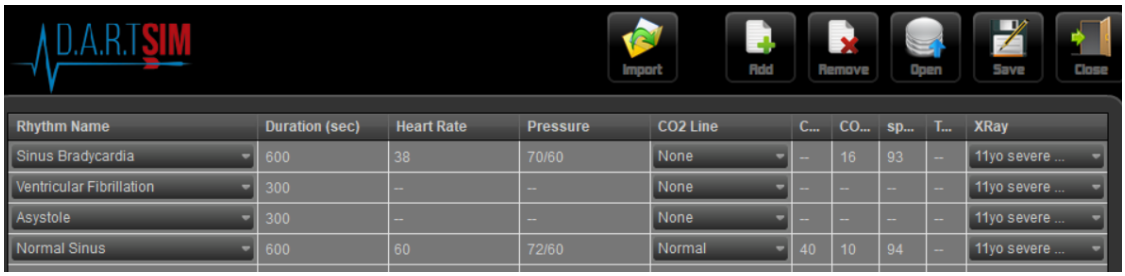
The Current Heart Rate, Current SPO2, Current EtCO2 will start to display on the screen according to that scenario. Some scenarios will be limited and may only show a heart rate/rhythm. Some scenarios will display all parameters.

NOTE 1: The blood pressure will not display until the **NIBP** button is selected or the **N** key if using the keyboard shortcuts.

NOTE 2: If the keyboard commands are not responding try clicking the **Current Pressure** text and click **Cancel**. This will reconnect the keyboard commands.

TASK View: You can view your selected scenario in a spreadsheet. For example: ACLS MegaCode Case 1 is selected below and now shown in the task view. The scenario can be edited (you will be prompted to rename after created) or more parameters can be added on by selecting the **ADD** button.

ACLS MegaCode Case 1 – Sinus Bradycardia

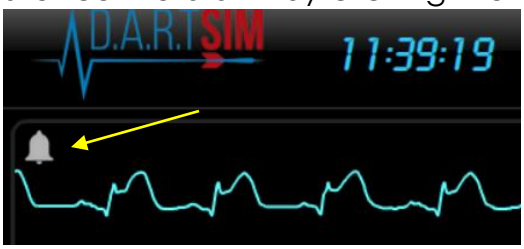


Setting Alarm Levels

1. Click on current Heartrate, SPO2, RR (Respiratory rate) or CO2 and a box opens.
2. Select **Set Alarm levels**.

3. Set the desired values.

4. Silence the alarm by clicking the bell icon.

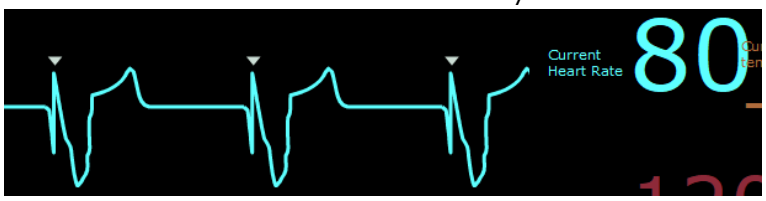


PACEMAKER

Click the **PACER** button to activate the pacemaker.

1. To change the **RATE** setting, click the up and down arrows.
2. To change the **mAMP** setting, click the up and down arrows.
   The RATE and mAMP are shown in the **PACER** display to the left.

When the mAMPs are increased you will see full capture as seen below:



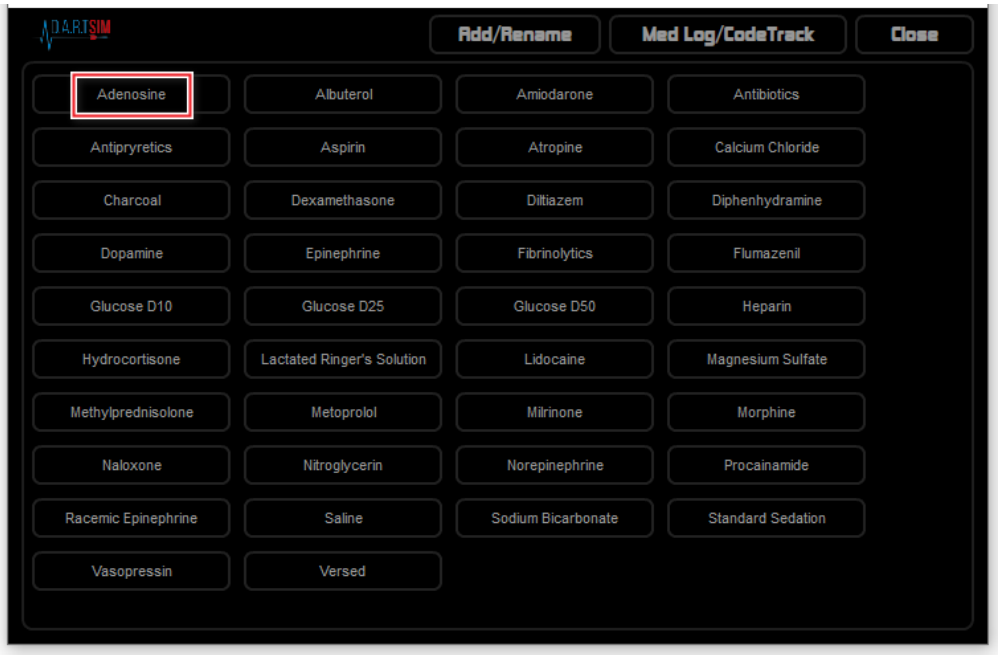
When the mAPMs are decreased you will lose capture as seen below:

MEDS

The medications feature is for tracking purposes only. Patient vitals will not be affected. When a medication is given, it will keep a log in the **Med Log/CodeTrack**. This can later be printed for debriefing.

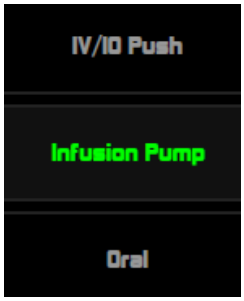
1. Select MEDS

A panel of options opens.



2. Select an option; in this case, **Adenosine**.

A popup shows the methods.

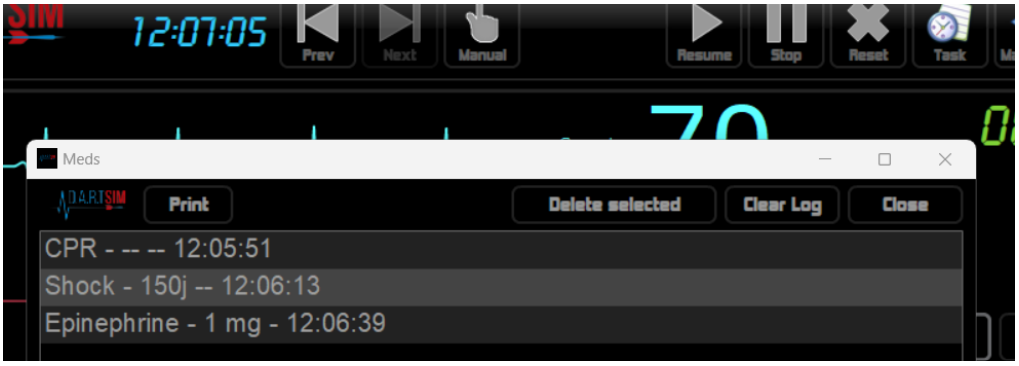


3. Select **IV/IO Push**, **Infusion Pump, or Oral**.
   A popup opens that allows you to select the dosage.

4. Select a dose using the up and down arrows, then select the measure.
5. Finally, click **Administer**.

CodeTrack

1. Click the **Meds** button.
2. Click **Med Log/CodeTrack**.
   This feature allows you to track CPR, Shocks, and Medications. It appears in a log and can be printed later for debriefing.



Timers

The real time clock (keeps track of current time) will appear in blue and the scenario timer in green.

Note: Not all scenarios will have a set timer to change automatically. A timer will only appear if a particular scenario has a set time to change automatically.

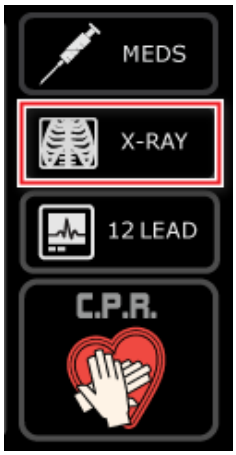
Current Time

Scenario Timer

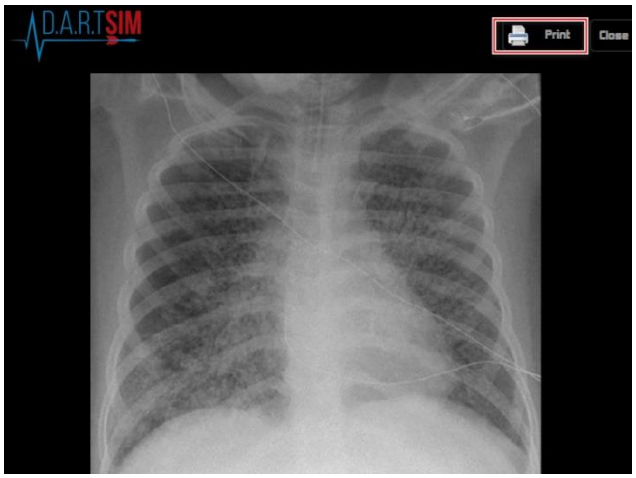
X-RAY

This feature allows you to display ANY radiology image of your choice. By default, we have only X-Ray images. To use this feature start by clicking the **X-Ray** button.

1. Select X-RAY.

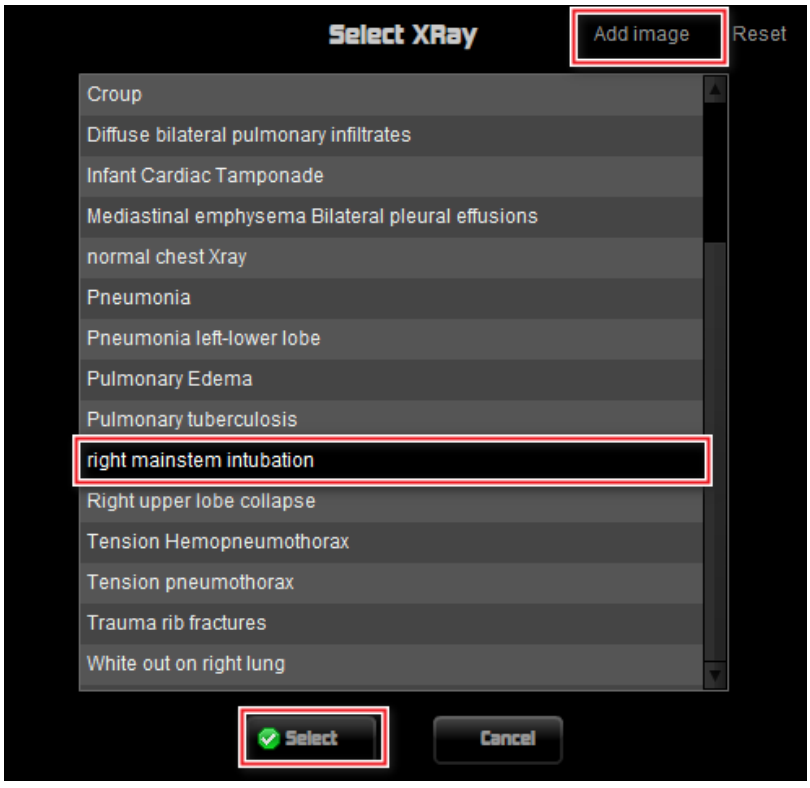


An X-RAY displays.



2. To change the image, click the **X-Ray panel** button.

The **Select X-Ray** panel opens.



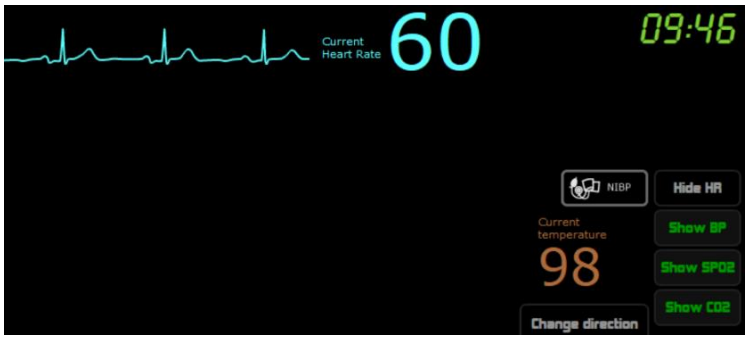
3. Choose an X-Ray from the list.
4. Click **Select**.
5. Select the **X-RAY** button again.

You can add any image file of your own by clicking on the **Add image** button. Google images or your own image files can also be added.

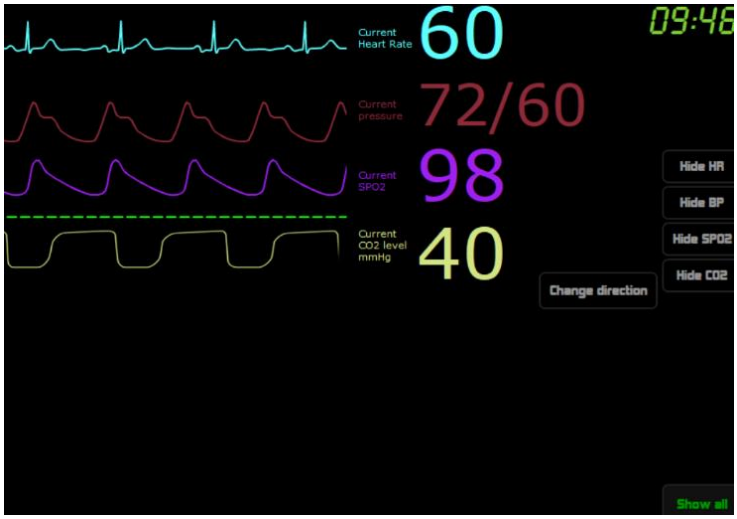
Hide Feature

This feature allows you to hide each vital sign parameter as needed. You can also hide all bottom controls and use **DART Sim** for monitoring only. Below all the parameters have been selected and are hidden. Once you visualize the student attaching the appropriate cable you can then show the parameter. ***Example***: You see the leads being applied by the student. Below the ECG is selected **Show HR**. You can then see the ECG appear. You can do the same as the student attaches the BP Cuff, SPO2 Probe, and intubates for EtCO2.

The ECG will now appear:



If **Hide All** is selected, all bottom controls will be hidden for monitoring only.

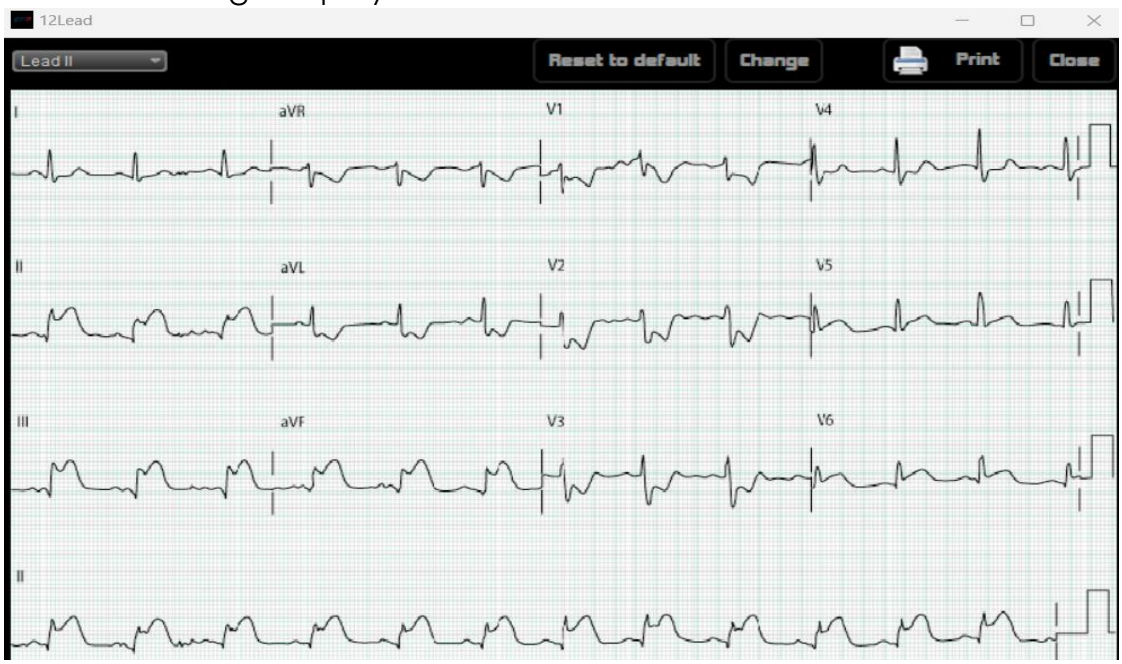


12 LEAD

This feature allows you to see a static 12 lead image of current rhythm playing in the simulator.

1. Select **12 LEAD**.

A 12 Lead image displays.



2. Select **Print** to print the 12 lead traces.
3. Select **Change** to replace the default image.
   You can now add any 12 Lead image of your choice. You can add from Google images or from your computer.

Displaying Blood Pressures

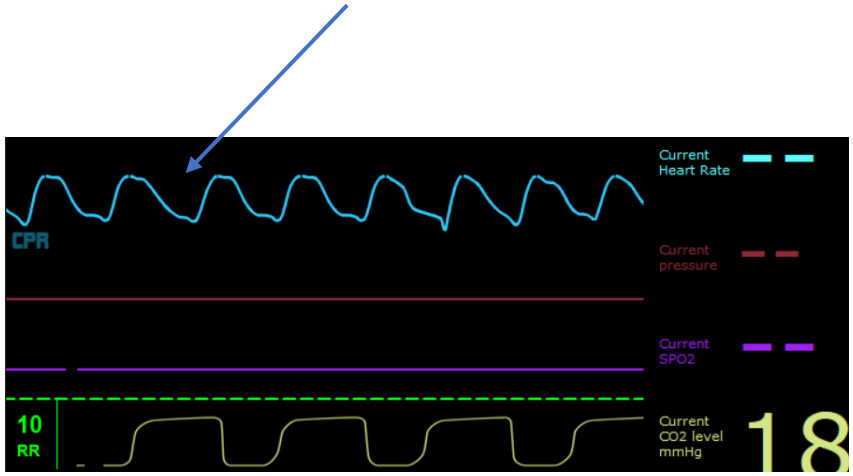
To display a current pressure, select the **NIBP** button.

CPR

This feature allows you to display a CPR waveform when pressed. This allows the student to then focus on delivering a shock or medications depending on the scenario.

Select CPR

CPR Waveform

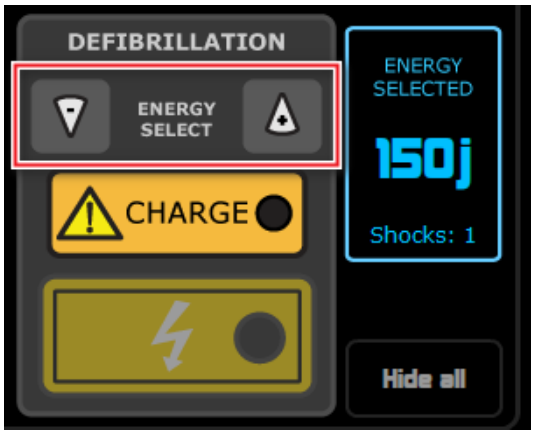


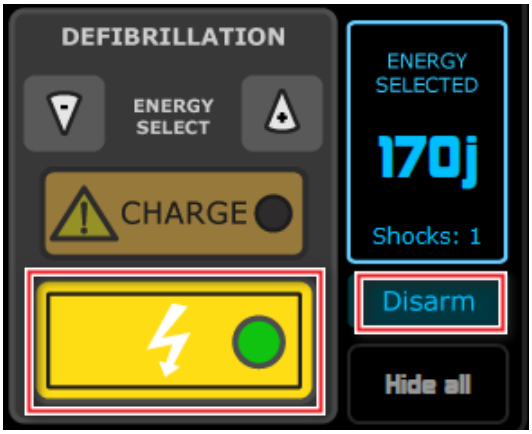
An audible metronome can be used for guiding the proper rate to use during CPR. The CPR waveform will stop after exactly 2 minutes.

DEFIBRILLATION

This feature allows you to deliver a simulated shock.

1. To change the **ENERGY** setting in Joules, click the up and down arrows.

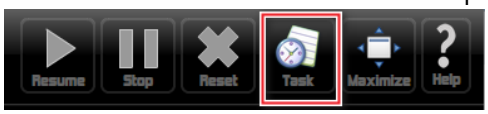




2. To apply the simulated charge, select **CHARGE**.
3. Select **SHOCK** or **DISARM** to cancel.

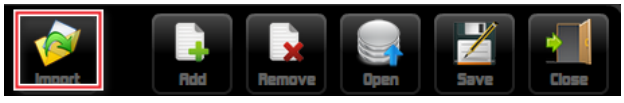
Creating your own custom scenario

1. Select the **Task** icon on the top navigation strip.

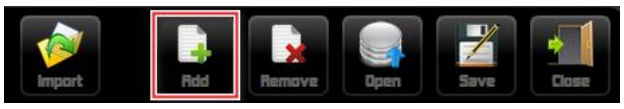


The Task panel opens.

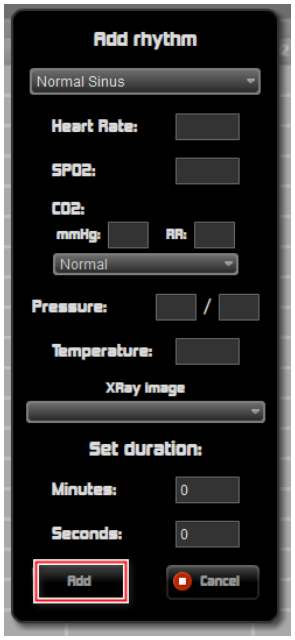
The icons in the strip have the following functions:



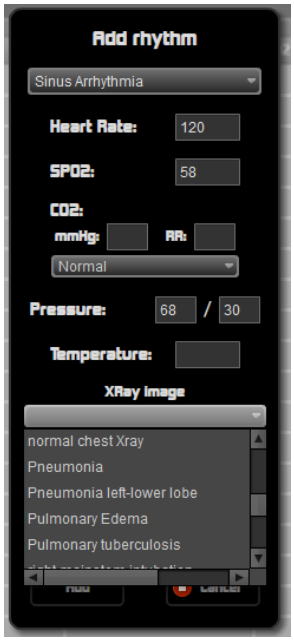
Import. Selecting this opens the file section of your computer where you can choose a **DART Sim** file to upload. NOTE: The ScheduleSaver software is required to create **DART Sim** scenario files to share with other **DART Sim** users.



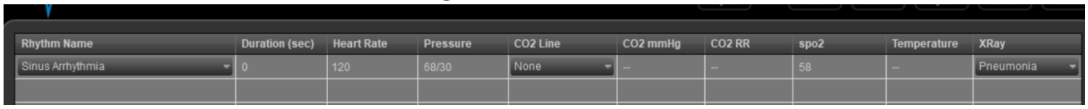
Add. Selecting this opens a popup enabling you to manually create the scenario parameters.



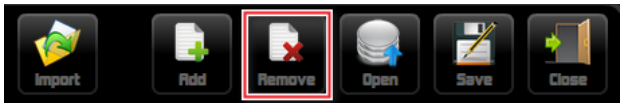
Enter parameters.



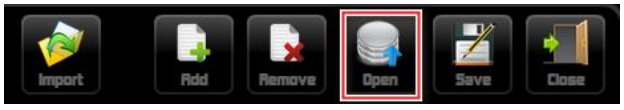
2. Select **Add**.
   Your data populates the page.



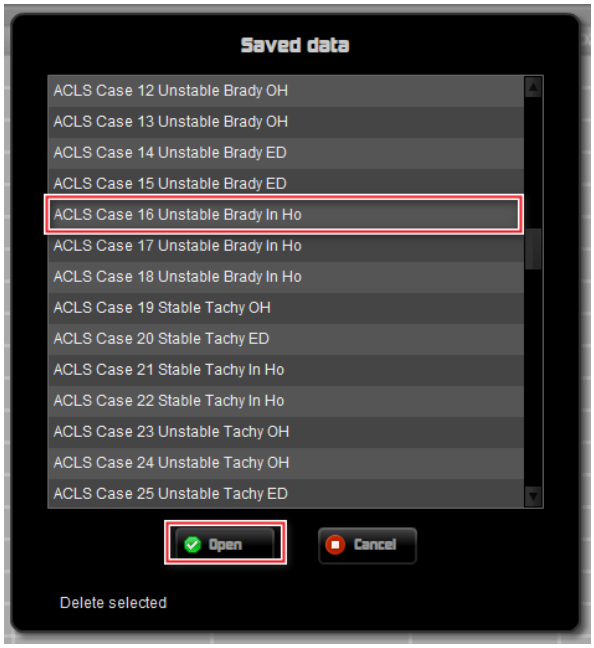
3. To add another row of parameters, press **Add** again and enter the appropriate information.



Remove. Removes a selected row of parameter data from the page.



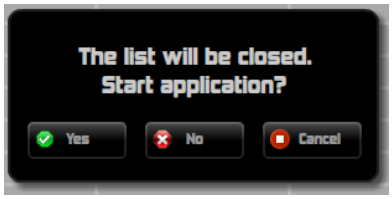
Open. Opens the **Saved data** panel with a list of cases. Scroll down to see them all. Your new created scenario will appear at the bottom of the list. See table below:



4. Select a Case, then select **Open**.
5. The selected scenario will appear in the spreadsheet. You can add or edit the scenario.

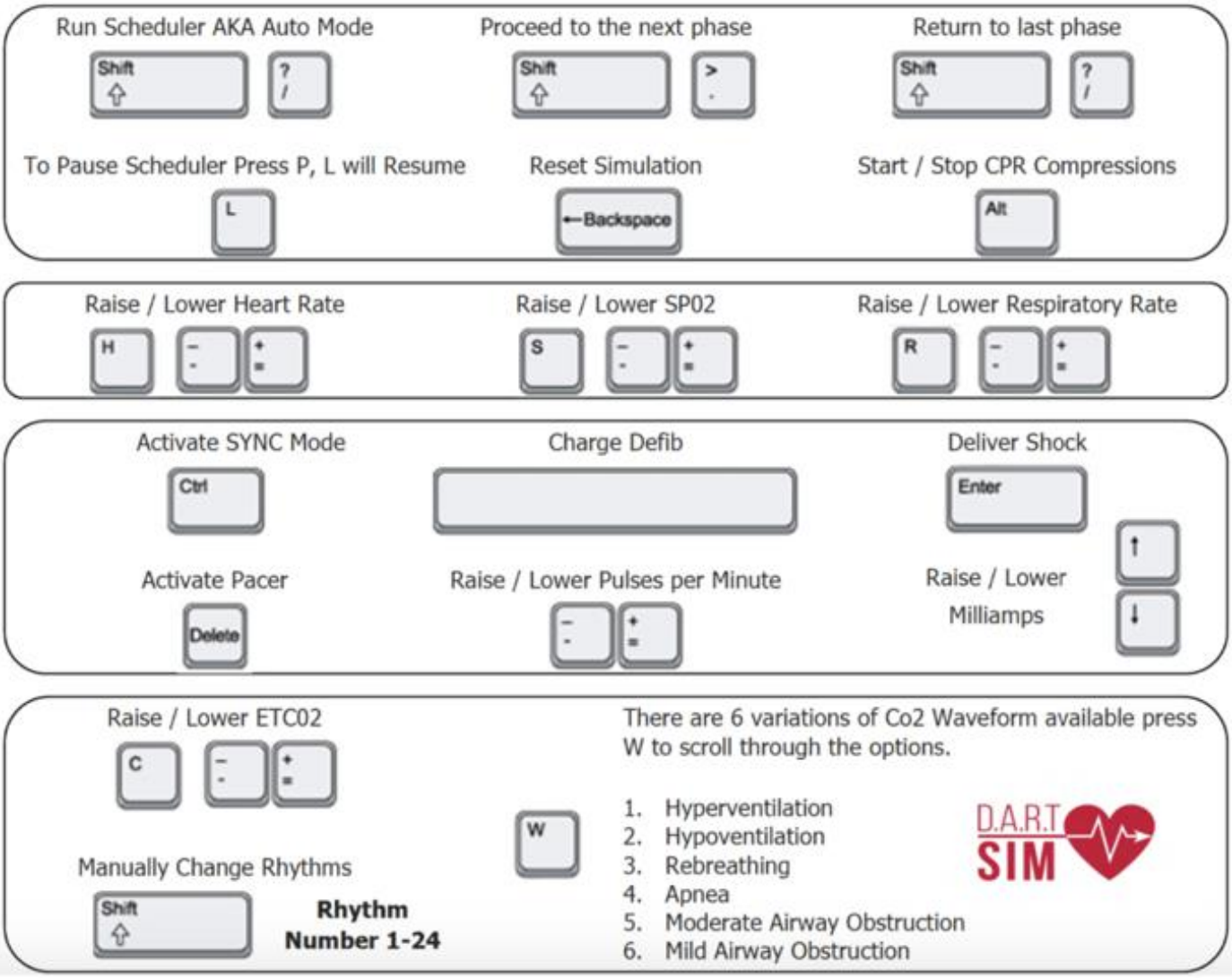
Save. Lets you give the data a name.

Close. Lets you close the application.



6. Select **Yes**, **No**, or **Cancel**.

Keyboard Commands



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