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5.0 RESULTS

Some information in this manual applies ONLY to Low Volume protocols. That information is clearly marked. Low Volume **Low Volume ONLY** appears in an orange shade like this.

Difference in Low Volume:

What is performed whenever BLS CPR is required..

Thus On-screen in the feedback area, what is displayed as the code is going on will display lower volume for ventilations and they will displayed during continuous compressions.

In Results, there will be two appropriate volumes for reporting;

1. *During the Code*: The low volume of BLS CPR

2. *Results*: The normal volume when/if the patient is intubated.

5.1 RESULTS ON-SCREEN

The screen changes once the code is completed and you move to review results. Once results are displayed you are able to:

See a quick summary on the screen

5.1 1 Information Area (Results)

This area disappears and it becomes the area to display an advanced analysis of the skills performed. See the section on Advanced Analysis below.

5.1.2 Current Progress Area (Results)

See picture below. This now displays summary information related to the total number of chest compressions performed during the code. It also provides the duration of the code.

Below this is a percentage of how well the total of compressions performed were correct for Depth and Rate. The last percentage is the percentage of the total compressions performed which were totally compliant with the current AHA guidelines.

5.1.3 Intervention Buttons (Results)

The Intervention Buttons will disappear. This area now displays Event Timeline. See Health Status Area below for details.

5.1 4 Real Time Feedback Area (Results)

This area displays the colored bar graph for each chest compression performed for each cycle of CPR. At the top left of the area it will tell you how many cycles of 30 were performed.

Each cycle shows you the quality of each chest compressions and ventilation. Click on the Next Button on the right edge of the display to show the next cycle.

5.1.5 Health Status Area (Results)

Click on Events button to show the completed quick graph as a timeline.

Color: The color shows the oxygen available to the patient. In the above case it shows the decrease in oxygenated blood as the code continues. By performing perfect CPR you can greatly slow down how quickly oxygenated blood is used up. That is, the better you perform the more gradual the decline.

Recovery Threshold: This is the Horizontal Green Line. The following picture is an example of a Health Status Display. The use of external heart massage cannot provide the same oxygenation as present in normal breathing. The "Recovery Threshold" line indicates the maximum you can aim for.

You will notice that stopping chest compressions reduces the health status. By performing better compressions (in accordance with the current AHA Guidelines) the health Status will improve.

Stages: This timeline also indicates when each stage started (a solid vertical line). This is triggered by use of the AED. Currently this Health Status Display will only show results for the first 10 minutes of the code.

Labels: The labels indicate when key events took place.

5.1.5 Hands-Off Graph (Results)

This will display a representation of the hands-off time for the whole code. This provides a visual assessment of where time on the chest can be improved to help the patient.

It is important to note that the graph is produced in real time as skills are being performed. Since it is time based, it refers to each second. The display of the results is a static display with only time representations so the still representation is not a completely accurate representation.

5.1.6 Print Button

Click this button and an html form containing the graphs and the detailed information will be presented. It will show you a summary of the performance. Your browser setting must allow information to be written to the page for you to see the numbers in this form. You can then save the page, print it, or attach it to an email. See below for more details.

5.1.7 Advanced Analysis Button

To display the advanced information relating to the performance of skills during the code, go to the far left edge of the window and click on the 3 buttons available.

It will open a window and it will display the summary information of the current code.

Summary Button

The following picture is an example of the summary information displayed:
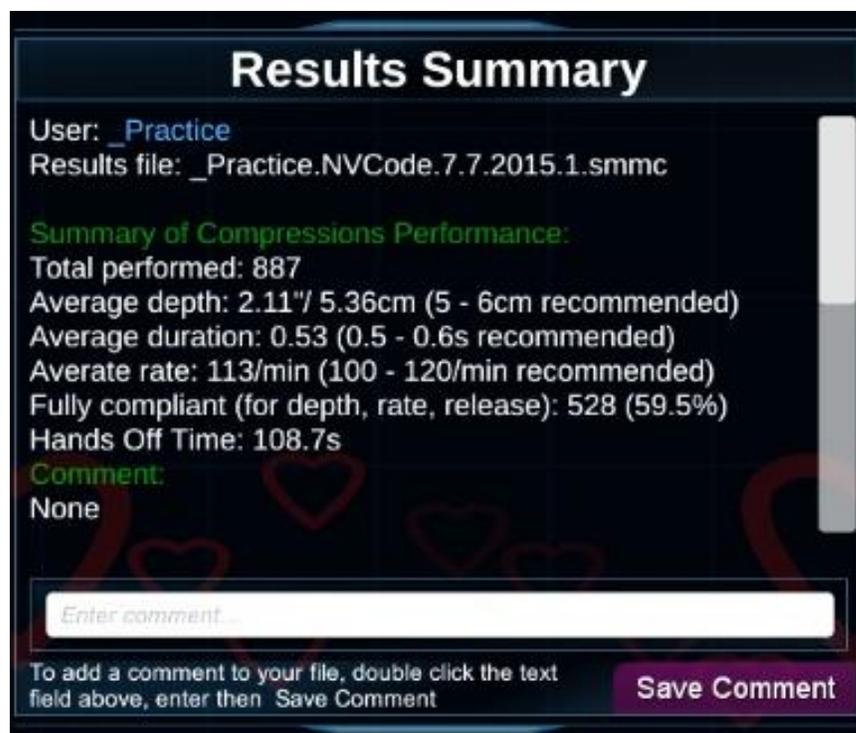
Compressions Button

The total number of compressions and how they were performed will be grouped according to each parameter and the level at which they were performed. Those performed to the target level are shown in green.

Line 1 Depths are categorized in groups of ½ inch.

Line 2 Rates are categories as described in the headings in the table.

Line 3 Non-release of the chest are categorized in groups of 0.1 of an inch. As SmartMan records even minor non-releases you may see a couple of categories slight non releases. If these are bright green and 0.1 inch or less then these are acceptable.

Compressions Results

Depths (inches)	0	0.5	1.0	1.5	2.0	2.5	Max	Score
Compressions	1	4	1	117	727	26	11	82%

Rate (per minute)	>200	150	120	100	86	75>		Score
Compressions	0	0	80	755	27	9	11	85.6%

Non Releases (inches)	0	0+	0.05	0.1	0.2	0.4	0.6<	Score
Compressions	74	379	275	130	21	1	0	82.1%

Ventilations Button

The total number of ventilations and how they were performed will be grouped according to parameter and the level at which they were performed. Those performed to the target level are shown in green.

Line 1: Volume (litres) refers to the volume of the ventilations provided.

Line 2 Inspirations refers to the rate at which the ventilation was delivered. These are put into categories with the target volumes being in green.

Line 3 Intervals refers to the time between ventilations.

Ventilations Analysis

Volume (litres)	0	0.3	0.4	0.5	0.6	0.7+	...xVol	Score
Ventilations	2	0	17	9	0	0	35	19.1%

Inspiration (second)	0	0.2	0.4	0.85	1.15	1.5+	...xVol	Score
Ventilations	0	0	24	4	2	0	0	8.5%

Intervals (seconds)	0	2	4	6	8	10	12	Score
Inspiration	1	7	5	24	0	1	9	51.1%

5.2 RESULTS IN AFTER ACTION REPORT - AHA

The report will be generated from the data that was stored as the code was performed. It is created from the data each time you press the print report. The After Action Report will open your default browser.

You may receive a message from your browser, saying that an application is trying to make a change to your page. You must allow this, or the numbers (the data) will not be permitted to be entered into your browser page.

5.2.1 Generating the After Action Report

The main screen provides real time feedback as the code is being performed. Once the code is finished it displays the results. To generate the After Action Report, you must have the Results on your screen.

The Print Button is located in the right side of the screen. See the picture below.

Since the report will be displayed in your default browser, it must open your browser. This may take a few seconds if it is not already open.

NOTE: You will have to allow the program to put the data into your browser page. If the page loads but there are no numbers in it, then your browser has been set to prevent the program from allowing it to be changed by another program. You must allow this.
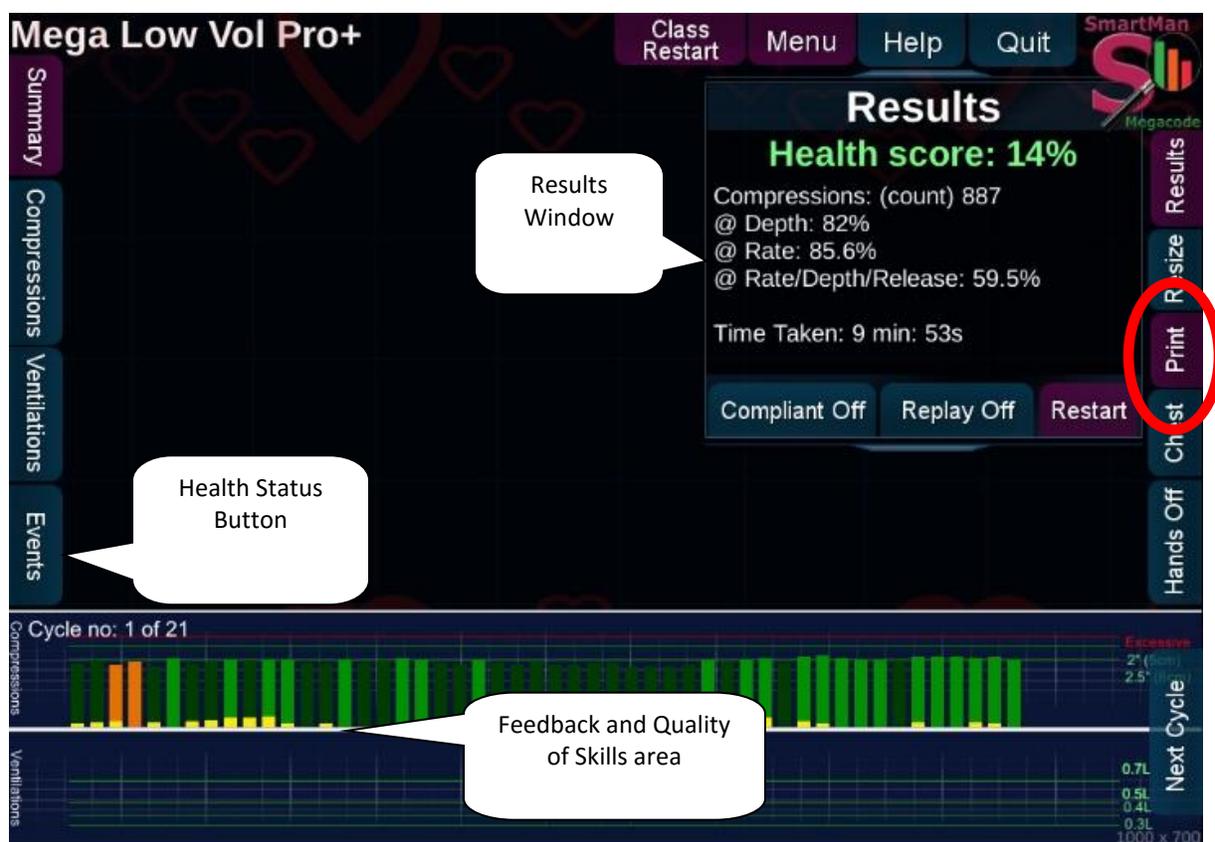
Press the "Print Results" button to generate the After Action Report.

5.2.2 Overview of the Sections of the AAR

There are 7 sections to the After Action Report. Each section provides specific information related to the code.

1. Title Section
2. Intervention Timeline

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3. Codes Summary Stats
4. Megacode Stages
5. Compliant Compressions By Stages
6. Analysis of Compressions
7. Analysis of Ventilations

Each section is described in detail below.

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5.2.3 Title Section

Results are recorded on the local computer under the login name. It is possible to copy and delete results from the local computer.

The time and date information used in the files is the time and date as set on the computer when the activity was performed. To make sure this file has the correct date and time, check the computer date and time settings before you begin the activity.

The following information is contained in this section.

Name: This contains identifying name that was used for Login. If you created a Login name, it is much easier to keep track of what was done.

File Name: This is the file name as stored on the hard drive. It will identify which activity was performed and the date it was performed (according to the computer it was performed on),

Activity: This will identify which activity was performed.

Date/Login ID: This reports the date the activity was performed and the name used for the login.

Health Score: This is the health score of the patient when the code was stopped. A good health score is close to 20%

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5.2.4 Intervention Timeline

This contains a timeline from the beginning of the code until it is stopped. Each critical event is marker with a blue circle.

You can hover your mouse over this to see more information on that event.

- Each time an intervention button was pressed, an identifying marker and the time is put onto the graph.

For example the graph indicates each time the defibrillator was used to analyze the heart rhythm, when an IV is established, when epinephrine was given, etc.

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5.2.5 Code Summary Stats

This section in the AAR provides an overall evaluation of how well skills were performed during the code. It gives you a total summary of the total time in the code, the amount of hands-off time, how many skills were performed, and how well they were performed,

Key points might indicate areas where improvement needs to be made or in fact where it is being performed very well

Note: 1/3rd of code not performing compressions

Sample code Summary:

Total Time in Activity	362 seconds
Hands Off Time in Activity	129.3 seconds
Total Compressions	550
Average Rate of Compressions	105/min
Overall Compressions Compliant	57.5%
Total Ventilations	41
Ventilations Compliant	10

Note the overall low level for compliant compressions

5.2.6 Megacode Stages

This section provides a table of the running time, a list of the stages of the code with the critical event that occurred, and details on performance during each stage.

It also provides detail on the total number of chest compressions were performed during that stage of the code along with how many of those were compliant with the protocol being practiced.

Below is an example of the report produced during this stage of the After Action Report. A couple of points are highlighted below to draw your attention to the information. These highlights are not a part of the report but are a part of this explanation.

Time from Start	Critical Event	Details
4	Stage1	Initial Response = first compression detected 94% health score
22	Stage2	Initial ventilation = BVM arrived. 17 compliant of 30 compressions 0 compliant of 1 ventilations 85% health score
71	Defib1	Defibrillation Analysis VF waveform detected **50 compliant of 68 compressions** 1 compliant of 5 ventilations 71s to defib. analysis 56% health score
178	Defib2	Defibrillation Analysis VT wave form detected **130 compliant of 154 compressions**

Analysis of CPR from 1st Defibrillator use until Defibrillator used again

		6 compliant of 10 ventilations
		107s to defib. analysis
		15% health score
272	Defib3	Defibrillation Analysis
		VF wave form detected
		24 compliant of 151 compressions
		3 compliant of 10 ventilations
		94s to defib. analysis
		7% health score
285	Intub.	Intubation Recorded
363	Defib4	Defibrillation Analysis.
		95 compliant of 147 compressions
		0 compliant of 15 ventilations
		91s to defib. analysis
		14% health score
368	Stop called	SCA response ended.
		14% health score

Note the difference in quality during the different stages

5.2.7 Compliant Compressions By Stages

This provides an at a glance view of how well compressions during each stage were performed.

- All compressions during each stage are displayed.

- Only two colors are used; bright green for all correct (compliant) or dark grey for not correct. Each compression is a single bar.

This allows you to instantly see whether it is a mostly compliant performance or not. In a situation where there is a change of team, you can instantly see if one team was much better than another.

Stage 3: Compliant Compressions (107s)

Very good set of compressions
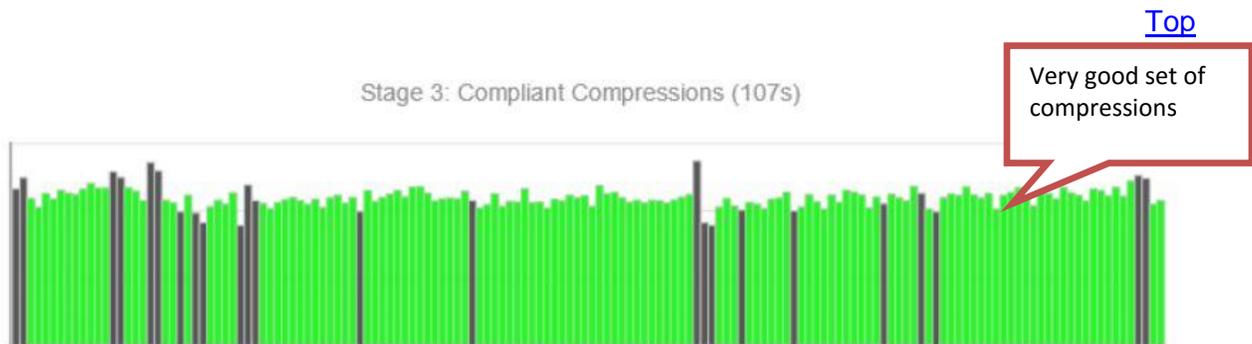
Stage 4: Compliant Compressions (94s)
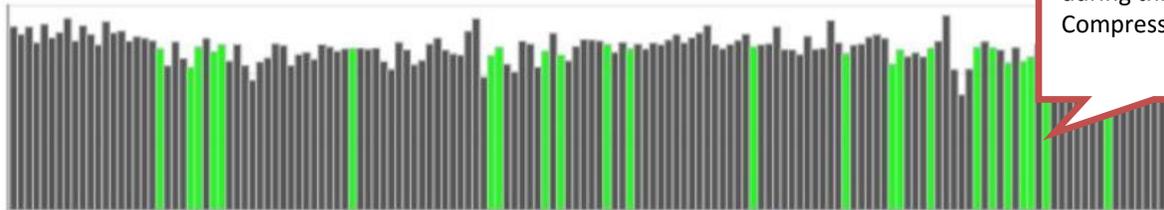
What happened during this set of Compressions?

Stage 5: Compliant Compressions (91s)

5.2.8 Analysis of Compressions

This section provides detail on the overall performance of chest compressions. It provides each of the following statistics:

- Total compressions performed:
- Average depth of compression:
- Average duration of compressions
- Average rate of compression
- Total time in activity:
- Hands off time (activity)

Also there is a statistic for the total compressions by depth, rate and release. There is also a percentage for fully compliant compressions.

Analysis of Compressions

Performance of Compressions		
Total compressions performed:	741	
Average depth of compression:	2.24in. (5.69cm)	
Average duration of compressions:	0.54s	
Average rate of compression:	111/min	
Total time in activity:	403s	
Hands off time (activity):	94.6s	
Compressions by		
Compressions (Depth)	66.3%	
Compressions (Durations)	87%	
Compressions (Releases)	97.7%	
Compressions (Fully Compliant)	58.3% (432 of 741)	

<u>Further Details on Compressions</u>

The total number of compressions and how they were performed will be grouped according to parameter and the level at which they were performed. Those performed to the target level are shown in green.

Line 1: Depths are categorized in groups of ½ inch. The target depth (2.0 – 2.5 inches) are shown in green. The percentage of compressions performed within this target range is also provided.

Line 2: Rates are categories as number performed per minute. The target rate of 100 – 120 per minute noted in green. Also the percentage of compressions performed at the target rate is provided.

Line 3: Non-releases of the chest are shown in tenths of inches. As SmartMan records even minor non-releases you see that a non-release of up to 0.1 of an inch is acceptable and hence the compression bar is shown in green. The percentage of chest compressions performed with full release of the chest is also provided.

Below is an example of this section of the After Action Report.

Compressions: Detailed analysis

Depths (inches)	< 0.5	<1.0	<1.5	< 2.0	2.0 - 2.5	>2.5	Max	Score
Comps	0	0	3	64	491	159	24	66.3%

Rate (/min)	>200	>150	>120	>100	>86	>75	<75	Score
Comps	0	1	85	645	6	1	3	87%

Releases (inches)	0	<0.05	<0.1	<0.2	<0.4	<0.6	0.6+	Score
Comps	118	594	12	12	2	0	1	97.7%

5.2.9 Analysis of Ventilations

This section provides detail on the overall performance of ventilations. It provides each of the following statistics:

- Total ventilations performed:
- Average volume of ventilation (low vol):
- Average volume of ventilation (normal volume):
- Average duration of inspiration (low vol):
- Average duration of inspiration (normal vol):

Also there is a statistic for the total ventilations by volume and duration of inspiration. There is also a total percent for fully compliant ventilations. See the picture below for an example of this information

Analysis of Ventilations

Performance of Ventilations	
Total ventilations performed:	67
Average volume of ventilation (low vol):	0.4L
Average volume of ventilation (normal vol):	0.46L
Average duration of inspiration (low vol):	0.35s
Average duration of inspiration (normal vol):	0.29s
Ventilations by Sub-skill	
Ventilations (correct volume)	37.3%
Ventilations (correct duration of inspiration)	56.7%
Ventilations (Fully Compliant)	23.8% (16 of 67)

Further Details on Ventilations

The total number of ventilations and how they were performed will be grouped according to parameter and the level at which they were performed. Those performed to the target level are shown in green.

Line 1: Volumes of air given in each breath are categorized in 100ml stages. The target ventilation is provided in green. The percentage of ventilations performed within the range is also provided.

> **Low Volume ONLY** In the example below, there are two target volumes because Low Volume protocol uses a low volume ventilation when the patient is not intubated. If you were performing AHA protocols there would be no information relating to low volume breaths as all breaths are provided at the same target range.

Line 2: Inspiration refers to the rate at which the ventilation was delivered. These are categorized as show in the picture below. The target volumes are shown in green and the percentage of ventilations delivered within the target range is also provided.

> **Low Volume ONLY** In the example below, there are two target inspiration rates because Low Volume protocol uses a low volume ventilation provided on a non-intubated patient while chest compressions are ongoing. This ventilation must be provided on release of the chest.

Ventilations: Detailed analysis

Volume (L)	< 0.3	<0.4	<0.5	< 0.6	< 0.7	<0.8	Other	Score
Vents	7	19	26	4	2	2	7	37.3%

Inspiration (s)	<0.2	0.2-0.4	<0.6	<0.85	0.85-1.15	1.15+	Other	Score
Vents	0	38	9	1	0	0	19	56.7%

5.3 STORE OR PRINT RESULTS

It is always possible to return to the results on your computer but there may be times when you want to keep a print copy of the code results and/or you may want to keep a convenient copy of the after action report in a pdf. Pdf's are easy to print and easy to attach to an email.

5.3.1 Print the After Action Report

The results displayed on your screen are in html format (the same format as a normal web page). Simply go to print in your browser.

5.3.2 Store the After Action Report as pdf

You must be viewing performance results to print the After Action Report. Results will appear as soon as you press the Stop Button. Or from the Main Menu, select the View Previous Results, select Megacode, then select the particular results you wish to view.

Print Button. Click the "Print" button near the right side of the window. The results will be generated in an html page. **Note**: If your browser is not yet running, it may take a few seconds to load before you see the results.

Your browser must be set to allow information to be written onto the page for you to see the numbers on this page. Most browser will ask whether you want to allow this program to use this or not.

The print page will show you a summary of the performance. Once it is displayed you can print the page and save it as a .mht or .maff file or it can be attached to an email.

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