

Results CPR

Results are an accurate analysis of the performance of every practice or test performed on SmartMan. It is possible to simply look at the color of the bars and the overall score to get a quick idea of how well a person has done.

Alternatively, you may wish to explore in detail how various component skills were performed. SmartMan gives you both options.

The SmartMan Admin Module is a separate utility that is designed to help you identify overall trends for groups.

The Admin Module also provides for export of data in a comma delimited or csv file format so that sophisticated statistical analysis can be performed.

Below is a description of the detail found in the results for CPR.

Results CPR Main Page

When a CPR practice or test is completed the screen will appear as in the picture below. CPR is a combination of both chest compressions and ventilations.

For a detailed explanation of the colored bars for

- Chest Compressions see “**SmartMan Manual - 5. Results 1. Compressions.doc**”
- Ventilations see “**SmartMan Manual - 5. Results 2. Ventilations.doc**”

The display for chest compressions is slightly different than described above, as:

- both chest compressions and ventilations appear on the screen at the same time,
- the timing of the ventilation is in relation to the chest compressions, i.e. after 30 compressions
- analysis must take account of how both skills worked together to achieve the best result for the patient.

In the main results page, note the number on the circled areas. Each area contains details on some aspect of the performance.

- 1 Score
- 2 More Scores
- 3 Colored Bars Area
- 4 Show Next Cycle Button
5. More Detailed Analysis Button



Below is a detailed description of the information in each area and what it means.

1. The Score (Percentage)

The overall score for the performance appears in the top right hand side of the screen.

This is calculated from all of the component skills in both chest compressions and ventilations, and includes the overall timing and the timings of ventilations as related to chest compressions. Current emphasis is on the priority of chest compressions and thus this score is weighted with 75% on the quality of the chest compressions and 25% on the quality of the ventilations.

Note: You must always get some air into the lungs or the activity will stop and it will not give you a final score.

The score allows individuals and program directors to set a target achievement level. It is also useful in allowing individuals to compare a) their current score with their previous scores and b) their own achievement level with how others have done in the same skill.

2. More Scores

This area provides more detail on the performance. It concentrates on information related to chest compressions.



Besides the final score it provides the following information.

Final Score: This is the SmartMan overall percentage score.

Compressions: This is how many compressions were performed and the target number.

Time Taken: This is the actual time taken and the target time.

Compressions (Depth): This is the percentage of compressions accurate for depth.

Compressions (Rate): This is the percentage of compressions accurate for rate.

Depth, Rate, Release: This is the percentage of compressions accurate for all three and is referred to by some EMS administrators as the Fully Compliant Score (FFS).

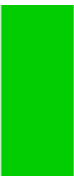



3. Colored Bars

The Colors

The colored bars give a quick easy way for the person performing a skill on SmartMan to know how they are performing and what they need to change in order to receive a higher score. The higher score meaning they are aiming to perform higher quality compressions.

The person aims to produce pure bright green bars at all times. If there is any other color, then he or she needs to modify how they are performing compressions.

In CPR SmartMan shows colored bars for both chest compressions and for the ventilations. Again it will indicate accuracy of the skill with the following 4 basic colors.

	Bright Green means everything is correct.		Dark Green means correct rate but incorrect depth (or volume)		Orange means rate too fast.		Red means rate was too slow.
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Compressions Indications on Screen



The two green horizontal lines on the right side, show the target depth of the compression. Push the chest until the bar goes between these two green lines.

The compressions should be at least 5.0cm and not more than 6.0cm (roughly 2.0 inches and 2.5inches). The EU specifies a top limit for depth but the AHA does not. It cites there is no evidence to say that compressions deeper than this are beneficial.

The red line is the maximum depth for that manikin. It is the point at which you bounce off the bottom.

More Detail on Depth of Chest Compressions

Yellow bar on the bottom: This shows the distance the chest has not been released. The higher it is from the bottom, the greater the distance of the non-release.

Yellow bar on the top: This shows that the depth went deeper than 2.5" (greater than 6.0cm).

Red bar on the top: This means that the chest hit the maximum depth of the manikin. The yellow on top will turn red if you hit the bottom.



Rate and Volume of Inspiration

The same colors are used in rescue breaths and ventilations given in CPR as for chest compressions. When performing ventilations on a patient, you must provide the correct inspiration volume and give the patient that volume at the correct inspiration rate.

SmartMan will detect if air goes into the stomach but the bars will only display information related to what goes into the lungs.



Bright Green means inspiration rate & volume was correct..



Dark Green means inspiration rate was correct but the volume was too little or too much.



Orange means inspiration was too fast; it took too short a



Red means inspiration was too slow. It is to be delivered over a span of 1 second.

		time.	
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Interval Between Inspirations

You must also consider the time between each ventilation. This information is provided in the horizontal bars. SmartMan will display the interval as a horizontal bar between each inspiration.

The interval for Rescue Breaths is about 6 seconds from the start of one ventilation to the start of the next ventilation (performed at a rate of about 10 per minute).

For the ventilations performed during CPR, the second ventilation should be performed as soon as the air has fully expired from the previous ventilation. This is about 2 seconds from the start of the first ventilation to the start of the second ventilation. It is roughly 1 second to inspire and 1 second to expire.



Bright Green means the time from the start of one breath to the start of the next breath was correct.



Orange means the interval between breaths was too short.



Red means the interval between breaths was too long.

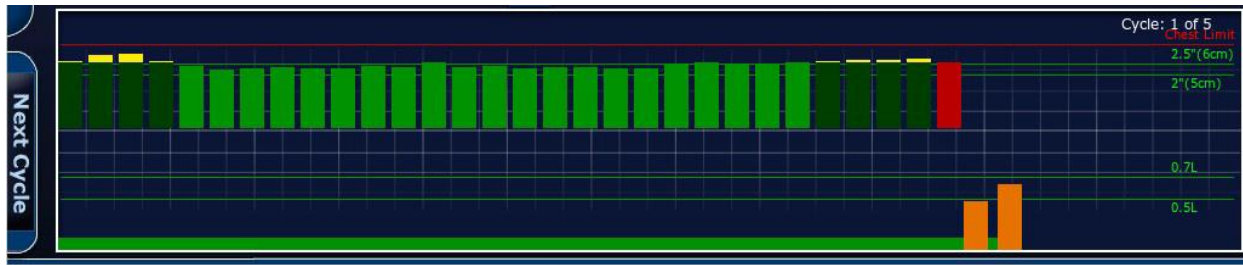
Volume of Inspiration

The two horizontal green lines on the screen show the target volume for each ventilation. This should be close to 0.6L.



An Example with Both On Screen

Below is a sample from the SmartMan screen for the first cycle of CPR. It shows the compressions on the top and the ventilations on the bottom.

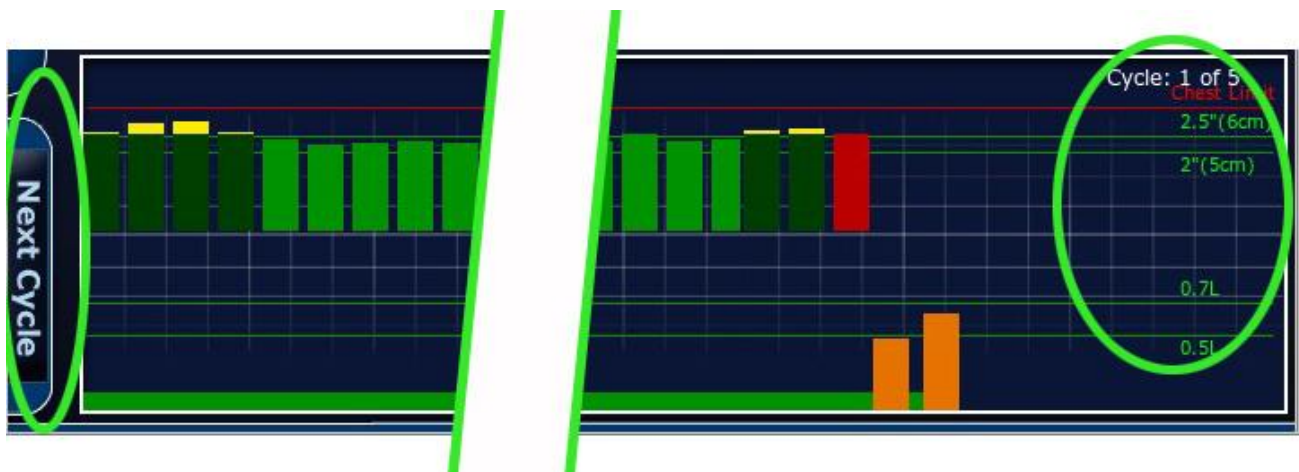


The compressions are showing a lot of bright green. Those are all very good. The dark green compression bars with a slight bit of yellow at the top indicate that the depths were slightly beyond 2.5" or 6.4cm.

The information related to ventilations is on the bottom of the display area. The long horizontal bright green bar indicates that the start of the ventilation, from when the first compression starts, was correct. Each of the ventilations delivered was too fast, but the interval between the two ventilations was correct.

4. Show Next Cycle

The show Next Cycle button is on the lower far left edge of the screen. It is at the left edge of where the colored bars are displayed. When you click on this button, the screen will display the bars for the next cycle of 30 compressions and 2 ventilations.

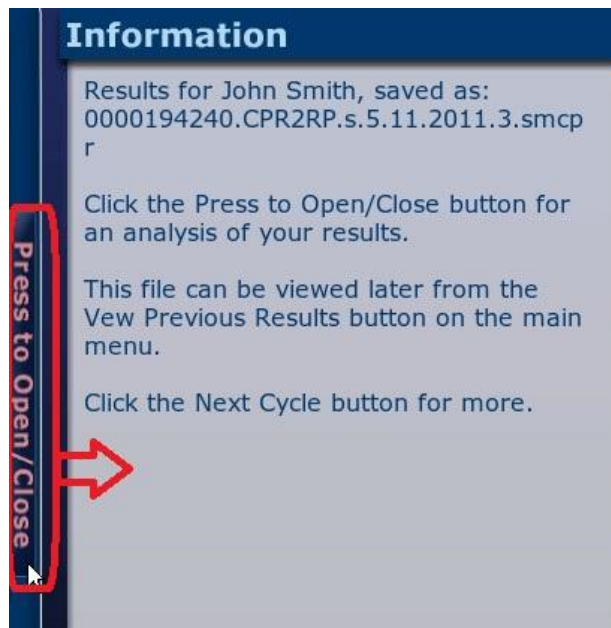


In the top right of the bar area, it will indicate which cycle you are displaying.

Each time you click the Next Cycle button, it will show the results for the next cycle of CPR. Clicking the button again will scroll through each cycle until you are back at the first cycle again.

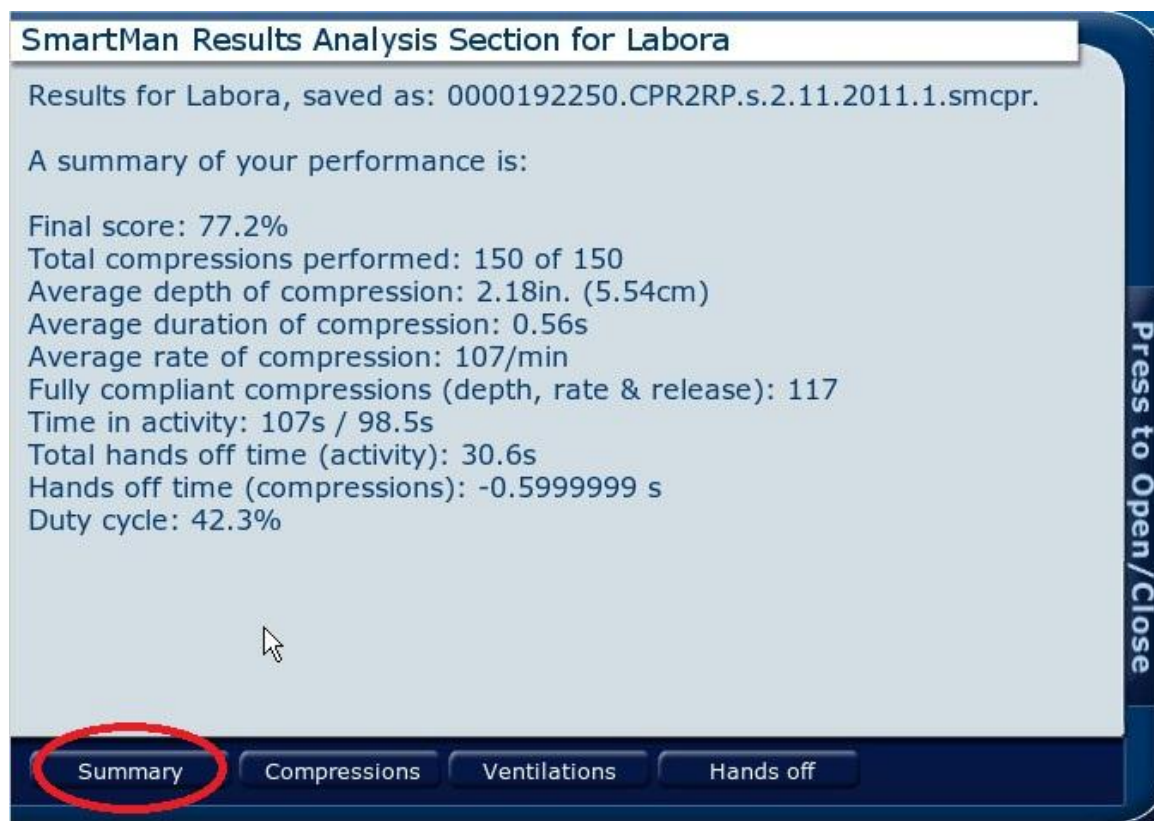
5. Detailed Analysis

To see further detail on any skills performance, click on the button at the far left edge of the page. See area number 5 in the picture at the top of Page 2. This button is just above the Next Cycle Button.



Summary Analysis

This will reveal the Summary Analysis page as seen below.



The screen will tell you the name of the person who is logged in along with the name of the results file which is being displayed.

The Summary Performance Information will be

Final Score: This is the overall percentage SmartMan score.

Total Compressions performed: This is the number performed of the target number required.

Average depth of compression: This is the actual average depth of compressions performed.

Average duration of compressions: This is the actual average duration of compressions performed.

Average rate of compressions: This is the average rate per minute of compressions performed.

Fully compliant compressions (depth, rate & release): This is the total number of compressions out of the target number, that were 100% correct on all three parameters.

Time in activity: This is the actual time for the activity versus the target time.

Total Hands Off Time (activity): This is the total time hands were not on the chest, including the ventilation time.

Hands Off Time (compressions): This is the total time the hands were not on the chest and this does not include ventilation time.

Duty Cycle: This is Duty Cycle.

If you are viewing information at one of the other two buttons, click on the Summary Analysis button circled in red above, to return to the Summary Analysis.

Press the button at the right to close this window and return to the main results display page.

Compressions Analysis

SmartMan Results Analysis Section for Labora

Summary chest compression performance.

Depths: (Inches)	0	- 0.5	- 1.0	- 1.5	- 2.0	- 2.5	- Max	SCORE
Compressions	0	1	2	6	120	21	0	80

Rate: (/min)	> 200	- 150	- 120	- 100	- 86	- 75	>	SCORE
Compressions:	0	3	0	141	2	3	1	94

Non Releases (Inches)	0	0+	- 0.05	- 0.1	- 0.2	- 0.4	- 0.6	>	SCORE
Compressions:	1	142	6	1	0	0	0	0	99.3

Summary Compressions Ventilations Hands off

Press to Open/Close

If you click on the Compressions Button you will see the depth, rate and on-release scores grouped by category. The target values are in green with the number performed correctly. See the picture above for an example.

Press the button at the right to close this window and return to the main results display page.

Ventilation Analysis

This area displays the performance information for volume, rate of inspiration and interval between ventilations grouped by category. The target values are in green with the number performed placed into each category. See the picture below for an example.

The screenshot shows the 'SmartMan Results Analysis Section for Labora' window. It contains a 'Summary of ventilations performance' section with three tables. The first table shows volume categories (0 to 0.8+ litres) with a score of 90. The second table shows inspiration time categories (0 to 1.5+ seconds) with a score of 40. The third table shows interval categories (0 to 20+ seconds) with a score of 88.9. At the bottom, there are four buttons: 'Summary', 'Compressions', 'Ventilations' (which is circled in red), and 'Hands off'. On the right side, there is a vertical button labeled 'Press to Open/Close'.

Vol.(litres)	0	- 0.3	- 0.4	- 0.5	- 0.6	- 0.7	- 0.8+	SCORE
Ventilations:	0	0	1	5	4	0	0	90

Inspirations (s)	0	- 0.5	- 0.75	- 0.85	- 1.15	- 1.25	- 1.5+	SCORE
Ventilations:	0	3	3	4	0	0	0	40

Intervals (s)	0	- 1.5	- 2.5	- 4	- 10	- 17	- 20 +	SCORE
Ventilations:	0	3	2	0	0	5	0	88.9

Buttons: Summary, Compressions, **Ventilations**, Hands off

Press to Open/Close

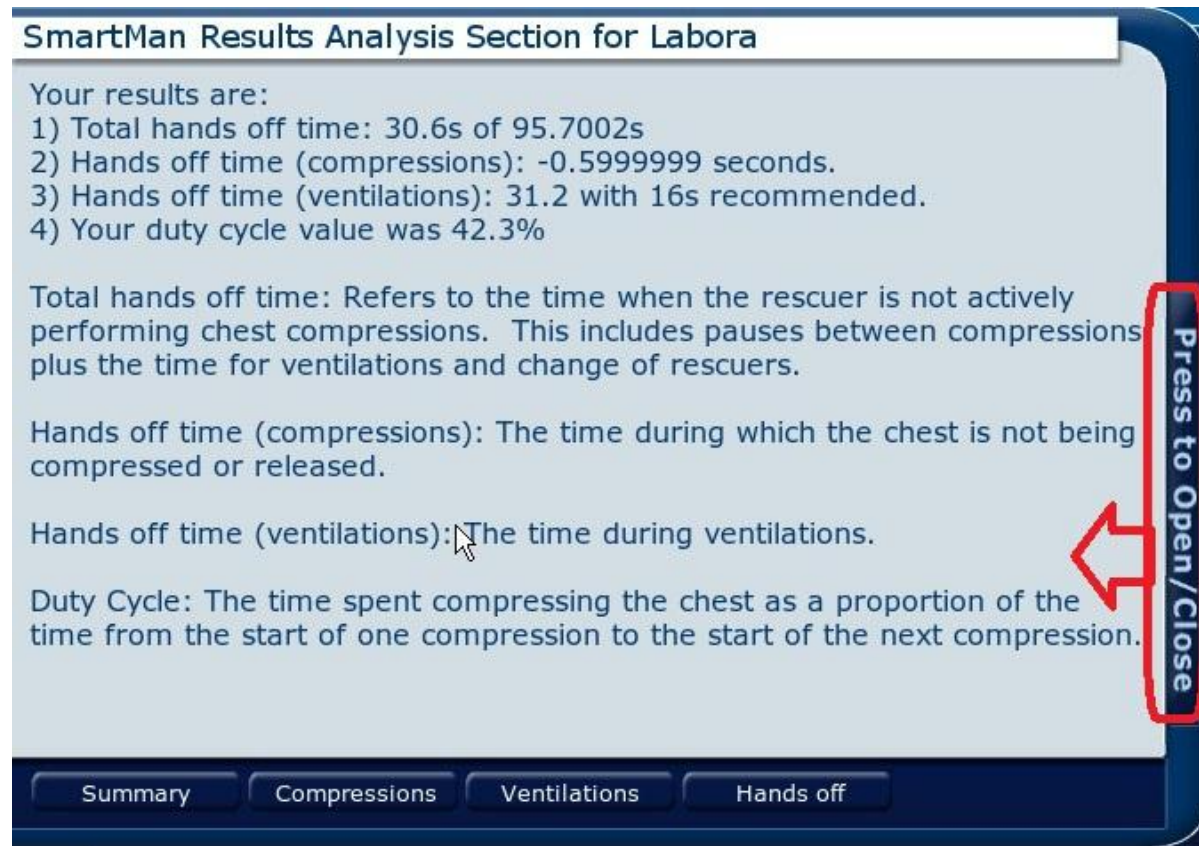
Press the button at the right to close this window and return to the main results display page.

Hands Off & Duty Cycle

The third button in this window is Hands Off and Duty Cycle. This section provides detailed analysis of the performance related to how long was spent in pressing/releasing the chest, delay times between compressions, and time allowed for ventilations.

The current guidelines specify the importance of spending as much time as possible in compressions. The stress on quality of CPR correlates with what is referred to as Duty Cycle. A

lower score is better for the patient. The guidelines site research which shows that a duty cycle below 50% relates to coronary pressure and thus to blood flow through the brain.



This screen provides details on the following points.

Total hands off time: This refers to the time when the rescuer is not actively performing chest compressions. This includes pauses between compressions plus the time for ventilations and, if applicable, change of rescuers.

Hands Off Time (compressions): This refers to the time when the chest is not being compressed and not being released.

Hands Off Time (ventilations): The time taken for ventilations.

Duty Cycle: The time spent compressing the chest as a proportion of the time from the start of one compression to the start of the next compression.

Press the button at the right to close this window and return to the main results display page.

6. Other Buttons

The main results page also contains a Print Screen Button and a Print Button.

See the section on “SmartMan Manual - 5. Results 5. Print” for more information on printing a report from the results.