ZOLL
RescueNet Code Review Getting Started Guide

SOFTWARE VERSION 5.8.1 OR NEWER

MAY 16, 2017

ZOLL®

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ZOLL Documentation

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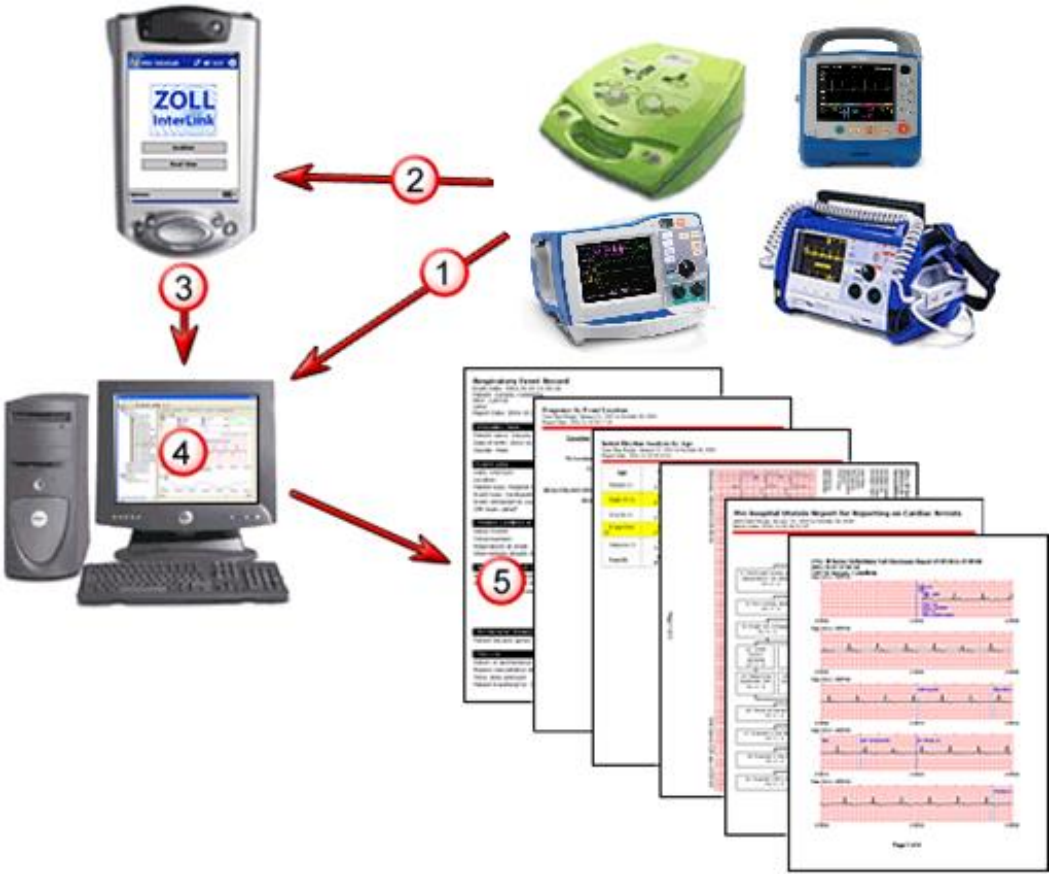
Chapter 1: Overview



1, 2, 3) Transfer the case data from the defibrillator into RescueNet Code Review via Bluetooth, infrared, USB, or serial cable connection. You can also transfer it from the defibrillator's flash card via the card reader. Transfer methods are dependent upon your defibrillator model.

4) Use RescueNet Code Review to review the case and add information as needed.

5) The system provides a variety of case and aggregate reports, as well as an export function, which easily enables you to analyze your data.

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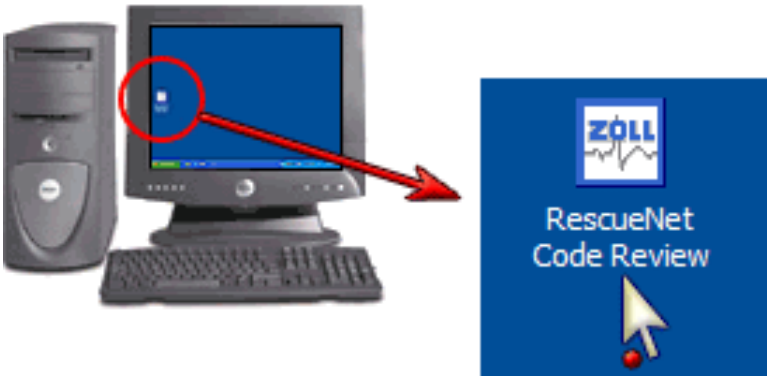
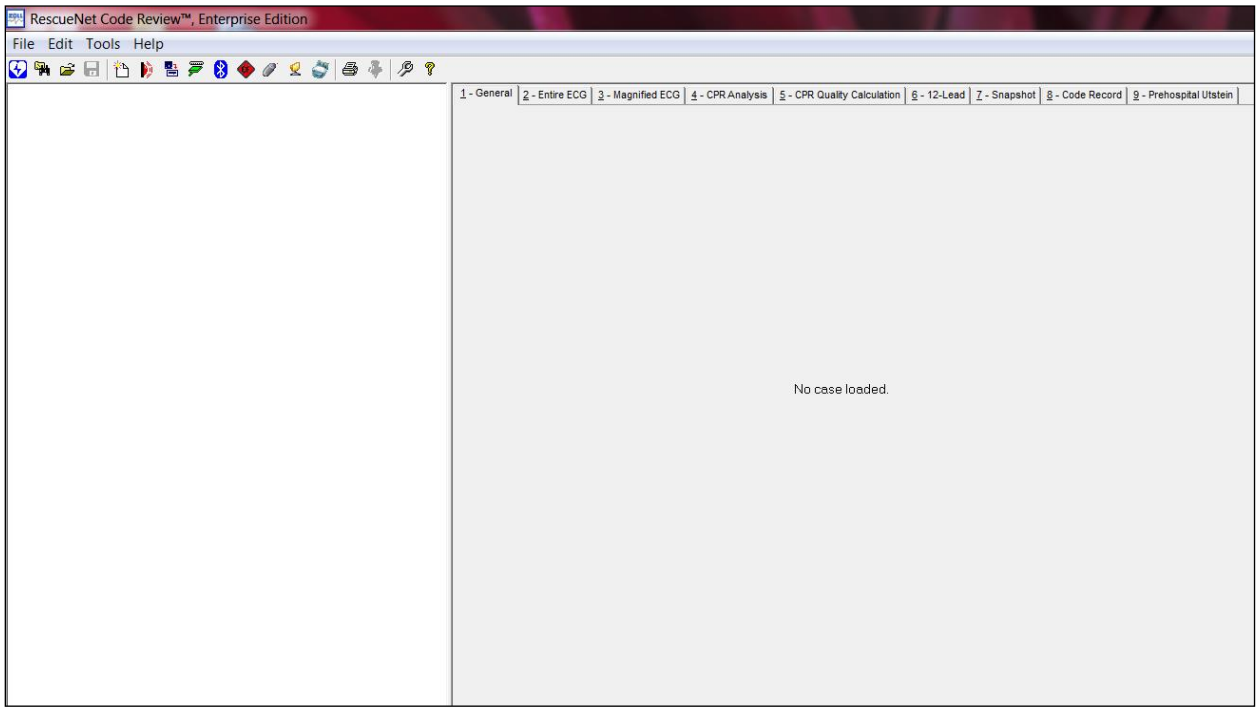
Chapter 2: Getting Started

Starting RescueNet Code Review



RescueNet Code Review opens with no loaded cases.



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Opening Cases

Search and open cases located in ZOLL CaseReview.

Upload a stored record by transferring it from an AED Plus™ or AED Pro™ via an infrared connection.

Upload a stored record by transferring it from a defibrillator's linear flash card via a card reader.

Upload a stored record by transferring it from a defibrillator via a serial cable connection.

Upload a stored record by transferring it from a defibrillator via a Bluetooth connection.

Open a stored case by transferring it from a defibrillator's compact flash card via a card reader.

Open a stored case by transferring it from a USB drive.

Upload a stored case by transferring it from a network location.

Upload a stored record from the ZOLL AutoPulse® Noninvasive Cardiac Support Pump via an infrared connection.

Search for and open an existing case located on the local file system or network

Create a new blank case. You can import a defibrillator or AutoPulse record at any time.

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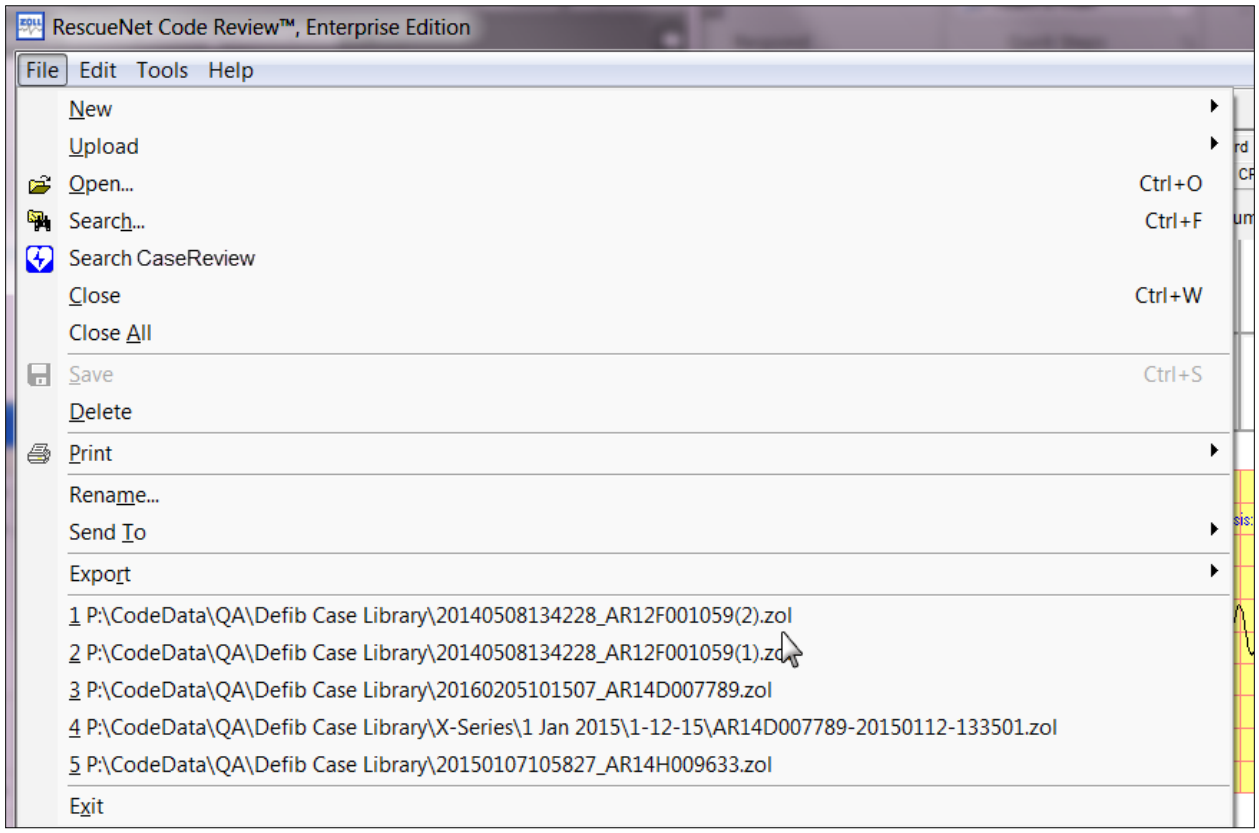
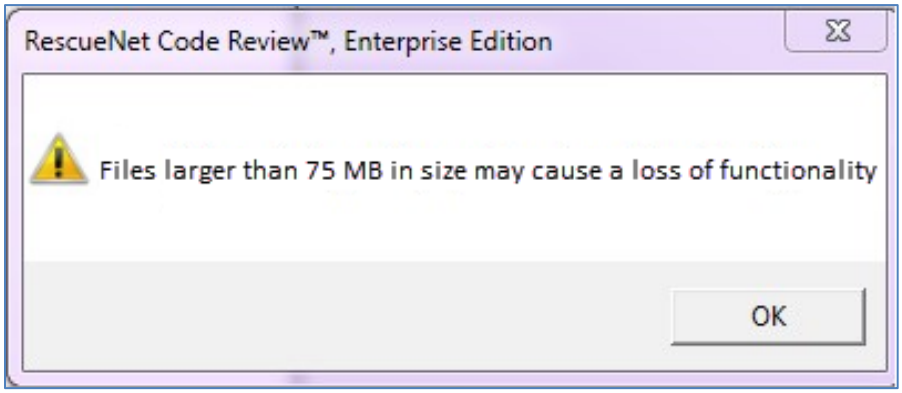
Open one of the last five recently viewed cases from the File menu:



Important! If you load a case file that is larger than 75 MB, the following message displays:

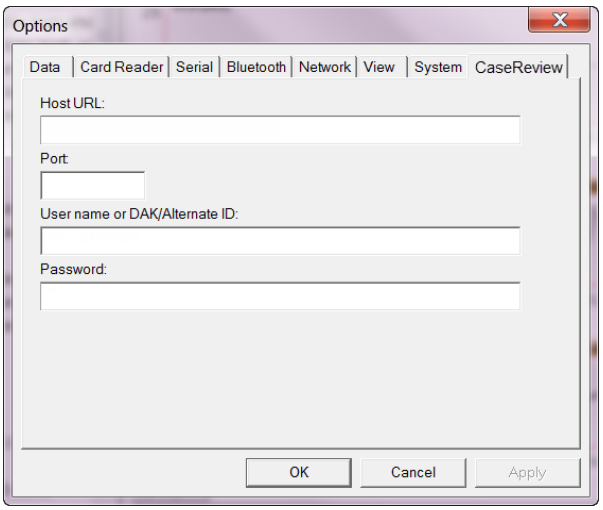


Upload Cases

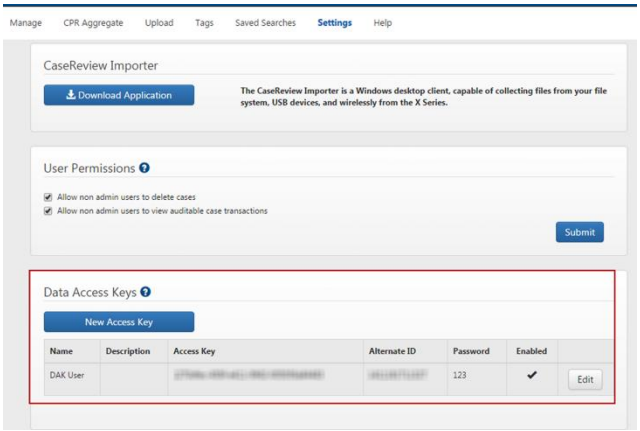
CaseReview

If you are using ZOLL CaseReview, you can upload cases from ZOLL CaseReview to RescueNet Code Review to add user-defined CPR periods and pause reasons. Once this is done, you can return to CaseReview to view the modified CPR quality metrics including aggregate CPR dashboards.

Note: Before you upload cases from CaseReview, the CaseReview location must be configured on the Options window. You must know the Host URL, Port, user name or DAK/Alternate ID, and password.



Some of this information exists in CaseReview under the Settings menu item on the navigation bar.



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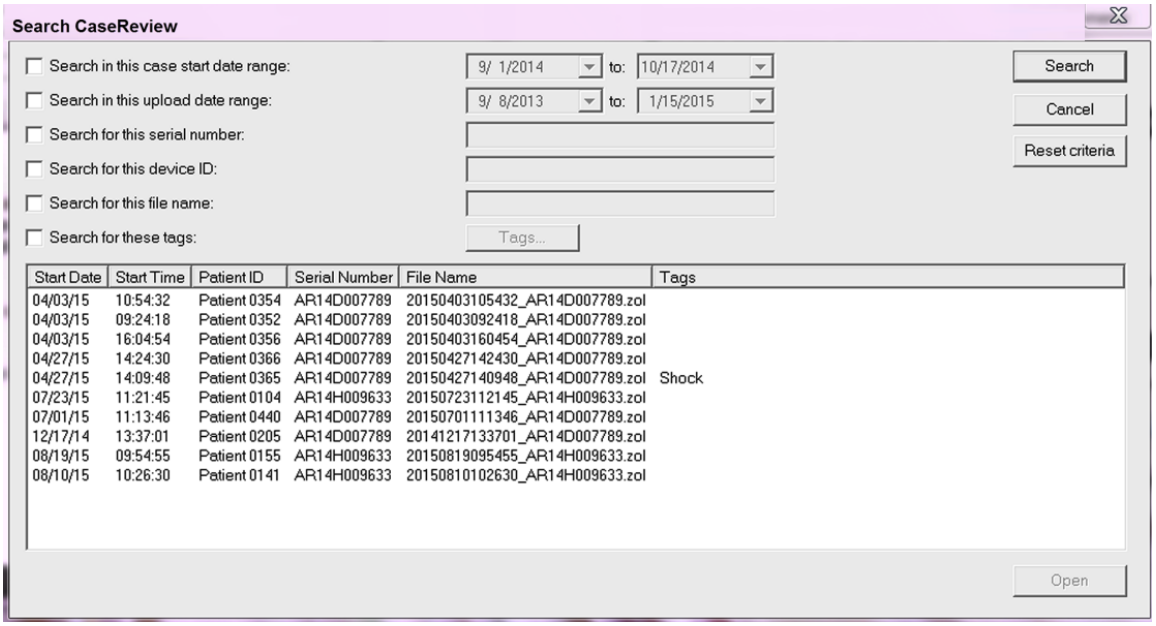
To upload cases from CaseReview:

1. On the navigation bar, click Search CaseReview  . The Search CaseReview window displays.
2. On the Search CaseReview window:

    a. **Upload cases with specific attributes**: **Upload cases with specific attributes**: Use the options on the left side of the window to narrow your search. As you check an option, the field to the right of the option enables to allow you to enter information. After entering the information, click **Search**. Because the search will return a maximum of 1000 cases, it is important to enter search attributes to limit the number of returned cases.

    b. A progress bar displays. Once loaded, the cases display at the bottom of the page. Double-click a case to open it in Code Review.



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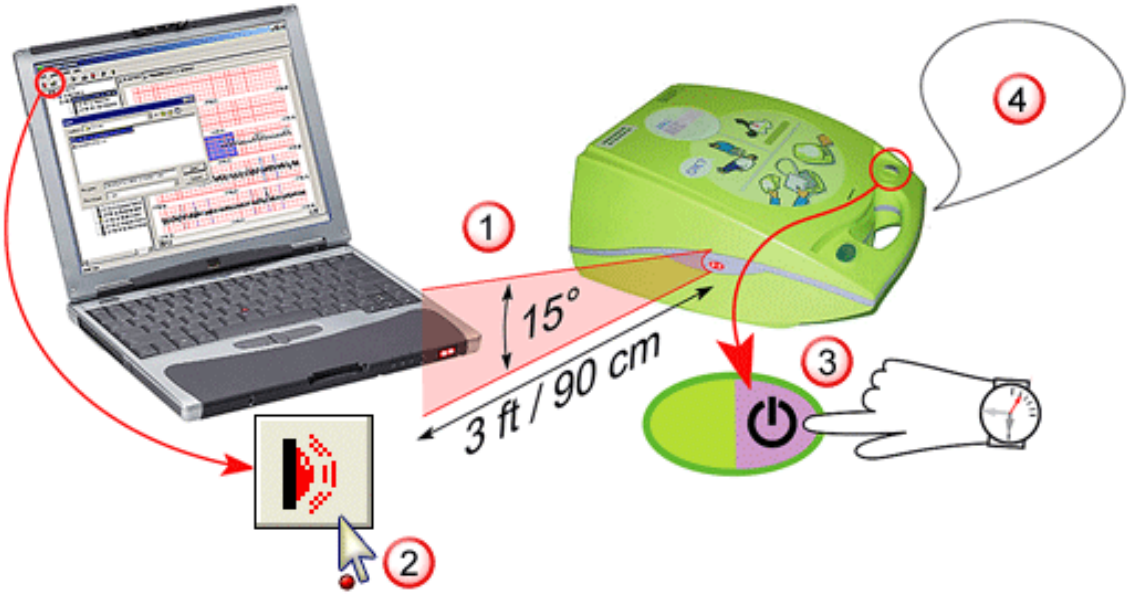
Infrared

AED/AED Pro



1. Position the AED Plus or AED Pro so that its infrared port lines up with the RescueNet Code Review workstation's infrared port or reader.
2. In Code Review, click the Upload Case from Infrared button.
3. On the defibrillator, press and hold the On button.
4. Keep holding the 'On' button until you hear the defibrillator say, "Non-rescue mode. Communications established."
5. In Code Review, a dialog box displays the transfer progress.

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AutoPulse

1. Position the AutoPulse so that its infrared port lines up with the RescueNet Code Review workstation's infrared port or reader.
2. In Code Review, click the Upload Case from AutoPulse button.
3. On the AutoPulse, turn ON. Press the Menu key. Select *Enter Communication Mode*. Press ENTER key.
4. In Code Review, a dialog box displays the transfer progress.

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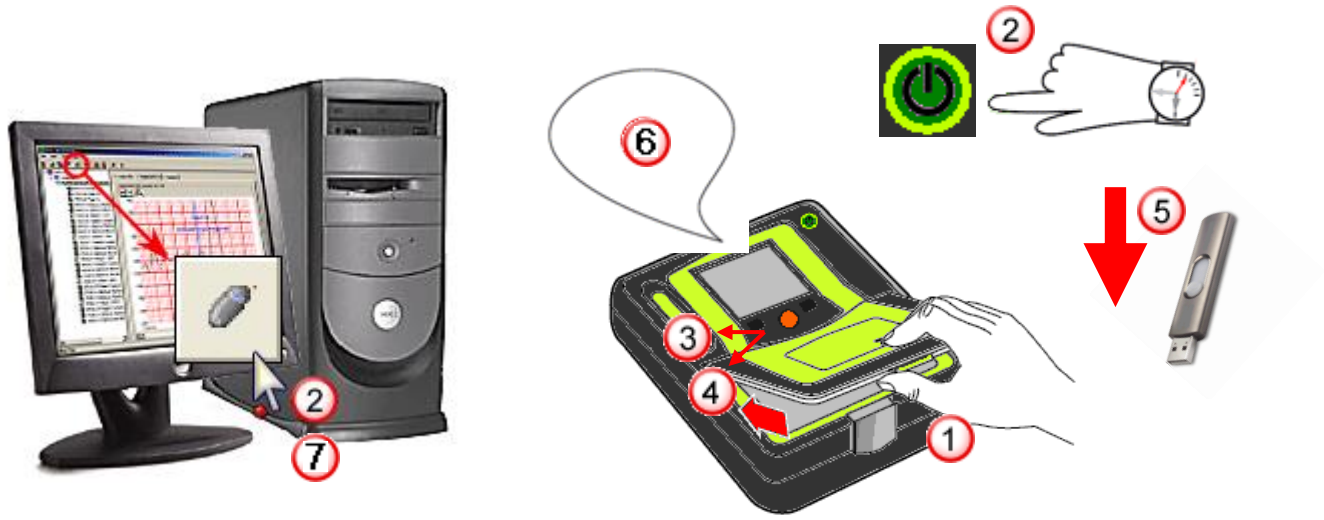
USB drive

AED Plus/AED Pro



1. Remove the battery cover from the top of AED Pro by releasing the front latch and lifting up on the cover.
2. Press and hold the Power button on the AED Pro for 5 seconds.
3. Press the left softkey labeled USB.
4. Press the left softkey labeled New.
5. Insert USB drive into USB port located above the battery in upper right corner. (You may need to remove the rubber USB port protector.)
6. The defibrillator recognizes that you inserted the device and downloads data. It announces, "Data download complete". Remove the USB drive and insert into the USB port on your computer.
7. In Code Review, click Upload Case from USB. The Select drive dialog appears. Select the drive letter of the USB drive and click **OK**.
8. A dialog box displays the transfer progress.

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ProPaq M/MD, R Series, Plus, or X Series

Open case

1. To copy available cases from the device to a removable USB, follow the instructions in the Operator's Guide associated with the device.

2. Connect the USB device to the computer.
3. In Code Review, click **Open**.
4. Browse to the USB device.
5. Select the .tdp case file(s) to open.
6. Code Review creates a .zol file for each case and stores it in the default data directory.

USB

1. To copy available cases from the device to a removable USB, follow the instructions in the Operator's Guide associated with the device.

2. Connect the USB device to the computer.
3. In Code Review, click the Upload Case from USB button. The select drive dialog appears. Select the drive letter of the USB drive and click **OK**.
4. A dialog box displays the transfer progress.

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Bluetooth

M Series/E Series with Bluetooth module

1. Position the defibrillator near the Bluetooth-enabled RescueNet Code Review workstation. Bluetooth is omnidirectional with a range of 20 – 30 feet.
2. In Code Review, click **Upload Case from Bluetooth**.
3. On the defibrillator, press and hold the leftmost softkey and turn on the defibrillator. Continue holding the softkey until the System Utilities screen displays and then press the Upload Card softkey.
4. On the Upload screen, press the Send softkey. On the E Series, press Bluetooth before you press Send.
5. In Code Review and on the defibrillator, progress bars display the transfer progress.

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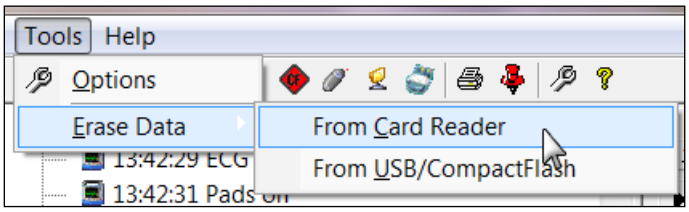
Card reader

M Series/E Series/R Series and 1600/1700

1. Insert the defibrillator's flash card into the RescueNet Code Review workstation's card reader.

Note: Inserting the card may prompt the Windows "New Hardware Found" wizard to appear and request to search for drivers. The system installs the necessary drivers with Code Review. You can prevent this message from appearing every time you insert the card by informing Windows not to prompt for drivers again. To do this, click **Next**, **Next**, **Finish**.

2. In Code Review, click the Upload Case from Card Reader button. A progress bar displays transfer progress.
3. When the transfer is complete, you can erase the card and re-use it in either an M Series/E Series or 1600/1700 defibrillator.



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Serial

M Series/E Series

1. Connect the defibrillator to the RescueNet Code Review workstation's serial port. For the M Series/E Series, you must use the ZOLL RS-232 Data Transfer Cable (ZOLL part number 8000-0605-01), which terminates in a female DB9 connector. For the 1600/1700, you must use a ZOLL 1600 Serial Link Cable and Connector (ZOLL part number 8000-1614).
2. In Code Review, click the Upload Case from Serial button.
3. On the defibrillator, press and hold the leftmost softkey and turn on the defibrillator. Continue holding the softkey until the System Utilities screen displays, and then press the Upload Card softkey. On the Upload screen, press the Send softkey. On E Series, you will need to press RS 232 before pressing Send.
4. In Code Review and on the defibrillator, progress bars display transfer progress.

Note: For serial uploads using the 1600/1700 defibrillator, refer to the 1600/1700 Operator's Guide.

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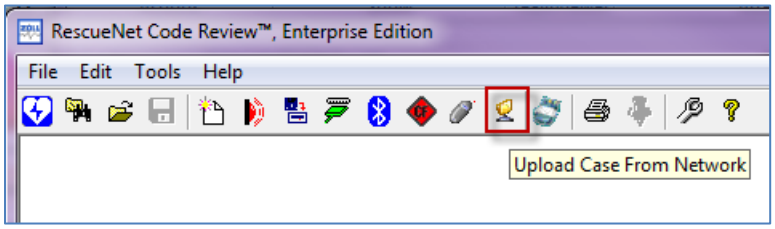
Wi-Fi

R Series Plus and X Series

On the defibrillator, use the transfer instructions found in the Operator's Guide for your device.

1. When you save to Wi-Fi, the system places the files in a "Full disclosure files" location on the configured server. In Code Review, you can rectify that location by going to Tools > Options > Network > Full disclosure files location.

2. To upload the files to Code Review, click the Upload Case From Network icon . The system retrieves the files from the full disclosure files location.



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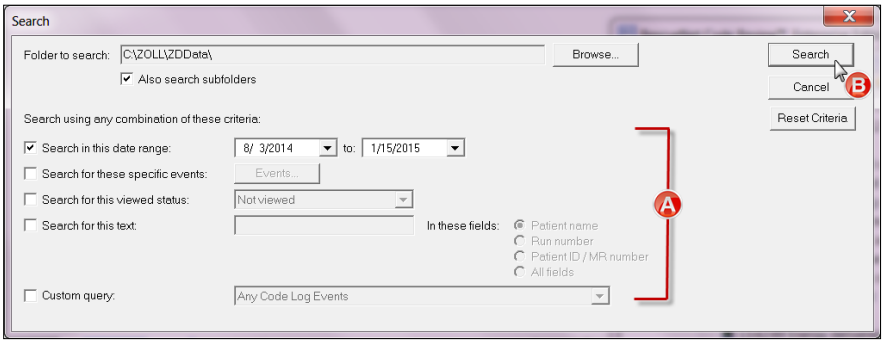
Search for Cases Previously Uploaded in CaseReview

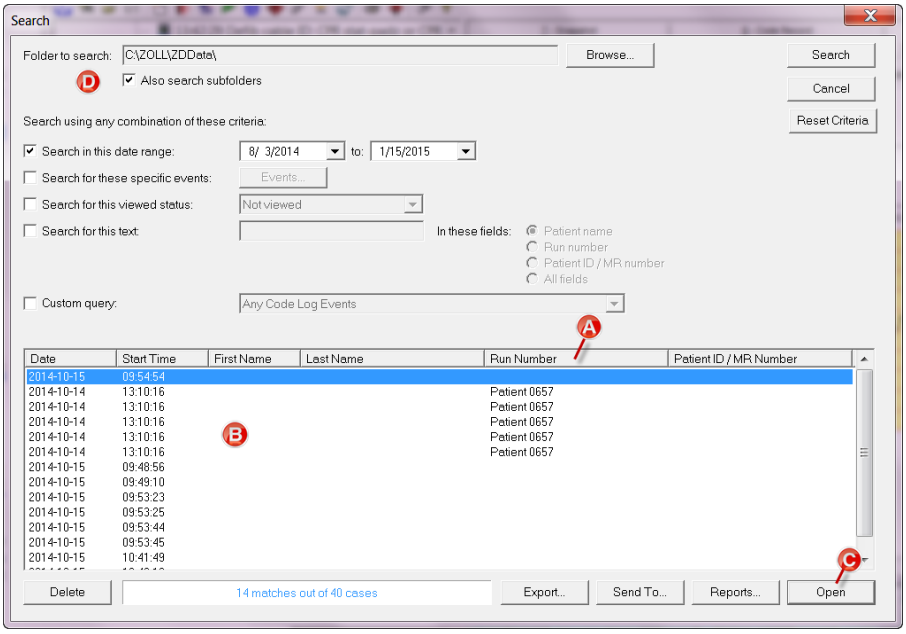
See the *ZOLL CaseReview User Guide* for more information on how to configure and use the Search CaseReview application.

Search for cases previously uploaded

1. Click the Search button.
2. Select any combination of criteria (A), and then click Search (B).



3. The system lists all cases that match that criterion. You can click any column header to sort by that column (A), select the case or cases you want to open (B), and then click Open (C).



Note: If you are archiving or sorting your cases into subfolders of the Default data files location folder, the Also search subfolders option (D) enables you to search those folders at the same time as the Default data files location folder.

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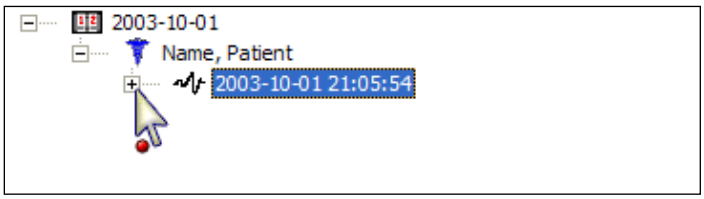
Chapter 3: View Cases

Navigate the Case Tree

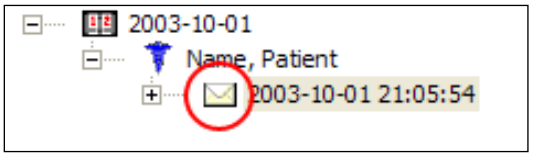
1. Case date:

2. Patient name:

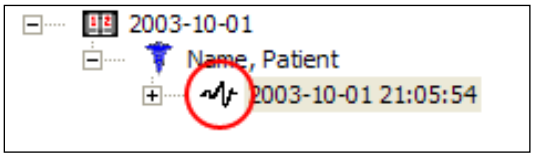
3. Case ID (date/time, preference by run number, if any):



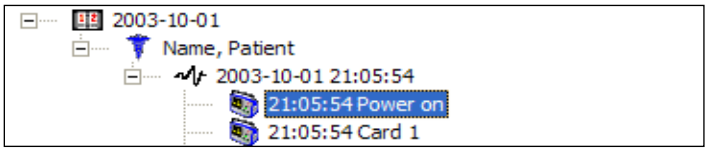
The case initially opens with a status of Not Viewed.



After five seconds, the status changes to Viewed.



4. Case events (click any event to display its data on the tabs):



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 M Series event

 M Series shock

 M Series 12-lead event

 E Series event

 E Series shock

 E Series 12 lead event

 R Series event

 R Series shock

 X Series/Propaq event

 X Series/Propaq shock

 X Series/Propaq 12-lead event

 AutoPulse event

 AED Pro event

 AED Pro shock

 AED Plus event

 AED Plus shock

 1600/1700 event

 1600/1700 shock

 User-added note

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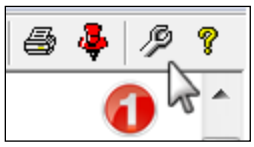
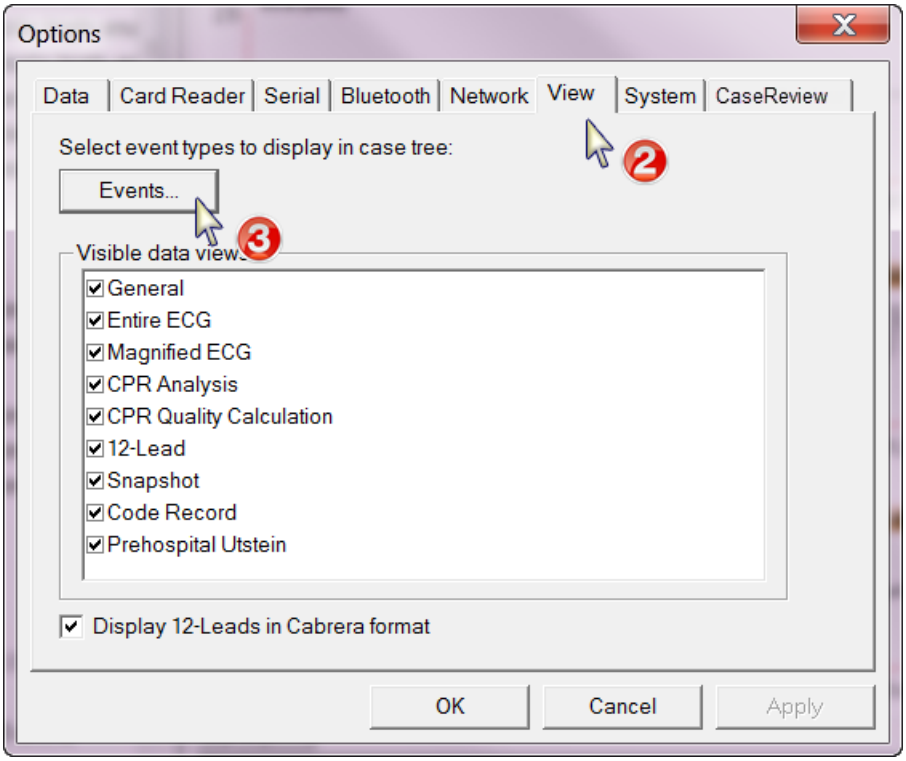
Select the Type of Events to View





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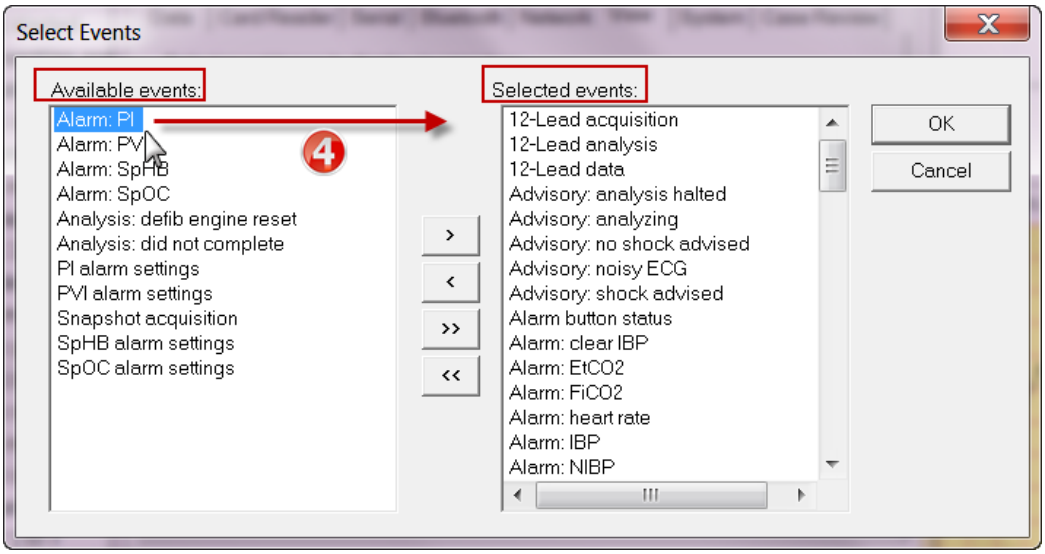

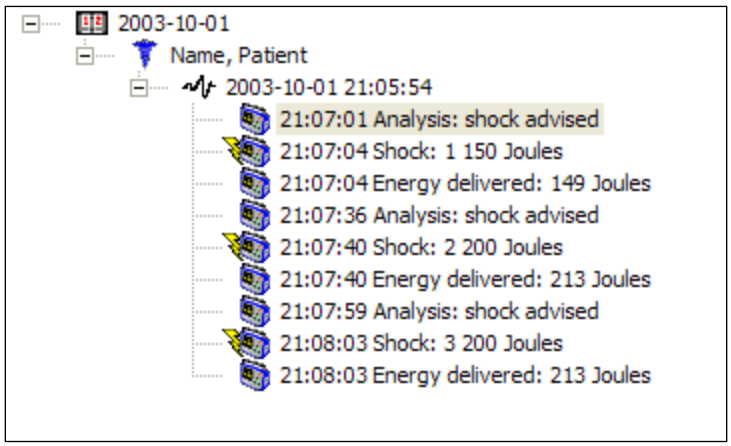

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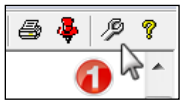
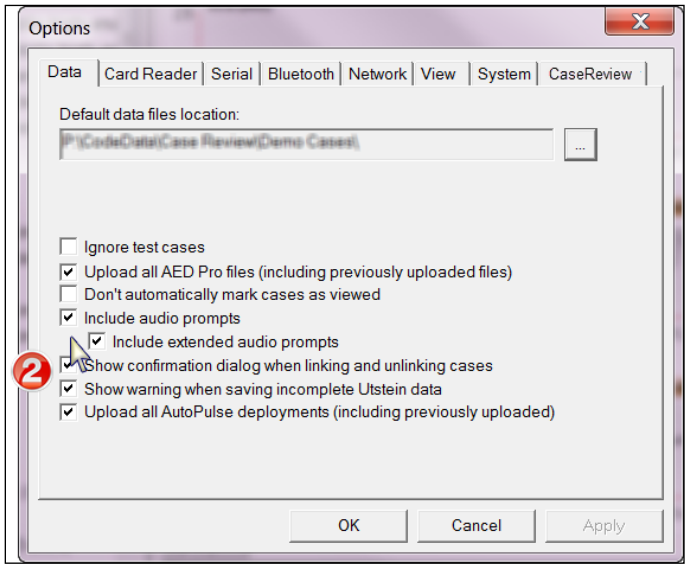
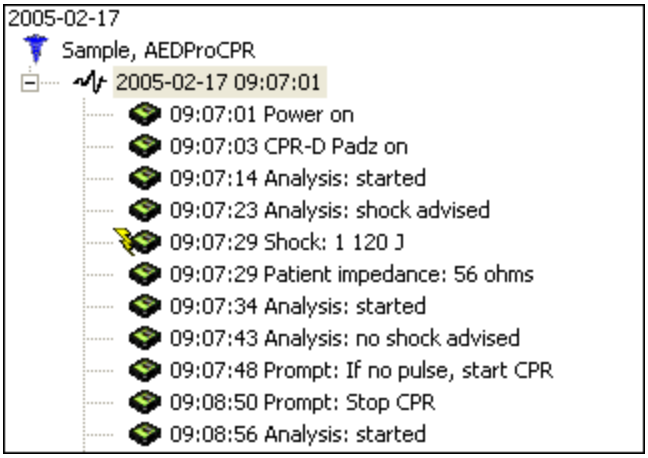
Turn On/Off Audio Prompts (AED Plus/AED Pro)





Note: To see how the case tree size changes depending on the audio prompt settings, see below.

Default view – include audio prompts



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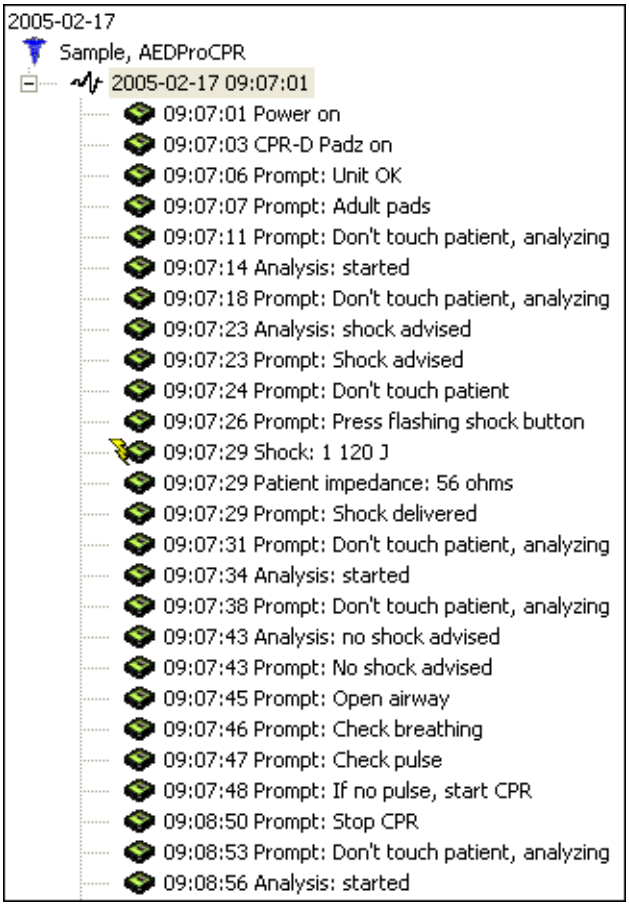
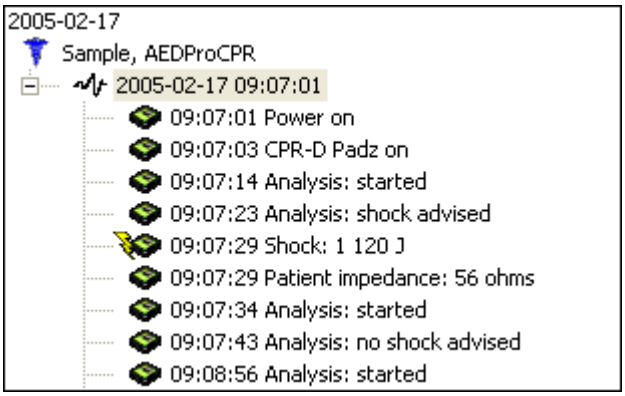
Optional view 1 – include extended audio prompts



Optional view 2 – audio prompts off



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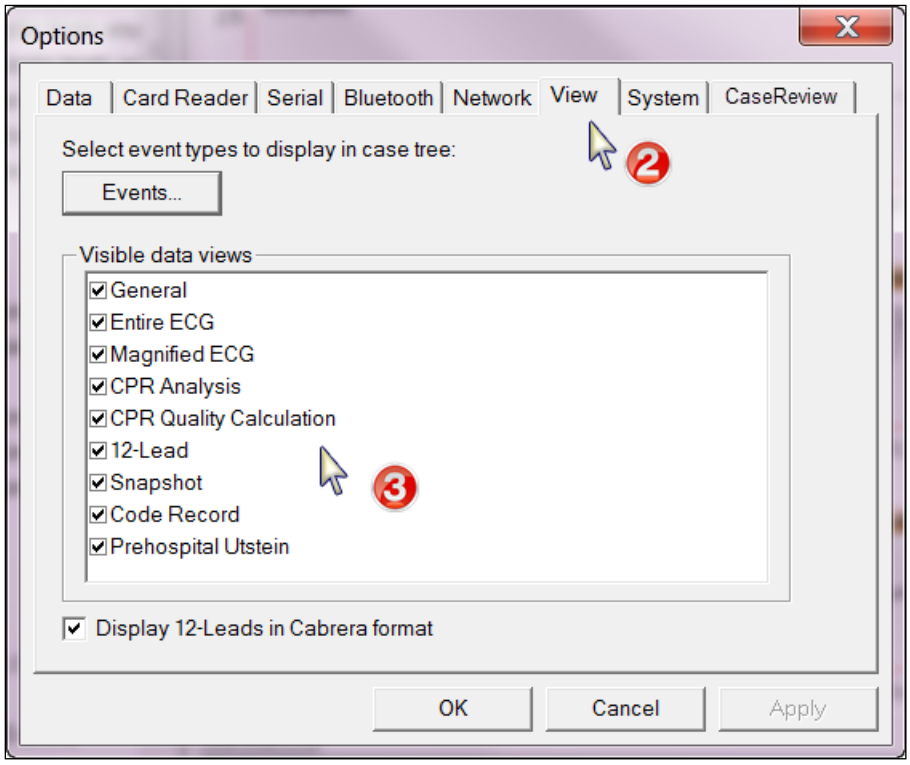
Select Data Tabs to Display



Note: The 12-Lead, Code Record, and Prehospital Utstein tabs are available in the RescueNet Code Review Enterprise edition.

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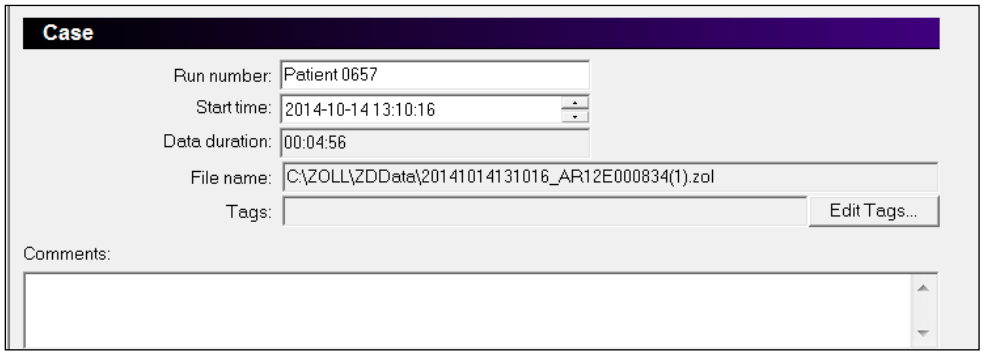
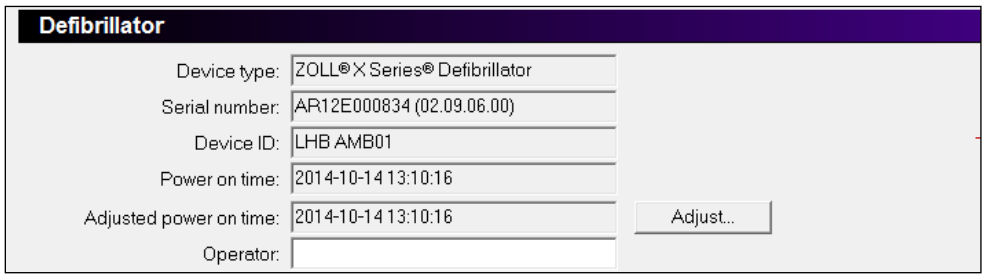
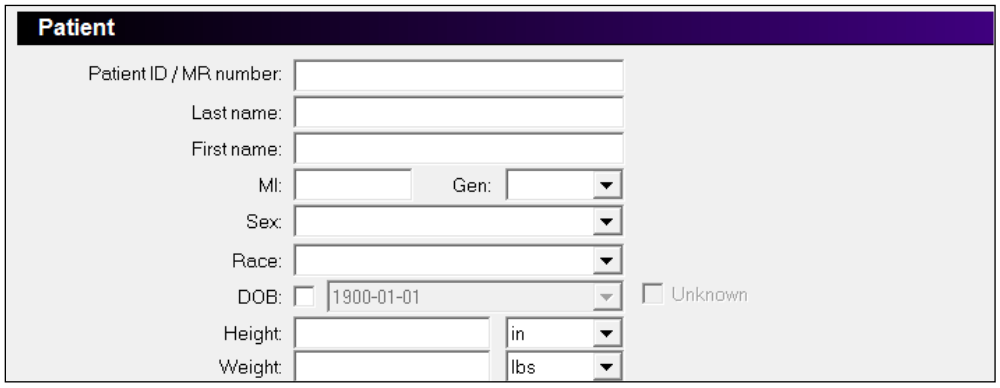
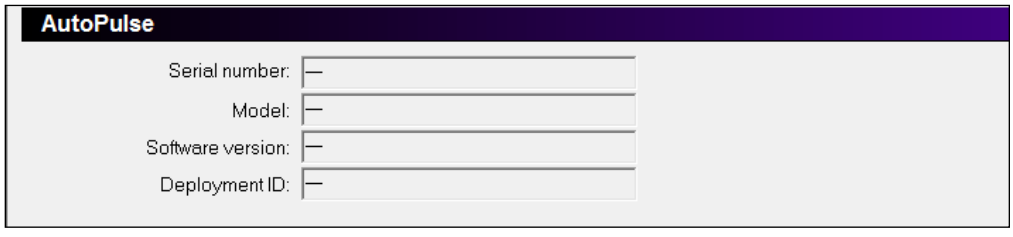
General information









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Tags

Under the General > Case section, apply a tag to a mark a case so you can easily find in in the future for further analysis. You can apply a tag to any type of case.

If you upload a case from CaseReview that has applied tags, the tags will display in the Tags field.

If you apply a tag using Code Review and then upload the case to CaseReview, the tag displays on the CaseReview Manage page when you view the case.

You can view all the tags configured in the system, add a new tag, or edit an existing tag.

1. Click **Edit Tags**. The system displays a list of configured tags.

2. Use an existing tag:
    a. Click a tag to highlight
    b. Click > to move the tag to the Selected tags column
    c. If you wish to apply multiple tags to the case, continue selecting the tags and moving them to the Selected tags column
    d. When you are finished, click OK. The tags display in the Tags field.

3. Create a new tag:
    a. Click Create New
    b. Enter the tag name in the window and click OK
    c. The tag name displays in the Available Tags list

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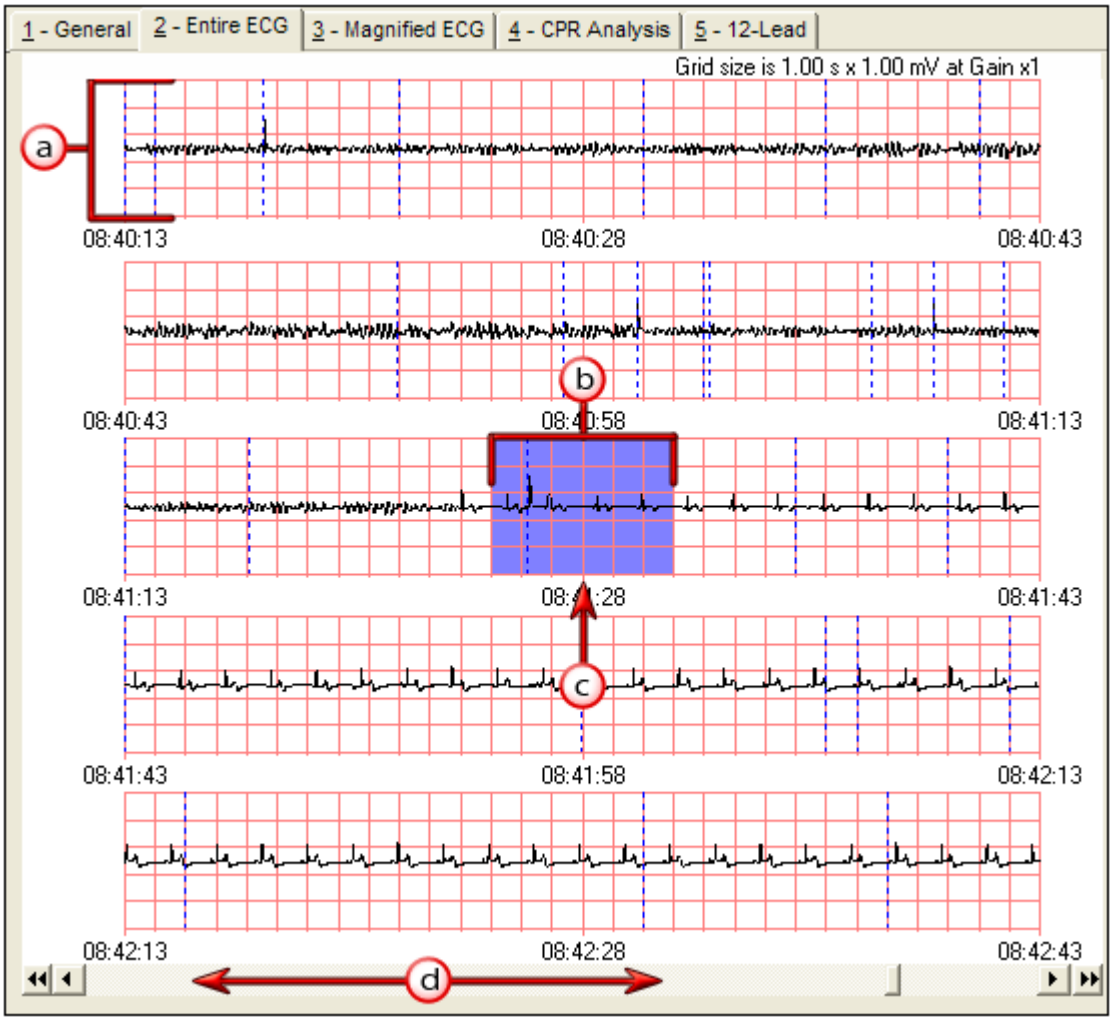
Entire ECG



a) Grid size is 1.00 s x 1.00 mV at Gain x 1
b) 6-second reference box
c) Midpoint
d) Click scroll arrow to move 00:00:30. Click in scroll box to move 00:02:00

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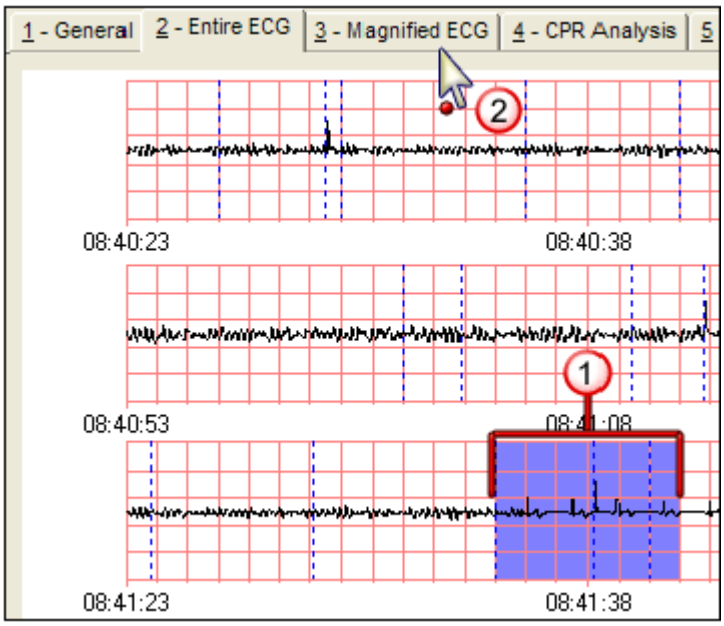
Magnified ECG and Animation

To view a magnified portion of the ECG, click the portion you want to magnify on the entire ECG.

On the other hand, in the case tree, click the event you want to magnify.

Alternatively, to display the portion of the entire ECG in the reference box, click the 3 – Magnified ECG tab.



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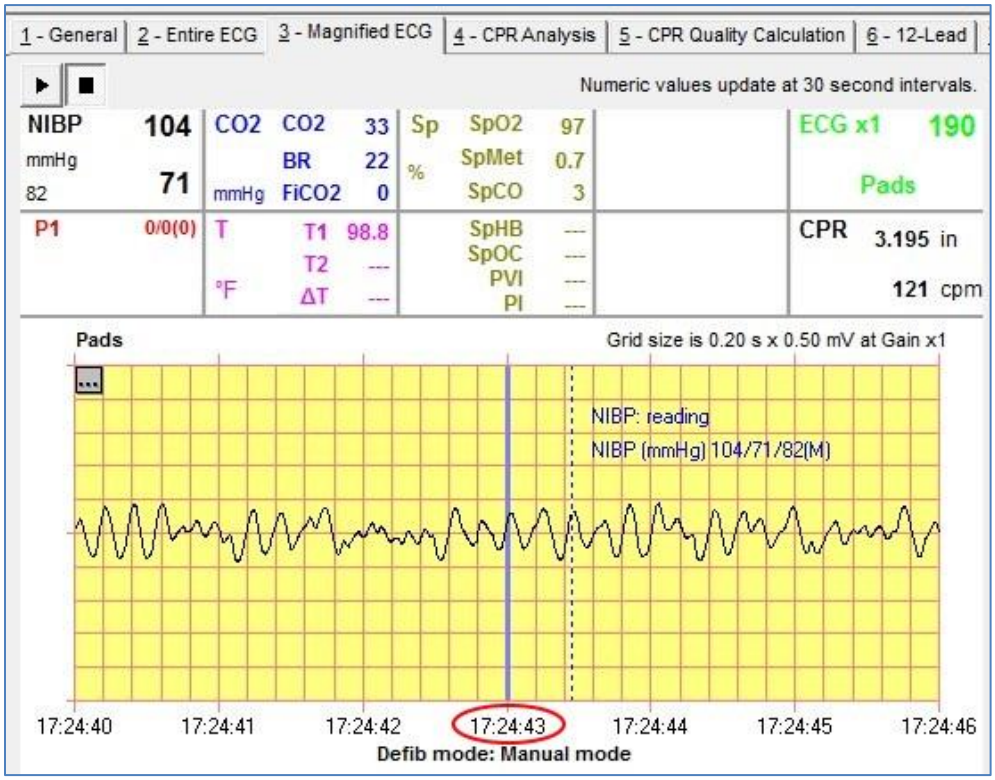
The system displays the selected portion of the ECG on the Magnified ECG tab.



Animated ECG controls.

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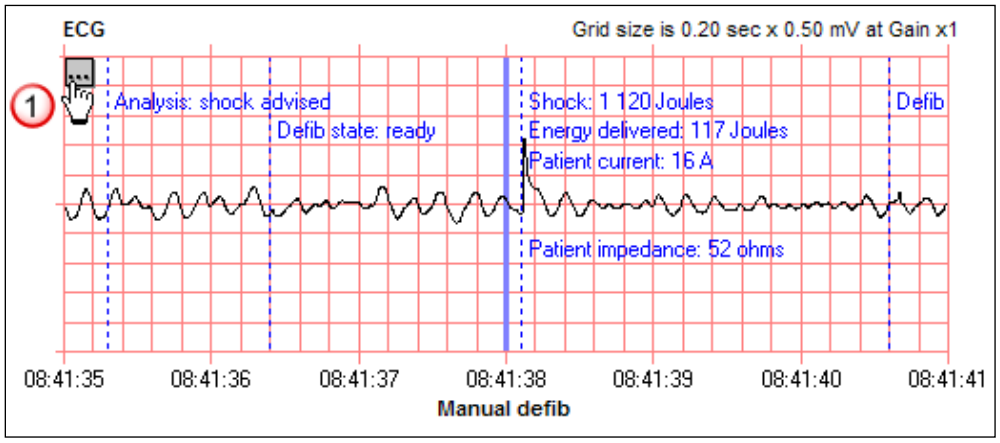
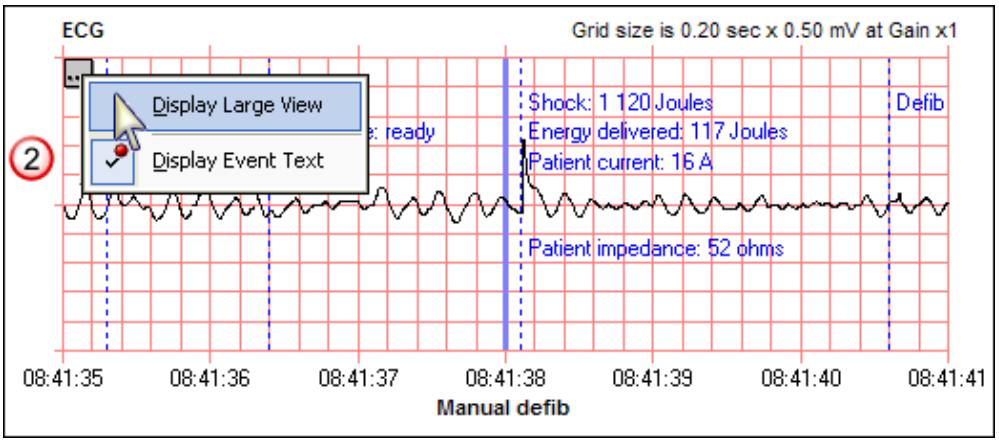
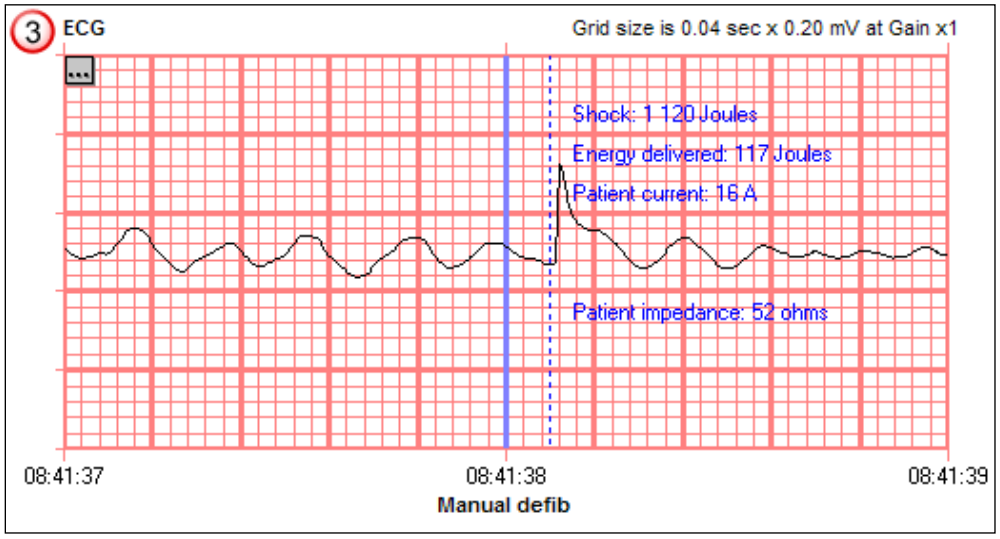
Magnified ECG – Display large view







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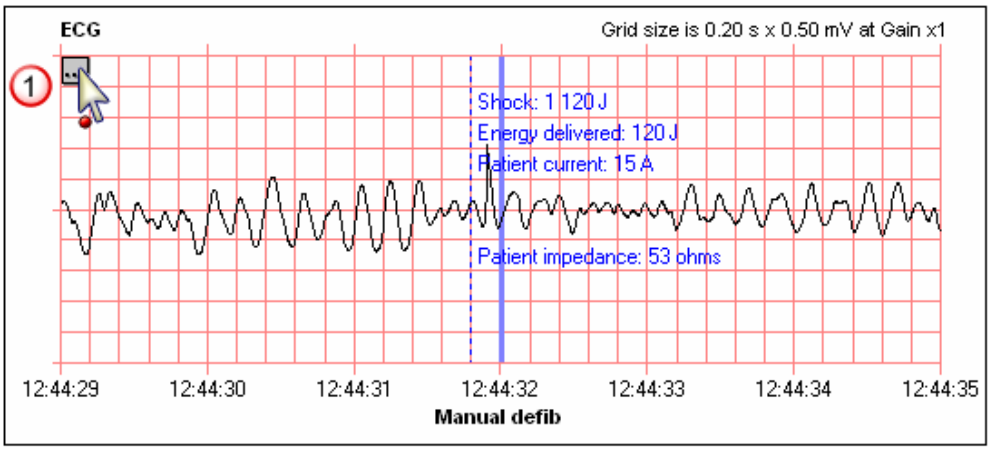
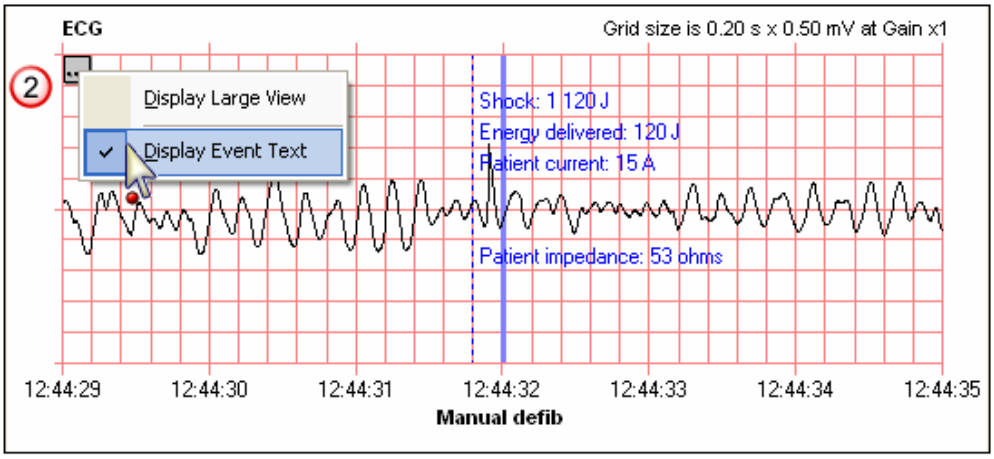
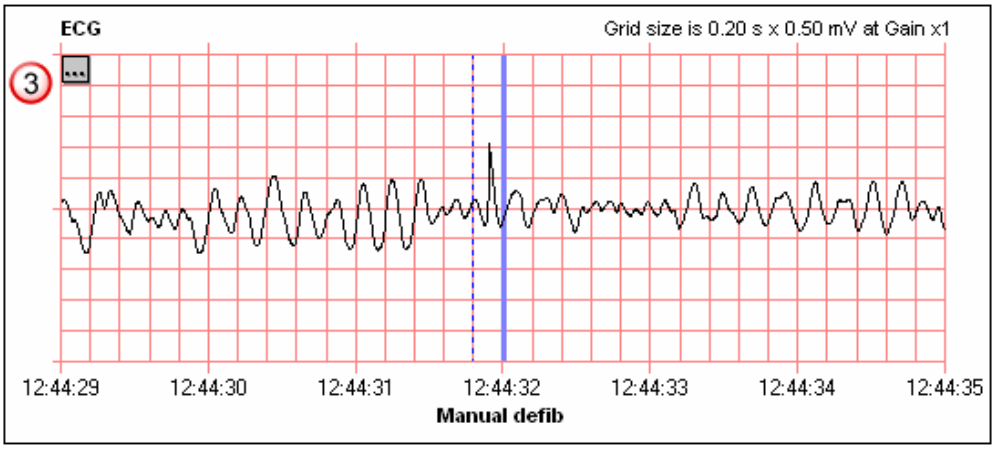
Magnified ECG – Display event text







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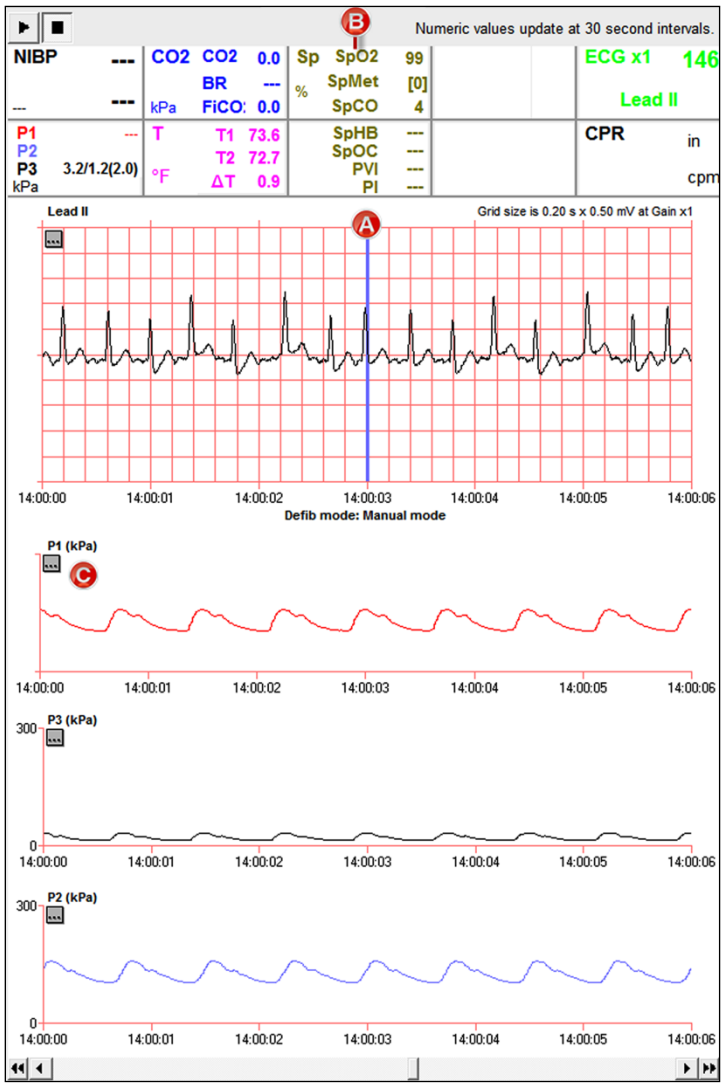
Advanced parameters

The system displays advanced parameters on the Magnified ECG tab in RescueNet Code Review – Enterprise edition.



A) Midpoint

B) Advanced parameters measurements at midpoint

C) The lower graph displays the advanced parameters waveforms. If the data is available, the system can show as many as three advanced parameter waveforms at one time.

Note: When using Propaq M/MD or X Series, the numeric values change at 30-second intervals.

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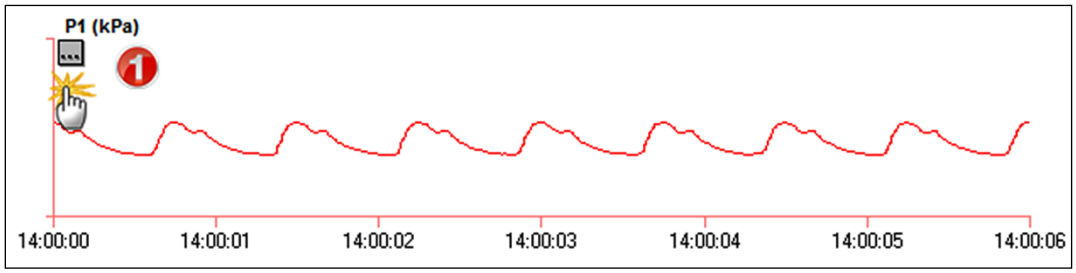
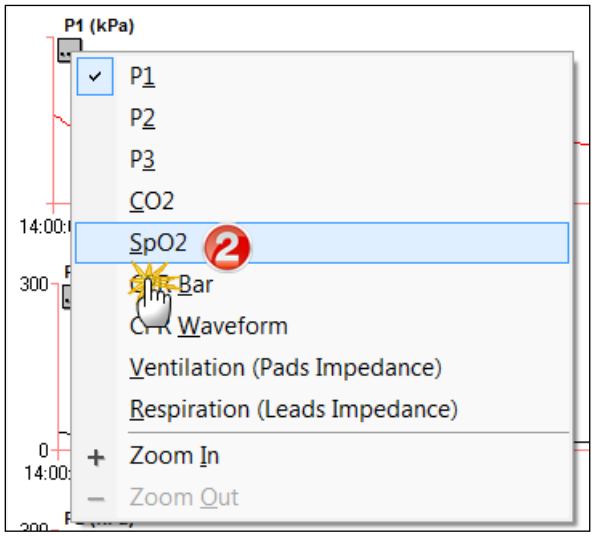
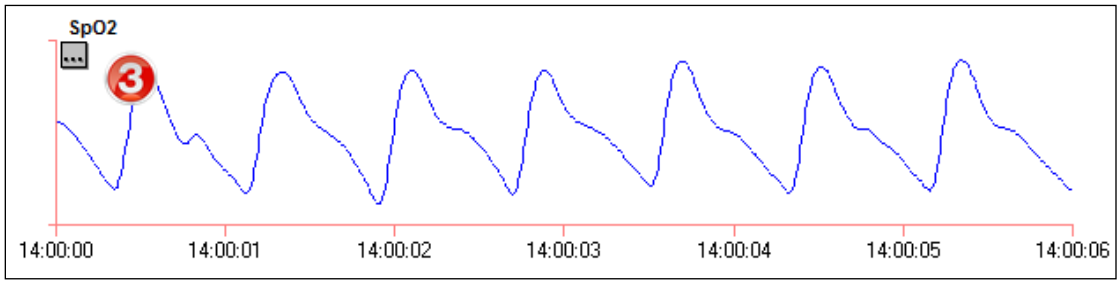
To change views for an advanced parameter waveform graph:







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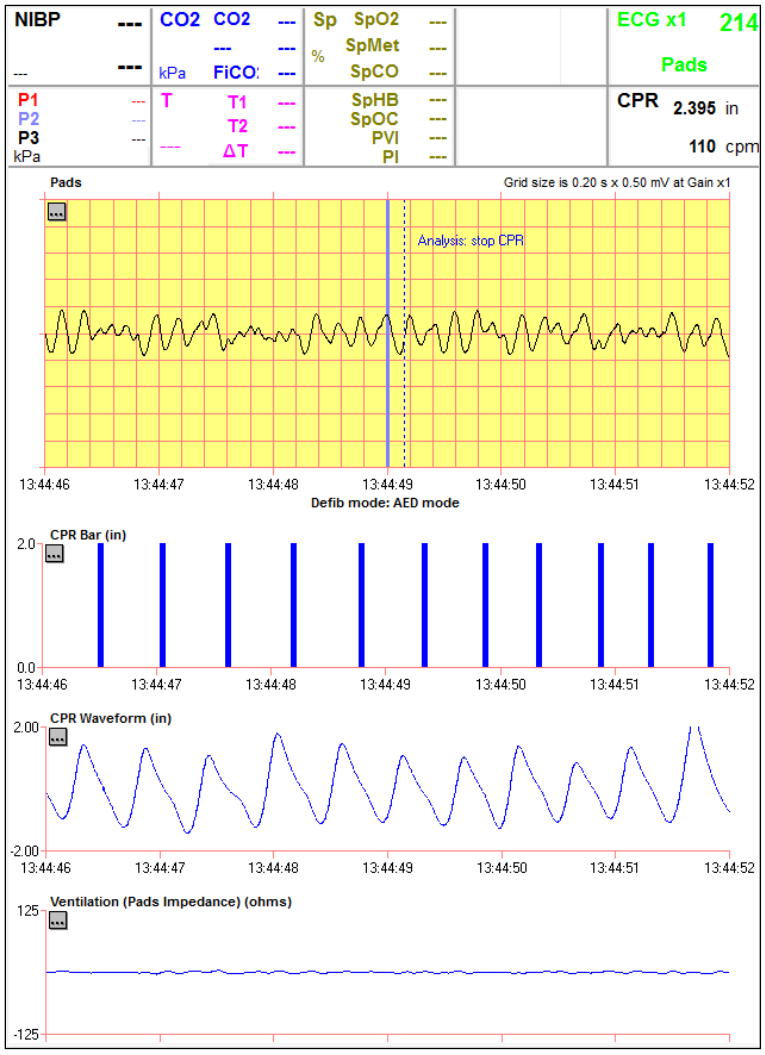
CPR (AED Plus/AED Pro/M Series/E Series/X Series/R Series

The Magnified ECG tab displays CPR compression depth and rate measurements along with the CPR Bar graph.



Note: CPR recording is contingent on the defibrillator software version and configuration.

See-Thru CPR® (filtered ECG)

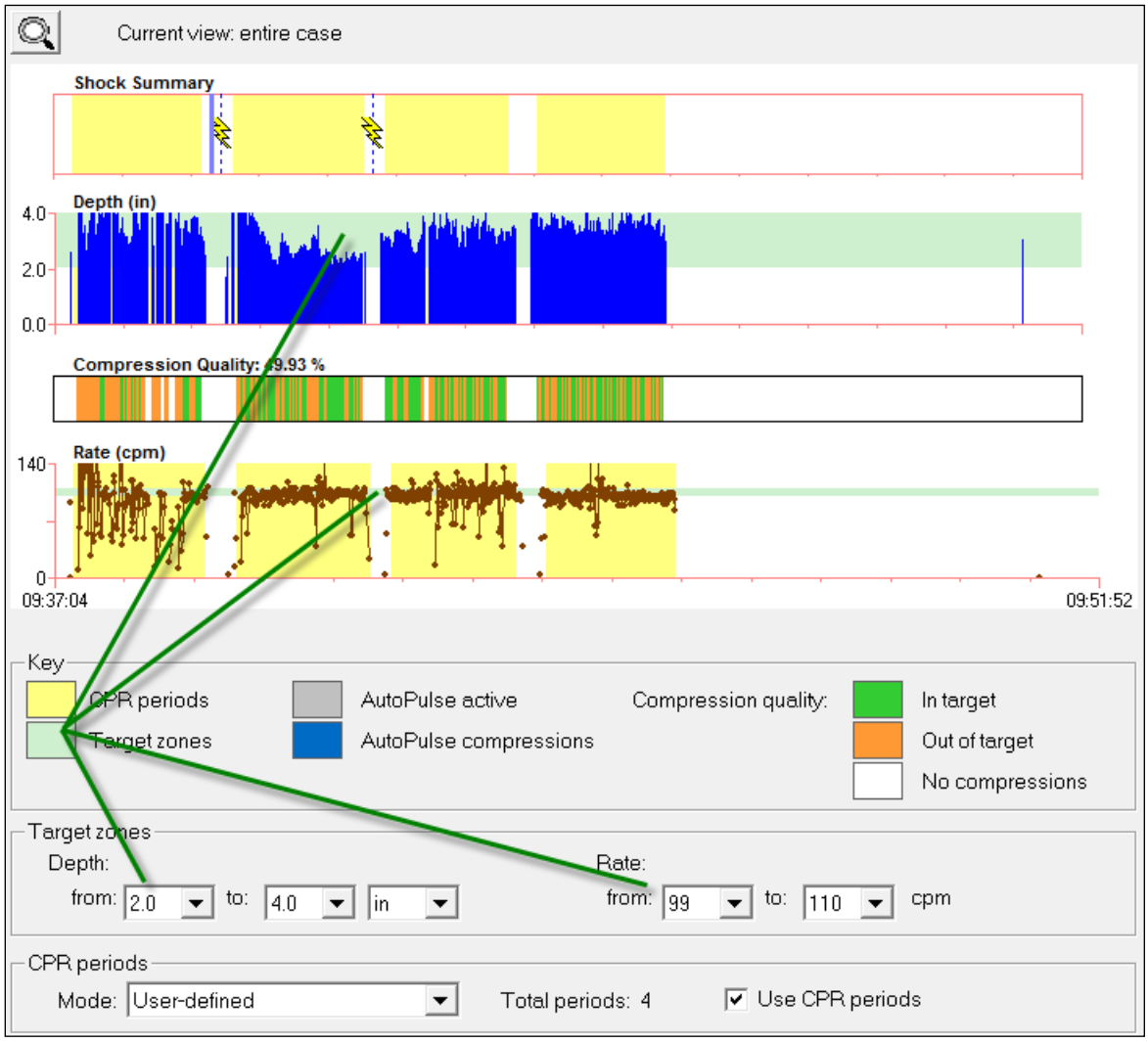
If the defibrillator records See-Thru CPR® (filtered ECG), the system draws two waveforms on the ECG. As demonstrated in the above image, the system draws graph an unfiltered waveform on the top and a filtered waveform on the bottom.

CPR Analysis

CPR Analysis is available for cases recorded on an AED Plus, AED Pro, AED 3, M Series, E Series, R Series, or X Series when CPR-D Padz was used. CPR Analysis also includes manual and AutoPulse compression information if the AutoPulse data is transferred via infrared.

Target zones

Target zones can be set to measure accuracy of compression rate and depth.



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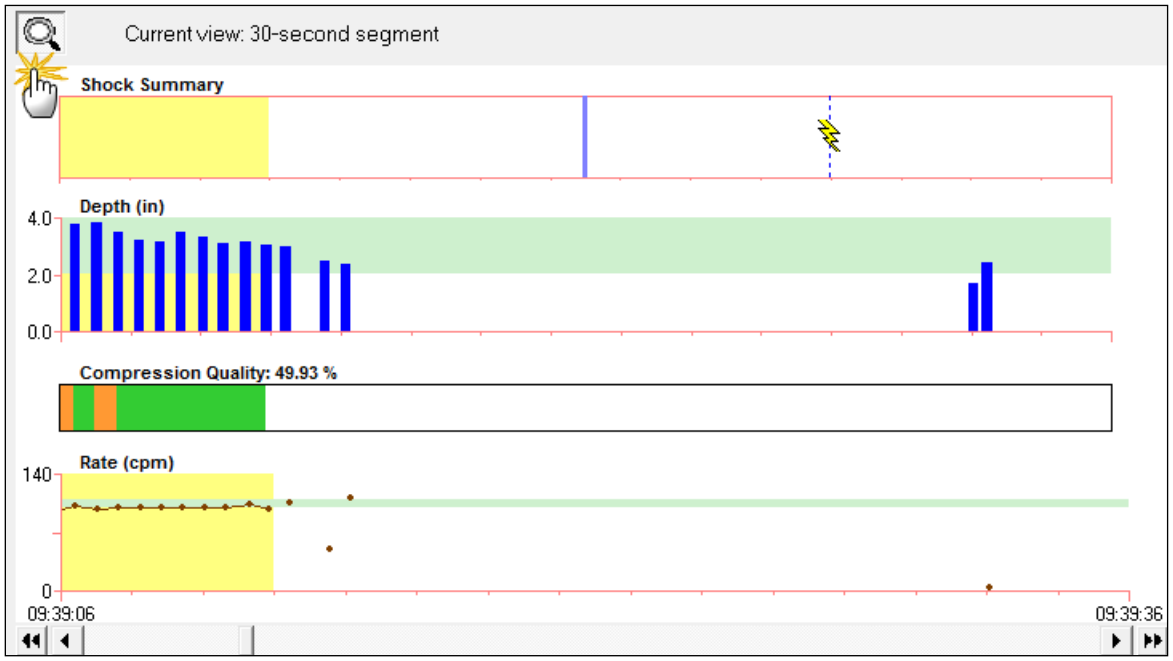
View

Click the magnifying glass to change the view from entire case to 30-second segment.



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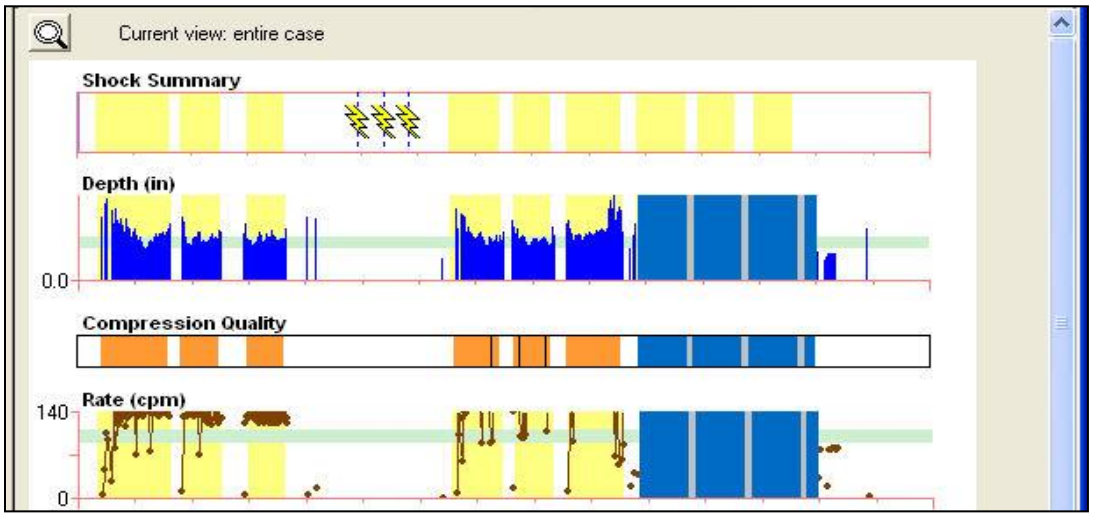
CPR periods

The CPR period defines which compression data to include in the CPR Summary. Compressions recorded outside of the defined CPR period are ignored. There are two ways to define the CPR periods in a case:

- **CPR prompt** – automatic; defined by the number of defibrillator prompts for start/stop compressions that were recorded during the case.
- **User-defined** – manual; defined by user drawn start/end CPR periods on the Entire ECG or Magnified ECG tabs.

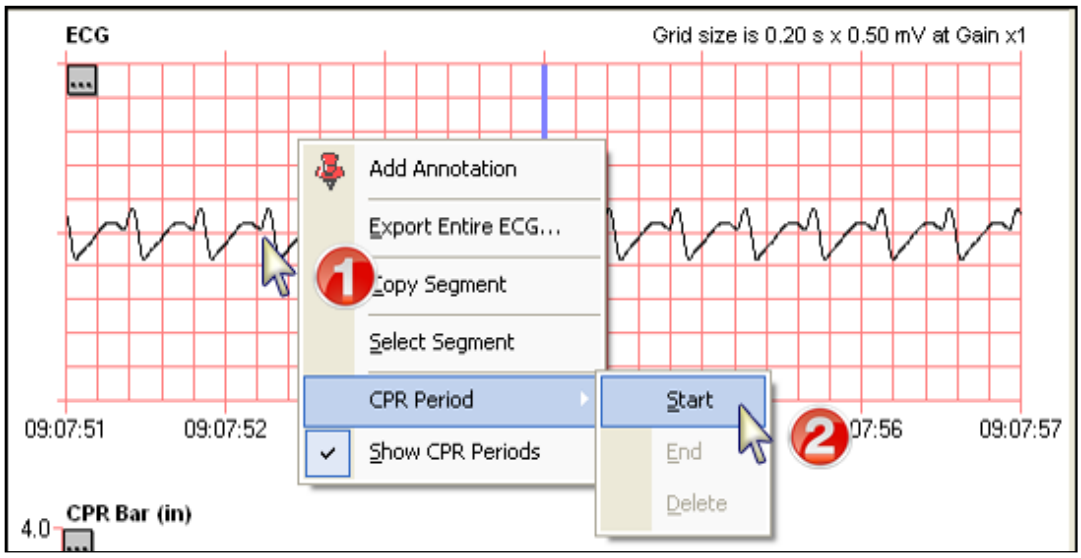
You can choose the mode for defining the CPR periods and whether to display the yellow boundaries on all graphs in Code Review. The system calculates the total number of boundaries (automatic or manually drawn) for you.

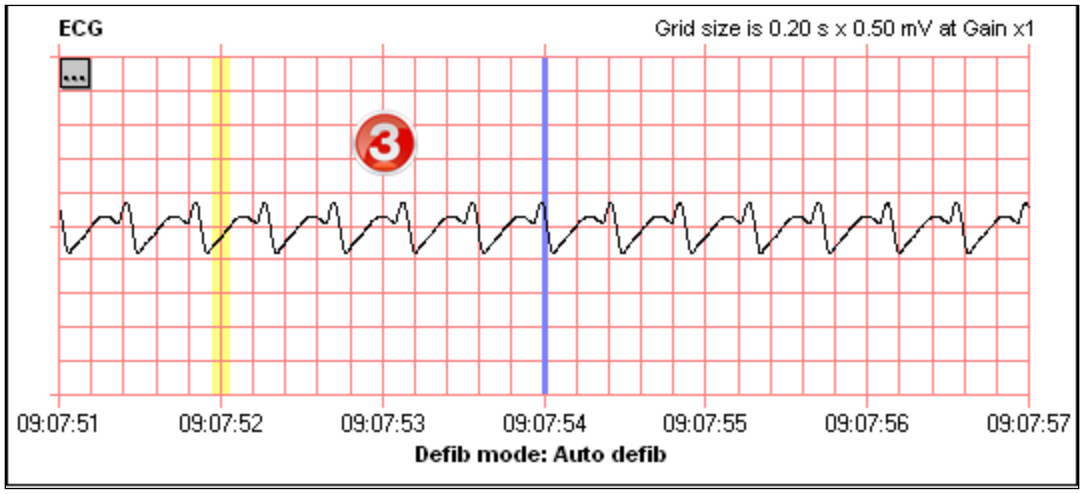


Notes:

- For defibrillator running in 'Manual mode', the automatic boundaries (mode: CPR prompt) are defined by the first CPR-D Padz onto the last CPR-D Padz Off or Case End.
- Compression data originating from the AutoPulse is not included in automatically drawn CPR boundaries (mode: CPR prompt) and must be manually drawn in mode: User-defined.
- The system connects the plotted points on the Rate graph within the boundaries of a CPR period only.
- In AED mode, the R Series records CPR periods that users can view in Code Review using the 'CPR Prompt' mode on the 'CPR Analysis' tab. The R Series does not display CPR Periods when it is in 'Manual mode'.

To create a user-defined CPR period on the Magnified ECG tab, first start a boundary:





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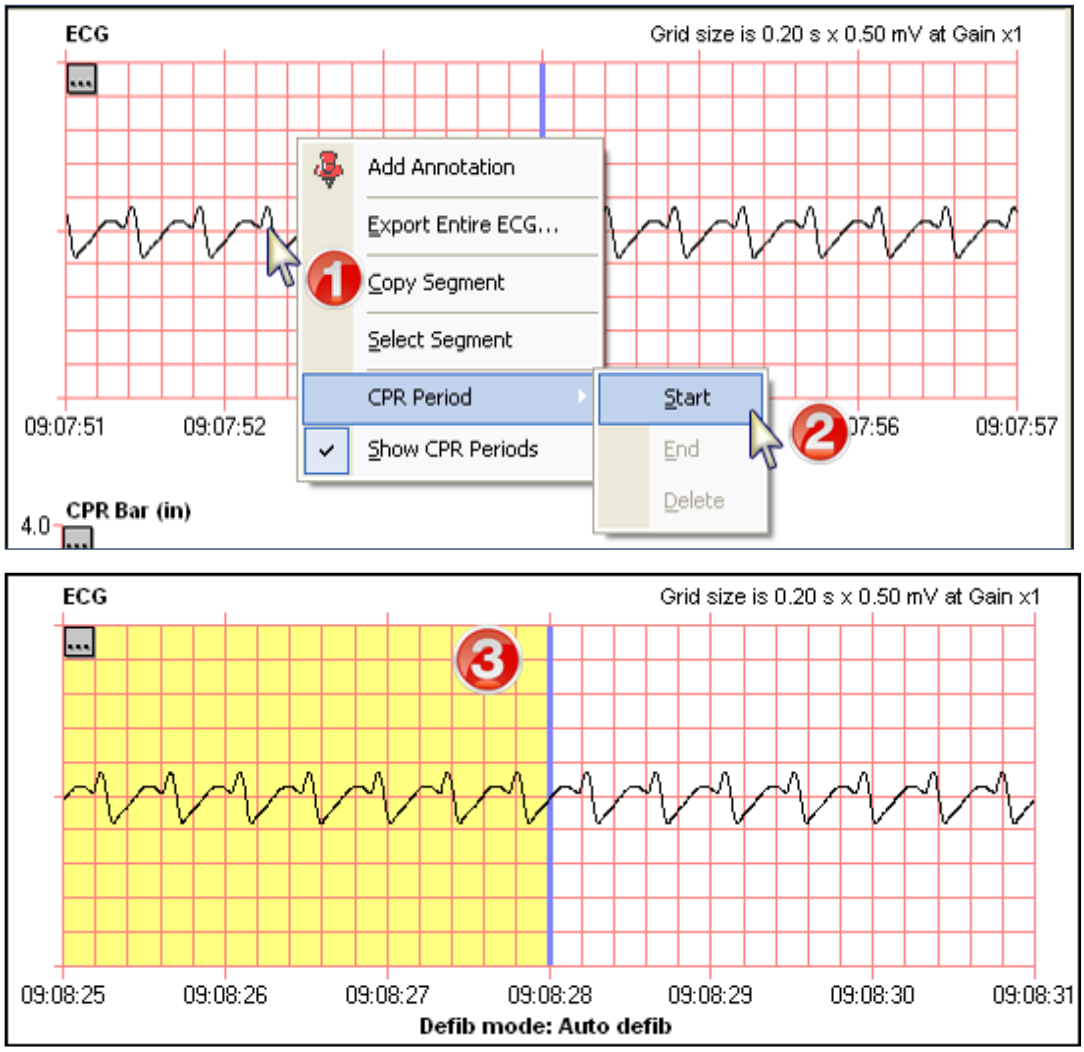
To end the boundary:



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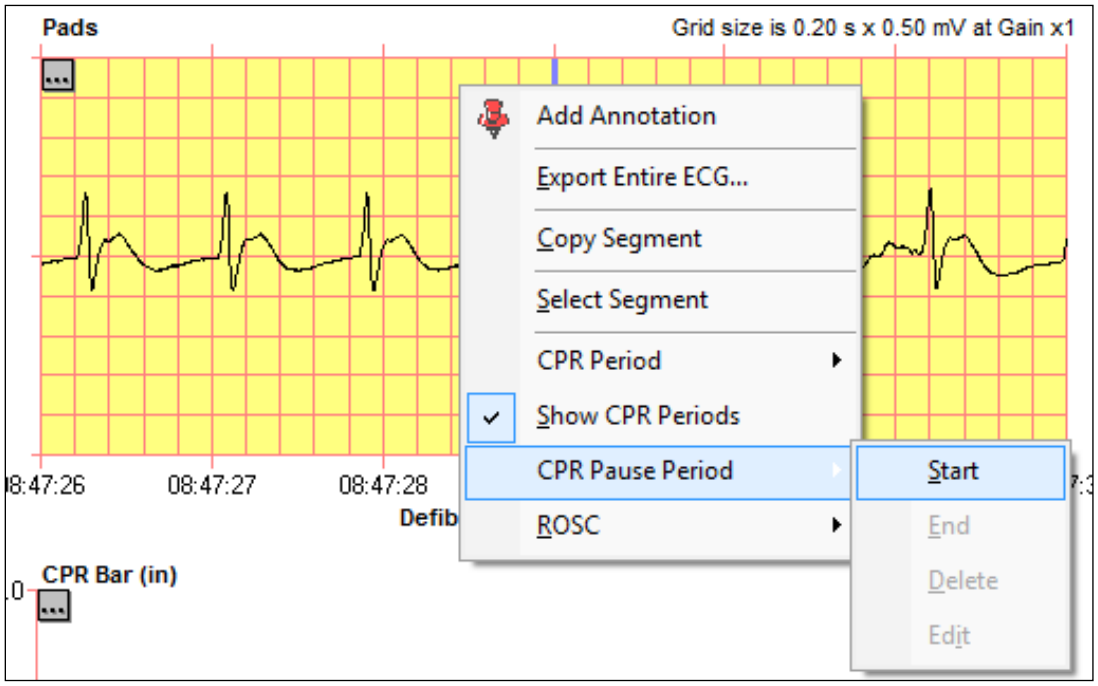
Drawing a CPR pause

Sometimes there are gaps in the delivery of compressions during a CPR Period. To annotate these time periods of missing compressions, a CPR Pause Period can be drawn and a reason for the pause can be included.

To create a user-defined CPR Pause period on the Magnified ECG tab, first start a boundary:



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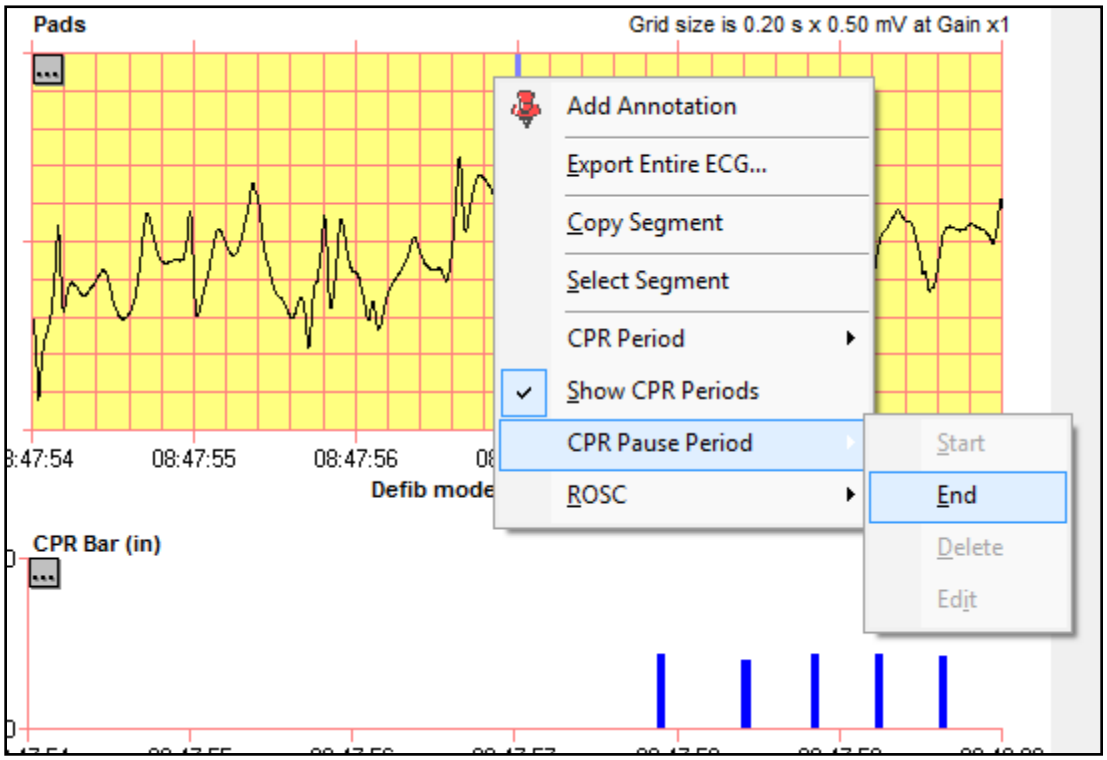
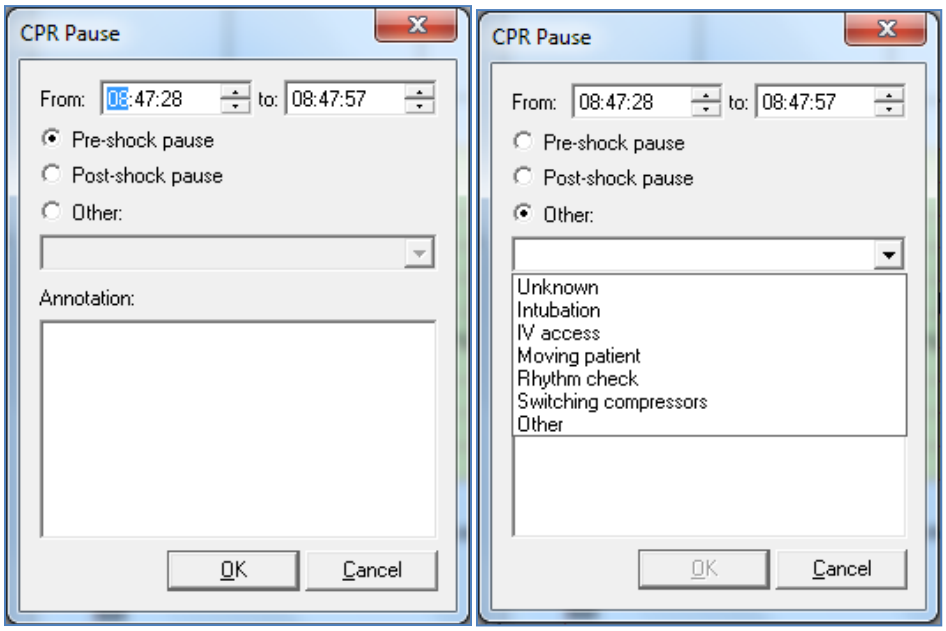
To end the boundary:



Select a CPR pause reason and click **OK**.



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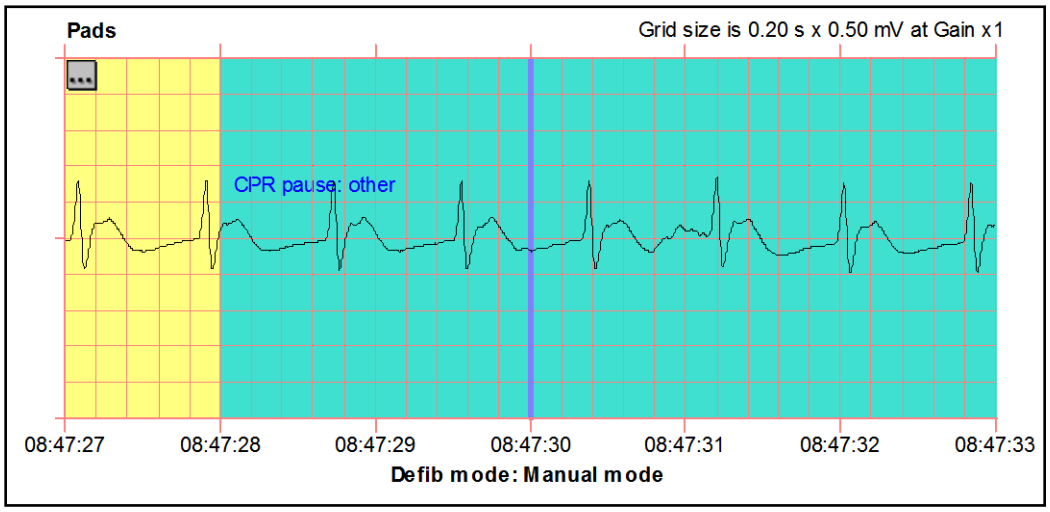
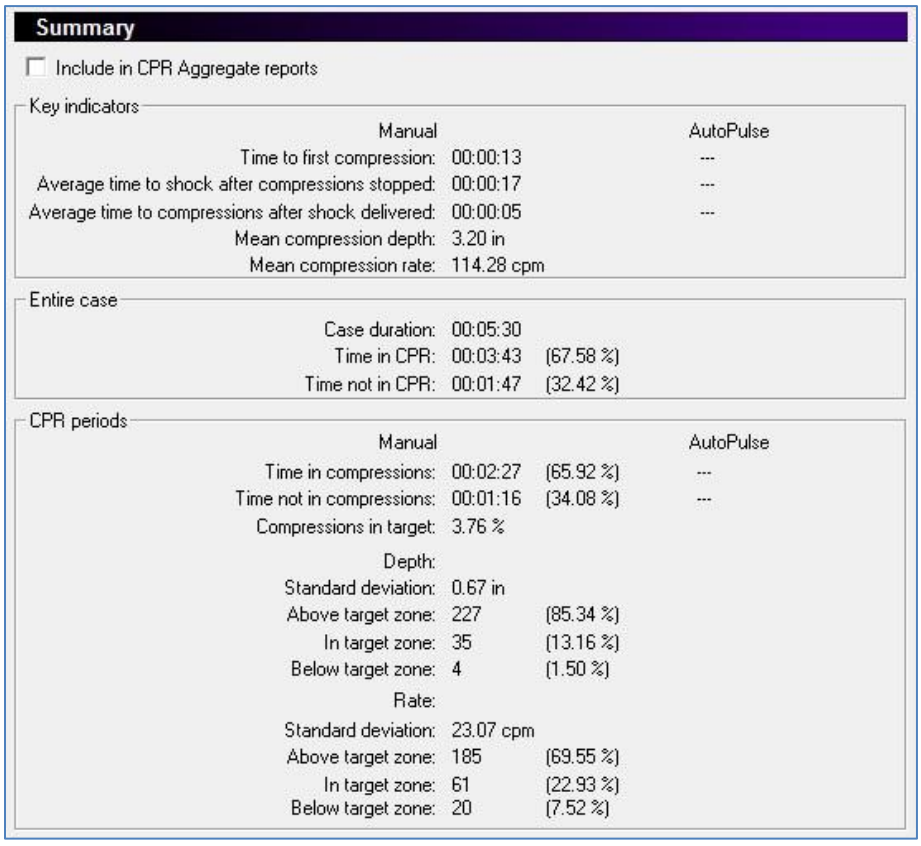
The system draws a blue-shaded segment that indicates the boundaries of the CPR Pause. The selected reason displays on the strip as Event Text.



Summary

The system displays an analysis of the defined CPR periods in the Summary section.

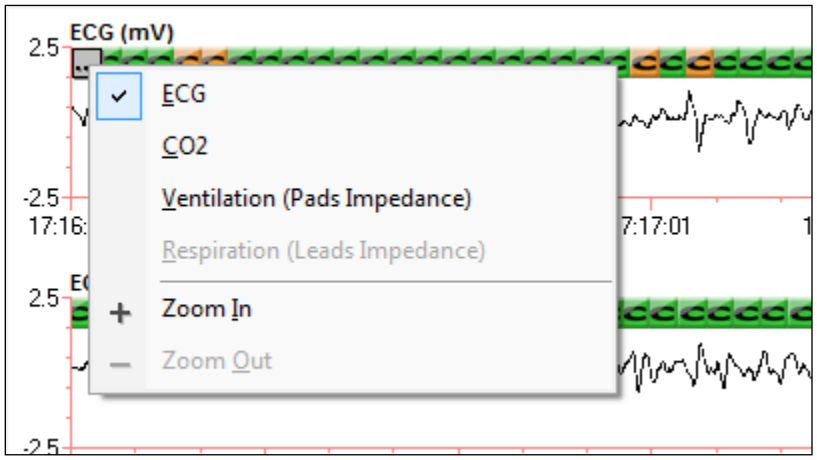


CPR Quality Calculation

The CPR Quality Calculations tab shows the physiologic waveform data timeline and the minute-by-minute analysis of the CPR quality parameters. The system automatically annotates the timeline with markers to indicate compressions and ventilations when the recorded data is available. You can manually add ventilations as well as ROSC periods.

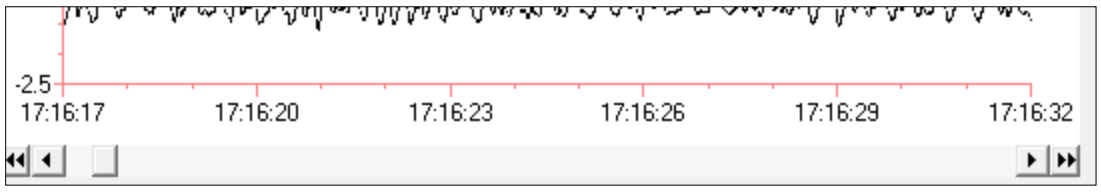
Timeline

Select which waveform to view on the timeline by right-clicking the context menu button on the first graph.



The system displays a full minute across the four physiological waveform graphs. You can select which minute of waveform data the system displays by using the Minute drop down list available at the top of the tab.

You can also use the scroll bar arrows under the waveform graphs to move forward or backward by one minute or jump to the beginning or end of the case.



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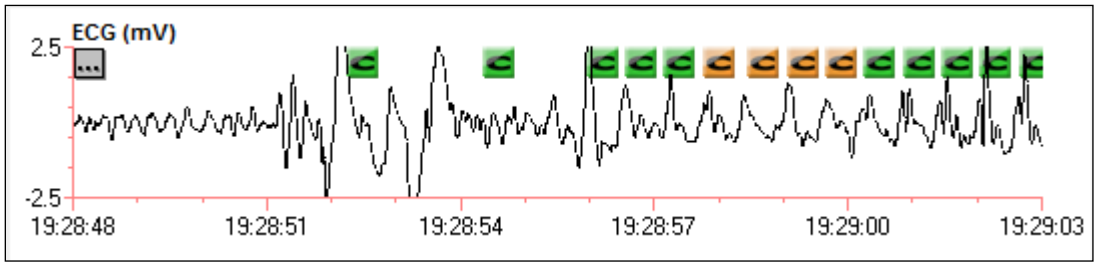
Annotating Compressions and Ventilations

The system produces compression markers from compression data stored by the defibrillators. When data is available, the system also annotates ventilation markers to indicate the impedance, derived from Pads or Leads, and/or breath detection from CO2. You can also manually annotate the timeline with ventilation markers.

C markers

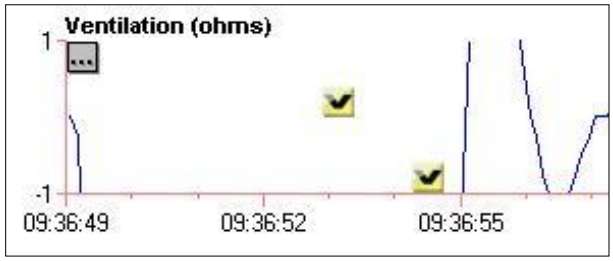
Compressions are marked with a bold **C** icon. Green indicates a compression with depth in range and orange indicates a compression with depth that is out of range. The depth range for compressions is set on the CPR Analysis tab. See the CPR Analysis tab, Target Zones, for instructions on setting the depth range target zone.

Note: You cannot manually add or delete a compression marker.



V markers

Ventilations/Respirations are marked with a bold **V** icon.



Note: The system places automatically generated ventilation markers higher on the timeline with manually annotated markers lower on the timeline.

The ventilation markers displayed are based on the user selected Vent. Source. The Vent. Source menu is available at the top of the tab and defaults to CO2.

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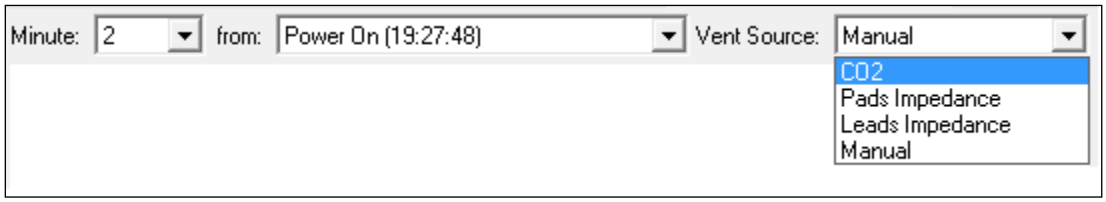


CO2: The system automatically annotates CO2 based ventilation markers when the CO2 data contains breath detection information.

Pads Impedance: The system automatically annotates Pads impedance based ventilation markers when Pads impedance data is available.

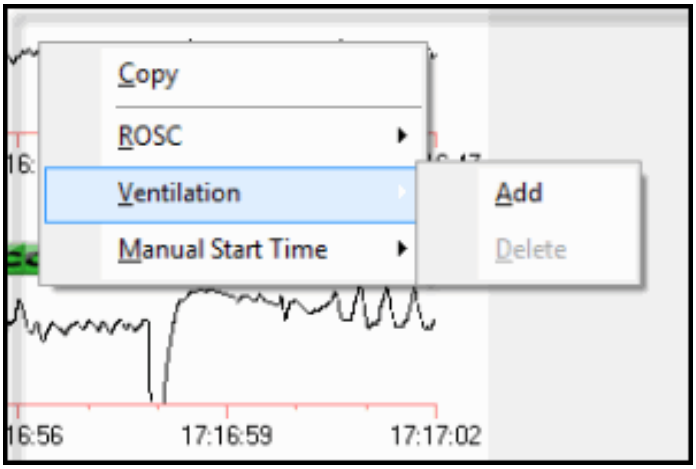
Leads Impedance: The system automatically annotates Leads impedance based ventilation markers when Leads impedance data is available.

Manual: The system displays the user created ventilation markers on the timeline.

Note: Choosing a new Vent. Source causes the timeline to be redrawn showing the chosen set of ventilation markers.

Adding, deleting, ventilation markers

Ventilation markers can be added or deleted by right clicking on the timeline and then choosing **Ventilation**, then **Add**, **Delete** or **Delete All**.



Note: Selecting **Delete All** will delete all ventilations in the current minute only.

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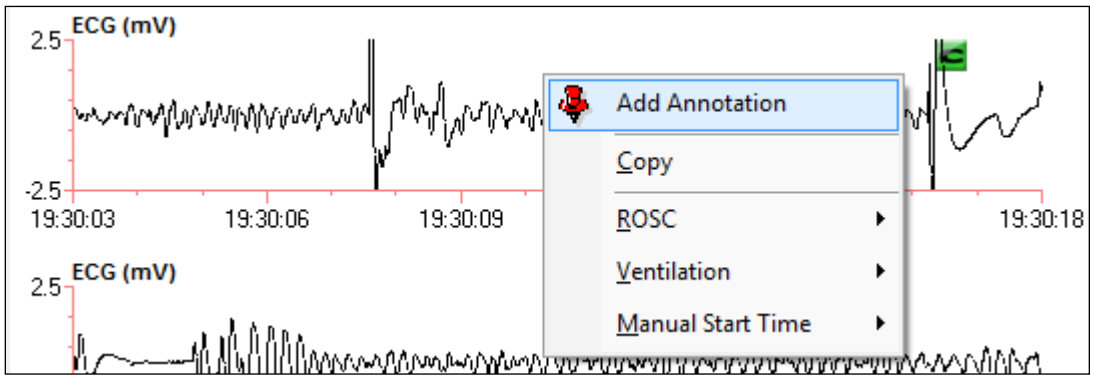
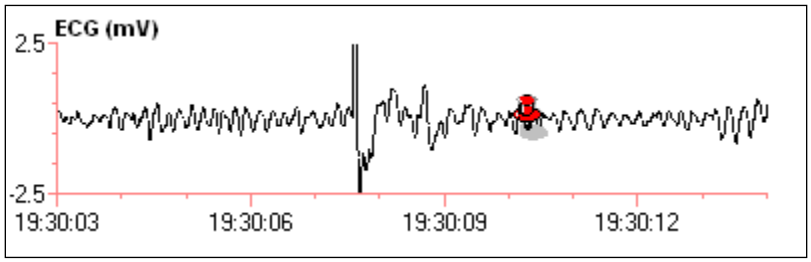
Adding annotations

You can insert an annotation event into the timeline by selecting *Add Annotation* in the context menu. For more information on how to add an annotation, see Adding Annotations.

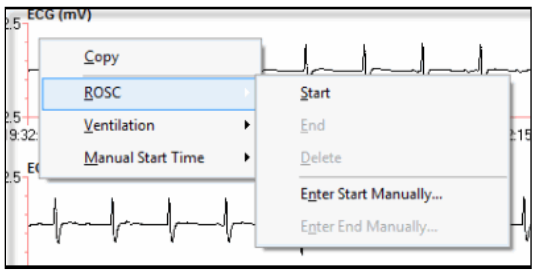


After saving the annotation, the event is marked with the push pin icon.



Adding ROSC periods

Draw ROSC boundaries with a simple right-click at a point in time on the graph or with a more precise method, by manually entering a specific time.



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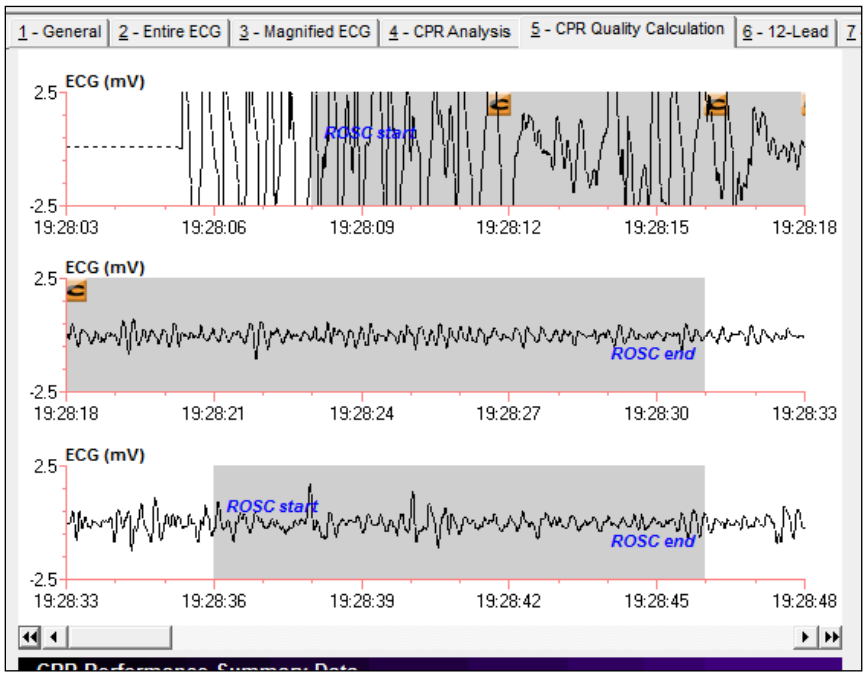
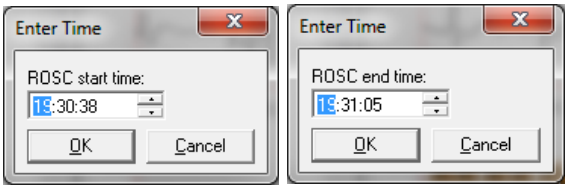
Create a ROSC Start event with a right-click on the graph at the point in time to begin the ROSC boundary; in the context menu, select **ROSC**, **Start**. Next, create a ROSC End event with a right-click on the graph at the point in time to end the ROSC boundary. In the context menu, select **ROSC**, then **End**. The ROSC period is shaded as shown below.



Alternately, you can enter the ROSC Start and ROSC End times manually by right clicking anywhere on the graph and clicking **ROSC**. Select **Enter Start Manually** or **Enter End Manually** as appropriate.



You can delete any user created ROSC period via the context menu by right clicking anywhere within the ROSC period drawn on the graph and clicking **ROSC**, then **Delete**.

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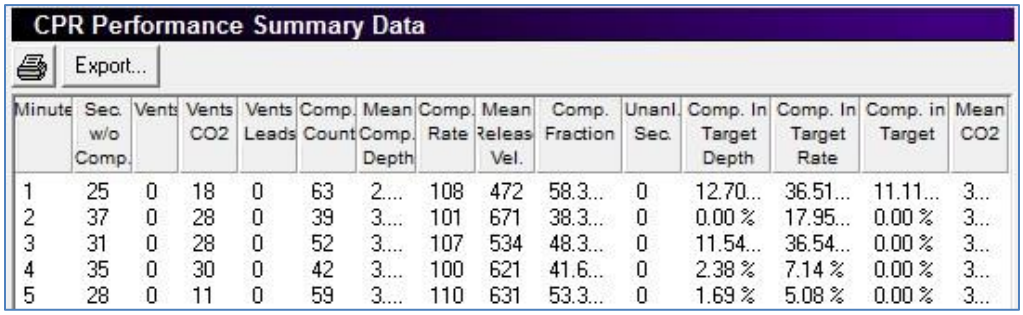
CPR Performance Summary Data

Use the CPR Performance Summary table for minute-by-minute analysis of the CPR data after you have made the desired edits for compressions, ventilation, and or ROSC periods to the timeline.



Minute	Sec. w/o Comp.	Vents	Vents CO2	Vents Leads	Comp. Count	Mean Comp. Depth	Comp. Rate	Mean Releas Vel.	Comp. Fraction	Unanl. Sec.	Comp. In Target Depth	Comp. In Target Rate	Comp. in Target	Mean CO2
1	25	0	18	0	63	2....	108	472	58.3...	0	12.70...	36.51...	11.11...	3...
2	37	0	28	0	39	3....	101	671	38.3...	0	0.00 %	17.95...	0.00 %	3...
3	31	0	28	0	52	3....	107	534	48.3...	0	11.54...	36.54...	0.00 %	3...
4	35	0	30	0	42	3....	100	621	41.6...	0	2.38 %	7.14 %	0.00 %	3...
5	28	0	11	0	59	3....	110	631	53.3...	0	1.69 %	5.08 %	0.00 %	3...

Note: Click on a row to display the selected minute the same as if you selected the minute from the dropdown at the top of the tab.

Minute:	Minute count from start time
Sec w/o Comp:	Seconds in this minute without compressions
Vents:	Manually marked vent count for minute
Vents CO2:	Ventilations reported from CO2 monitoring (Breath detection)
Vents Leads:	Respirations detected from leads impedance signal
Comp. Count:	Compression count for minute
Mean Comp. Depth:	Depth: Average compression depth
Comp. Rate:	Rate: Average compression rate
Mean Release Velocity:	Average over the minute shown in millimeters per second.
Comp. Fraction:	Percentage of minute with compressions
Unanl. Sec.:	Un-analyzable Seconds, the number of seconds that were not analyzed
Comp. In Target Depth:	Percentage of compressions in target depth for minute
Comp. In Target Rate:	Percentage of compressions in target rate for minute

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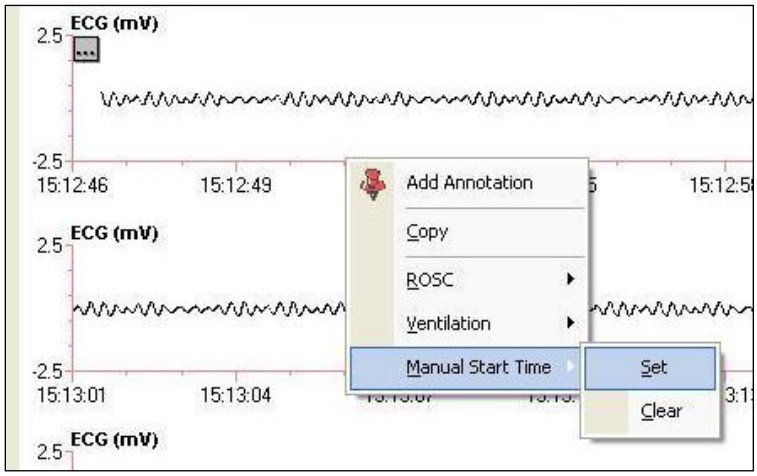
Choosing the Start Time for Minute-by-Minute Analysis

You can choose to set the start time for the minute-by-minute analysis to Power On, Pads On, or manually set. When you change the start time selection, the system recalculates the minute-by-minute results. The system automatically calculates and provides the Pads On and Power On times from the case data in the dropdown.

Creating a manual start time

To set the manual start time, right click on the timeline and choose *Manual Start Time,* then *Set*. The system adds the Manual start selection to the start time list as shown above.



Print/Export CPR Performance Summary Data

You can save and/or generate a report of the columns shown in the CPR Performance Summary Data.

Export: Click the Export... icon and choose a file location. The system exports the data to a .xml file.

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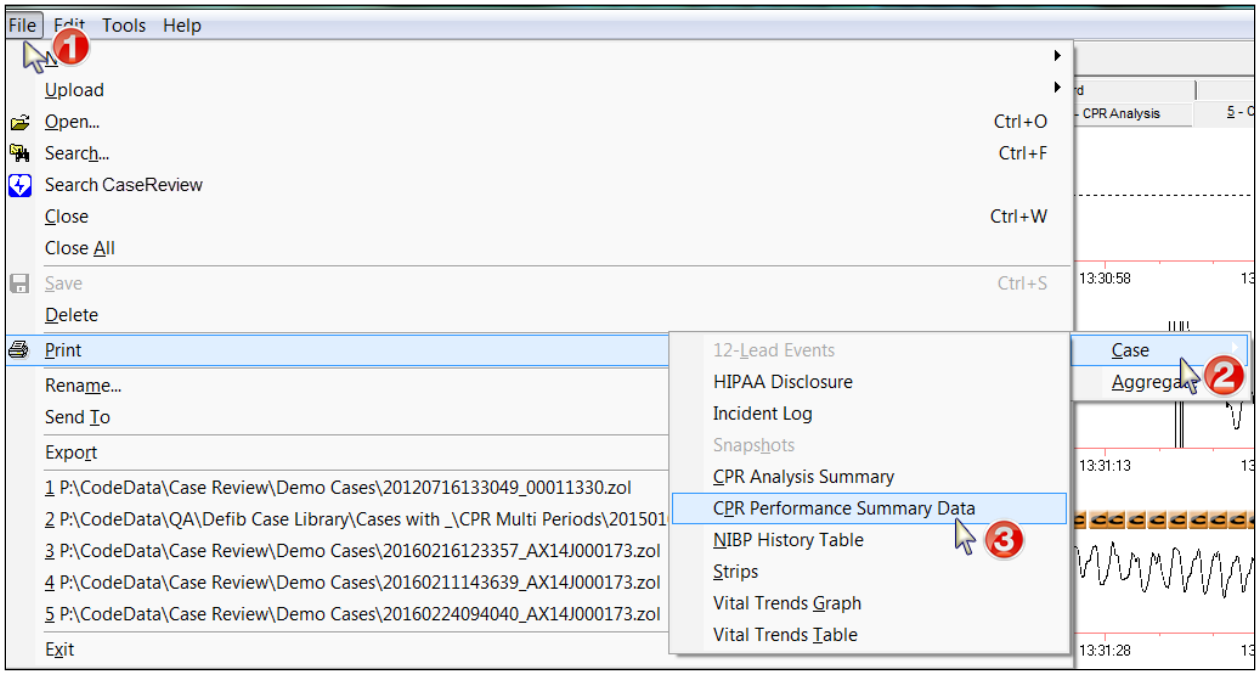
Print: There are two ways to generate a report:

1. On tab 5, click the Print icon  under the CPR Performance Summary Data heading, choose a local network printer, and click **OK**.
2. On the navigation bar:
    a. Click **File**
    b. Hover over Print and Case
    c. Click **CPR Performance Summary Data**
    d. On the Print Setup window, choose a local printer and click **OK**



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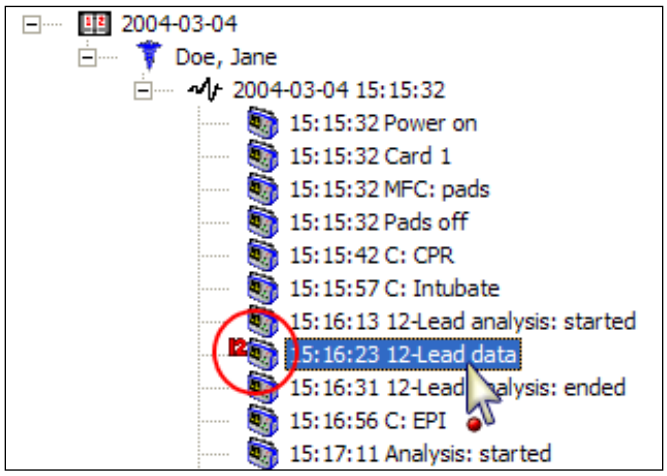
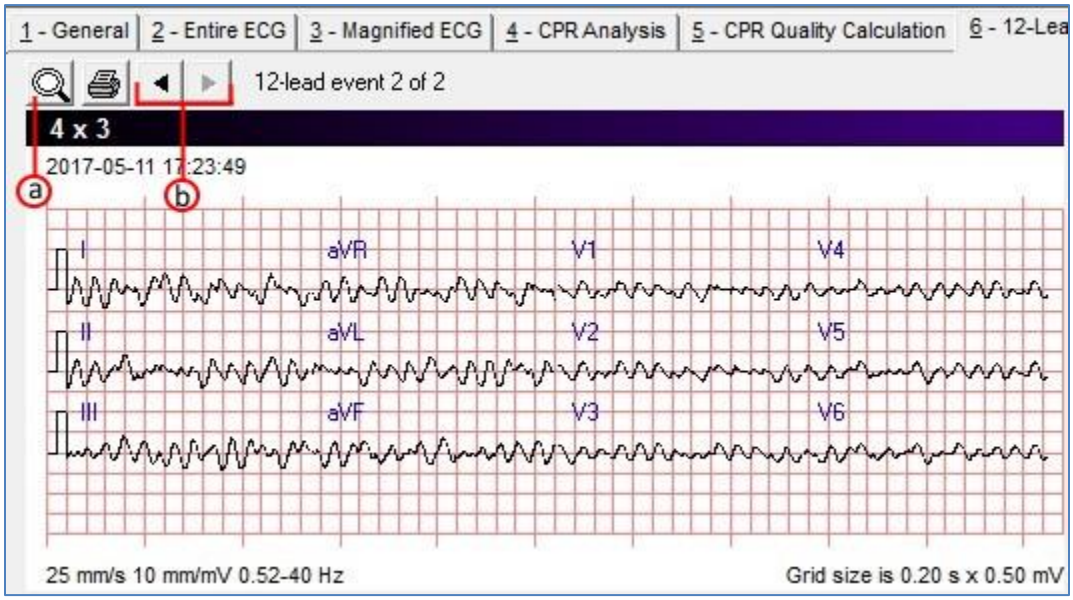
12-lead

The 12-lead tab is available in RescueNet Code Review - Enterprise Edition.





a) Zoom in/out

b) View previous/next 12-lead event in currently selected case

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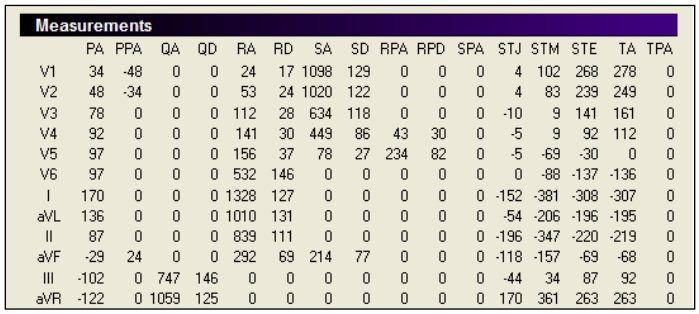
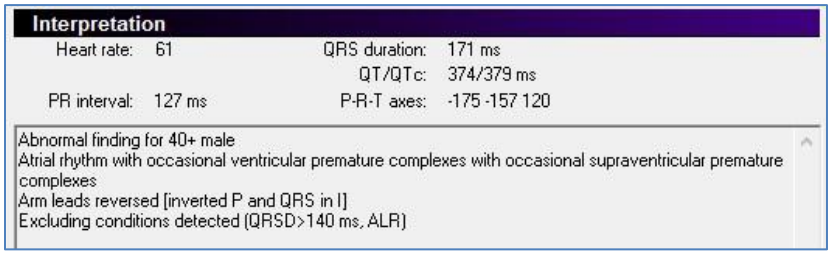


Measurements

	PA	PPA	QA	QD	RA	RD	SA	SD	RPA	RPD	SPA	STJ	STM	STE	TA	TPA
V1	34	-48	0	0	24	17	1098	129	0	0	0	4	102	268	278	0
V2	48	-34	0	0	53	24	1020	122	0	0	0	4	83	239	249	0
V3	78	0	0	0	112	28	634	118	0	0	0	-10	9	141	161	0
V4	92	0	0	0	141	30	449	86	43	30	0	-5	9	92	112	0
V5	97	0	0	0	156	37	78	27	234	82	0	-5	-69	-30	0	0
V6	97	0	0	0	532	146	0	0	0	0	0	0	-88	-137	-136	0
I	170	0	0	0	1328	127	0	0	0	0	0	-152	-381	-308	-307	0
aVL	136	0	0	0	1010	131	0	0	0	0	0	-54	-206	-196	-195	0
II	87	0	0	0	839	111	0	0	0	0	0	-196	-347	-220	-219	0
aVF	-29	24	0	0	292	69	214	77	0	0	0	-118	-157	-69	-68	0
III	-102	0	747	146	0	0	0	0	0	0	0	-44	34	87	92	0
aVR	-122	0	1059	125	0	0	0	0	0	0	0	170	361	263	263	0



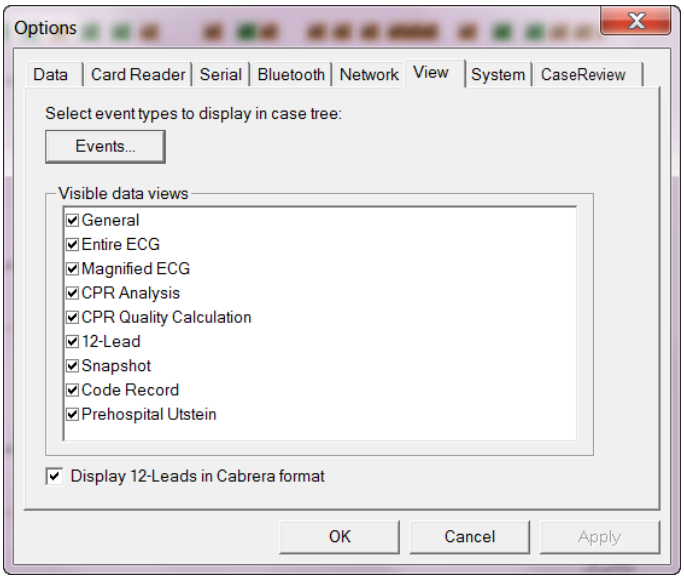
Interpretation

Heart rate: 61 QRS duration: 171 ms
QT/QTc: 374/379 ms
PR interval: 127 ms P-R-T axes: -175 -157 120

Abnormal finding for 40+ male
Atrial rhythm with occasional ventricular premature complexes with occasional supraventricular premature complexes
Arm leads reversed [inverted P and QRS in I]
Excluding conditions detected (QRSD>140 ms, ALR)

Cabrera Format

To change the display of the 12-Lead 4x3 to Cabrera format on the 12-Lead tab, Go to Tools > Options > View and select Display 12-Leads in Cabrera format.



Note: This setting is for X Series only. If an E or M Series recorded a 12-Lead in standard format, it will still display in standard format on the 12-Lead tab.

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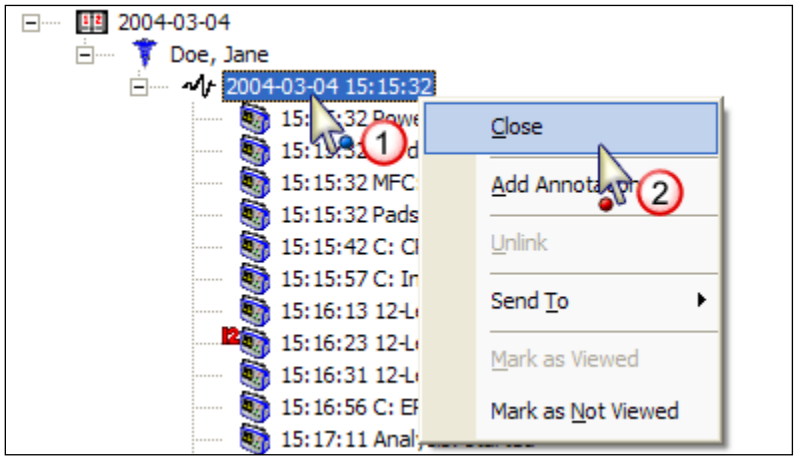
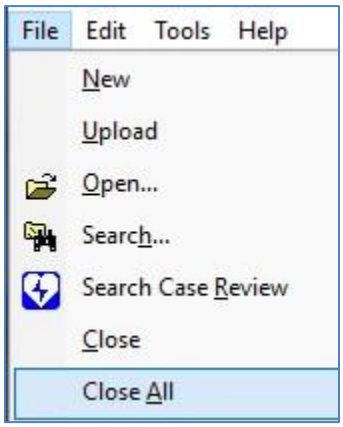
Closing Cases

When you exit RescueNet Code Review, cases are automatically closed.

You can manually close an open case.



You can also manually close all open cases.



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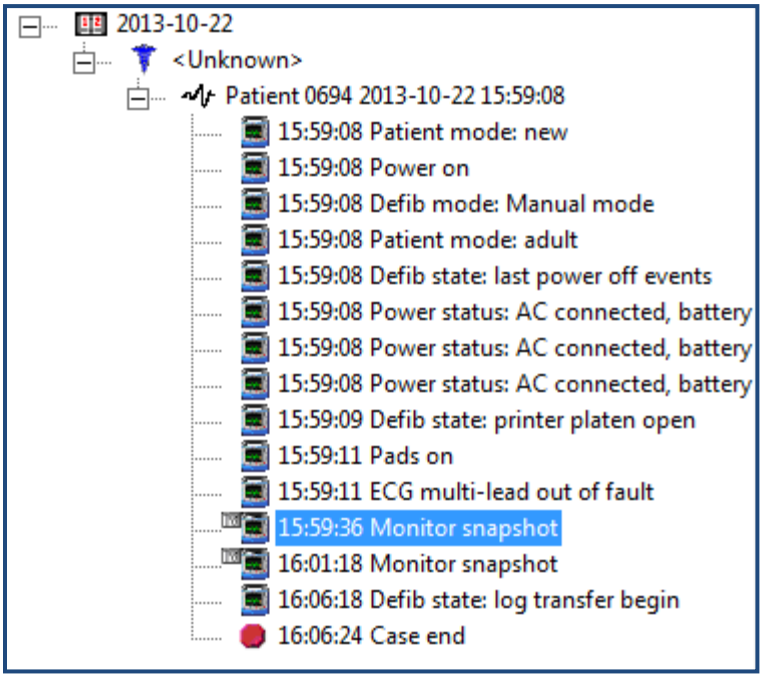
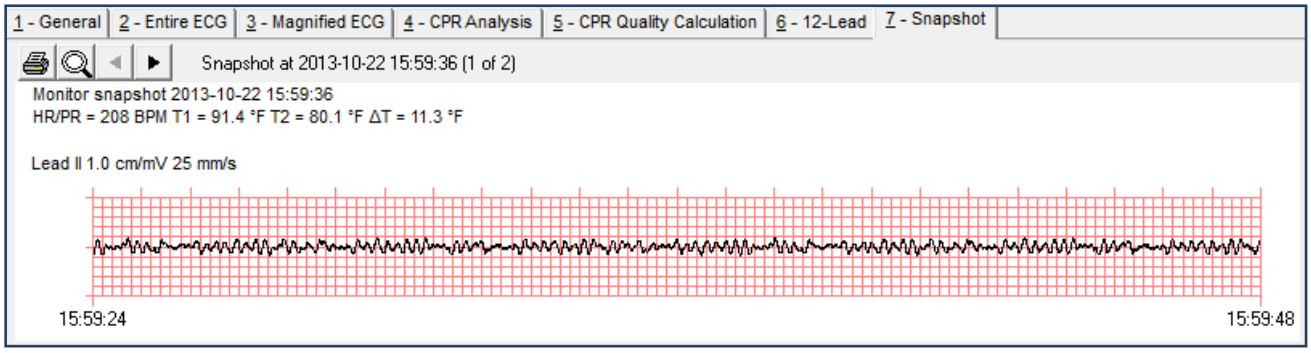
Snapshot

The Snapshot tab is available in RescueNet Code Review - Enterprise Edition. This tab displays snapshots recorded by the X Series.





Use the provided buttons to print the snapshot(s), zoom in/out, and view the previous or next snapshot.

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Closing Cases

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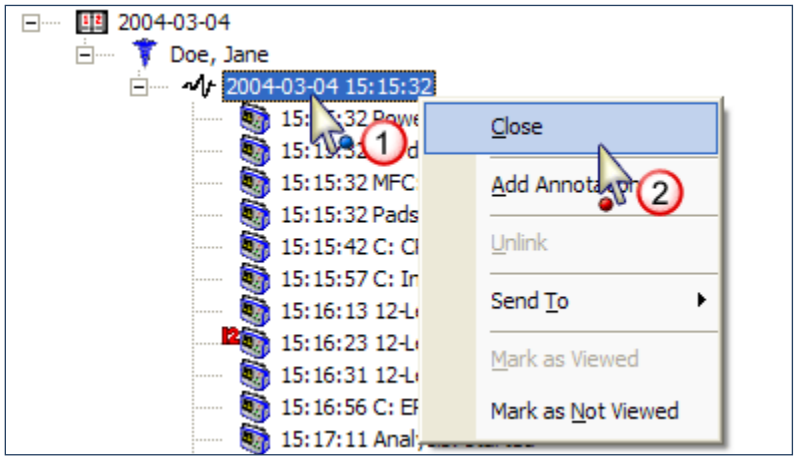
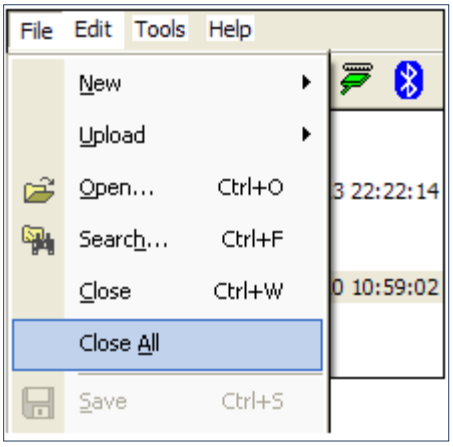
You can manually close an open case.



You can also manually close all open cases.



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Snapshot

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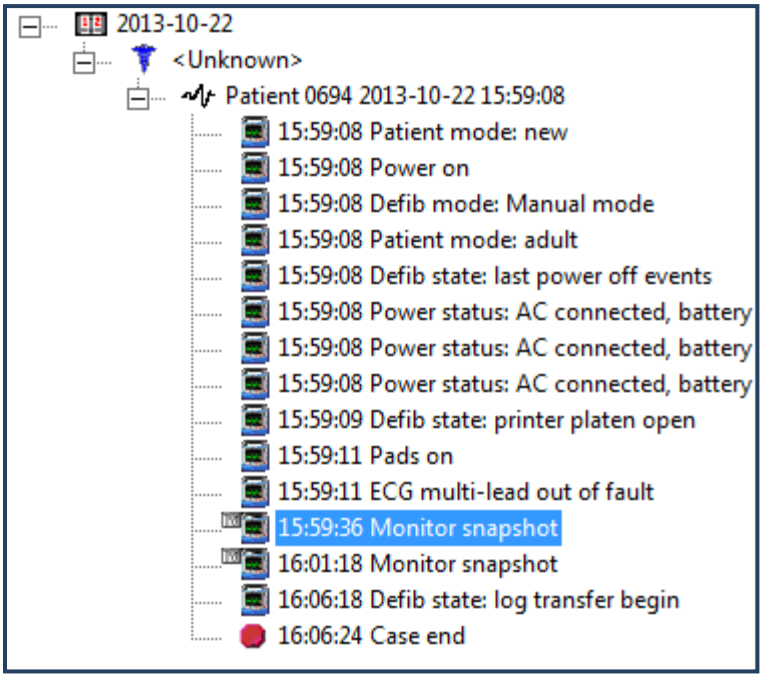

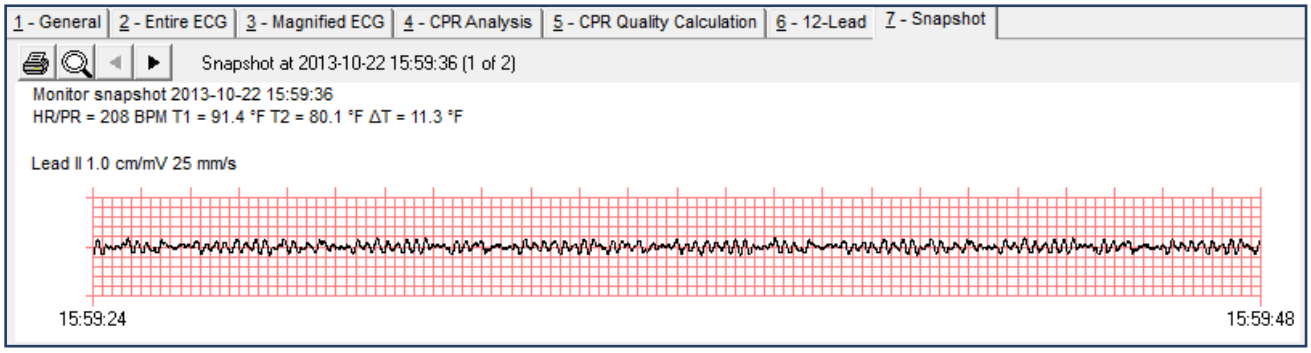

Use the provided buttons to print the snapshot(s), zoom in/out, and view the previous or next snapshot.

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Chapter 4: Documenting Cases

Reviewing and Adding Information

To review and make changes to code information, download or open the case. To quickly search for a case that a user previously downloaded, combine the date range and, optionally, other search parameters.

Saving Changes

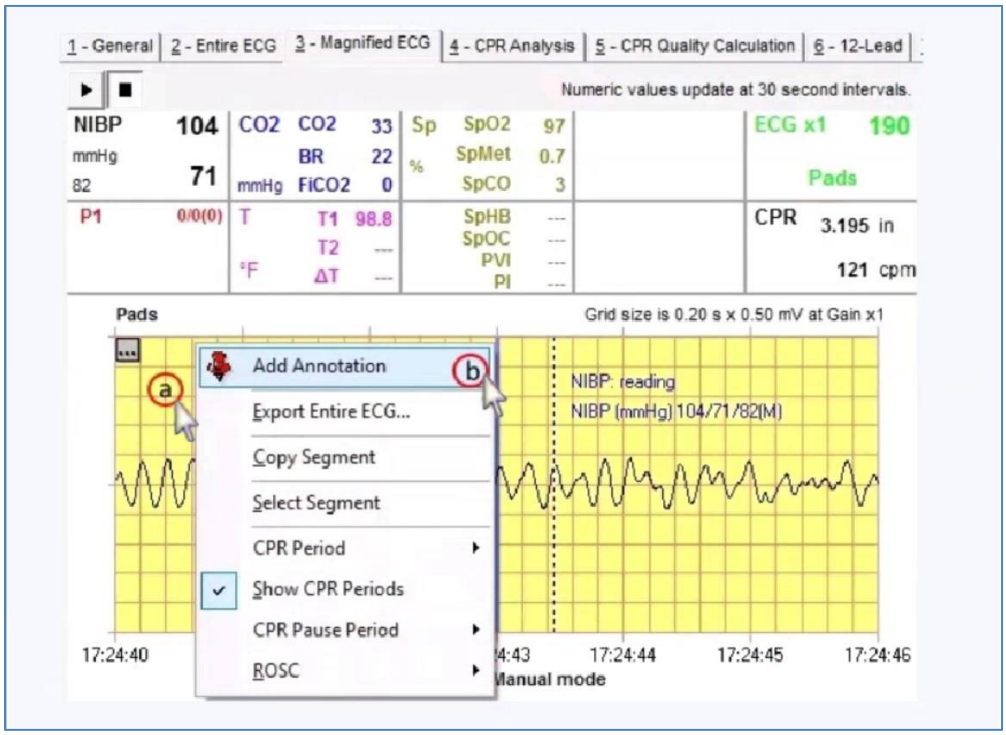
Whenever there are unsaved changes, the Save button is enabled.

- At any time, you can click the Save button to manually save changes.
- If you close a case with unsaved changes, a message asks if you want to save them.

Note: When you move from viewing one case to another, unsaved changes in the first are preserved, but not saved. If you return to the original case, your changes will still be there. However, if you close that case without saving, your changes will be lost.

Adding Annotations

1. On the magnified ECG, right-click on the time you want to add an annotation.



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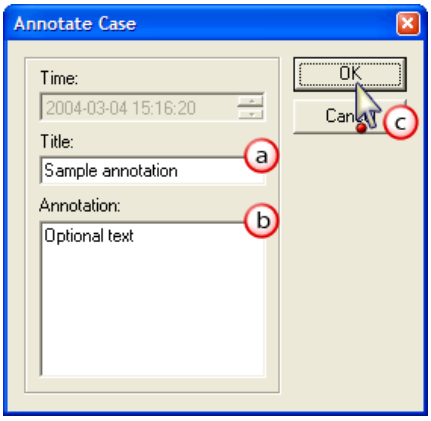
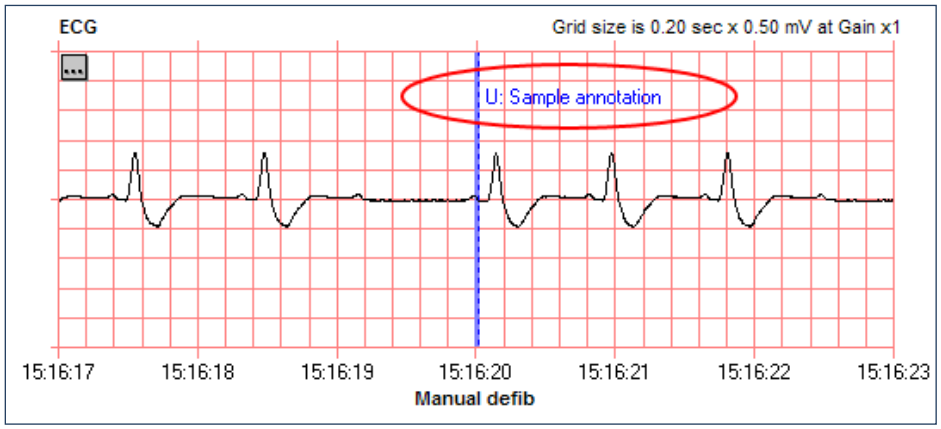
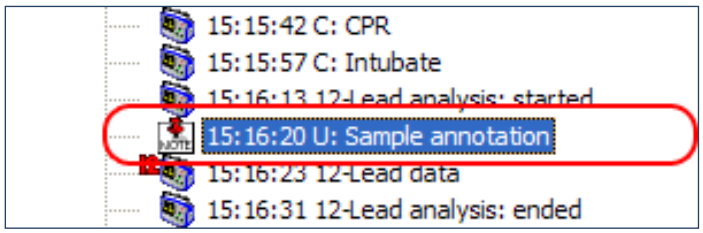
2. Add the title and optional text.

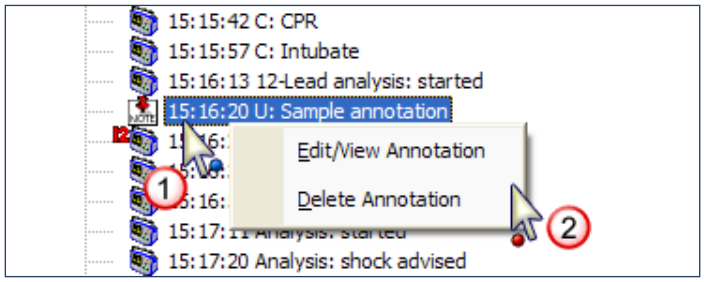


3. The system displays the annotation title on the ECG and in the case tree.





4. To edit, view, or delete an annotation:



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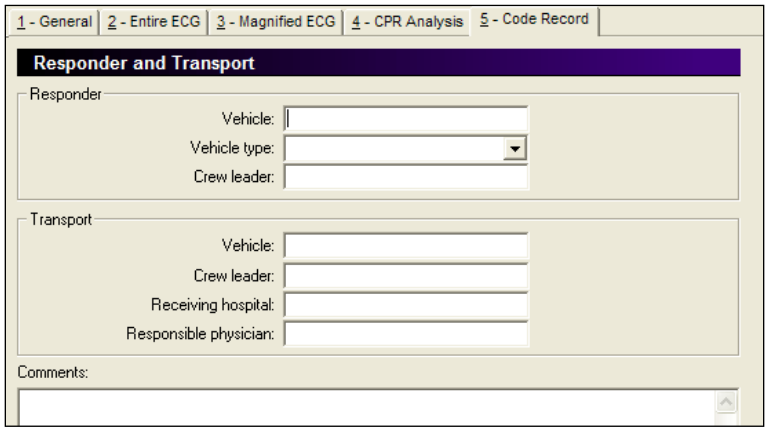
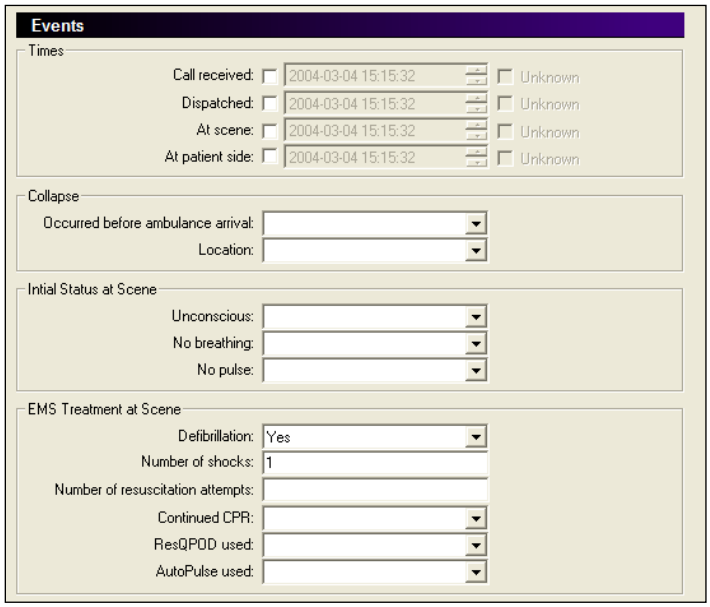
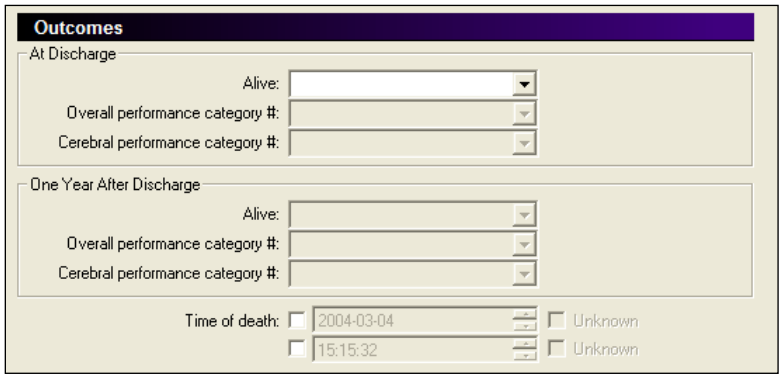
Code Record

The Code Record tab is available in the RescueNet Code Review - Enterprise edition.







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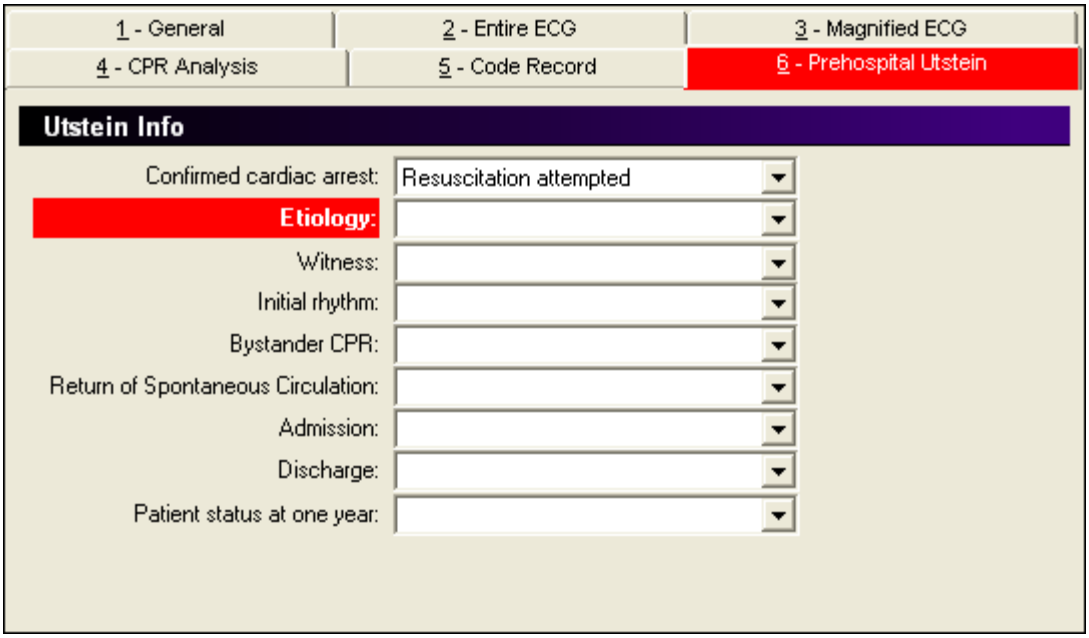
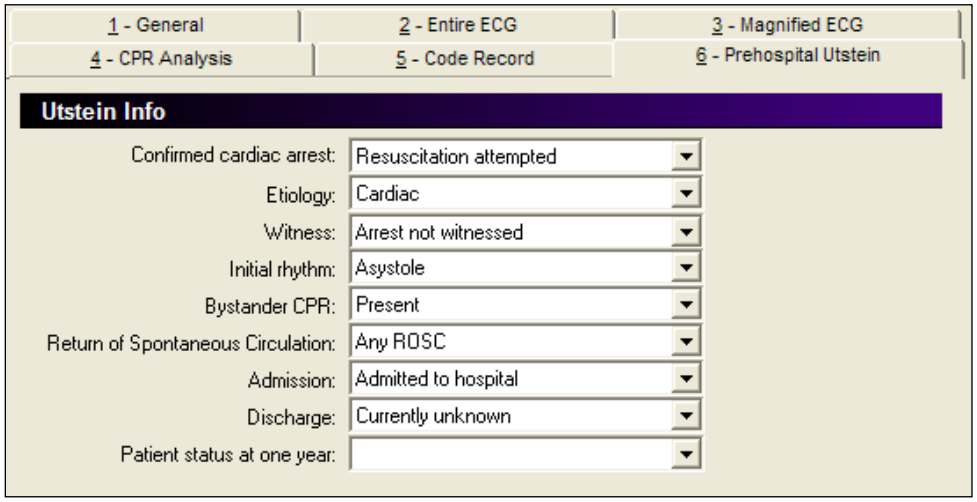
Prehospital Utstein

The Prehospital Utstein tab is available in RescueNet Code Review - Enterprise edition.

Accurate Utstein reports depend on complete data. As you begin capturing prehospital Utstein data for a case, additional field labels might be displayed highlighted red to indicate that they are also required. As long as the prehospital Utstein data is incomplete for a case, the tab title is displayed **red**. (Completeness is only measured for confirmed cardiac arrest cases.)



When you have captured complete Prehospital Utstein data, the tab title and all labels are black.



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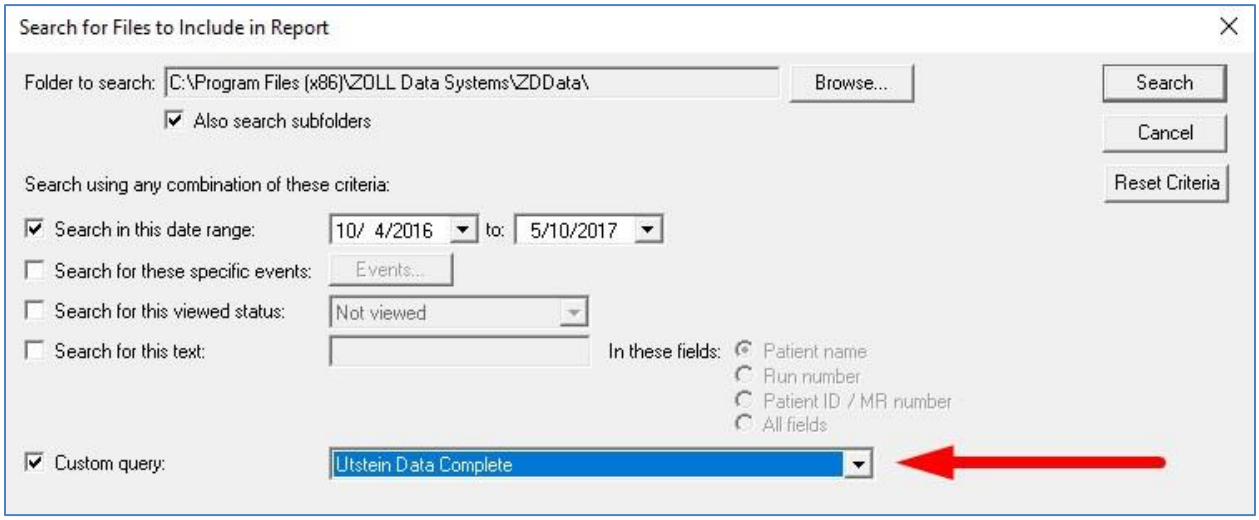
Note: You can still save a case with incomplete Prehospital Utstein data (in that case, a message notifies you of the incompleteness). To ensure accurate reports even if you have cases with incomplete Utstein data, when you search for cases to include in the Utstein report, configure your search criteria to include cases that have complete Utstein data only.



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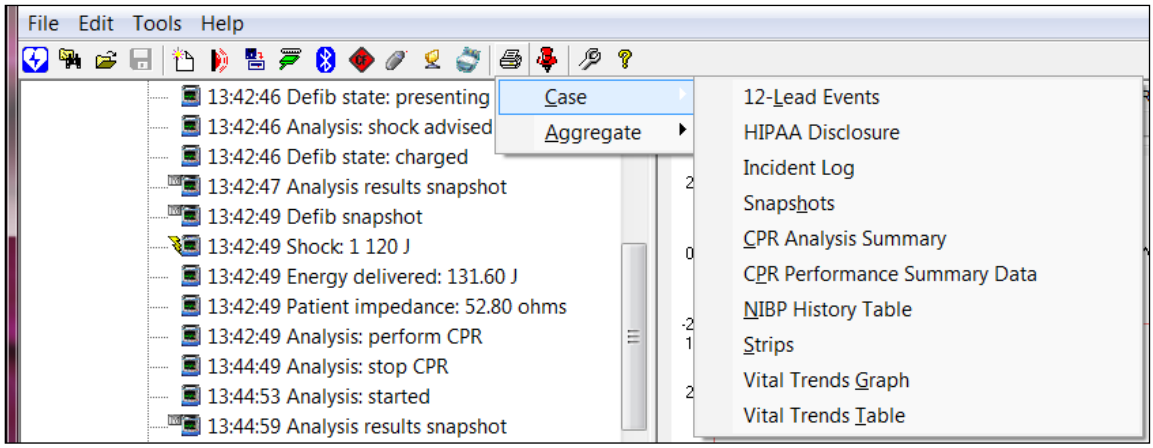
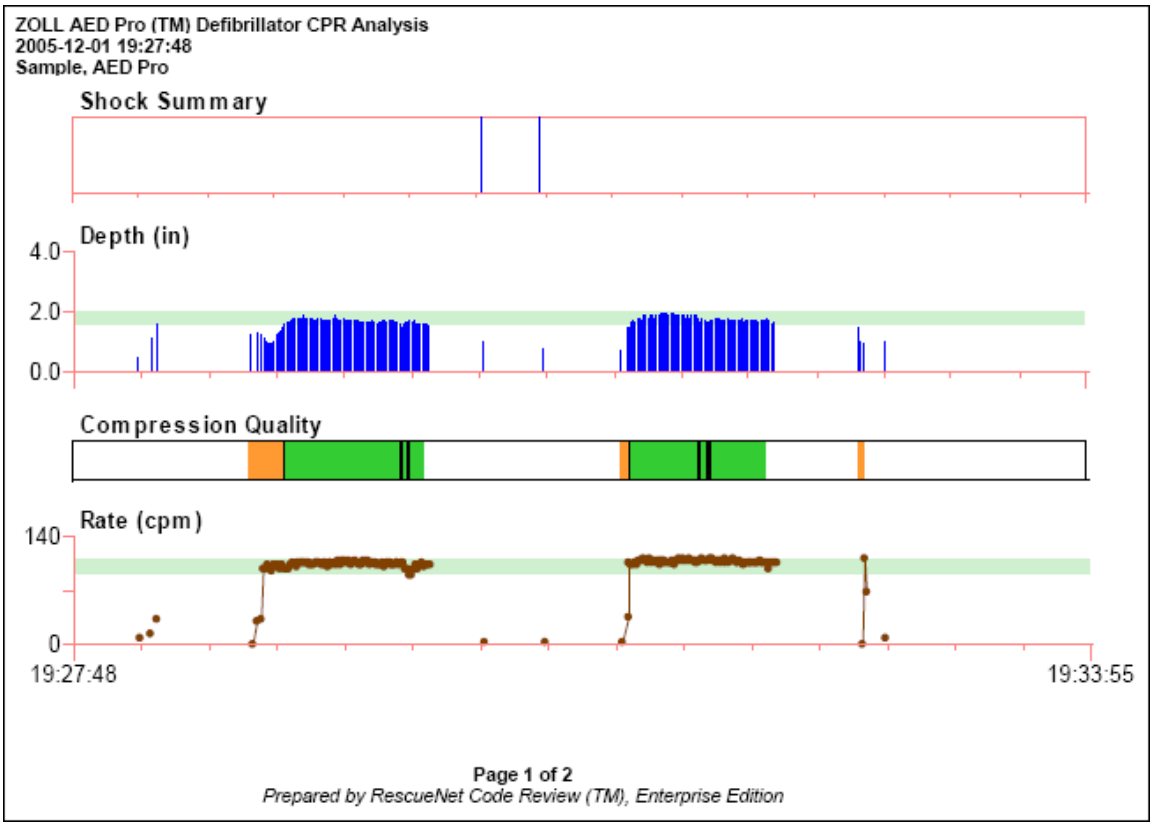
Chapter 5: Reporting

Case Reports



CPR Analysis Summary Report



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ZOLL AED Pro (TM) Defibrillator CPR Analysis
2005-12-01 19:27:48
Sample, AED Pro

Key Indicators

	Manual		AutoPulse
Time to first compression:	00:01:04		---
Average time to shock after compressions stopped:	00:00:32		---
Average time to compressions after shock delivered:	00:00:40		---
Mean compression depth:	1.67 in		
Mean compression rate:	100.76 cpm		

Entire Case

Case duration:	00:06:07	
Time in CPR:	00:03:36	(58.86 %)
Time not in CPR:	00:02:31	(41.14 %)

CPR Periods

	Manual		AutoPulse
Time in compressions:	00:01:57	(54.17 %)	---
Time not in compressions:	00:01:39	(45.83 %)	---
Compressions in target:	84.92 %		
Depth (target zone from 1.5 to 2 in):			
Standard deviation:	0.21 in		
Above target zone:	0	(0.00 %)	
In target zone:	174	(87.44 %)	
Below target zone:	25	(12.56 %)	
Rate (target zone from 90 to 110 CPM):			
Standard deviation:	17.08 cpm		
Above target zone:	4	(2.01 %)	
In target zone:	185	(92.96 %)	
Below target zone:	10	(5.03 %)	

Page 2 of 2
Prepared by RescueNet Code Review (TM), Enterprise Edition

Incident Log

ZOLL AED Plus (TM) Defibrillator Incident Log
2007-02-07 12:12:12
Patient: SampleAutoPulse, AEDPlus
MR#:
Run number:
Report Date: 2007-05-25 13:33:17
Prepared by RescueNet Code Review (TM), Enterpr

Patient
Patient ID/MR Number:
Last Name: SampleAutoPulse
First Name: AEDPlus
MI:
Gen:
Sex:
Race:
Date of birth: Undocumented
Height: Undocumented
Weight: Undocumented

Case
Date: 2007-02-07
Start time: 12:12:12
End time: 12:16:33
Length: 4:21
Run number:
Device Type: AED Plus (TM) Defibrillator
Serial Number: X03B010762
Device ID:
Software Version: 5.16
Operator:
Number of Shocks Delivered: 4

Event Summary
12:12:12 **Power on**
12:12:15 **Electrode: CPR-D Padz on**
12:12:17 **Prompt: change batteries**
12:12:18 **Prompt: adult pads**
12:12:21 **Prompt: stay calm**

ZOLL AED Plus (TM) Defibrillator Incident Log
2007-02-07 12:12:12
Patient: SampleAutoPulse, AEDPlus
MR#:
Run number:
Report Date: 2007-05-25 13:33:17
Prepared by RescueNet Code Review (TM), Enterprise Edition

12:13:59 **Patient Impedance: 56.00 ohms**
12:13:59 **Prompt: treatment delivered**
12:14:02 **Prompt: don't touch patient, analyzing**
12:14:04 **Analysis: Started**
12:14:09 **Prompt: don't touch patient, analyzing**
12:14:13 **Analysis: Shock Advised**
12:14:13 **Prompt: treatment advised**
12:14:16 **Prompt: don't touch patient**
12:14:18 **Prompt: press flashing treatment butto**
12:14:20 **Prompt: change batteries**
12:14:21 **Shock:2 150 Joules**
12:14:21 **Patient Impedance: 55.00 ohms**
12:14:21 **Prompt: treatment delivered**
12:14:24 **Prompt: don't touch patient, analyzing**
12:14:26 **Analysis: Started**
12:14:31 **Prompt: don't touch patient, analyzing**
12:14:35 **Analysis: Shock Advised**
12:14:35 **Prompt: treatment advised**
12:14:39 **Prompt: don't touch patient**

ZOLL AED Plus (TM) Defibrillator Incident Log
2007-02-07 12:12:12
Patient: SampleAutoPulse, AEDPlus
MR#:
Run number:
Report Date: 2007-05-25 13:33:17
Prepared by RescueNet Code Review (TM), Enterprise Edition

12:16:12 **Prompt: treatment delivered**
12:16:15 **Prompt: don't touch patient, analyzing**
12:16:16 **Analysis: Started**
12:16:17 **Prompt: change batteries**
12:16:22 **Prompt: don't touch patient, analyzing**
12:16:25 **Analysis: No Shock Advised**
12:16:26 **Prompt: no treatment advised**
12:16:29 **Prompt: start compressions**
12:16:33 *Case end*

Comments

Physician Signature _____

Print Name _____

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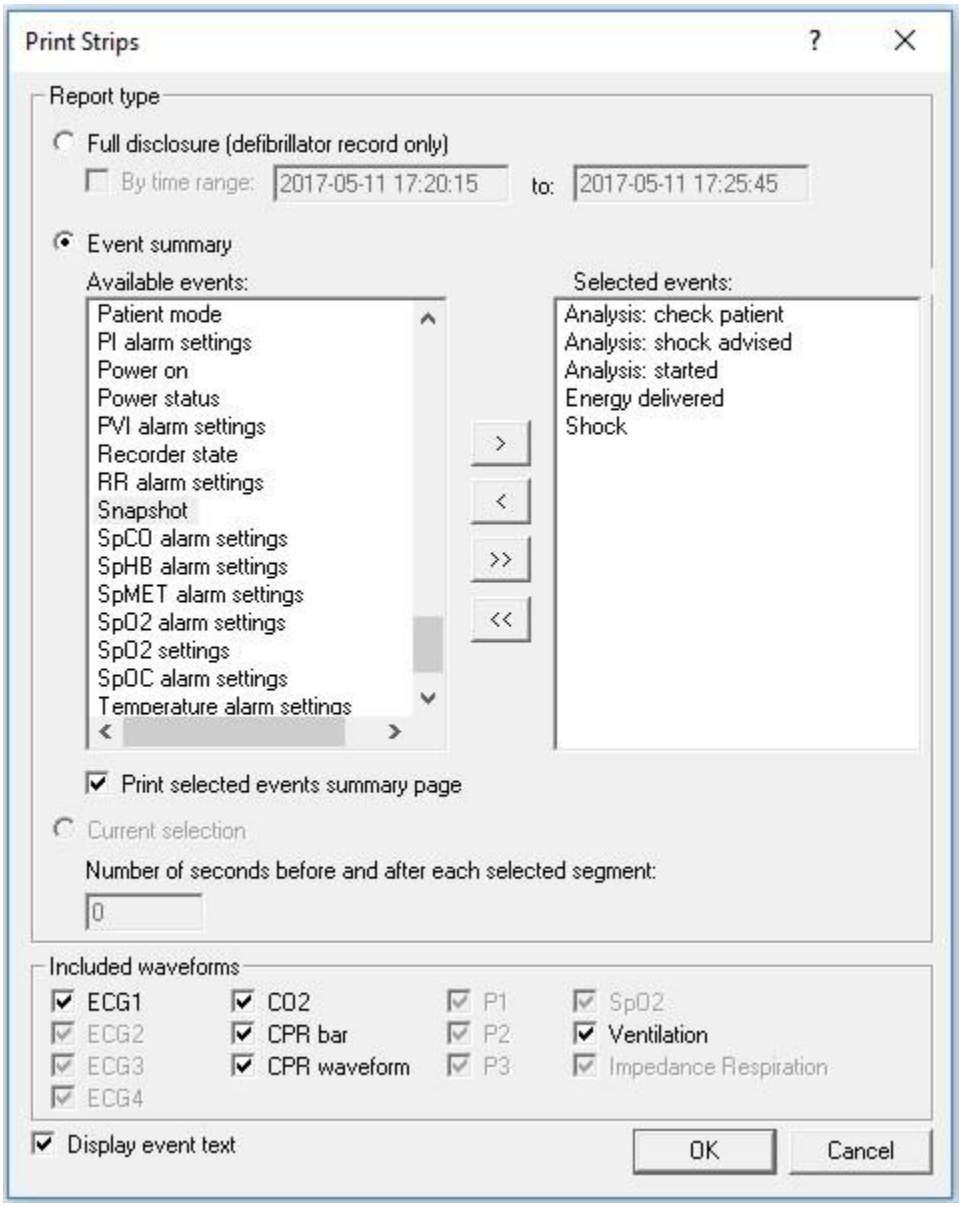
Strips

For strips, you can print a full disclosure (for entire case or a specific time range) or an event summary report (for all events or selected events).



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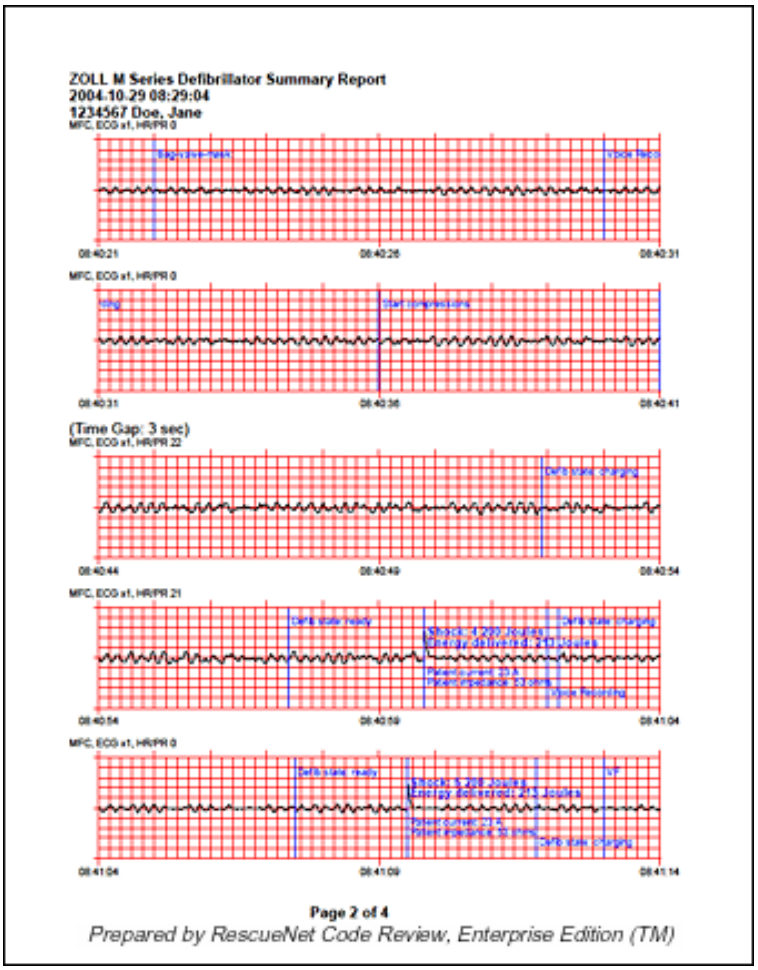
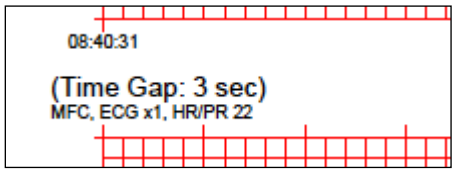
The Event Summary report displays at least 15 seconds before and after each instance of the selected events.



If there is a gap of no activity for the selected events, the system displays a time gap notification.



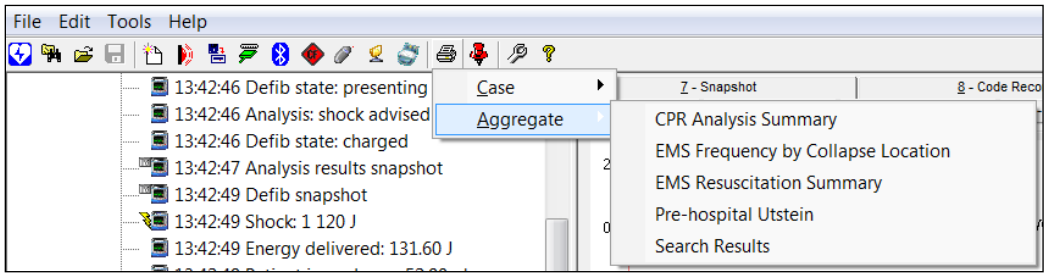
Note: RescueNet Code Review - Enterprise edition includes these additional case reports:

- 12-Lead Events
- NIBP History Table
- Vital Trends Table
- Vital Trends Graph

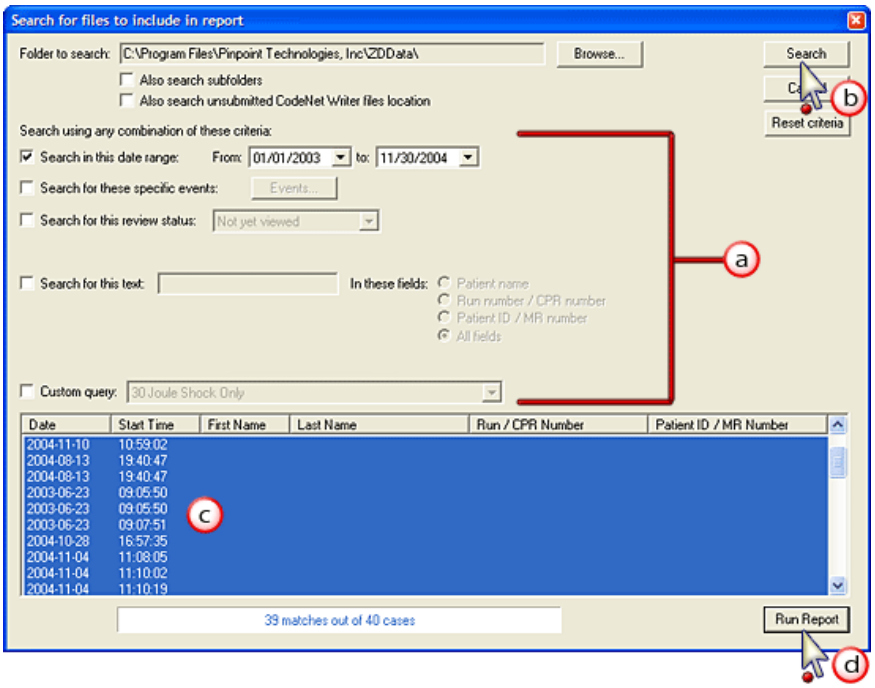
Aggregate Reports

Aggregate reports are available in RescueNet Code Review - Enterprise edition.

1. Select an aggregate report to print.



2. The Search for File to Include in Report dialog box automatically opens. Select any combination of criteria (a), and then click Search (b).



3. Cases that match your criteria display. Select the cases that you want included on the report (c), and click Run Report (d).

   The report displays in a browser window.

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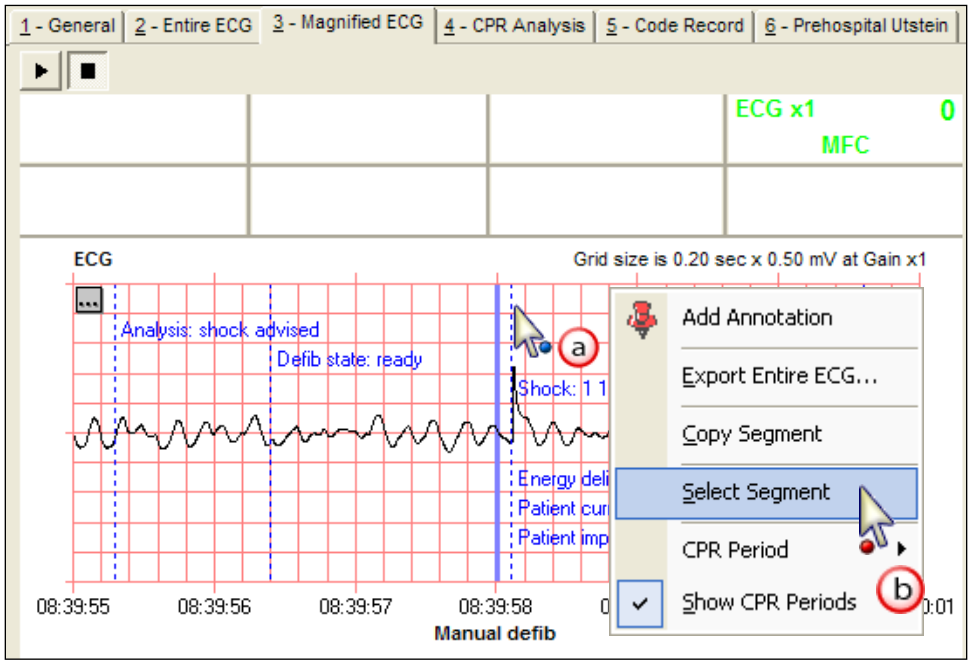
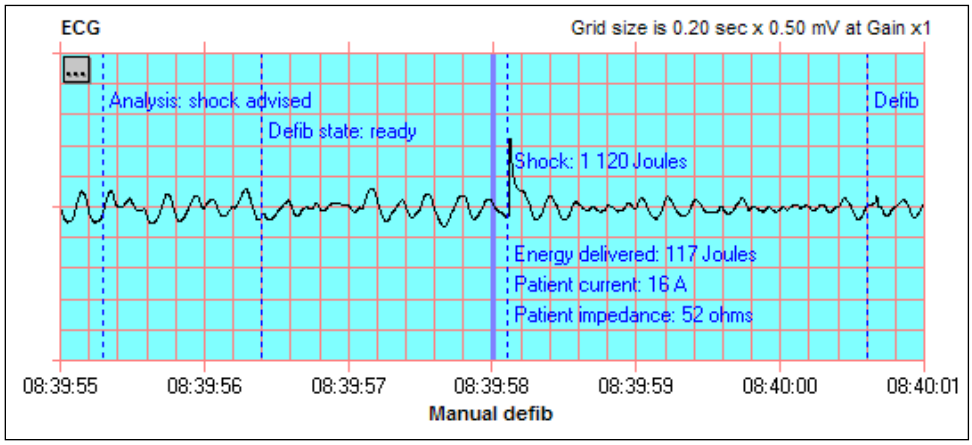
Printing ECG Segments

1. Right-click to select a segment you want to print.



2. The selected segment highlights.



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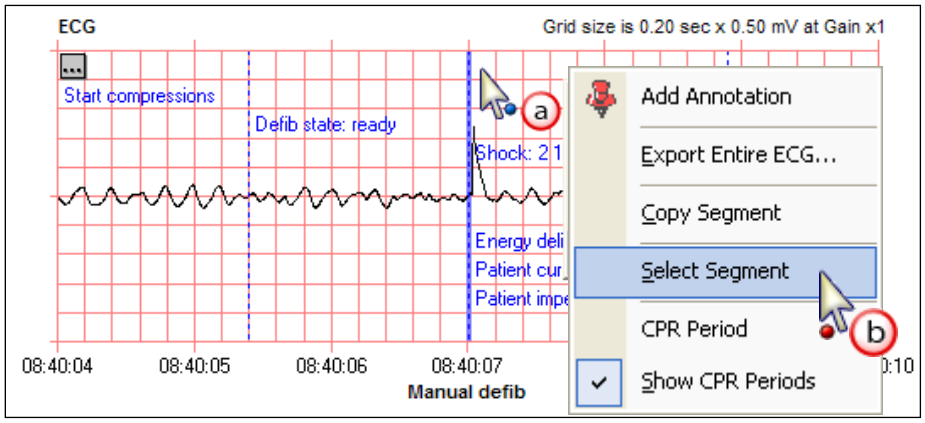
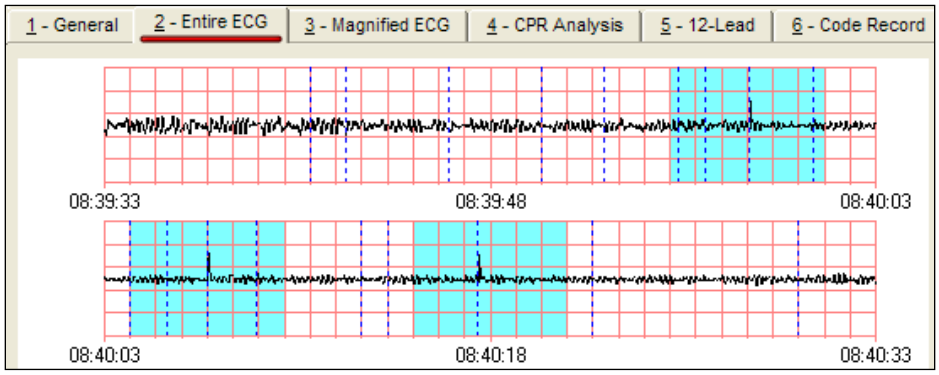
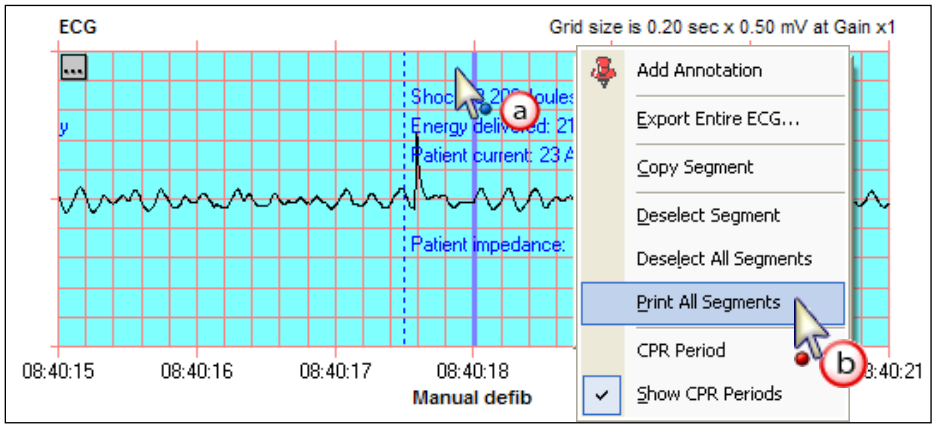
3. Optionally, you can select additional segments anywhere on the ECG.



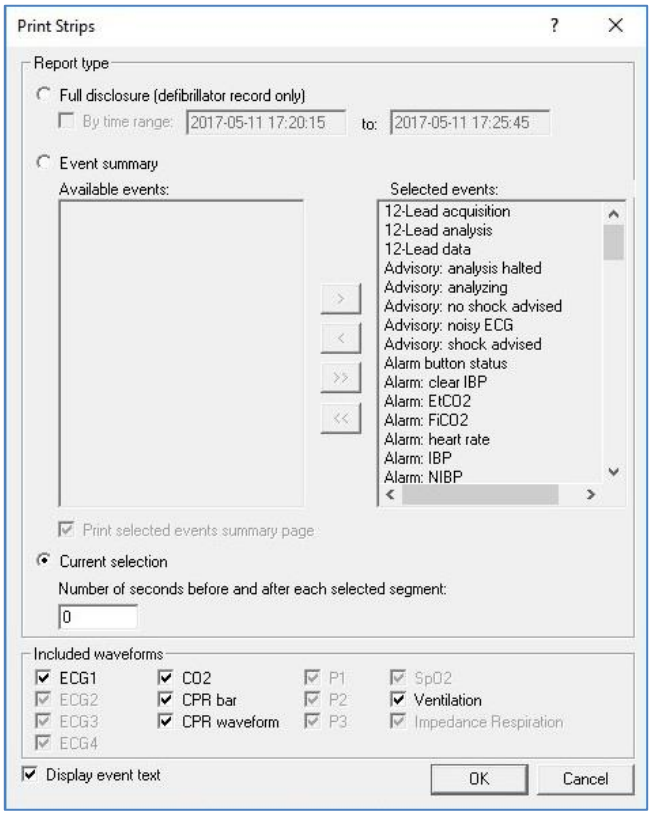
4. You can view all selected segments on the Entire ECG tab.

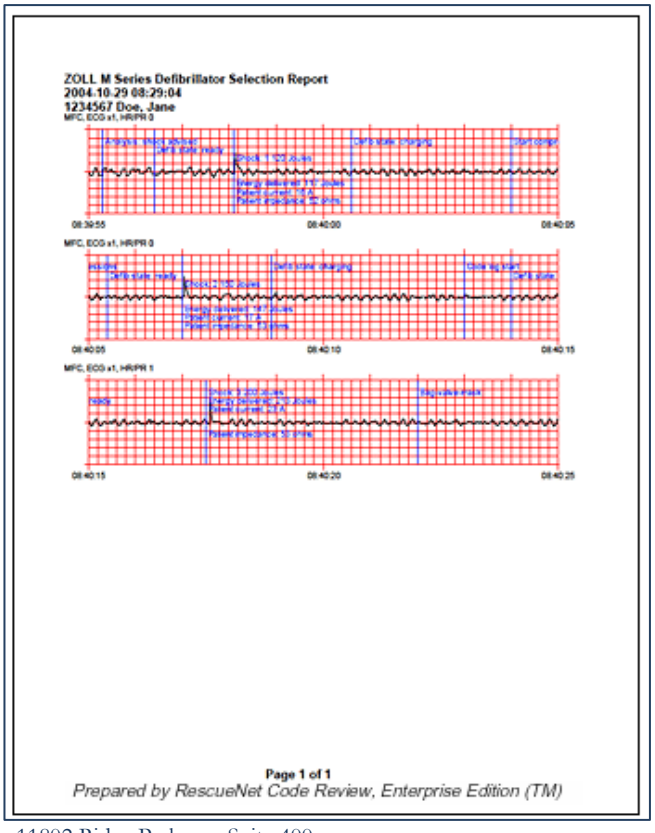


5. To print all selected segments:



6. Select Current selection option.





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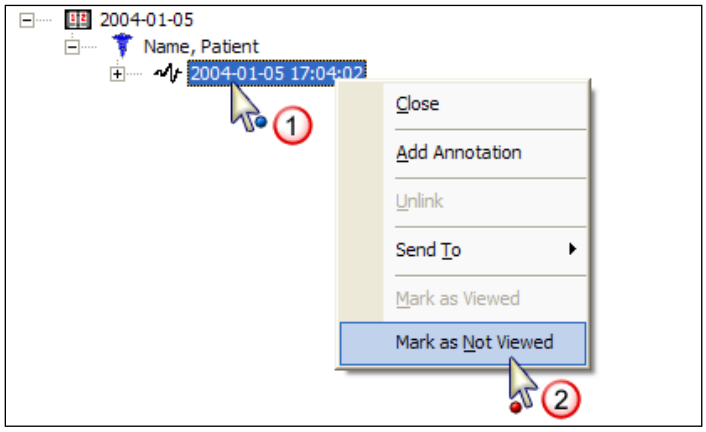
Chapter 6: Advanced

Mark Cases Viewed/Not Viewed

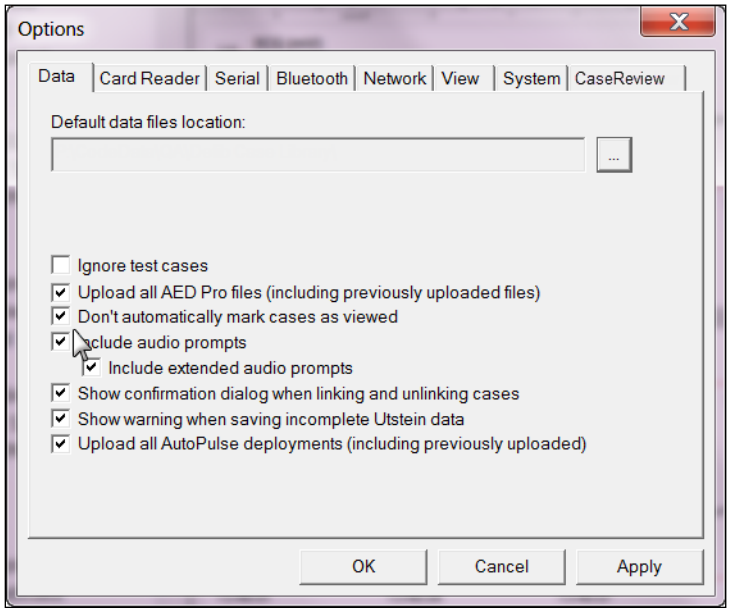
To manually control the status:



Once you manually change the status to Not Viewed, it remains in that status until:

- You manually change it to Viewed.
- You close it, and then reopen it.
- You view another case, and then return to viewing the one with the manually changed status.

You can also force status changes to be manual.



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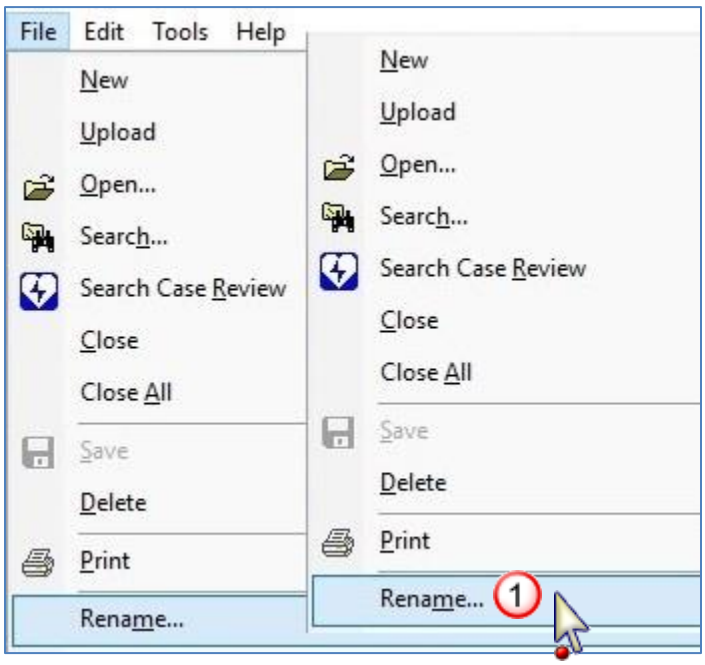
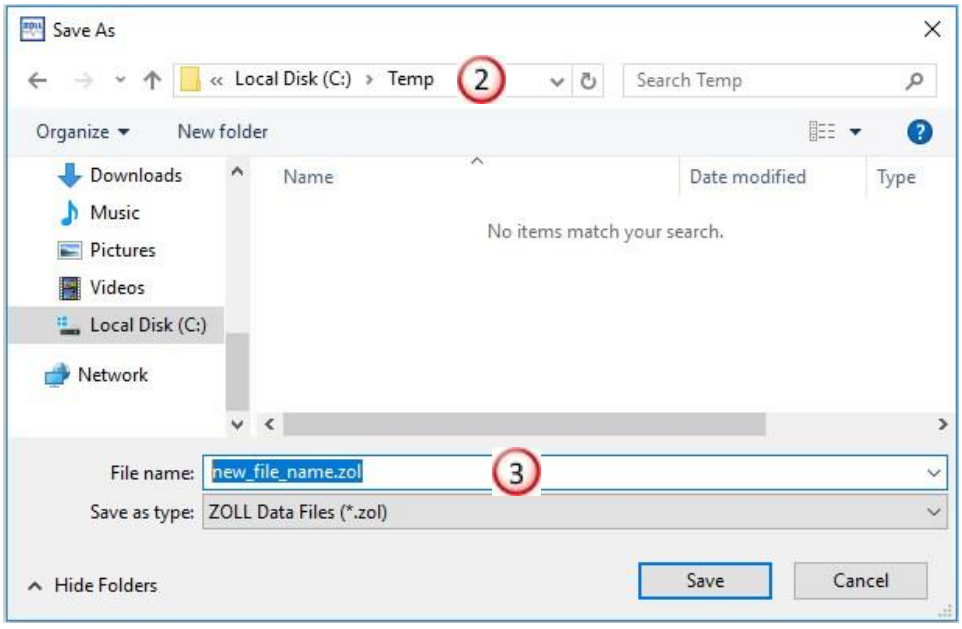
Renaming Cases

Cases are stored as .zol files. By default, the files are named with the date and time of the defibrillator when the case was created, plus the serial number of the defibrillator (if available), for example, 20060328132727_00000017.zol.

You can rename a case file and, optionally, save the renamed file in another location.





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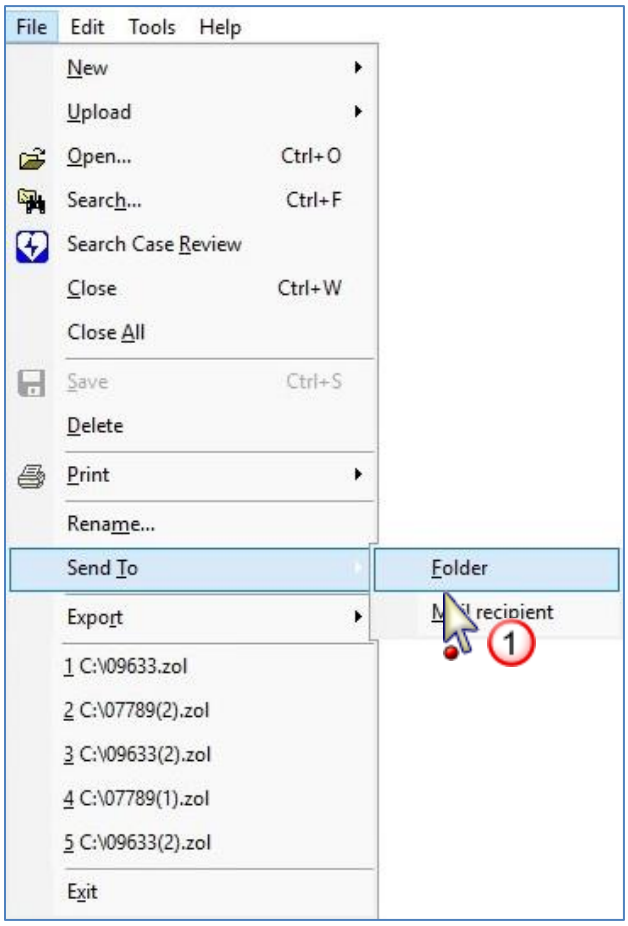
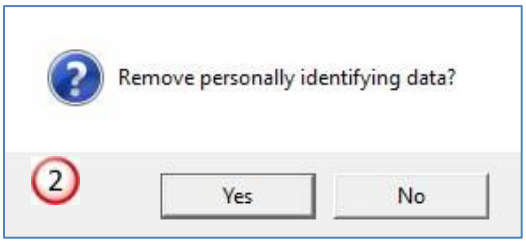
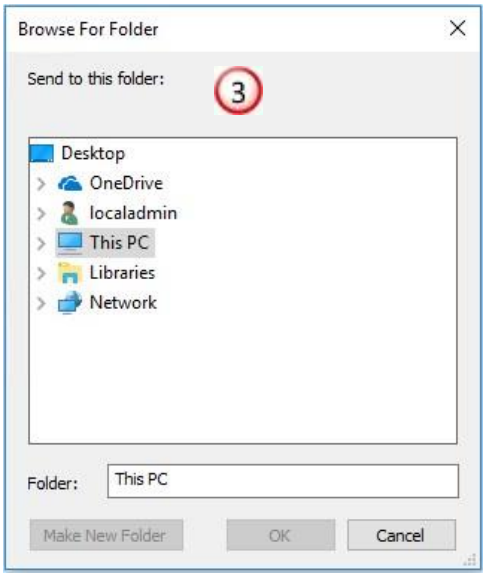
Sending Case to a Folder or Email Recipient







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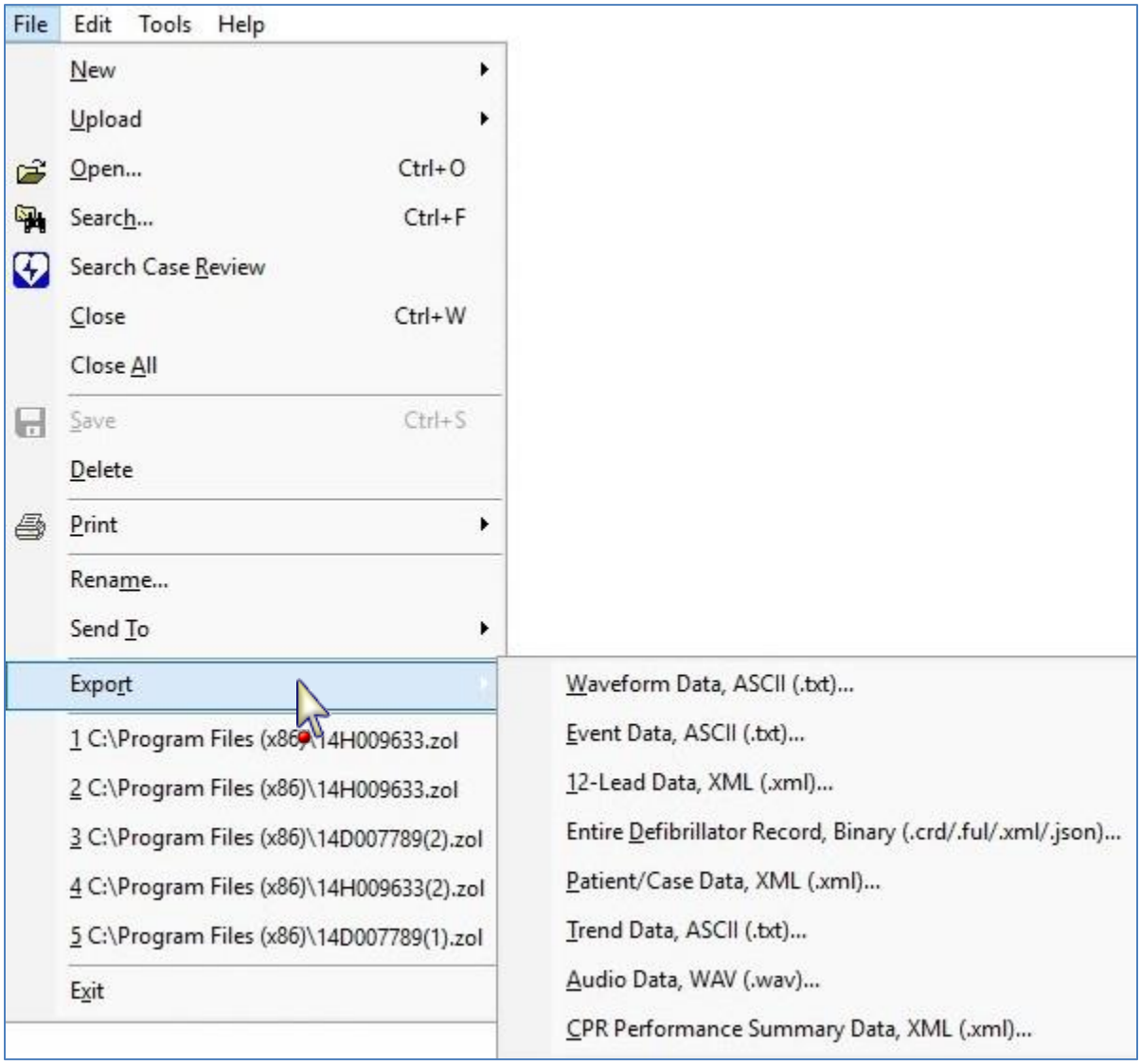
Exporting Data

1. Open the case you want to export.
2. Select the type of export.



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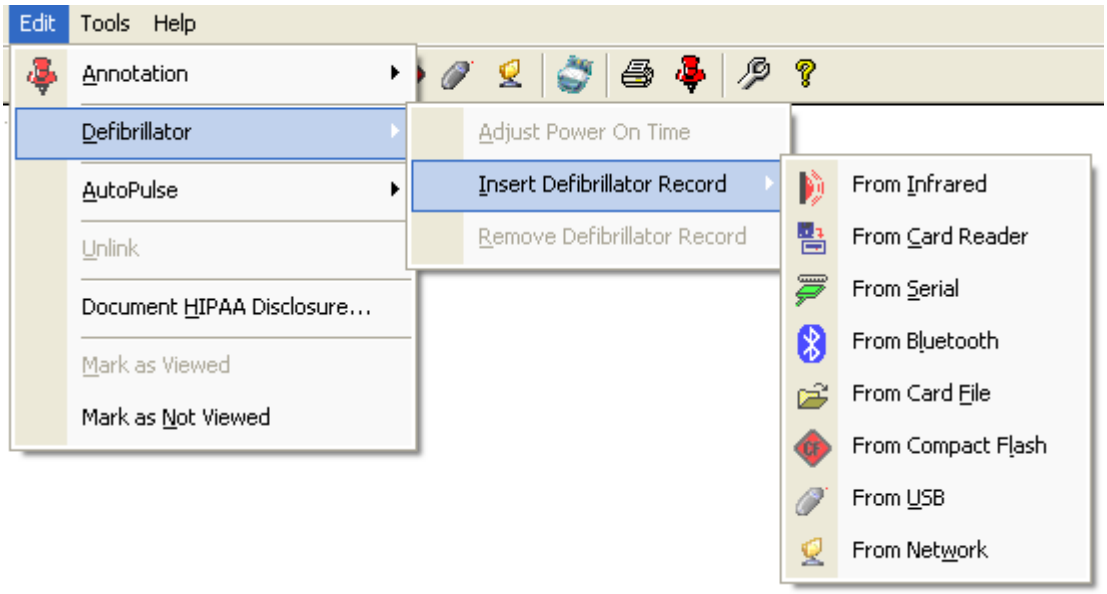
Inserting Defibrillator Records into Cases

If you have a case that does not have a defibrillator record, you can insert one into it.

1. Open the case.

2. Select the source of the defibrillator record.



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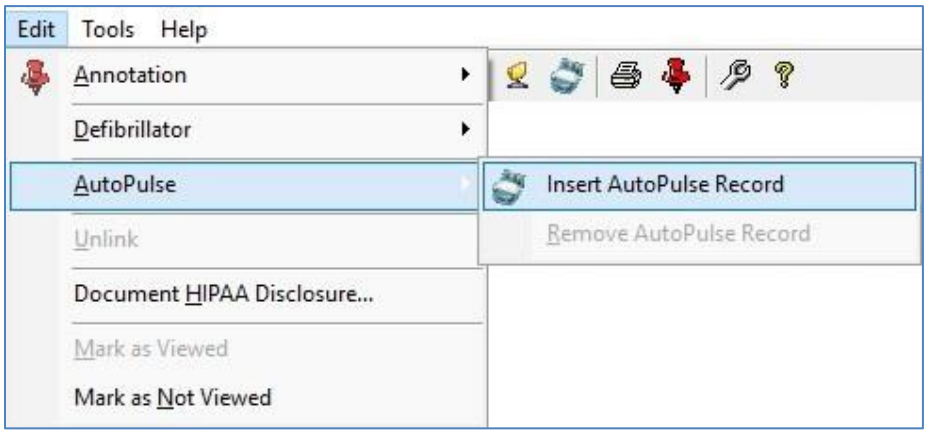
Inserting AutoPulse Records into Cases

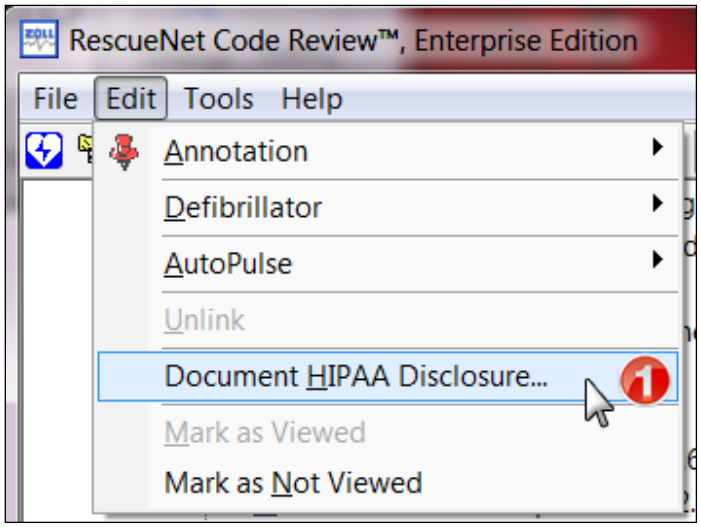
If you have a case that does not have an AutoPulse record, you can insert one into it.

1. Open the case.

2. Select Insert AutoPulse Record and place the AutoPulse in upload mode.



Documenting HIPAA Disclosure



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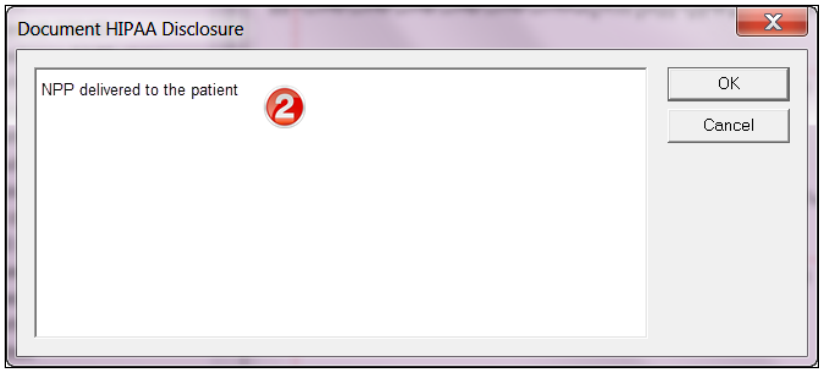
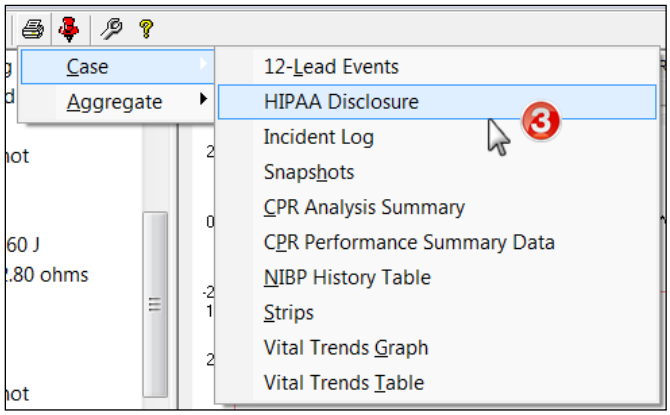
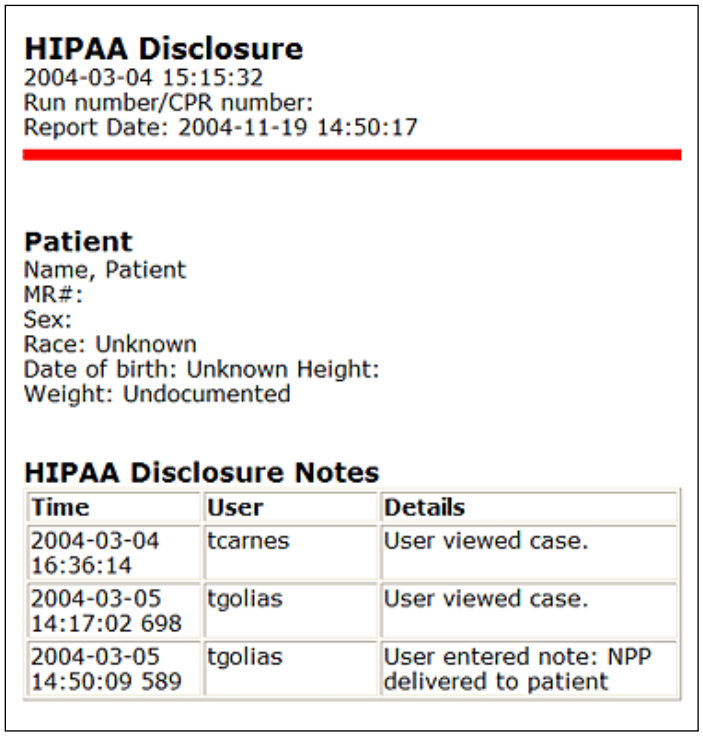






HIPAA Disclosure
2004-03-04 15:15:32
Run number/CPR number:
Report Date: 2004-11-19 14:50:17

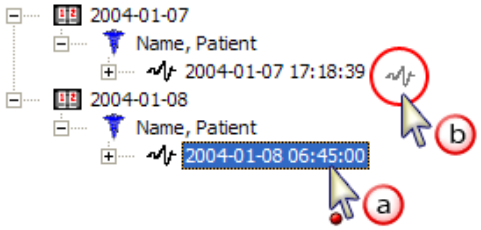
Patient
Name, Patient
MR#:
Sex:
Race: Unknown
Date of birth: Unknown Height:
Weight: Undocumented

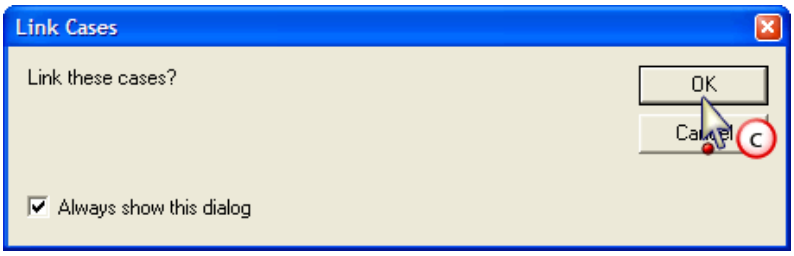
HIPAA Disclosure Notes

Time	User	Details
2004-03-04 16:36:14	tcarnes	User viewed case.
2004-03-05 14:17:02 698	tgolias	User viewed case.
2004-03-05 14:50:09 589	tgolias	User entered note: NPP delivered to patient

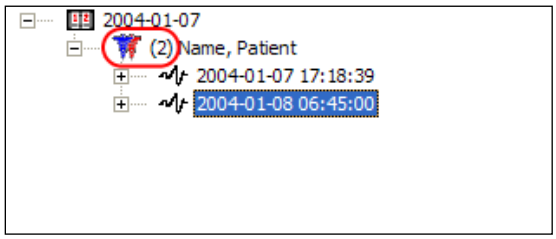
Linking Cases

1. Drag the case you want to link (a) to the case you want to link it to. As you're dragging, you'll see a lighter version of the case symbol (b).

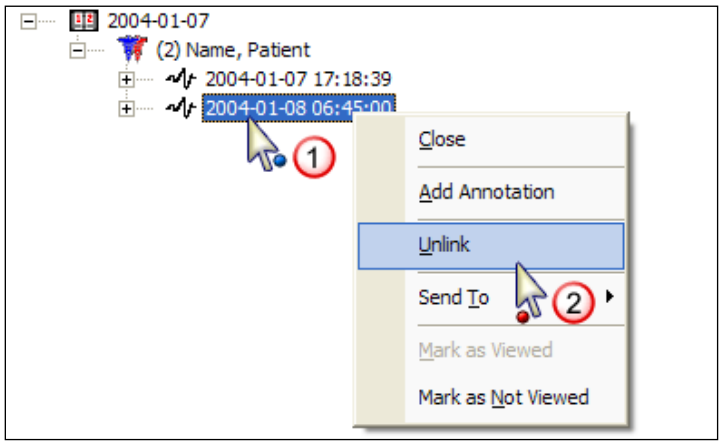




2. The system displays linked cases with a double caduceus symbol followed by the number of linked cases in parentheses.



Unlink Linked Cases



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Case Times and Synchronization

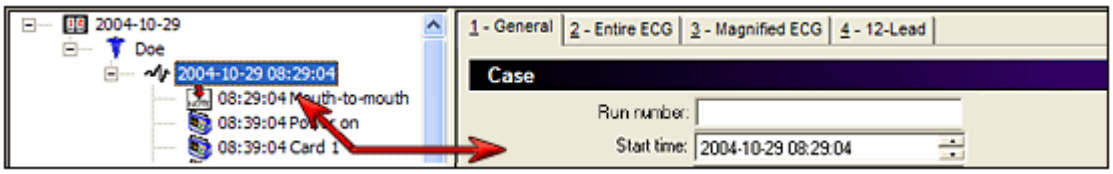
Whenever possible, the system automatically synchronizes the defibrillator event times to the clock on the RescueNet Code Review workstation. You can also manually adjust the case start time and the defibrillator times. This enables you to ensure that the times for your cases displayed in RescueNet Code Review are consistent.

Note: To ensure correct current time, keep the RescueNet Code Review workstation synchronized to an accurate time source.

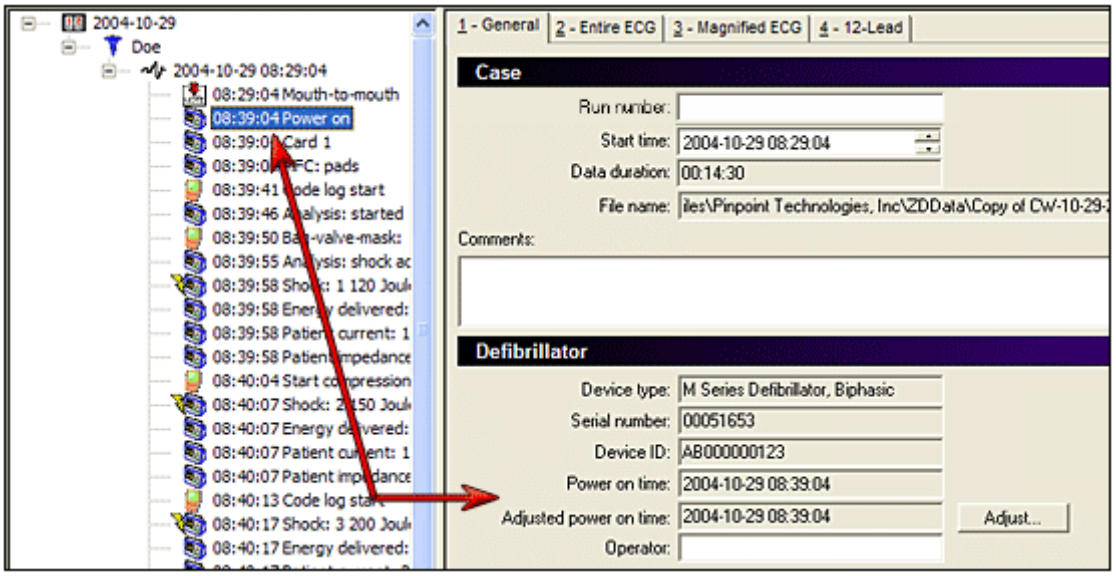
There are three key times: the case start time, the defibrillator power on time, and the adjusted power on time.

Case Start Time

The case start time is the time the case actually started, which could coincide with the defibrillator power on time or an earlier, non-defibrillator event.



Defibrillator Power On Time and Adjusted Power On Time



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The read-only defibrillator power on time, which is always the first defibrillator event, is based on the defibrillator clock. When possible, the system synchronizes it to the clock on the RescueNet Code Review workstation. (Depending on your view options, the system may not display the power on time in the case tree, but will still display the time on the General tab.)

The times displayed in RescueNet Code Review for all defibrillator events are based on the adjusted power on time, which initially is usually the same as the defibrillator power on time. You can manually control the displayed defibrillator event times by adjusting this time.

The Relationship between Case Start Times and Adjusted Power On Times

- The case start time must always be equal to or earlier than the adjusted power on time.
- You can manually adjust the case start time to a time that is earlier than the adjusted power on time.
- If you manually adjust the adjusted power on time to be earlier than the current case start time, the system automatically adjusts the case start time to be equal to the new adjusted power on time.
- If you add an event that occurred before the current case start time, the system adjusts the case start time to be equal to the time of the added event.
- It is not possible to adjust the case start time to be later than the adjusted power on time nor the time of the first non-defibrillator event time.

New Blank Case

Created with the case start time = the current time. Initially, there is no defibrillator data or times.

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Upload from Infrared, Serial, Bluetooth, or Downloaded via ZOLL Data Retriever

If RescueNet Code Review is able to determine defibrillator power on time:

- The system synchronizes the defibrillator power on time to the RescueNet Code Review workstation clock.
- Adjusted power on time = defibrillator power on time.
- For all others, case start time = adjusted power on time (= defibrillator power on time).

If RescueNet Code Review is unable to determine defibrillator power on time:

- Defibrillator power on time = "Unable to determine."
- Adjusted power on time = current time.
- Case start time = adjusted power on time (= current time).

Note: For cases downloaded via ZOLL Data Retriever, it is presumed that the mobile device time is in-sync with the RescueNet Code Review workstation. Prior to using Data Retriever, ensure that this is the case by docking the mobile device to the RescueNet Code Review workstation. This triggers an automatic synchronization of the mobile device clock to the workstation clock.

Upload from Card Reader, USB Drive, or Compact Flash

Time synchronization cannot be performed as time continuity is lost when the card is out of the defibrillator or there is not a direct data transfer from the defibrillator to RescueNet Code Review.

- The system displays the defibrillator power on time as recorded on the card.
- Adjusted power on time = defibrillator power on time.
- Case start time = adjusted power on time (= defibrillator power on time).

Insert Defibrillator Record into an Existing Case

Follows the same rules as when creating a new case from the same source, with one exception: the new case start time = the earlier of the adjusted power on time or the existing case start time.

Note: Insert Defibrillator Record from Card File follows the same rules as Insert Defibrillator Record from Card Reader.

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Chapter 7: Administration

Controlling Access / Using in a Networked Environment

Using groups to control access to RescueNet Code Review

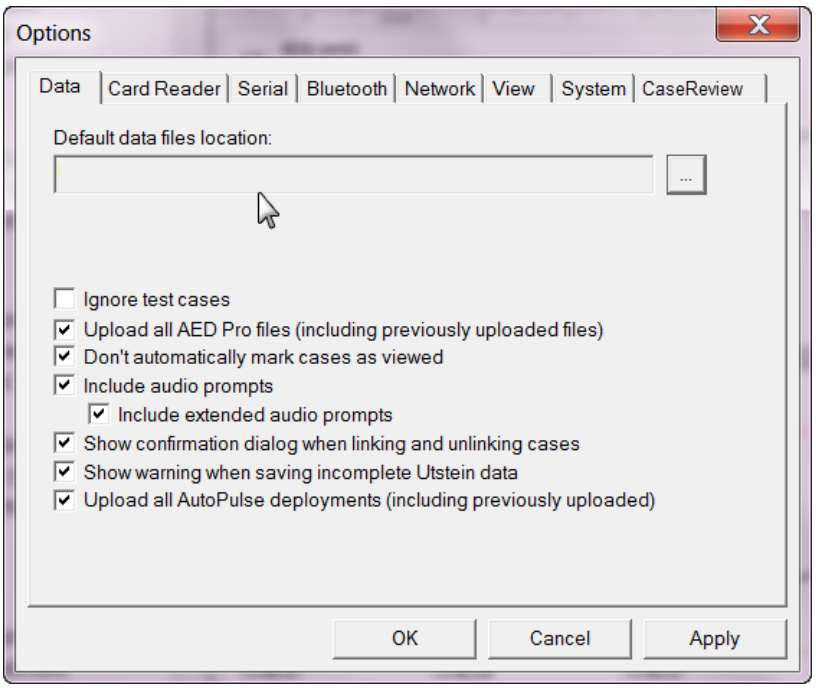
For a standalone installation, set up these groups on the workstation. For an environment in which multiple users are sharing case files over a network, set up these groups in the Windows domain or Active Directory. When these groups exist, the user logged on to Windows must be a member of a group to access its associated item.

- **ZDUsers.** Only members of this group can start RescueNet Code Review.
- **ZDAdmins.** Only members of this group can access Tools › Options.

Note: Group names are specific and cannot be altered. You need to add them as a global security group. The system does not support Novell networks.

Using RescueNet Code Review in a networked environment

All instances of the program should point to one default data files location, which all users can access, share, read, and write to.



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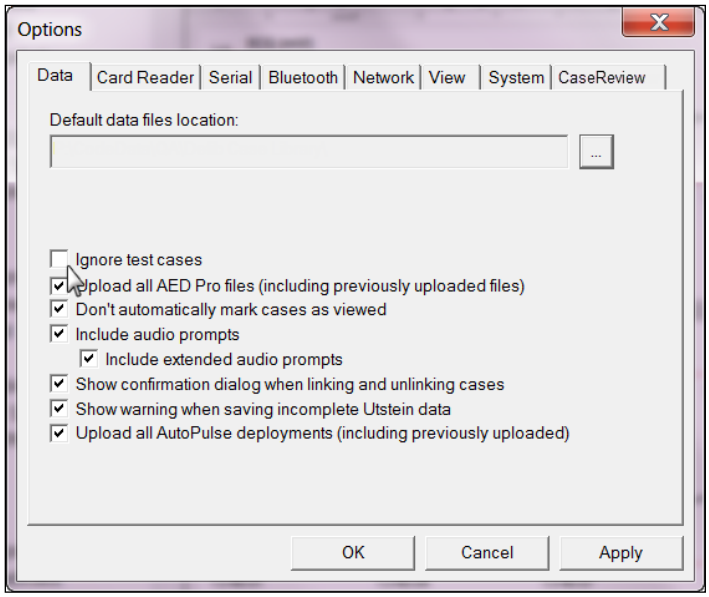
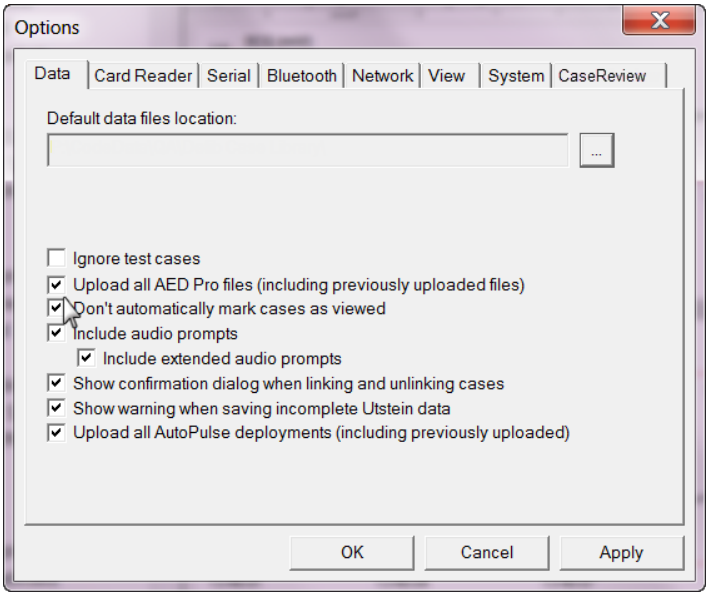
Ignoring Test Cases

You can control whether the system ignores test cases when a user opens a new case from infrared, a card reader, a serial connection, or Bluetooth or attempts to attach a case. Test cases are defined as cases with 30 joule shocks, patient impedance of less than 15 ohms, and in which internal paddles were not used.



Ignore Previously Uploaded Cases AED Pro/AutoPulse

You can control whether to upload only new cases from the AED Pro and AutoPulse or all recorded cases including cases that have been previously uploaded.



Configure Case Transfer Settings

When you upload a case from infrared, a card reader, a serial connection, or Bluetooth, the transfer is controlled by the settings on the associated Options tab.

Card reader

The Internal option works for most internal card readers in notebook PCs. If the default memory window does not work, you can click Detect to find the first free memory window. You can also try manually selecting the memory window to find one that works. Click Test to determine whether the selected memory window is a valid choice for use with a card reader.

You can optionally choose to erase cards automatically after they are successfully read. This makes it possible to use the card next in either an M Series/E Series/R Series or 1600/1700 defibrillator.

Serial and Bluetooth

The COM port must match the COM port used on the PC by the serial or Bluetooth device. The defibrillator baud setting in CodeNet Central must match the baud setting configured in the defibrillator (see your defibrillator manual for details).

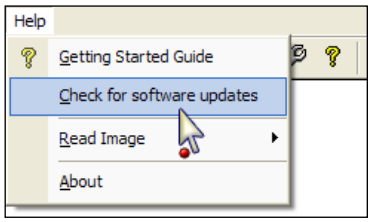
- For the M Series/E Series, the default setting is 115200
- For the 1600/1700, the default setting is 57600

Serial transfer technical note

- **M Series/E Series**. You must use a ZOLL RS-232 Data Transfer Cable (ZOLL part number 8000-0605-01), which terminates in a female DB9 connector.
- **1600/1700**. You must use a ZOLL 1600 Serial Link Cable and Connector (ZOLL part number 8000-1614).

Checking for Software Updates

To enable or disable the Check for Software Updates option: Tools › Options › Enable software updates. If you enable this option, the menu item will appear under Help.



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Latest docs: www.zolldata.com

Upgrading

You can upgrade RescueNet Code Review Standard to the Enterprise edition.

To purchase an upgrade license, contact your ZOLL Medical Regional Sales Manager.

To upgrade, enter the license code on the Tools › Options › System tab.

RescueNet Code Review Standard Edition

The RescueNet Code Review Standard Edition has the following features:

Tabs

- General
- Entire ECG
- Magnified ECG
- CPR Analysis
- CPR Quality Calculation

Case Reports

- 12-Lead Events
- HIPAA Disclosure
- Incident Log
- Snapshots
- CPR Analysis Summary
- CPR Performance Summary Data
- Strips

Exports

- Waveform Data
- Event Data
- 12-Lead Data
- Entire Defibrillator Record
- Patient/Case Data
- Audio Data
- CPR Performance Summary Data

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RescueNet Code Review Enterprise Edition

RescueNet Code Review Enterprise Edition has the following additional features:

Tabs

- General
- Entire ECG
- Magnified ECG
- CPR Analysis
- CPR Quality Calculation
- 12-Lead
- Snapshot
- Code Record
- Prehospital Utstein

Case Reports

- 12-Lead Events
- HIPAA Disclosure
- Incident Log
- Snapshots
- CPR Analysis Summary
- CPR Performance Summary Data
- NIBP History Table
- Strips
- Vital Trends Graph
- Vital Trends Table

Aggregate Reports

- CPR Analysis Summary
- EMS Frequency by Collapse Location
- EMS Resuscitation Summary
- Pre-hospital Utstein
- Search Results

Exports

- Waveform Data
- Event Data
- 12-Lead Data
- Entire Defibrillator Record
- Patient/Case Data
- Trend Data
- Audio Data
- CPR Performance Summary Data

Chapter 8: Getting help

If you are a ZOLL customer in the United States, use the following contact information for questions or information concerning software sales, upgrades, and support:

ZOLL Medical Corporation
269 Mill Road
Chelmsford, MA 01824-4105 USA
Telephone: toll free (800) 348-9011 or (978) 421-9655
E-mail: SupportData@zoll.com
Fax: (978) 421-0015
Web: www.zoll.com

If you are a ZOLL customer in any other location, either send e-mail to SupportData@zoll.com or contact your nearest authorized local ZOLL representative.

Web for International offices: http://www.zoll.com/contact/worldwide-locations/