Holter ECG editing can continue to be performed in the traditional manner, or you can select a new method of editing. The following is a description of this new method.

Go to System Setting at top of first Holter screen display, and click. The below screen display will appear.

Select New Template at bottom right.

Also, select SVE Premature % at 30%; and select Manual Set ST at Yes.

Click on OK at bottom left to exit.
Select “Tom Jones” patient file from Prior Holter menu. (This file is being sent to you)

From Data Access Choices menu, click on Edit to see the below screen display. This is the look of “New Templates.”

Click on Close at bottom right to start the instructions for use of the New Templates.

The purpose of New Templates is to provide a quicker and more accurate editing process. This new editing process will apply to most Holter ECG files, but not all.

After clicking on Close, you will see the below screen display.

Click on Re-Analy at bottom right to begin the re-analysis process.
For QT analysis, we suggest that you move the PR baseline vertical marker one sample to the left (Tab key and left arrow key) for channels 1 and 3.

To begin the re-analysis, use the F10 key or click on the Accept icon (from 1 to 3 times). Depending on the speed of the PC, the re-analysis should take less than 20-seconds.

Click on the “Edit” icon at top left. This will take you to the New Templates.
To begin the editing process, you want to edit in the opposite direction. First edit the Normal beats, then the Artifact beats, then the SVE Template, then the BBB, then the Aberrant, and finally the VE Template.

The purpose of the above paragraph is to label all of the VE beats that may be in Normal, Artifact, etc. before beginning the New Template process.

**Normal:** click on Normal box.

VE beats would most likely be in first template at bottom left. There are no VE beats in the Normal templates, so click on Close at the bottom right.
Click on Artifact box, and quickly see that there are no VE beats. And click on Close.

Click on SVE Template, and see a new display of SVE beats prior to editing the SVE beats.

![ECG template image]

You will now see a 2-beat display. The second ECG beat is the SVE beat, or artifact. Above each 2-beat display is a horizontal yellow line with 2 small legs. The vertical legs represent where the beats were detected. When the vertical legs are directly above 2 good R-waves, then all is OK. However, when one of the vertical legs is lined up on something other than a real R-wave, then you need to edit as an Artifact. Or it could be a VE beat.

In the above, note that column 1 with rows 1 and 4 are artifact; column 2 with row 4 is artifact; column 3 with row 2 is artifact; column 4 with row 2 and 3 are artifact. Thus, use the mouse to select these artifact beats, and use the “F” key to change to Artifact.

Now you have edited your SVE beats.

Note: you may want to move the mouse arrow to column 1 and row 2, and do a double left click. Now you will see that the second beat of the SV Run needs to be changed to S.
Click on Close at bottom right to continue the editing process.

You are back to the New Template screen display. Click on the Aberrant box. There are 4 Aberrant beats. Change the first Aberrant beat to S for SVE, and change the remaining 3 beats to Artifact. Click on Close at bottom right.

**Now click on Update Template icon on lower right side. If there had been any VE beats in the non VE templates, they will now be moved to the VE Template box.**

After clicking on Update Template, now is the time to edit the VE Template. Note that the Update Template now only takes about 5-seconds. Click on the first VE Template box.

For all patients, the first template at the bottom is most likely to need editing. It is shown above surrounded in a small white box with a “21” at the top. This is the number of beats.

You will see that 12 beats need to be edited to Artifact. They are C1-R2&3, C3-all, C4-all, C5-R3, and C6-R1&3 (C=column and R=row). Use mouse arrow and F key to change to Artifact.

Quickly click on template boxes at bottom for 154, 29, 11, and 5 to visually verify that they are VE beats.
Now you want to move all of the good VE beats into the second template at the bottom of the display. This is the template with 154 beats.

You will see 5 template boxes at the bottom of the display. They need to all be moved into the second template which probably shows a number of 154.

You move the 4 other templates into the second template with a simple point and drag with the mouse. Place the mouse arrow on the first template, do a left click and hold, and then slide the first template on top of the second template and release the left click. Repeat this process for templates 3, 4, and 5.

You should see the below.

![Image of ECG display]

All of the VE beats are now in a single template at the bottom of the display.

They are all in the second template box.

This is the focus of New Template editing. Get all of the good VE beats into the single template box, and the single template is to be located in the second template location.

Now we want to get the VE beats separated by foci. Essentially this is separating VE beats that are positive-going from those that are negative-going. And then, we want to print a new Report Page for Multi-focal Arrhythmias.

Thus, place the mouse arrow just below the second template box, and do a right mouse click.
The below screen display will appear.

The most common selections (from the right mouse click) are Auto Multifocal VE Sort (CH1) and Print Multifocal VE Report.

Click on the Auto Multifocal VE Sort (CH1) and the following display will appear.
In less than 3-seconds, there is a separation of positive-going VE beats and negative-going VE beats.

The VE beats in the second template will automatically go to VE1 in the Category column of the EDIT screen display; and the VE beats in the third template will go to VE2 in the Category column. Thus, the different foci VE beats are prepared for the ECG Strip prints in the Holter report.

It is important that all the VE beats first go into the second template, and then use the right mouse click to auto-sort the multi-focal beats. The second template will always be the VE1 beats, and the third template will always be the VE2 beats.

**To print a multifocal report, mouse click on Print Multifocal VE Report.** At the bottom of the following display, click on the OK print icon.

The printed page gives you numerical data and a 24-hour histogram for each of the multi-focal VE beats. You can print up to 4 different types of multifocal beats on the one-page print-out.

It is very seldom that you actually have more than 2 multifocal VE beats, but you can edit so that you could place additional VE beats in the fourth and fifth template locations. Usually, the difference in positive-going VE beats is caused by body position changes.

The second template = the first 24-hour (minute-by-minute) histogram of VE beats.  
The third template = the second 24-hour histogram print-out.  
The fourth template = the third 24-hour histogram print-out.  
The fifth template = the fourth 24-hour histogram print-out.

**Note:** There are three (3) other multi-focal sorts. This is for more difficult arrhythmias and requires more sophisticated editing. We recommend that you first get comfortable with the above recommended procedure.

**Note:** In general, anything new comes with some rejection. However, we think with a little practicing that you will be able to process most Holter ECG files in a significantly shorter time period, and with more accuracy.

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**We are also sending you a second Holter file, named VT Morton.**

First, go to PageScan. Go to the time of 23:16. The remaining several hours after 23:16 need to be changed completely to Artifact. Use your mouse to point and drag all the time from 23:17 to the end of the Holter. When done properly, there is a gray shade on all this time. Then press the “F” key to change all of this time to Artifact.

Then process VT Morton per the above recommendations.

Note how the Auto Multifocal Sort (CH1) generally separated the V-Tach beats from the other VE beats.
A-Fib Editing
&
P-Wave Changes
CardioScan 76a is only compatible with the new HASP security keys. All software has been subject to the 2010 end-of-the-year Annual Audit for compliance with software quality control processes.

The DMS 300-3A and 300-4A recorders include a new ECG connector and ECG Cable. Additional artifact rejection has been added to the 3A and 4A recorders. Double lead-wire isolation has been incorporated into the new ECG Cables. The 3A recorders use the 7-electrode and 5-electrode ECG Cables. The 4A recorders use the 4-electrode ECG Cable for 3-Lead ECG monitoring, and the 10-electrode ECG Cable for 12-Lead ECG monitoring. The 4A recorders automatically recognize the pin connections from either the 4 or 10 electrode ECG Cables, and then automatically adjusts the 4A to either a 3-Lead or 12-Lead ECG recording.

The following are software capabilities not found in versions prior to 75a:

1. **AES-256 Encryption:** for safeguarding the privacy of medical facilities and their IT systems.

2. **HELP icon on Main Screen Display**
   
   a. **Feature**
Click on the various pages to view the CardioScan features. Double left click on any selected page-print to view an enlarged page.

b. Learning Center

Click on “Select Topic” icon at upper-left to sequence through ECG learning center.
c. **CE Info** (password is ce)

![CE Info screenshot](image)

---

d. **Show Real-Time Holter ECG:** this is an important icon. It has three purposes.

- Connect Patient Isolation Test cable from Holter recorder to CardioScan PC to view the quality of the electrode application. If you tap each electrode gently, you should not see bad artifact. If you see artifact upon gently tapping an electrode site, this is an indication to clean the skin again at that electrode site.

- Soon to be released. The ANS Test (Autonomic Nervous System Test) can be performed by clicking on the ANS icon. The autonomic nervous system is what initiates the beginning of each heart beat. This is a 3-minute test. Minute 1 is 60-seconds of Deep Breathing with min and max HR analysis. Minute 2 is 60-seconds of Valsalva Ratio with min and max HR analysis. Minute 3 is 60-seconds of 30:15 Ratio (sitting down versus standing up) with min and max HR analysis. Then click on the Print icon for the ANS report.

- Soon to be released. Resting 12-Lead ECG test prior to the Holter ECG recording. The 300-4A recorder connected to the CardioScan PC performs the Resting 12-Lead ECG.
3. SETTINGS Menu

a. **ECG Strip Display:** with each R-R interval the heart rate, the ms interval, and arrhythmia label is displayed above the R-R interval. The ECG Strip Display allows you to center this data in three different horizontal locations.

b. **Print Page Number:** allows each page in the Holter report to have its page number printed.

c. **Other A Tab, Auto Fill Patient Info:**

```
Use for setting up interface with GDT, SQL, HL7 databases.
```

d. **Other A Tab, DICOM Server Setup:** use for interface with DICOM databases.
e. **Other B Tab:** **ECG STRIP COLOR MODE:**  this allows the grid background for color ECG print-outs to be either red or blue.

4. **EDIT Menu**

![Image of an ECG display with various tools and settings]

a. ECG Strip on left side has been increased to 12-seconds of ECG data.

b. When using the 300-4A recorder, you can select either a 3-Lead or 12-Lead display with the Tools bar on the left side of the screen display.

c. The shade-bar on the arrhythmia beat can be On-Off with the Tool bar icon.

d. The Gain of the ECG can be adjusted with the + or – with the Tool bar icon.

e. The per-cent (%) of prematurity above the VE beats has been enhanced.

f. The **CAPS LOCK** key is now active as a hot key for turning on the All Templates Switch. You can use the power switch icon or the **CAPS LOCK** key. When active, all the templates at the bottom section of the EDIT display can be edited with one command. For example, if you see the templates in the bottom section are artifact, then you can press the **CAPS LOCK** and press the F key (or mouse click the F icon) and all beats are edited to Artifact.

g. Additional artifact rejection has been added to both the 75a and the Holter recorders 300-3A and 300-4A. This will allow Holter ECG recordings to be edited in less time.
h. **CATEGORY on right side of EDIT:** Auto sequence to next Category for all Categories.

i. Click on Histogram icon on right side of above display, and double left click on R-R Interval. This is a new display. The far right and left sides very often show interesting ECG events.
j. There is also a new BBB Histogram display. The BBB label is activated by the “U” key. If you want to change the BBB label to a Fusion label or a Ventricular Escape, you can do this in the above screen display. With the BBB label at the bottom right, place the mouse arrow at BBB followed by U, and do a right mouse click. A window will be displayed in the center of the display that will allow you to change the beat label for this special abnormal Category.

k. In the EDIT menu, you can display the large 8-second ECG display.

![ECG Display](image)

Note the icons at bottom of display that are for “QT” and “TWA.” Click on QT icon to see vertical markers for QT interval. QTc measurements must be set-up properly in the ST/QT Set-up menu (or Re-Analysis). Place the PR vertical marker at the beginning of an estimated Q-wave, and then use arrow key to move sample point one sample to the left.

If the QT markers are in an acceptable location, you could then access the RULER icon to verify the QT measurements at the bottom left of the ECG Strip. If the RULER measurement is close to the printed QT number, then the QT and QTc numbers are accurate.

Also note the TWA (T-Wave Alternans) icon. From this ECG Strip display from the EDIT menu, you can go into the TWA program by clicking on the TWA icon at the bottom of the above display.
I. The below is the display when you click on the TWA icon.

![ECG display](image1.jpg)

The + key (under Num Lock) increases the Gain of the ECG until the size of the T-waves shows the T-Wave Alternans.

The middle top section shows a 128 beat trend of the peak of the T-waves. The severe up-and-down trend shows a likely area of TWA.

Click on the PRINT icon to print the TWA Report.

5. PAGE SCAN Menu

![Page Scan](image2.jpg)
a. There are many software additions in the Page Scan Menu.

b. You can select several Trends and Histograms for the top of the Page Scan display.

c. There is a Tool bar on the left side of the Page Scan display. You can select R-R Trend, or V, S, or P Histograms. V = green bars for quantity of VE beats and the yellow bars show the hours of V-Runs. In the above display, a left click on the yellow bar resulted in the Sustained V-Tach shown below the Histogram.

d. By selecting the S (for SVE beats) or the P (for Pause beats), the same results will be displayed.

e. The Tool bar then allows for the selection of Channel 1, 2, or 3 with the “CH” tool.

f. The next tools are “+” and “-” for Gain adjust of the ECG display.

g. The next tool is the selection of the standard 60-second per line ECG display, or the enlarged 30-second new ECG display.

h. The lower section of the new tools are for the larger ECG display at the bottom.
   - The first tool is for keeping the red grid background, or removing it.
   - The next tool is for displaying the heart rate, or removing it.
   - The next tool is for displaying the ms of the R-R, or removing it.
   - The next tool is for displaying the V beat label, or removing it.
   - The next tool is for displaying the dot rectangular box around the selected beat.
   - The 8, 16, and 24 tools are the number of seconds in the rectangular dot box.
i. Additional new features at the bottom of the Page Scan display.

At the bottom of the 3-Lead ECG is a slide bar that allows you to move the 3-Lead ECG throughout the 24-hour time period.

At the middle bottom, there is an ECG Strip icon. Click on this icon and the below appears.

This feature allows you to see the additional ECG Strips that are being added to the report.
6. **A-Fib/Flu Menu**

A-Fib algorithm changes were added. The A-Fib detection performs better at SVE Prematurity selections of 20% or 15%. For A-Fib patients, go to Settings menu, and select the 20% or 15% SVE Prematurity %. As shown above, the ECG Gain can be selected at Full Size or Half Size.

7. **HRV Menu**

a. You can select either HRV or Deceleration Capacity. Outside of USA and EU, you can access a HR Turbulence program.
b. Click on HRV.

c. There are four (4) Lorenz Plots across the top of the HRV display. You can click on any of the four plots. Double left click on the top-left Lorenz Plot. Patient is Morton Lewis file.
d. The dots represent the ms R-R difference of the subject beat and the next beat. As the beats are located more towards the lower left corner, the less the Heart Rate Variability, and the higher the Risk.

e. There are many options in viewing the locations of these dots. The dots are color-coded. VE beats are green dots, SVE beats are majenta dots, normal beats are white dots.

f. At the top-left, there is an “ALL” field. Click on the access arrow.

g. You can select the dots from the following options: All, Normal, VE, V-Pair, V-Run, SVE, SVE-Pair, SV-Run, or Artifact. For example the below is selecting V-Run.
h. Now there is a plot of only the beats that are in the V-Tachs for this patient. If you do a point and drag to surround some beats, you can see the below.

i. The beginnings of each V-Tach are shown on the right side. You can double left click on any of these ECG Strips and see the enlarged ECG Strips in the same manner as you see them in the other parts of the CardioScan program. You can edit the beats, if desired.

j. At the top of display, you will see a field for Color Plan 1 and Color Plan 2. The f. above picture is Color Plan 2. The below is Color Plan 1. The difference is that the black dots to the far right are the beats that are the next beat after the green beats in f. above.
k. Heart Rate Variability requires the deletion of the Artifact beats. Artifact beats give you incorrect measurements of R-R intervals, and HRV is based on good Normal-to-Normal beats. Very often white dots that are in the lower left corner are artifact, and can be easily edited by a mouse point, drag, and surround. Then a right mouse click, and then click Artifact. You verify the surrounded beats by verifying the ECG Strips on far right side,

8. Deceleration Capacity

a. Click on Deceleration Capacity. Password is vec321.
b. Background material for Deceleration Capacity: Go to Internet and search for “Deceleration Capacity of Heart Rate as a Predictor of Mortality.”

c. The published medical literature suggests “Impaired heart rate deceleration capacity is a powerful predictor of mortality after myocardial infarction and is more accurate than LVEP and the conventional measures of heart rate variability.”

d. After typing in the password, the below is displayed.

e. RULES icon allows for measurement of selected time periods, other than the default 24-hours.

f. The DMS normal beat file is created with its unique Full Disclosure artifact rejection process.

g. Acceleration Capacity algorithm and report also included.

h. Click on PRINT.

i. Deceleration Capacity test is completed. Read above suggested medical article to review DC report print-put.

j. Deceleration Capacity + Lorenz Plots + Autonomic Nervous System is a strong Risk Predictor.
9. **ECG Strip Menu:** from Access Data Choices, click on ECG Strip

   a. Note the new field in top right corner. It is “Output Raw ECG Data.” Click on it.

   b. Select ASCII file or Save ECG to HL7 FDA, etc.

   c. Then you will see a new screen display as shown below.

   d. Select the number of desired minutes for the Raw ECG file output, and click on OK. ECG Raw data is now ready for interfacing with other analysis systems.
INTRODUCTION:

CardioScan (10, 11, and 12) has evolved into a significant upgrade with the introduction of Version 76a. In addition to many new features that are described in another information document, Version 76a adds many significant data outputs that can be used for research study projects and for databases such as PDF, SQL, HL7, DICOM, etc.

These new outputs and interfaces are found in the ECG Strips menu, the HRV menu, and the Report menu. There will soon be an output added to the A-Fib menu and the QT Validation menu.

This document will focus on the outputs and interfaces in the ECG Strip menu, the HRV menu, and the Report menu.

The ECG Strip menu provides outputs with buttons labeled “Output” and “Output Raw ECG Data”. The “Output” button is simply a traditional real-time ECG display from any selected time period. The “Output Raw ECG Data” button provides choices on how a user can select multiple formats to transfer raw ECG data for any selected time period into other computer programs or other medical analysis devices. For example, the ECG signal print-out consists of 128 sample points per second that are joined together to create a smooth and diagnostic ECG trace. The ASCII and HL7 FDA XML formats locate the exact position of each sample point for each channel of ECG data for a time period of 1 to 1440 minutes. See the DMS HL7 manual to review the details of the HL7 FDA XML format.

The HRV menu provides an output for HRV study projects. Many university hospitals have developed their own HRV computer algorithms for reporting on a wide spectrum of Heart Rate Variability activity. The two (2) general HRV outputs are first the output of 5-minute HRV analysis data groups for both Time Domain and Frequency Analysis. The 5-minute data groups cover the entire length of the 24-hour Holter ECG. The second HRV output is the one most used by research study projects. It sends the R-R interval in ms to the C:\ for each ECG beat in the 24-hour Holter ECG. Each beat is annotated as (1) a qualified N-N beat, (2) a Ventricular Ectopic beat, (3) an Atrial Ectopic beat, and (4) an Artifact detected signal. The C:\ drive data can be instantly accessed from this HRV output menu.

The Report menu provides a series of outputs for EMR databases. This includes PDF, ASCII, HL7, DICOM, and SQL.
1. CREATING RAW ECG DATA OUTPUT IN ASCII (TXT) OR XML FORMAT

1. Start the CardioScan Premier software, and access the desired patient file via the Prior Holter menu.

2. From the Data Access Choices menu, click on ECG Strip.

3. At the top-right of the window, select the ECG output start time. By default, it is 2 minutes after the start time of the recording.
4. Click on **Output Raw ECG Data** and select **Save to ASCII File** or **Save ECG to HL7 FDA XML File** depending on the desired output format.

![Image of ECG data output window]

5. The **Output Duration** window will appear. Select the number of minutes from the start time you would like to output. Click **OK** when done.

![Image of output duration window]

6. A new window will appear, displaying the location of the output file. By default, the file name is the last name of the patient, and it is saved to the root of the C: drive. Click **OK** to finish.

![Image of file location window]
7. To access the file, close out of the CardioScan Premier software, and browse to the C: drive using **Windows Explorer** (right-click on the Start button and click on **Explore** or **Open Windows Explorer**). You will see the files located there.

8. Double-click on the TXT (ASCII) or XML file to open it, or right-click then **Open with** to specify which program you would like to view the file with. Samples of the output files can be found on the next page.
ASCII

XML (HL7 FDA XML)
XML (HL7 FDA XML) Cont.
2. CREATING HRV OUTPUT IN ASCII (TXT) OR XLS (EXCEL) FORMAT

1. Start the CardioScan Premier software, and access the desired patient file via the Prior Holter menu.

2. From the Data Access Choices menu, click on HRV and select HRV again.

3. At the bottom-right of the window, click on Output HRV.
4. The HRV output window will appear:

- The time interval can be changed in the bottom-left corner, click Refresh to see the changes once the time is set.
- Click on Print to print this chart using a printer.
- Click on Output to view this chart as a text file using Notepad.

5. You can specify the output directory using the box in the bottom-right. It is set to C:\ by default. Click on Output to Xls to create the output files.

6. A new window will appear, displaying the location of the output files. By default, the file name includes the last name of the patient, the times of the interval, and it is saved to the root of the C: drive. Click OK to finish.
7. To access the files, close out of the CardioScan Premier software, and browse to the C: drive using **Windows Explorer** (right-click on the Start button and click on **Explore** or **Open Windows Explorer**). You will see the files located there.

8. Double-click on the TXT (ASCII) or XLS (Excel) file to open it, or right-click then **Open with** to specify which program you would like to view the file with. Samples of the output files can be found on the next page.
### ASCII

```
Q: Qualified QRS  A: Atrial Ectopic
V: Ventricular Ectopic  Z: Artifact
Start Time: 00:00
First beat time: 00:02:01.15
End header
V563
Q1390
Q1023
Q1063
Q1054
Q1035
Q1070
Q1039
Q1047
Q1059
Q1062
Q1063
Q1063
```

### XLS

![Excel Spreadsheet](image-url)
3. CREATING REPORT SUMMARY OUTPUT IN ASCII (TXT) FORMAT

1. Start the CardioScan Premier software, and access the desired patient file via the Prior Holter menu.

2. From the Data Access Choices menu, click on Report.
3. On the right side of the window, click on **ASCII**.

![Image of ASCII button](image1)

4. All of the categories are selected by default. Uncheck the box for any you would like to omit, and then click **Transfer to ASCII**.

![Image of Transfer to ASCII button](image2)
5. A window will appear, letting you know the file creation is complete. Click **OK** to close it.

6. To access the file, close out of the CardioScan Premier software, and browse to the folder where CardioScan is installed (typically C:\Carsc12) using **Windows Explorer** (right-click on the Start button and click on **Explore** or **Open Windows Explorer**). You will see the file named ASCII.txt located in there.
7. Double-click on the file to open it.
4. CREATING REPORT OUTPUT IN PDF FORMAT

1. Start the CardioScan Premier software, and access the desired patient file via the Prior Holter menu.

2. From the Data Access Choices menu, click on Report.
3. On the left side of the window, check the boxes next to the reports you would like to save as a PDF file. On the right side of the window, click on **PDF+DICOM**.

4. In the bottom-left corner of the window, select **Color** or **Black and White**, and then click on the **PDF File** icon.
5. Select **Create PDF File** to create the PDF file. When it is finished, you will see the file appear in the box above the icons. At this point, you can select **Preview** to view the file, or **Send Email** to launch the computer’s default E-Mail program.

6. Select the PDF file and click on **Export**.
7. You will now be able to specify the location where you wish to save the PDF report, as well as the file name. When ready, click **Save**.

8. A window will appear, letting you know the file has been saved. Click **OK** to close it.
5. CREATING REPORT OUTPUT IN DICOM FORMAT

1. The first step is to input the DICOM server settings. Start the CardioScan Premier software, and click on System Settings. Select the **Other A** tab, and click on **DICOM Server Setup**.

![DICOM Server Setup](image)

2. Enter the correct DICOM server parameters (please consult your IT/EMR department), and click **Close** when finished. Then, click **OK** to close the System Settings menu.

![DICOM Server Setup](image)
3. Access the desired patient file via the **Prior Holter** menu.

4. From the **Data Access Choices** menu, click on **Report**.
5. On the left side of the window, check the boxes next to the reports you would like to save as a PDF file. On the right side of the window, click on PDF+DICOM.

6. Click on the DICOM File icon, and select Create DICOM File. When finished, the file will appear in the box above the icons.
7. Select the file, and you can either click on (a) **DICOM File**, then **Transfer to Server**, or (b) Export.

8. If you select **Export**, you will now be able to specify the location where you wish to save the DICOM file, as well as the file name. When ready, click **Save**.
9. A window will appear, letting you know the file has been saved. Click **OK** to close it.
6. USING A BARCODE SCANNER TO INPUT PATIENT INFORMATION

1. To automatically input patient information by using a barcode scanner, run CardioScan Premier, go to System Settings -> Other A tab. Under “Auto Fill Patient Info”, there is a drop-down box that lets you select the desired method.

2. After making your selection, click the OK button.

3. You can now go into the “New Patient” menu and scan the barcode, or manually enter the number under “Case #” and press Enter. The patient data will be filled in for you automatically.
Template Editing New Advances:

At the bottom right of the System Setting menu, there is a new feature named “Template.” There are now four (4) selections to choose from. One of the selections is the same as has been in CardioScan for several years. The 4-choices are Single, Multiple, Single (simple), and Multiple (simple).

“Single” is the same process as prior CardioScan systems, except there is only a single Template bin at the bottom of the Edit Beats screen display. “Multiple” is the same process as prior CardioScan systems.

“Single (simple)” and “Multiple (simple)” are a quick editing process that allows the significant arrhythmias to be located and edited. Some users may find either of these two new editing techniques to be a major step forward.

The “Longest R-R” is no longer in the Category section to the right side of the Single or Multiple screen displays. This data is now accessed by clicking on the “Histogram” icon, and then clicking on the “R-R” at the bottom of the listing. Then click on the right side bars of the displayed histogram. The longest R-R will be the bar to the far right of the histogram.
**Single (simple) and Multiple (simple):**

Click on the first VE Template.

The difference between Single (simple) and Multiple (simple) is the number of Templates at the bottom section of the above screen display. The above is the Multiple (simple) display.
Instant Re-Editing of Pauses:

In less than 5-seconds you can now do a re-editing of PAUSES without changing any other analyzed data. Just select a different Interval duration and click.

There are “0” Pauses at 2.50 seconds. Double click on Pause at top-right.

Note that there are no Pauses at 2.50 seconds. Also note that at bottom-left there is Pause Search. Click on arrow icon to change Pause to 2.30 seconds, and click on Search. See next page. In less than 5-seconds the entire Holter file is searched for Pauses in excess of 2.30.
Note that there is now one (1) Pause at 2.30. Double click on above ECG.

See the above Pause at 2.367 seconds, and all Pause data is auto-updated. This Pause re-editing can be done at any time without having any effect on prior edited Holter ECG data.
The recent cardiology publications have spotlighted the importance of testing for Heart Rate Deceleration Capacity (DC) and Heart Rate Acceleration Capacity (AC) during the Holter ECG.

The above Page Scan shows Holter ECG data during the 12:00 hour. The data table to the right shows both the Deceleration Capacity (DC) and Acceleration Capacity (AC) for each one-hour time period. The Risk Indication is also shown for each one-hour time period. The lower the DC number, the higher the patient Risk.

Note the Output icon at the bottom of the DC and AC data table. This data can now be transferred to a research cardiology PC for further investigation and publishing of this important Risk Assessment data analysis from a modern Holter ECG system.

The DMS version 76a software has a large selection of various data outputs into other computer programs that have been developed by various scientists and medical researchers. A good example is the new data output from the ECG Strip menu. Go to the general Data Access Choices menu, and click on the ECG Strip menu. Click on Output Raw ECG Data.
Three (3) raw data outputs are provided. The ASCII and HL7 FDA XML outputs locate the sample points of the raw ECG data. The output for “Save Raw Data (ECG + RR + QT) to Binary Format” is a valuable research tool for studies conducted with Holter ECG monitoring.

A later section of this document on new features in version 76a describes the various outputs now available from CardioScan, and describes how to move the data and view the data.

**Soon To Be Released:**

In order to provide additional Risk Assessment and the basic testing for initiating each heart beat, the Autonomic Nervous System (ANS) data will soon be released. There will be reports for the Parasympathetic ANS and for the Sympathetic ANS.