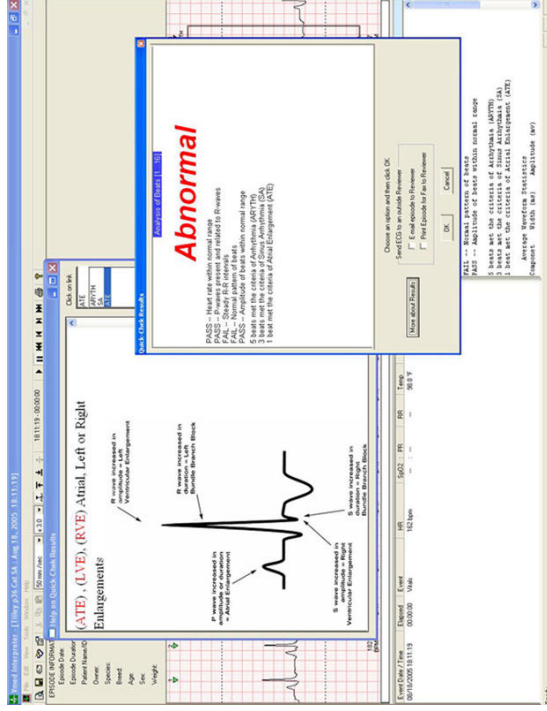


ECG Interpreter Setup and Operating Instructions



Installation, Configuration and User Instructions v2.26

CAVEATS AND LIMITATIONS

Caveats

1. Insure that the ECG segment to be analyzed is free of noise spikes and movement artifacts.
2. Use only leg clips when analyzing ECG traces; the chest sensor and esophageal probes are accurate only for the determination of rate and rhythm.
3. Manually adjust the bounding box around each complex if prompted to do so.

Limitations

All ECG interpretation software has limitations and users should be familiar with them. These limitations include:

- o Misreading complexes; for example reading a tall “T” or “P” wave as an “R” wave resulting in the doubling of heart rate.
- o Inability of the computer to accurately lock on to a beat due to noise or artifact.
- o Low voltage signals with poor signal to noise ratios.
- o Misadjusted windows describing the end and beginning of beats. Interpreter will attempt to automatically adjust these windows, but manual adjustment may be needed in some cases.
- o Excessive baseline movement

A computer’s ability to analyze ECG strips is not as good as a trained medical professional. Vmed Interpreter is only a tool and should not be the sole basis of diagnosis. If conclusions are at all equivocal, Vmed suggests follow-up procedures to confirm the conclusion. Noise spikes or movement artifacts may be erroneously counted by the Interpreter as a valid ECG signal (oftentimes a VPC) and may result in an inaccurate conclusion. This software program is not a substitute for professional judgment. Should any doubt exist regarding interpretation results or conclusions, obtain consultation from a veterinarian qualified in the interpretation of ECG traces.

Notice

This software program, “Help” file and any accompanying documentation are copyrighted. You may not give, sell, rent or otherwise distribute copies of this program or its content to third party, except as provided under the U.S. Copyright Act. Registration of this software program with Vmed Technology is required within 30 days of delivery. This software may be returned for credit or refund at any time prior to registration.

Making additional copies of the software program or enabling others to use your registration code(s), key code(s) or serial number(s), if any, is strictly prohibited.

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Chapter 1 Installing and Configuring Interpreter

Installing Vmed Interpreter

1. Insert the Vmed Interpreter installation CD into your CD drive and follow instructions. NOTE: If installation does not start, Click Start>Run>select drive>OK.
2. After installation, you may use the program twenty times before registration. If any time during the first 20 uses you are not satisfied with its performance you may return the program for a full refund.
3. After 20 uses, you will be prompted to register the product for continuous use. Follow the registration instructions.
4. Check our website periodically for updates. Updates are free of charge and found at: <http://www.vmedtech.com/customers>

Configuring Vmed Interpreter

- Click the “Tools” menu at the top of the screen and then select “Configure Vmed Interpreter” or click on the  icon and the following window will appear:

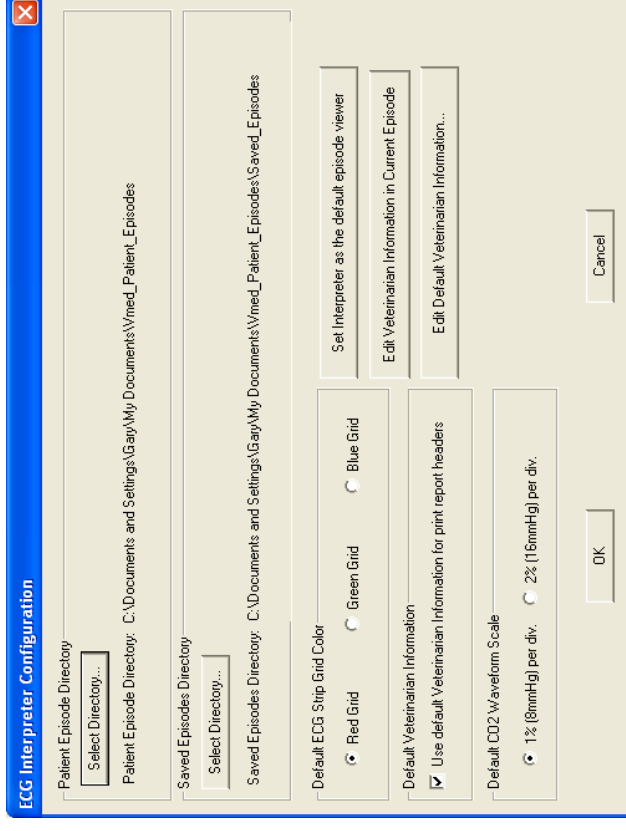


Figure 1 Interpreter configuration window

- Click “Use default Veterinarian Information for print report headers” box to use defaults stored on your computer for printout. Not checking this box will use the information embedded in the patient episode file.
 - To set the file directory where Interpreter will look for PC-Vet or PC-VetGard/ + ECG recordings, click the topmost “Select Directory” button.
- NOTE:** The default file path is to the computer’s “My Documents” folder under a subfolder named “Vmed_Patient_Episodes”. This is the same default directory path used by the PC-Vet and PC-VetGard/+ monitors. Use this default path unless you have entered a different path when installing PC-Vet or PC-VetGard. If a different path was used when PC-Vet or PC-VetGard+ was installed, use that path.

- To set the file directory where Interpreter will save copies of episodes or emailed episodes, click the bottom “Select Directory” button under the Saved Episodes Directory section
- Select the color of grid that you want for the display and then click “OK”.
- Clicking the “Set Interpreter as the default episode viewer” button causes your computer’s operating system to associate files with a “pve” extension to be opened using Interpreter when double clicked in the Windows file browser.
- Clicking on the “Edit Default Veterinarian Information” button allows editing of information in the dialog box described in the next section of this manual.
- Choose between 1% (8mmHg) and 2% (16mmHg) per division default scale factor for CO₂ waveforms being displayed by selecting the appropriate radio button.

Setup Vet/Clinic Information USA and Canada Users

1. Click the “Tools” menu on the upper tool bar of the Windows display and then “Edit Vet Information” and the following window will appear:

2. Type in your vet/clinic information as above.

NOTE: Your entries will be remembered each time the program is started and contains text that will be printed on the ECG print report and all Reviewer generated reports.

3. Press OK. **NOTE:** Refer to the following instructions to add your clinic logo to the report heading.

Setup Vet/Clinic Information International Users

The “Edit Vet Information” box as shown below has a pull down menu selection for state. All U.S. and Canadian States and Territories should be listed. If your clinic is not within one of these state selections, then select the entry which shows a blank. Use the other available entry boxes to fill in the specifics of your address.

✕

Edit Vet Information

Please enter Vet Information that will be used for the ECG print report header.

Clinic Name:

Buckingham Veterinary

Clinic Address:

Line 1

c/o Her Majesty The Queen

Line 2

Buckingham Palace

City

London

State

SW1A 1AA

Zip Code

Contact Info:

Phone

(+44) (0)20 7930 4832

E-mail

vet@royal.gov.uk

OK

Cancel

A custom logo can be created for reports using the data entered above. Size A4 printer outputs will be supported if the Windows Driver for your printer supports it. The logo output from the above screen will be created in the upper left hand corner of the printout as shown at the top of the next page.

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INSET YOUR IMAGE AND INFORMATION HERE

Figure 2 Custom logo from international vet information setup window

Using Your Clinic Logo on Printed Reports



Vetmed Technology
16149 Redmond Way #108
Redmond, WA 98052
(800) 926-9622
info@vmedtech.com

Vmed Remote:

PC-VetGard+

HR from ECG:

134 (bpm)

BP [Sys, Dia, MAP]:

120, 82, 100 (mmHg)

SpO2:

98 (%)

Respiration Rate:

32 (bpm)

CO2 [Ins, Exp]:

0.9, 4.6 (%)

O2 [Ins, Exp]:

71.9, 58.3 (%)

Temperature:

98.8 (°F)

Isoflurane [Ins, Exp]:

3.8, 3.4 (%)

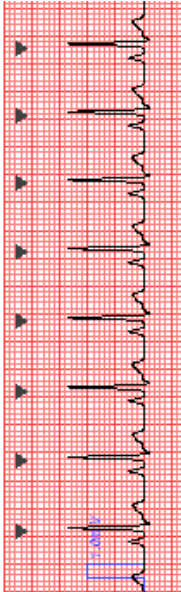
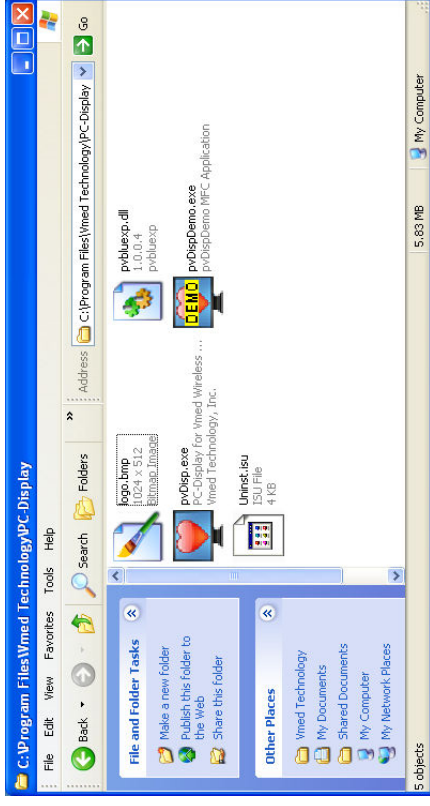


Figure 3 Default report logo

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NOTE: To customize a logo specific to your clinic, follow the procedure below:

1. Click on the desktop 'My Computer' icon and navigate to the installation directory for PC-Display. For most users this will be 'C:\Program Files\Vmed Technology\PC-Display'



2. Select the file 'logo.bmp' and then right click the mouse and select 'Copy', then right click again and select 'Paste'.
3. A file called 'Copy of logo.bmp' will be created. Right click on this new file and choose 'Rename' then rename the file to 'customlogo.bmp'.

4. The image in this file will now appear on the printouts from PC- Display, Interpreter land Reviewer. Edit the file to create your own custom logo. The following constraints must be observed:

- The file must be named "customlogo.bmp"
- Any size image can be used but it will be stretched or compressed to 1024 by 512 pixels in the printout. Best results are achieved when image file is 1024 bt 512.
- The image must be in 'bmp format', 24 bit color.
- Any photo editor can be used to create a custom logo. Most computers will at least have MS Paint. If you have a logo as part of the header in a Word document it can be cut and then pasted into MS Paint, resized and then saved.
- Vmed software upgrades will overwrite the original 'logo.bmp' file but will leave the 'customlogo.bmp' file untouched. Software upgrades should not affect the new logo.

NOTE: The 'Print Preview' function in PC-Display can be used to see how the new logo will look on the printout. An example is shown on the next page.



16201 San Pedro Ave
San Antonio, TX 78232
(210) 404-CATS (2287)
afhc@swbell.net

Vmed Remote: PC-VetGard+
PR from SpO2: 84 (bpm)
BP [Sys, Dia, MAP]: 119, 87, 99 (mm-Hg)
SpO2: 97 (%)
Respiration Rate: 31 (bpm)
CO2 [Ins, Exp]: 0.5, 4.5 (%)
O2 [Ins, Exp]: 70.6, 58.0 (%)
Temperature: 96.4 (°F)
Isoflurane [Ins, Exp]: 3.4, 3.3 (%)

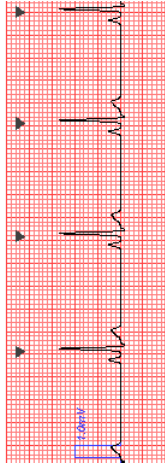


Figure 4 Example of custom logo

NOTE: Veterinary information can be changed by using the “Tools”> ‘Edit Vet Information...’ menu shown below.

Edit Default Veterinarian Information

Please enter default Veterinarian Information that will be used for print report headers.

Clinic Name:

Vmed Technology, Inc.

Clinic Address:

Line 1

914 164th Street SE, #471

Line 2

City

Mill Creek

State

WA

Zip Code

98012

Phone

(800) 926-9622

E-mail

info@vmedtech.com

OK

Cancel

Managing Stored Episodes

To manage stored patient episodes, click the “Tools” menu at the top of the screen and then select “Manage Patient Episode Directory”. The following window will appear which will display all patient episodes that are currently saved in your designated directory.

Vmed Interpreter - Manage Patient Episode Directory

Patient ID

20050330
20050331
20050404
20050414
20050419
20050420
20050421
20050425
20050426
20050428
20050429
20050502
20050504
20050505
20050509

Delete Patient

Delete Episodes

Episodes [14 found]

Mar 30, 2005 11:16:59 [00:00:30] *ECG
Mar 30, 2005 11:25:41 [00:00:52] *ECG
Mar 30, 2005 11:31:44 [00:20:36]
Mar 30, 2005 11:52:47 [00:07:04]
Mar 30, 2005 12:05:33 [00:00:30] *ECG
Mar 30, 2005 12:06:13 [00:00:47] *ECG
Mar 30, 2005 12:07:25 [00:00:30] *ECG
Mar 30, 2005 12:11:51 [00:00:07]
Mar 30, 2005 12:15:34 [00:03:36]
Mar 30, 2005 12:16:54 [00:03:58]
Mar 30, 2005 12:26:32 [00:01:17] *ECG
Mar 30, 2005 12:29:48 [00:18:17]
Mar 30, 2005 12:46:54 [00:19:59]
Mar 30, 2005 18:52:11 [00:00:30] *ECG

Done

Select a Patient ID in the left window and then an Episode in the right window. Use the Delete Patient/Episode keys to eliminate old or unwanted data. **NOTE: Several episodes may be present for any one patient depending on the duration of the monitoring period. Episodes which contain ECG information will be followed by an “ECG” annotation.**

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Setup Patient Information

NOTE: You may elect to enter patient information after completing the monitoring procedure if desired. This information may also be edited in the Reviewer Program.

1. After opening a patient episode, select “Edit” on the upper tool bar and then “Patient Information”. The following window will appear:

The screenshot shows a 'Patient Information' dialog box with the following fields and values:

Field	Value
Patient Name / ID:	Muffy
Client / Owner:	Fowler
Species:	Canine
Breed:	Alaskan Malamute
Sex:	Female - Spayed
Age:	12
Weight:	82

Buttons: OK, Cancel

2. Type in desired information or choose from dropdown menu's and click OK
3. The episode must be saved to keep the changes.

Customization of the Patient Information List

Species and Breeds available in the dropdown menu above are user customizable using the following procedure;

1. Verify that your computer has Microsoft Excel installed properly
2. Click on the desktop 'My Computer' icon and navigate to the installation directory for PC-Display. For most users this will be 'C:\Program Files\Vmed Technology\PC-Display'
3. Select the file 'Species&Breeds.xls' and then right click the mouse and select "Copy", then right click again and select "Paste"

4. A file called 'Copy of Species&Breeds.xls' will be created. Right click on this new file and choose 'Rename' then rename the file to 'CustomSpecies&Breeds.xls'
5. Double click on "CustomSpecies&Breeds.xls". Excel should open it as shown below;

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D
1	Species	Breed		
2	Arachnid	Tarantula		
3	Arachnid	Unknown Arachnid		
4	Avian	Amazon		
5	Avian	American		
6	Avian	Berkshire		
7	Avian	Blackbird, Brewer		
8	Avian	Blackbird, Red-winged		
9	Avian	Budgie		
10	Avian	OK American Giant		
11	Avian	Canary		
12	Avian	Chicken		
13	Avian	Cockatiel		
14	Avian	Cockatoo		
15	Avian	Conure		
16	Avian	Crow, Sand-bill		
17	Avian	Crow, American		

6. The spreadsheet can be edited to add species and breeds as desired. The following restrictions apply;
 - ✓ Entry A1 must remain "Species" and B1 "Breed".
 - ✓ The total number of characters per spreadsheet line (Species and Breed) must be less than 60
 - ✓ There can be no more than 25 different kinds of species
 - ✓ There can be no more than 500 breeds per species.
 - ✓ There can be no more than 2000 total entries in the spreadsheet.
 - ✓ Do not enter data in any columns except A and B
7. Save the edited spreadsheet.

8. Use Excel's "Save As" feature to save the spreadsheet as tab delimited text. The saved filename should be "CustomSpecies&Breeds.txt". This file is read by PC-Display to generate the species and breeds dropdown menus in the patient information dialog;

Quick Check Results

Analysis of Beats (1: 37)

Abnormal

FAIL -- Heart rate within normal range

FAIL -- A-wave present and related to R-waves

FAIL -- P-wave present and related to R-waves

FAIL -- Normal pattern of beats

PASS -- Amplitude of beats within normal range

10 beats met the criteria of T-wave is large (35% of R-wave) (TLRG)

3 beats met the criteria of T-wave is small (10% of R-wave) (TLRG)

3 beats met the criteria of Tachycardia (TACH)

Check for Atrial Tachycardia (ATAC) found in episode

Note: Heart malalignment detected, check for Cardiomyopathy (CMPY) found in episode

Choose an option and then click OK.

Send ECG to an output (Review)

End episode to Review

Print Episode for Print to Review

Cancel

More about Results

ECG

08/20/20

ECG and related data are stored automatically in the first two options listed below and manually in the last option below. **NOTE: Record modes are selected in the PC-Display configuration window.**

1. Continuous ECG (Typically used in surgical monitoring or ECG screening)
 - Records vital signs on event (Print command, marker command or activation of alarm).
 - Records ECG sweep (waveform).
 - Activated (and de-activated) by pressing the Record icon on the PC-Display toolbar.
 - Records vital signs every five minutes (factory default) or the period selected in the PC-Display Default Configuration menu.

NOTE: This is the factory default mode for the PC-Display software.

2. Events Only Recording (Typically used in surgery where no ECG waveform is needed)
 - Records vital signs on event (Print command, marker command or activation of alarm).
 - Records vital signs every five minutes (factory default) or the period selected in the PC-Display Default Configuration menu.

NOTE: This is the factory default mode for the PC-Display software.

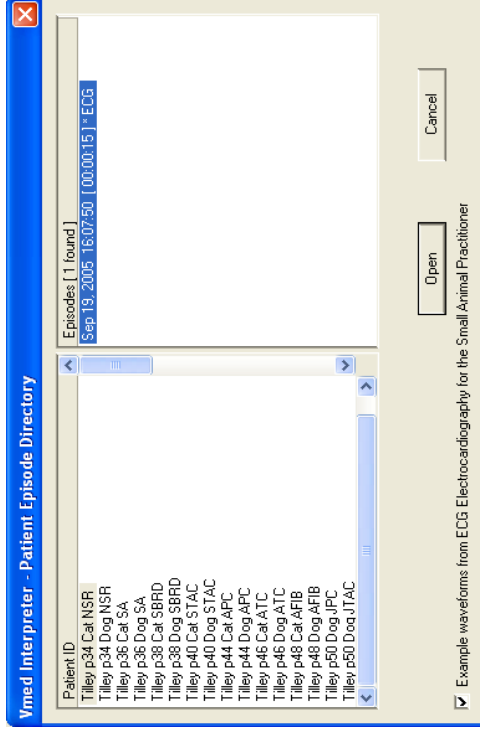


NOTE: This mode selection overrides and supersedes the default mode settings.

Opening an Episode

- To open a saved patient episode in Interpreter:

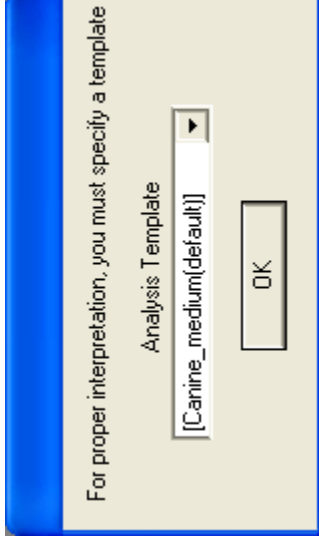
Click the “File” menu in the upper left hand corner of the screen and select “Open Patient Episode”. The following window will appear:



- Click the bottom left hand box to access a library of example waveforms from: “ECG Electrocardiography for the Small Animal Practitioner”, Larry P. Tilley, DVM, DACVIM (Internal Medicine), Naomi L. Burtnick, MT (ASCP), “Made Easy” Series, Teton New Media **NOTE: This is a good place to start when learning how to use this product or if you would like to see a “text book” example of a given waveform.**

- Choose a specific recording by clicking on the Patient ID in the left window and then double-clicking on the Episode in the right window. **NOTE: the episode may take a few moments to load depending on its size.**

NOTE: The first time a waveform is read, Vmed Interpreter will check to see if an Analysis Template has been specified. If the recording came from a PC-Vet or PC-VetGard+ and the species was set to “Feline” then the Feline (default) template will automatically be used. If the species was set to “Canine” then you must choose one of four possible canine templates (small, medium, large, puppy). If the species is “Other” then a custom template must be defined by the user.



Controls and Adjustments

Once you have loaded a patient episode, you can use the following key functions to adjust amplitude and chart speed of the ECG recording:

- The Ctrl+Up and Ctrl+Down arrows adjust the trace amplitude scale factor.
- The Page Up and Page Down keys adjust the chart speed.
- The Ctrl+G key allows you to jump directly to a specific beat in the episode
- The Ctrl+L key inverts the ECG trace
- The Ctrl+Q key is a shortcut to launch Quick-Chek
- The Ctrl+I key is a shortcut to edit patient information.

NOTE: You can also adjust these functions by using the *Edit drop-down top-level menu* shown below:



NOTE: The controls described below are only visible if you have selected an episode that includes an ECG waveform, otherwise these icons will be grayed out.

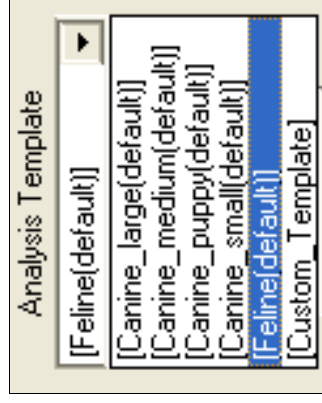
The following control functions are contained on the program tool bar:

-  Configures the Interpreter program.
- Change Sweep Speed:  Select chart sweep speed in drop down window
- Select display of ECG and CO₂, ECG only or CO₂ only by use of the  drop down window
- Change CO₂ Scale Setting:  Select vertical scale factor
- Change ECG Gain Setting:  Select desired ECG gain from drop down window. Note: more accurate cursor measurements will be obtained by increasing the gain setting.
- Turn off/on "R" Wave Markers:  Places triangular marker over each "R" wave to help identify this complex. The default setting is ON. To use the advanced features of this program, the "R" Wave Markers should be left ON.



- Up/Down Arrows:  Changes the position of QRS complex displayed in the sweep area and brackets the sweep to be printed. Use this control to show the entire sweep complex in the window before analysis or printing.
- Episode time display:  The time that the episode was recorded is displayed below the printer icon.
- Waveform Display Controls:  for real-time playback of recorded sweep and to stop, start, and scroll through the ECG record.
- Print Command:  Prints to any printer connected to the computer being used.
- Information:  Displays the version of the Interpreter program.
- E-Mail:  Attaches an episode to an outgoing e-mail (not compatible with web-based email).
- Save Copy of Episode:  Saves a copy of the episode in the Saved Episodes Directory by default.
- Save Episode:  Saves any changes to the current patient episode.
- Open Episode:  Opens a patient episode
- Vitals Only:  Toggles between display of all events or just vital sign events.
- Edit Operations:  to Cut, Copy, and Paste text in the notes section.

NOTE: Once a patient episode is loaded, you will need to choose the appropriate Analysis Template. It is important to set the Analysis Template to match the patient type for analysis results to be accurate.



- Select the Analysis Template that you wish to use from the drop-down menu by clicking the “down” arrow in the upper right hand corner.
- When you save the episode, the species template will also be saved.

Adding and Deleting Beats

R-wave markers are identified as black triangles located at the top of a trace. They mark the presence of a beat (even in the case that no R-wave is actually present in the beat).

Vmed Interpreter will read in the R-wave markers as they were originally detected on the PC-Vet or PC-VetGard device. In most cases these markers will be in the correct positions. In some cases, however, the markers may have to be adjusted. This may occur if bizarre rhythms are present (especially at very high heart rates) or if motion in the patient has introduced artifacts in the ECG trace.

- To “open” an R-wave marker, double-click on the black triangle. The triangle will turn red. Opening a marker will allow it to be deleted by using the Delete key on the keyboard or by selecting “Delete R-wave Marker” from the Edit menu.

- The position of a marker can be moved by using the Ctrl+Left Arrow or Ctrl+Right Arrow or the   buttons located under the “Move R-Wave Marker” on the upper-right hand area of the screen.

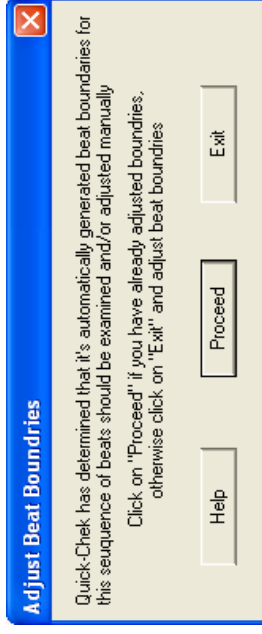
- To “close” a beat press the Escape key or double-click on any open area of the chart. To move on to another beat simply double-click its R-wave marker.
- If you wish to add an R-wave marker,  close any open beat and press the Insert key. The cursor will change to . Move the marker using the mouse to the desired position and left click on the mouse to drop it in place.

NOTE: The beat-to-beat heart rate appears on the bottom of the trace. Rhythm irregularities are automatically marked “**ARYTH**” on the top of the chart.

Adjusting Beat Boundaries

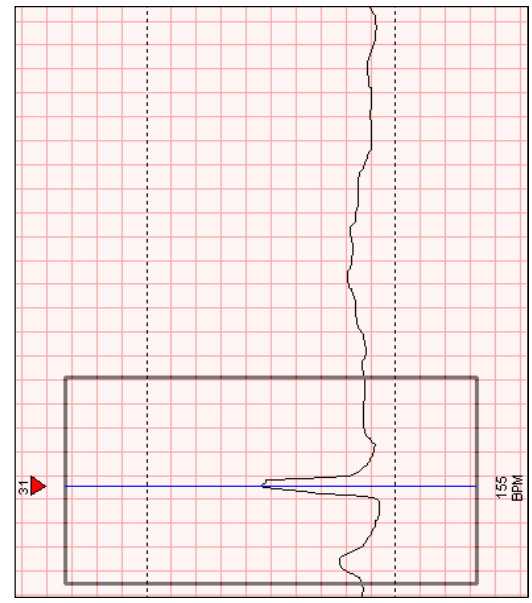
When Vmed Interpreter reads in a data file from the PC-Vet or PC-VetGard, it uses a computer algorithm to determine where the peak of the R-wave resides, and where the beat begins and ends. For a normal, artifact-free ECG trace, the program should automatically determine boundaries correctly. However, in real-world practice not all ECG traces are ideal and free of baseline noise and/or other artifacts. In these cases, manual adjustments may be required.

NOTE: In the process of using Quick-Check to analyze a sequence of beats, the following message box may appear:



NOTE: *In the event that manual adjustment is required, remember that Quick-Chek analyzes the beats shown on the screen, so repeat these steps for each beat you want to analyze.*

- Adjust scale factors (ECG Gain) so that you can clearly see the beat you want to adjust.
- Double click on the black triangle above the beat. The triangle will turn red, a blue reference line will appear and a rectangle box will bracket the beat as below:



- Verify that the blue line intersects the apex of the peak of the R-wave. In cases where there is no clear R-wave (as in ventricular premature complexes, VPCs), make sure that the marker is on the largest peak (+/-). As necessary, adjust, add, and delete R-wave marker(s) per Section 6 above.

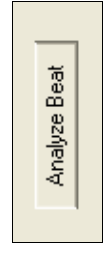
NOTE: *In most cases, the R-wave markers are positioned correctly.*

- Adjust beat boundaries by moving the mouse pointer over the right-hand or the left-hand side of the beat rectangle, the cursor will change to $\leftrightarrow$. Hold down the left mouse button and drag the rectangle edge to describe the beginning/ending of the beat. Release the left button when the edge is in position.

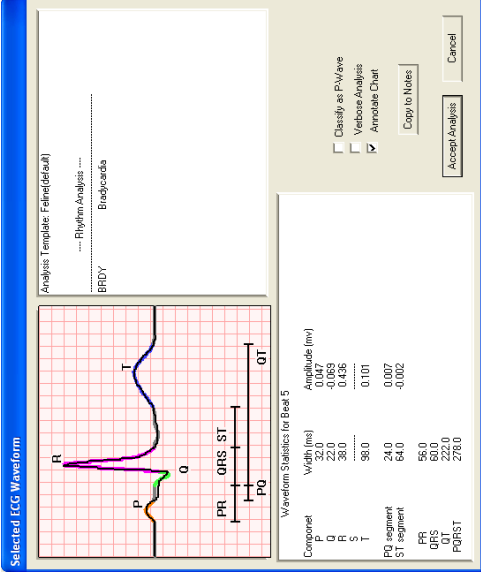
Analyzing Individual Beats

Interpreter allows you to analyze a range of beats or an individual beat. To analyze an individual beat, follow the steps outlined below:

- Open a patient episode and make any necessary adjustments as previously described.
- Select the beat's R-wave marker by double-clicking on it. It will turn red and a rectangle surrounding the beat will appear. A button labeled "Analyze Beat" (shown below) will also appear on the upper right-hand area of the screen.



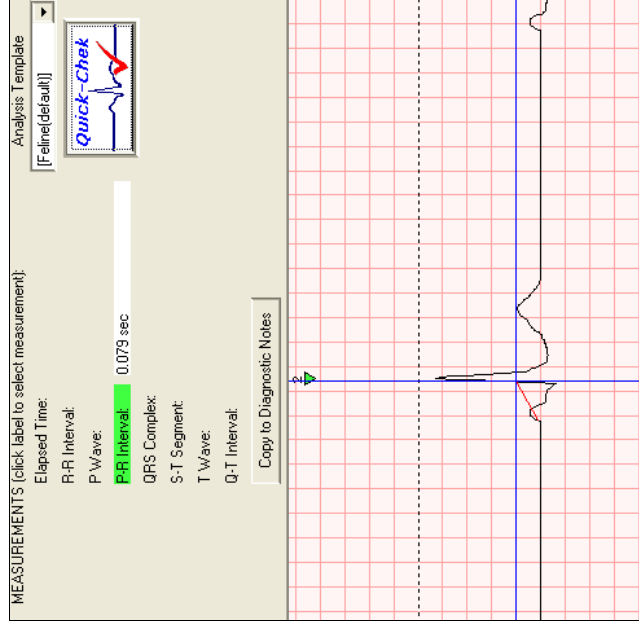
- Click on the "Analyze Beat" button and the following screen will open:



- Check the “Verbose Analysis” box to view a more detailed report of the analysis of the beat.
- Check on the “Annotate Chart” box to copy results to the strip chart display when “Accept Analysis” is clicked.
- Click on the “Classify as P-wave” box to “force” this beat to be looked at as a P-wave. Choosing this function forces the analysis program to view this event as a solitary P-wave not associated with a PQRS^T complex. Considerations when using this function:
 - Normal P-wave (positive and rounded on Lead II)—indicates that the impulse is originating in the SA node.
 - A P-wave that differs from normal in shape and is upright—may represent an ectopic pacemaker in the atrium.
 - P-waves that are inverted—on lead II, indicate that the impulse was formed in or near the atrioventricular junction.

- Absence of P waves—signifies atrial fibrillation, atrial standstill, or buried P-waves in QRS complexes of AV junctional rhythms.
- P-waves can be superimposed—on a portion of the QRS complex, S-T segment, or T wave of the preceding cardiac cycle in various supraventricular tachycardias.
- Click on the “Copy to Notes” button to copy the beat analysis to the “Diagnostic Notes / Comments” section of the program (located in the lower right-hand area of the screen).
- Click on “Accept Analysis” button to accept the analysis. Otherwise, click on the “Cancel” button to exit the beat analysis without saving the analysis data.

Manual Measurement of Waveforms



- First click on the complex you wish to measure in the “Measurements” box at the top of the screen.

NOTE: For a description of each complex, click on the “Help” menu in the upper toolbar.

- Next, left click the mouse at the beginning point of your measurement, then drag the mouse to the right and up if amplitude is to be included. Note the red rubber band in the above illustration. Place the blue crosshair at the end of the interval and the top of the amplitude and release the mouse button. The one step measurement will result in an interval and amplitude calculation if appropriate for that complex.

NOTE: For best accuracy, increase the gain of the signal before beginning the measurement procedure.

- Repeat the procedure in step 2 for each measurement. And click the “Copy to Diagnostic Notes” box to drop your measurements into the diagnostics

Using Quick-Chek

Interpreter’s Quick-Chek function allows you to perform a high-level diagnostic analysis of an ECG trace resulting in a “Normal” or “Abnormal” assessment. Perform the steps outlined below to perform a Quick-Chek analysis:

- Open a patient episode (Section 3) and make any necessary adjustments as described in Sections 6 and 7.
- Double-click on the Quick-Chek button (shown below). Note: make sure that the correct Analysis Template is selected.



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- The window shown below will appear. Quick-Chek will automatically choose the beats that are displayed on the screen. Each beat is numbered and that number is displayed above the R-wave marker triangle. If you wish to change the range of beats used in the analysis you can do so by using the drop-down menus to select different start and stop points. In most cases, just click the OK box.



- A progress bar will be displayed while the beats are being analyzed. When the analysis is finished the following box will be displayed:

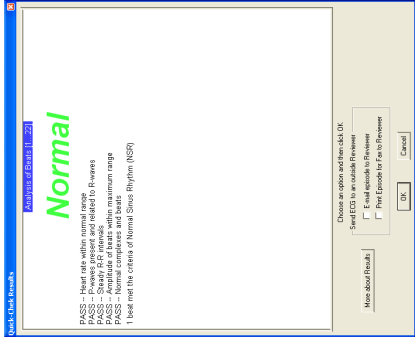


- If “Yes” is chosen then the contents of the “Diagnostic Notes / Comments” section of the program will be cleared prior to appending the results of the analysis to this section.

NOTE: The results of the Analysis are shown in a window like the one below. The primary assessment of the analysis will be printed in

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large type at the top of the screen. A normal diagnosis is displayed in green and an abnormal diagnosis is displayed in red.



- You can click on the “More about Results” button to bring up a help window with hyperlinks (listed on the right-hand side of the window) to additional information about the specific results found in your analysis. A sample of this window follows:

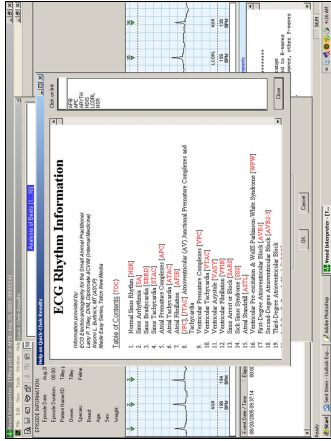


Figure 5 Window showing hyperlink to reference text.

- Quick-Chek gives you the option to send your analysis results to an outside reviewer:
 - To e-mail your analysis results, check the “E-mail episode to

Reviewer” box and click OK. This will create a new message in your Windows e-mail program and attach a copy of the analysis.

NOTE: Whoever receives email files must have the Vmed Reviewer program installed in order to read the files. The Reviewer program may be downloaded free from www.vmedtech.com.

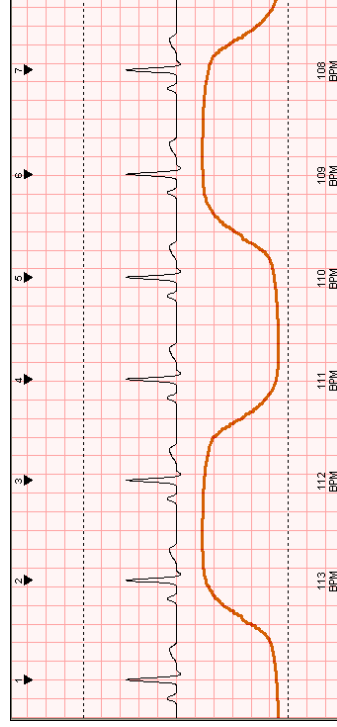
- Check the “Print Episode for Fax to Reviewer” box and click OK if you wish to print the results that can then be faxed to an outside consultant for review.
- Alternatively, leave both options above unchecked and click OK if you don’t want either of these options. Note: you can e-mail or print an analysis later if you wish.
- Alternatively, leave both options above unchecked and click OK if you don’t want either of these options. Note: you can e-mail or print an analysis later if you wish.

CO₂ Waveform Display

CO₂ waveforms captured on VetGard+ remote units with PC-Display software v1.37 or later can be displayed by selecting ECG, CO₂ or just CO₂ in the pull down menu of Interpreter.

PC-Display must be properly configured to record CO₂ prior to recording an episode (See PC-Display Manual). CO₂ waveform recording is defaulted to off and if a record has no CO₂ information the pull down selection box to display CO₂ will be grayed out and indicate ECG.

The chart below shows a display of CO₂ and ECG



NOTE: The respiration rate and interval can be measured manually using the ECG manual measurement tool.



NOTE: When CO₂ waveforms are displayed they will be printed in the print report as they are shown on the screen.

Exporting An Episode Segment

On occasion you may find it necessary to separate a large episode into one or more smaller episodes. This can now be done with the Export Segment feature of Interpreter. The following example will demonstrate copying a small portion of a large episode.

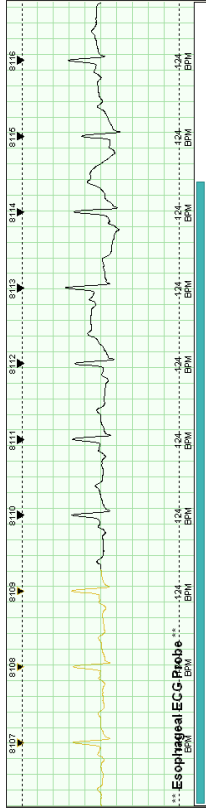
1. An episode with a more than one and a half hour duration is first opened.

EPISODE INFORMATION:	
Episode Date:	Sep 12, 2008 09:57:43
Episode Duration:	01:31:22
Patient Name/ID:	Blinka
Owner:	Art Capshaw
Species:	Canine
Breed:	Shepherd, German

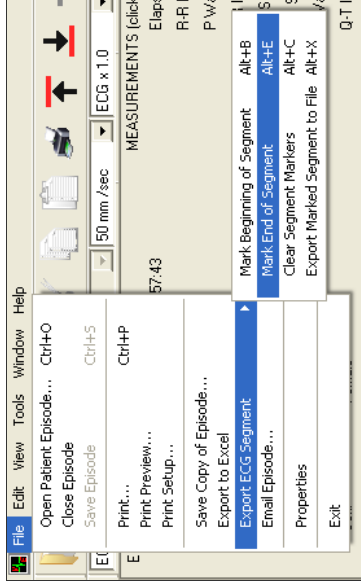
2. We start by selecting the “Export ECG Segment” option from the File menu and then selecting “Mark Beginning of Segment.” (alternately, press *Alt+B*)



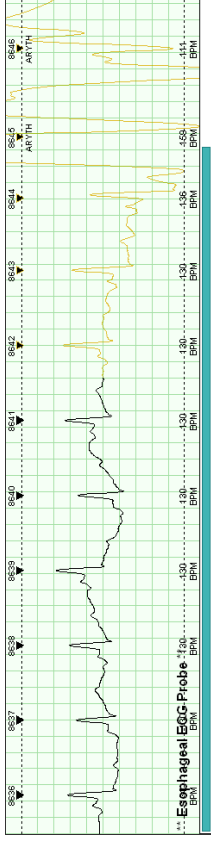
3. The cursor will now change to an arrow pointing to the right. We now set the waveform view so that the place we wish this segment to start is in the view window and then we simply click at this point of the waveform. The portion before that point will fade.



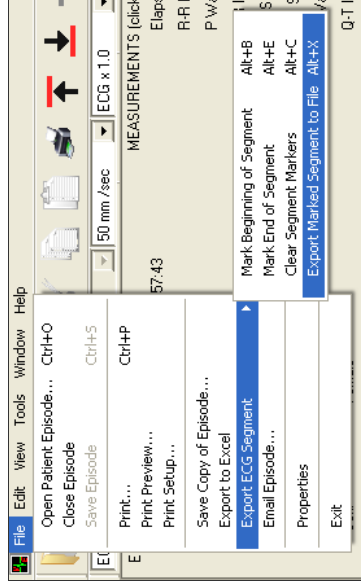
4. Next, we select “Mark End of Segment” from this same “Export ECG Segment” area of the File menu. (alternately, press *Alt+E*)



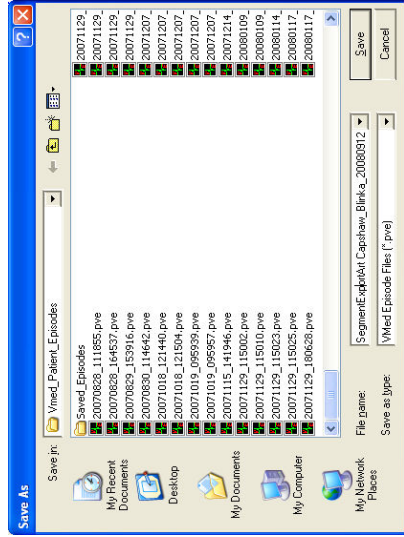
5. Now the cursor changes to an arrow pointing to the left. Set the waveform view so that the place we wish this segment to end is in the view window. Click this point of the waveform and notice that the portion of waveform after it will fade.



6. Next, select “Export Marked Segment to File” from the “Export ECG Segment” area of the File menu. (alternately, press *Alt+X*)



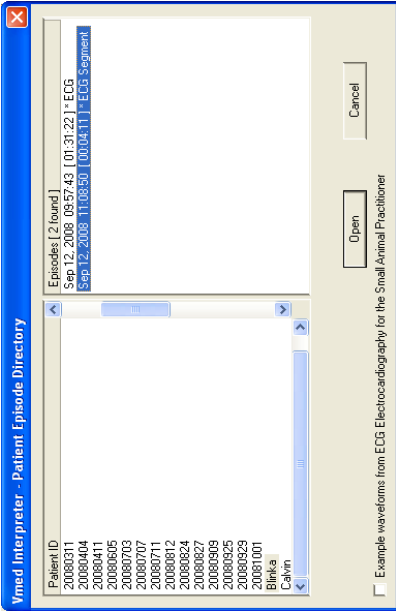
7. This will open the Save As window allowing you to save the segment in the default Vmed_Patient_Episodes directory or wherever you choose to save it. In this case we will save it in the default directory.



8. This new segment now only contains what was selected in this process (including whatever events were associated with this time frame) and has a duration to reflect it.

EPISODE INFORMATION:	
Episode Date:	Sep 12, 2008 11:08:50
Episode Duration:	00:04:11
Patient Name/ID:	Blinka
Owner:	Art Capshaw
Species:	Canine
Breed:	Shepherd, German

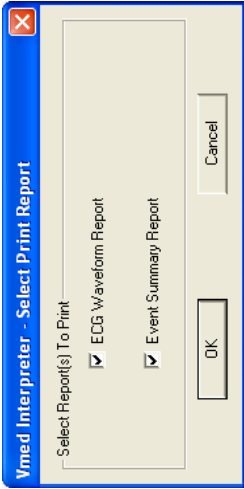
9. Additionally, if you were to look for this episode, it would appear in the Open Episode window as a Segmented file.



NOTE: No information is lost from the original episode after performing this export function.

Printing the Report

Vmed Interpreter offers two types of reports, an ECG Waveform (and CO₂ waveform if selected) report and an Event Summary report. You can print one or both reports by clicking on the printer icon on the program toolbar or by selecting Print from the File drop-down menu. The following window will open when the print command is initiated allowing you to make your selection.



Vmed Technology, Inc.
16149 Redmond Way #108
Redmond, WA 98052, USA
(800) 926-9622

Date / Time: 09/19/2005 16:07:50
Elapsed Time: 00:00:00
Sweep Rate: 50mm/sec
Gain: (x1.0) 10mm/mV
ECG Filter / Notch: High / 60Hz

Patient Name/ID: Tilley p34 Cat NSR
Owner: Tilley
Species: Feline
Breed:
Age:
Sex:
Weight:
Template: Feline(default)

Episode Date / Time: 09/19/2005 16:07:50
Episode Duration: 00:00:15

Event Date / Time
Elapsed Time
Event
Vitals

HR
SpO2 : PR
RR
Temp

193 bpm
--- : ---

98.8 °F

Diagnostic Notes / Comments:

Analysis of Beats [1...22]
ECG IS NORMAL
PASS -- Heart rate within normal range
PASS -- P-waves present and related to R-waves
PASS -- Steady R-R intervals
PASS -- Amplitude of beats within maximum range
PASS -- Normal complexes and beats
1 beat met the criteria of Normal Sinus Rhythm (NSR)
Vmed Interpreter has determined that the ECG episode is "Normal" for the segment of beats analyzed. Please verify these results by inspection of the ECG strip.

Average Waveform Statistics

Component	Width (ms)	Amplitude (mv)
P	36.5	0.123
Q	18.8	-0.090
R	30.5	0.426
S	-----	-----
T	65.7	0.046
PQ segment	26.5	-0.000
ST segment	72.0	0.005
PR	63.0	
QRS	49.3	
QT	186.9	
QRST	243.7	

Vmed Interpreter ECG Interpretation Software Caveats and Limitations.

No ECG interpretation software can provide conclusive and correct results

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Vmed Technology, Inc.
16149 Redmond Way #108
Redmond, WA 98052, USA
(800) 926-9622

Episode Date / Time: 03/19/2005 16:07:50
Episode Duration: 00:00:15

Patient Name/ID: Tilley p34 Cat NSR
Owner: Tilley
Species: Feline
Breed:
Age:
Sex:
Weight:
Template: Feline(default)

Diagnostic Notes / Comments:

in all cases. Professional judgment must be used in selecting patterns for software analysis. Signal artifact and electronic noise may result in an incorrect interpretation of ECG complexes and episodic patterns. Choose an ECG complex and chart segment with a steady baseline and free of apparent artifacts. If in doubt, repeat the analysis with a different chart segment or ECG complex. Use leg clips for the most accurate Lead II information. Diagnosis should not be made using ECG interpretation only.

IF, AFTER FOLLOWING THE ABOVE PROCEDURES, THERE IS ANY QUESTION ABOUT THE RESULTS, SUBMIT ECG SLEEP INFORMATION AND REPORTS TO A VETERINARY CARDIOLOGIST FOR CONFIRMATION. VMED ASSUMES NO LIABILITY FOR INCORRECT OR INCONCLUSIVE ECG INTERPRETATION.

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Vmed Interpreter Small Animal ECG Interpretation Software

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*Installation, Configuration and User Instructions Vmed Interpreter Version
2.26*