

# Acquiring an EEG Examination

## Quick Reference Guide

*Version 1*

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**This quick reference guide explains the functionality for an EEG examination.**

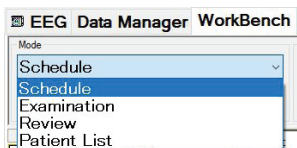
**This guide is for quick reference only. Please refer to the operator's manual for further details. For 24/7 technical support, call (800) 325-0283 and then follow the prompts.**

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## Acquiring an EEG Examination

Select the NeuroWorkbench® icon from the Windows desktop to start a patient examination.

Click the **[WorkBench]** tab, then select **[Schedule]** from the mode drop down list.



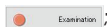
Check that the correct calendar day is selected, then click **[New Schedule]**.



Enter patient information and click **[OK]**.


*\*ID and Patient Name are required fields.*

Highlight the patient and click **[Examination]**; the Select Protocol box will appear.





Click to select the desired protocol.

The examination will open in calibration mode, and the patient information window will be displayed. Additional patient information can be entered at this time, or you can return to this window later by clicking the **[Patient Information]**  button. Click **[OK]** to save and close this window.

Depending on the selected protocol, the digital video window will automatically appear.

## Recording the Exam

Click on the **[Start]**  button.

A pop-up window will appear, asking if you would like to start long-term monitoring. Select **[Yes]** to confirm. This applies to both routine and long-term studies.

## Impedance Check

At beginning of the recording, the impedance check window will appear.

Any electrodes that are over the set impedance threshold will appear in **RED**. Electrodes that are under the impedance threshold will appear in **BLUE**.

An impedance check can be performed at any time by clicking the **[Impedance]**  button.

The reference electrodes for the JE-921 amplifier are C3/C4. The impedance reference channels are A1/A2 or FP1/FP2. The ground electrode is X. If all impedances are reading over the set threshold, check the connection of these electrodes first.

The reference electrode for the VitalEEG Headset is CZ.

## EEG Waveforms

To begin recording EEG waveforms, click on the **[EEG Signal]**  button.

## Selecting Filters and Patterns

Use the drop-down lists to select the Sensitivity, Low Frequency Filter, High Frequency Filter, and Pattern (Montage) to be applied to the examination.

Sens	LF	HF	Pat
7 uV ▾	1.0 Hz ▾	70 Hz ▾	DIG CA ▾

## EEG Toolbar



**Remote Scope:** Launches the EEG scope window in a split screen to allow for review of the recording. To close EEG Scope, click **[File]** and **[Exit]**; the recording window will resume to full screen.



**AC Filter:** Turns the notch or AC filter on or off to reduce 60 Hz electrical interference.



**Display Pattern Table:** Opens the pattern table window to allow changes to be made to the patterns (montages). Once changes are made, click **[OK]** to apply the changes to the current exam.



**Impedance Check:** Click and hold this button for 3 seconds to perform an impedance check at any time.



**Calibration:** Displays calibration waveforms.



**EEG Signal:** Displays EEG waveforms.



**Reset:** Returns all waveforms to the baseline position. Reset on or Reset off will appear at the bottom of the screen, and the waveforms will go flat as the amplifier is being reset.



**Freeze:** Suspends the waveform display; waveforms are still being recorded.



**Patient Information:** Opens the patient information dialogue box.



**Activation Display:** Displays or hides the activation bar.

## Adding Annotations/Notes

Annotation

Manual Input

Keep preset

Annotation table

Sort

Eyes open  
Eyes closed  
Awake  
Drowsy  
Asleep  
Eye Movement  
Movement  
Good Effort  
Fair Effort  
Poor Effort  
Look Here  
Swallow  
Yawn  
Snore  
Talking

Modify

OK


Three different methods are available to add annotations to the exam.

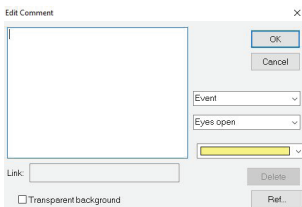
**Method 1:** Simply begin typing and the lower annotation field will appear. Select **[First key]** to place the annotation in the exam at the time of the first key stroke or select **[Enter]** for the annotation to be placed in the exam once the 'Enter' key is pressed on the keyboard.

**Method 2:** Select a preset annotation located on the bottom event bar. It will be added to the exam at the time the annotation is selected. Click **[Next]** to view additional preset annotations.

**Method 3:** Right click on the EEG exam display where the annotation is to be placed. This will open the annotation window and hold that place in the exam until you select an annotation from the list or type a note and click **[OK]**.



For a post-it note type annotation, click the **[Screen Comment]**  button in the bottom left corner of the annotation window. Manual comments or pre-selected annotations can be entered from the annotation box.




Click on the drop-down arrow to select different colors, which can be used to associate with different types of clinical activity (e.g., patient care, events).

Select the transparent background box to apply the color only to the border of the annotation box.

Once all selections are complete, click **[OK]** to confirm.

## Digital Video (DV) Camera Viewing Window

The camera viewing window can be minimized or closed without stopping the DV recording. If the DV viewing window is closed, it can be opened by clicking on the video camera  button in the Windows taskbar; this will open the DV recording window. Click on the DV viewing window icon. Closing the DV recording window will stop the DV from recording.

## DV Camera Controls

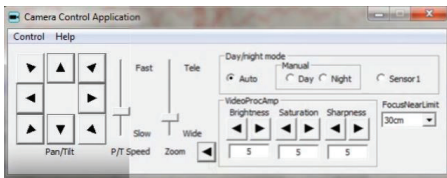
To open the Camera Controls, click on **[Camera Controls]** or **[PTZ Controls]** from the Window menu.

Select the arrows to move the camera up, down, left, right or in a diagonal direction.

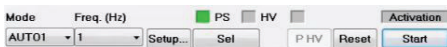
The “P/T Speed” slider bar allows for control of the speed at which the camera will move; slide up for faster and down for slower.

The “Zoom” slider bar allows for zooming the camera in or out. Slide up to zoom in and down to zoom out.

Click the arrow icon in the bottom right hand corner to view additional camera options.



## Performing Activations



Click the **[Sel]** button to toggle the selection between photic stimulation (PS) and hyperventilation (HV).


**Photic Stimulation (PS):** Select the **[Start]** button from the activation bar to initiate the selected photic setup.

To stop PS, click the **[Stop]** button from the activation bar; this will pause the photic run. To continue the photic run, click **[Start]**. To start PS from the beginning, click **[Reset]**, then click **[Start]**.

To run a single photic frequency, click on the "Mode" drop-down list, select **[Manual]**, then click on the "Freq" drop-down list and select the desired frequency to run. Click **[Start]** to begin the photic activation.


**Hyperventilation (HV):** Click **[Start]** to begin the HV timer. Once complete, the timer will automatically switch to post HV.

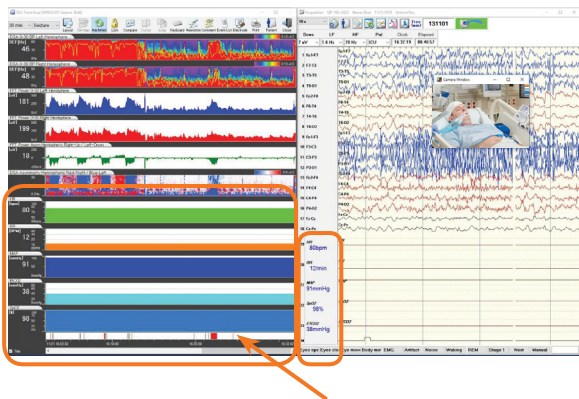
## Stopping the Recording

Once the exam is complete, click the **[Stop]**  button. A pop-up window will appear to confirm that you wish to stop the recording. Click **[Yes]**.

## Acquiring an EEG Exam with QP-160 Trending

Click on the QP-160 protocol, or the unique name that was created for your site (with or without VSI).

The examination will launch with QP-160 trending on the left and the EEG on the right. If available, the digital video window will automatically appear. Once all windows have launched, click the blue arrow  button to start recording the examination.



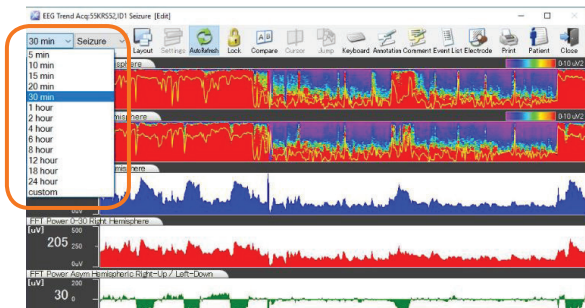
Once the exam is recording, the trends will display from right to left. The timeline for the trending is displayed at the bottom.

If utilizing Vital Sign Integration (VSI) software, the parameters and numeric values will be displayed and trended at the bottom of the EEG and trend screen.

The functionality reacts the same for both QP-160 and QP-160 with VSI.

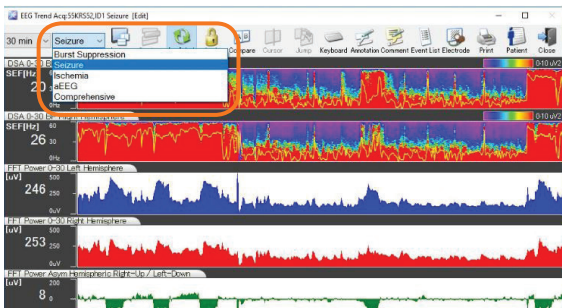
## Time Display

Click the drop-down list to select a timeframe to display either more or less trending time.



## Trend Panel Display

Click the drop-down list to select different trend panels based on the patient's condition (Burst Suppression, Seizure, Ischemia, aEEG).

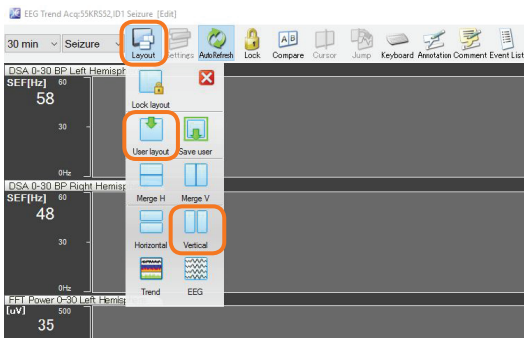


*Trend panels are customizable.*

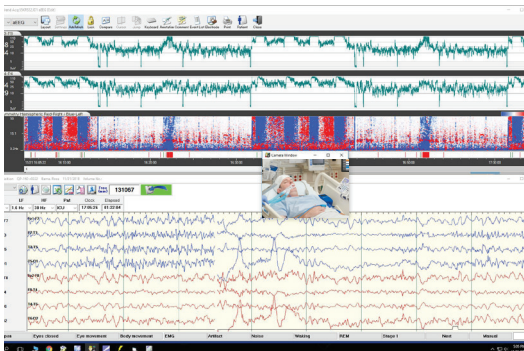
## Layout

Select the **[Layout]**  button to select the desired size display for trend and EEG.



Select a layout by clicking **[USER Layout]** or **[Vertical]**.



A horizontal layout can be suitable for aEEG Neonatal environments.

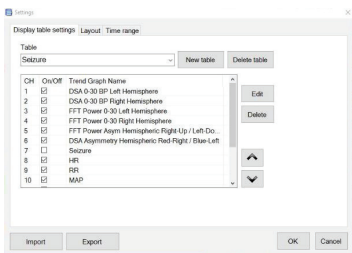


## Trend Settings

The selecting/de-selecting of trends can be adjusted by clicking on the Settings button. To access these settings, the Auto Refresh function must first be turned off. Click **[Auto Refresh]**  to toggle this setting off, then click on **[Settings]**  to launch the trend settings.


## Selecting/De-selecting Trends

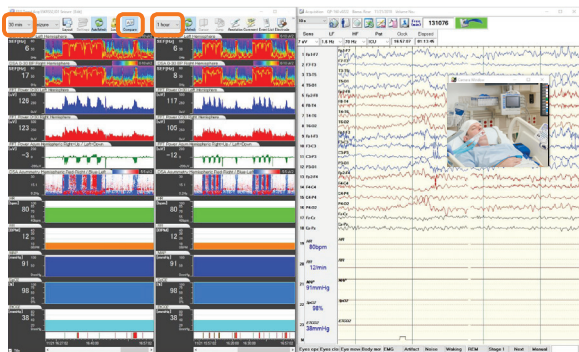
From the **[Display table settings]** tab, click the check boxes to select or de-select the trends to be displayed within the selected trend panel.





## Compare Trend by Time Display

“A/B Compare”  enables the display of two different trend timeframes simultaneously.



## EEG Scope

To launch EEG Scope, double click anywhere on the trend screen. This enables review of the currently recording live examination for analysis.

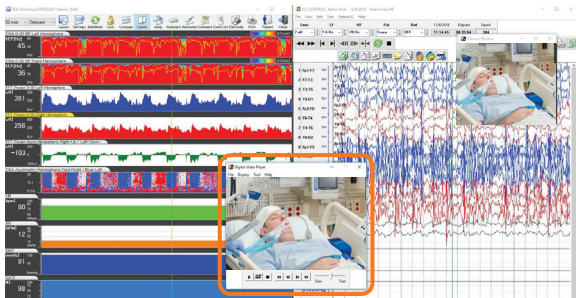
Once EEG scope has launched, click anywhere on the trend screen and the EEG will synchronize to that point.

Advance to points of interest using the review arrows or mouse wheel.

The screenshot displays the EEG Scope software interface. On the left is the 'Trend' screen, which shows multiple channels of EEG data as a color-coded heatmap. On the right is the 'Review' screen, which shows a list of EEG channels (e.g., F7, F8, T7, T8, etc.) and a patient photo. An orange callout box with a white arrow points from the trend screen to the review screen, containing the text: "Double click anywhere on the trend to launch EEG Scope". Another orange callout box is positioned over the review screen, containing the text: "Launches previously recorded EEG for review".

## To View Digital Video


To launch digital video in EEG Scope, from the EEG Review Window menu bar, click **[Option]**, then select **[Digital Video Play]**. This allows a view of the clinical video while analyzing earlier points of interest in the trending.



## Exiting EEG Scope


To exit EEG Scope, click **[File]**, then **[Exit]**.

## Stopping the Exam with QP-160 Trending

To stop and save the examination, click and hold the **[Close]**  button on the trend window for three seconds. This will close the trending and the EEG windows. The exam will be saved to the local PC. If you are connected to the network, the exam will automatically copy to the designated storage location. Do not shut down the PC or disconnect from the network. This will cause an interruption in the auto copy process.

If you are not connected to the network during acquisition, the next time you are connected, open NeuroWorkbench. The exam will automatically copy to the designated storage location.

## Assigning a Workflow



Once the exam has copied to the designated storage location, update the workflow status from examining to review by clicking on the **[Examination End]**  button.

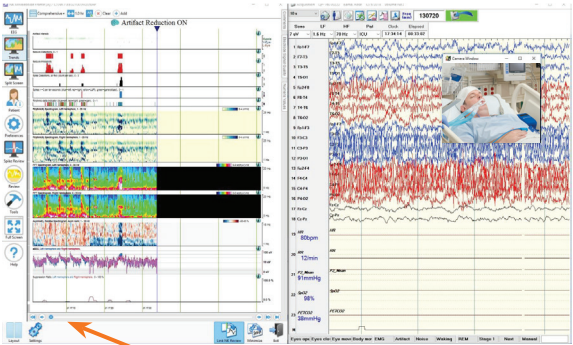
## Acquiring an Exam with Persyst Trending

Select the Persyst protocol or the unique name that was created for your site (with or without VSI) to launch the EEG/Trend examination.

The examination will open with Persyst on the left, EEG on the right. If available, the digital video window will automatically appear.



The EEG exam will open in calibration mode and the patient information window will be displayed. Additional patient information can be entered at this time, or you can return to this window later by clicking the **[Patient Information]** button. Click **[OK]** to save and close the window.

Click the Start  button to begin recording the examination. If configured with QP-160 Trending and Vital Sign Integration (VSI), start the recording by selecting the blue arrow  button.



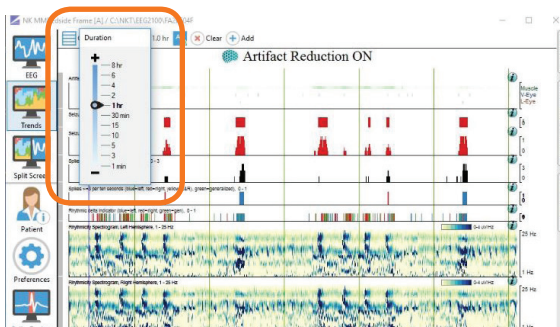
Once the exam is running, the trends will display from left to right. The timeline for the trending is displayed at the bottom.

If utilizing VSI, the parameters and numeric values will be displayed at the bottom of the EEG when the VSI montage is selected.

If utilizing QP-160, these trends can be viewed by clicking the  icon located in the Windows taskbar at the bottom of the screen. To go back to Persyst trending, click the  icon in the windows taskbar at the bottom of the screen.

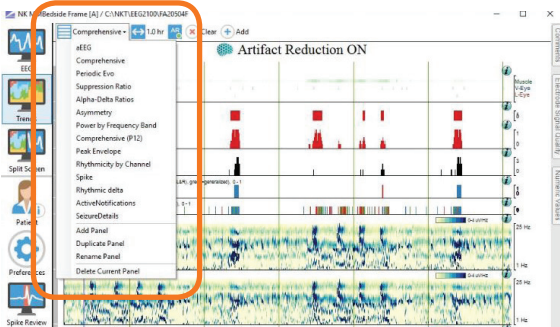
## Time Display

Click on the Duration drop-down list to display more or less trending time.




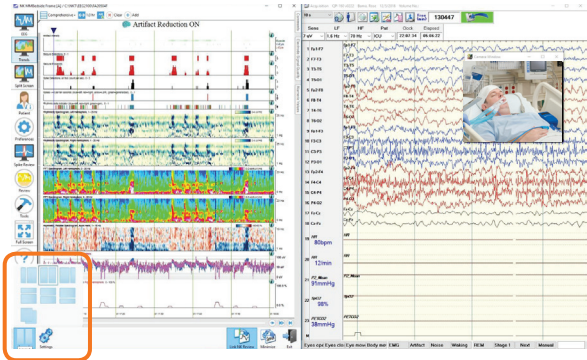
## Trend Panel Display

Click on the drop-down list to select trend panels for the patient condition (Comprehensive, Alpha Delta Ratio, aEEG, etc.).



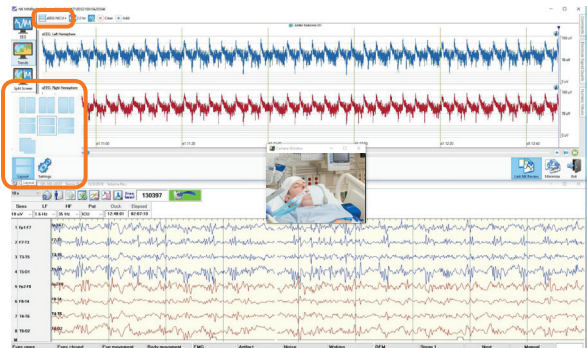
## Screen Layout

The trend screen size and layout can be adjusted by clicking on the **[Layout]** button  located at the bottom left of the trend screen.




## Horizontal Display with aEEG

This may be suitable in a Neonatal ICU cEEG examination.





## Artifact Reduction (AR)

Artifact Reduction will filter most muscle artifacts that affect the trending. To turn AR on or off, select the  button.

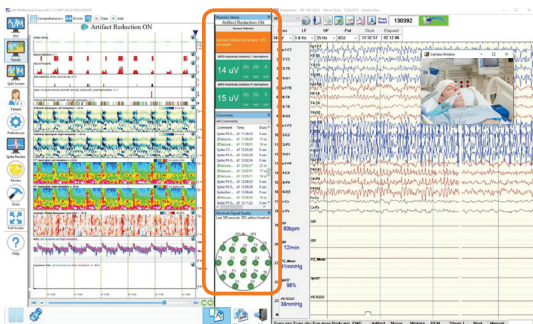
## Numeric Values, Comments, and Electrode Signal Quality

**Numeric Values:** displays the Seizure Detector; left and right hemisphere limits can be set.

**Comments:** displays Persyst spike and seizure detection annotations as well as annotations manually entered into the EEG exam.

**Electrode Signal Quality:** displays 10/20 head stamp electrodes. **Green** = good connection / **Red** = bad connection.

The Numeric Values, Comments, and Electrode Signal Quality displays can be pinned to the side for more trending space by clicking on the Pin icon located in the top right corner of each window.



## Trend Tool Side Bar



View the EEG waveforms in Persyst Insight EEG reader software



View the trend panels




View the trend panels & EEG waveforms in Persyst Insight EEG reader software



View Spike Review which collects potential localized epileptic spikes with time based occurrence from the EEG exam

# EEG Scope

The screenshot displays the EEG software interface. On the left, a toolbar contains various icons, including a 'Review' button (a yellow circle with a magnifying glass over a waveform). An orange box highlights this button with the text 'Select the Review button to launch EEG Scope'. On the right, the main trend screen shows multiple EEG channels. An orange box highlights a 'Review' button (a yellow circle with a magnifying glass over a waveform) in the trend screen, with an arrow pointing to it from the left. A second orange box next to it contains the text 'Launches previously recorded EEG for review'. The interface also shows a patient's name 'Arturo J. Rodriguez', a 'Camera Window' showing a patient in a hospital bed, and various EEG waveforms and data tables.

To launch EEG Scope, select the **[Review]**  button located on the left toolbar of the trend screen. This allows for the review of live examination for analysis.

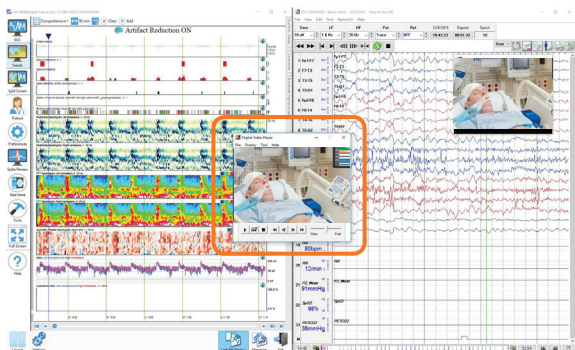
Once the EEG scope has launched, click anywhere on the trend screen and the EEG will synchronize to that point.

Use the review arrows or mouse scroll wheel to advance through the exam.

## To View Digital Video

From the EEG window, click **[Option]**, then select **[Digital Video Play]**; this will launch the video in EEG Scope.

This allows a review of the clinical video while analyzing the points of interest in the trending.



## Adding Annotations/Notes

Annotation

Manual Input

Keep preset

Annotation table

Sort

Eyes open  
Eyes closed  
Awake  
Drowsy  
Asleep  
Eye Movement  
Movement  
Good Effort  
Fair Effort  
Poor Effort  
Look Here  
Swallow  
Yawn  
Snore  
Talking

Modify


OK

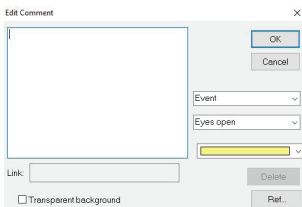
Three different methods are available to add annotations to the exam.

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**Method 2:** Select a preset annotation located on the bottom event bar; it will be added to the exam at the time the annotation is selected. Click **[Next]** to view additional preset annotations.

**Method 3:** Right click on the EEG exam display where the annotation is to be placed; this will open the annotation window and hold that place in the exam until you select an annotation from the list or type a note and click **[OK]**.

For a post-it note type annotation, click the **[Screen Comment]**  button in the bottom left corner of the annotation window. Manual comments or pre-selected annotations can be entered from the annotation box.




Click on the drop-down arrow to select different colors, which can be used to associate with different types of clinical activity (e.g., patient care, events).



Select the transparent background box to apply the color only to the border of the annotation box.

Once all selections are complete, click **[OK]** to confirm.

## Stopping the Recording with Persyst and EEG

Once the exam is complete, click the **[Stop]**  button. A pop-up window will appear to confirm you wish to stop the recording, click **[Yes]**.

## Stopping the Exam with Persyst, QP-160, and EEG

If running Persyst with VSI and QP-160 you must click on the  icon in the windows taskbar at the bottom to display QP-160 trending. Then, click and hold the **[Close]**  button for three seconds. This will close the EEG and trending examination.






## Saving the Exam

Once the exam has stopped recording, it will be saved to the local PC. A pop-up window will then appear displaying the recording time; click **[OK]**. If you are connected to the network, the exam will automatically copy to the designated storage location. Click **[File]** and select **[Exit]** to close out of the exam.

Do not shut down the PC or disconnect from the network. This will cause an interruption in the auto copy process.

If you are not connected to the network during acquisition, the next time you are connected, launch NeuroWorkbench and the exam will automatically copy to the designated storage location.

## Assigning a Workflow

Once the exam has copied to the designated storage location, update the workflow status from examining to review by clicking on the **[Examination End]**  button.

**For more information, please  
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Better Healthcare.®**



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