

ICS G2

IN-SERVICE GUIDE for CLINICAL ACCESS to Smart Disclosure, Bedside View, Custom Trends, and Print Jobs

Learning Objectives

1. The participant is able to access patient data in various forms to evaluate acuity and response to therapy.
2. The participant is able to validate alarms recordings and view alarm notifications in history.
3. The participant is able to correlate waveform and tabular data.

Overview



To open Clinical Access:

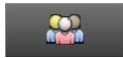
Double-click the **Clinical Access** icon on the desktop.

To start Clinical Access from a shared workstation:

If you are not already logged in to Windows or the person logged in does not have access to ICS, your Windows Security credentials are required.

1. At an alternate workstation, click the **Clinical Access** icon to open the application.
The Windows Security, **User Credentials** dialog box is shown.
2. Enter your user name and password.
3. Click **OK**.
Windows checks that your credentials are valid. ICS then authenticates your access to clinical data.

Note: The role you are assigned through ICS Administration is retained when you log in at an alternate workstation.



To open a patient clinical history:

1. To open the **Patient Select Dialog** box, click the **Patient Select** button located in the lower left of the display.
2. Select the patients from specific hospitals, units, **Active** patients, or **Discharged** patients.

Note: You can select both **Active** and **Discharged**.

3. After patient location and status have been selected, sort the lists by any of the column labels. To change the order of the data, click the column label.
4. A **Search** tab is also available to locate patients in the database. Enter the **Last Name**, **First Name**, or **ID 1***.

Note: Access to the **Search** tab is security driven. User Roles are assigned via ICS Security. These assignments control access to both facilities and departments.

To refresh data, change system controls, or access the help, click one of the buttons that follow:



Click Refresh to update patient data during a patient review.

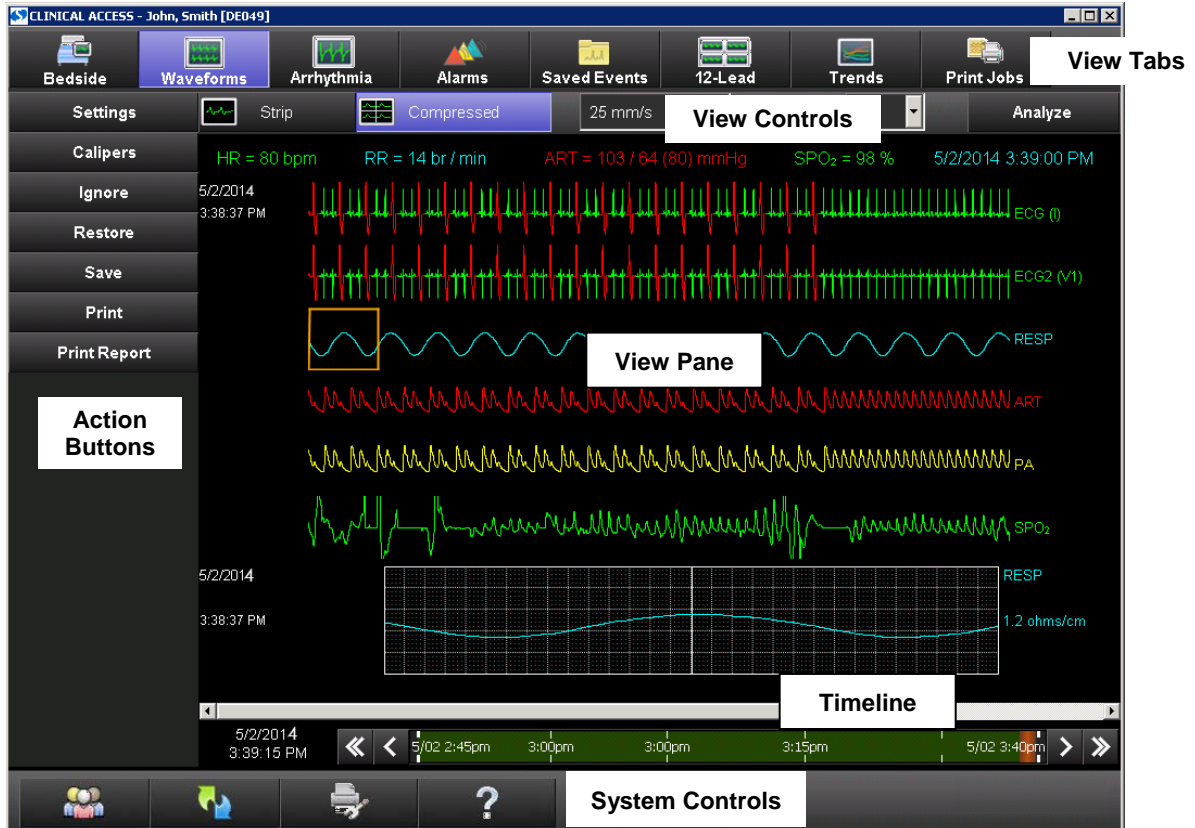


Click Printer Controls to select a printer and select printer settings.



Click Help to open the *ICS G2 Operations Manual* and Education documents.

Clinical Access



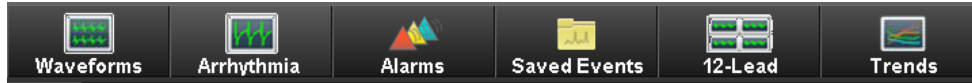
Display

When an application is open, the View Tabs and Action Buttons manage data views and their use.

- View Tabs – The horizontal tabs across the top of the display that control various views for data review and management. The default display is **Waveforms**.
- View Controls – The horizontal menu below the View Tabs that enables you to change views within an application.
- Action Buttons – The vertical buttons on the left side of the display. These buttons control the actions related to the chosen view.
- View Pane – The area of the display where clinical data is presented.
- System Controls – These buttons are on the bottom of the display. They are used to select patient data, refresh data, manage printers, and access the Help menu.
- Timeline or Time Bar – Right and left arrows that are on the bottom of the display. They are used to select time-specific data for viewing.

Note: *View Controls and Action Buttons change with each individual application selected. These buttons are specific to the processes of the application.*


Smart Disclosure Application




Waveforms Tab

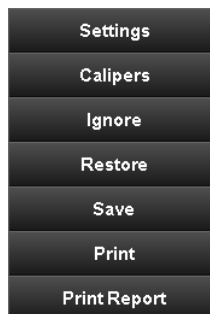
To begin, click the **Waveforms** tab. This tab displays **Strip** views or **Compressed** views of available waveforms.

- Vital signs are displayed across the top of the display with a correlated time stamp.
- The Time Bar at the bottom of the display can be used to navigate to a specific point in time. To see recorded patient data, click a point on the timeline.
- The time of a selected waveform is synchronized to any other application such as **Trends**. This synchronization allows quick correlation of physiological response to ECG changes.


The View Controls are at the top of the display. 

- **Strip** view displays the strip on the top of the display with a compressed waveform in the lower part of the display.
- **Compressed** view displays waveforms in condensed format on the top of the display and a strip view in the lower part of the display. This format allows quick identification of rate and rhythm patterns.
- **Sweep Speed** drop-down list allows a choice of a 25 or 50 mm/sec. 
- **Minutes** can be changed from 1 minute to 5 minutes in **Compressed** view.

The View Pane provides a Time Bar with scroll arrows at the bottom of the display. The time range defaults to the total time of available data. The orange area represents the requested time currently being viewed.



The Action Buttons are on the left side of the display.

 Click **Analyze** to open the **Select Time** dialog box.

Note: The **Analyze** button is also available from the **Arrhythmia** tab.

1. Select the **End Date** adjust the **End Time**, and the **Duration**.
2. Click **OK**, or click **Options** to customize the data.
3. Click **OK** to finish. An **Analysis has been completed for patient: patient name** message shows at top of the display.

Note: **Analysis must be performed to view arrhythmias, make measurements with Calipers, and Ignore or Restore waveforms that have occurred during a selected time period.**

Settings

Settings

Settings enable the choice of waveforms to display, the scale for selected waveforms, and whether to turn ON **Beat Annotation**, **Beat Color**, or **6-Second Strip (Print/Save)**.

1. To open the **Display Settings** dialog box, click **Settings**.
2. Click the check box for each waveform you want to show.
3. To adjust the waveform scale, highlight the parameter label, and select **Scale** from the drop-down list. Note the waveform change in the View Pane.

Beat Annotation and **Beat Color** can also be selected to enhance the rhythm presentation of the waveform.

- **Beat Annotation**
 - V** – Ventricular
 - *** – Qualified beats
 - N** – Noisy signal
 - PM** – Paced mode
 - SP** – Suspend processing
 - LV** – Low voltage
 - EM** – Extended mode
- **Beat Colors**
 - Red – Ventricle
 - Yellow – Undiagnosed
 - Gray – Ignored

6-Second Strip (Print/Save) allows you to select the midpoint of a six-second segment of a waveform to either print or save (**Strip** view only).

- In **Strip** view, to capture a six-second segment of a waveform, click **Save** or **Print**.
- Click a point in the waveform that indicates the midpoint of the waveform segment you want to capture. A six-second range is highlighted in the waveform.

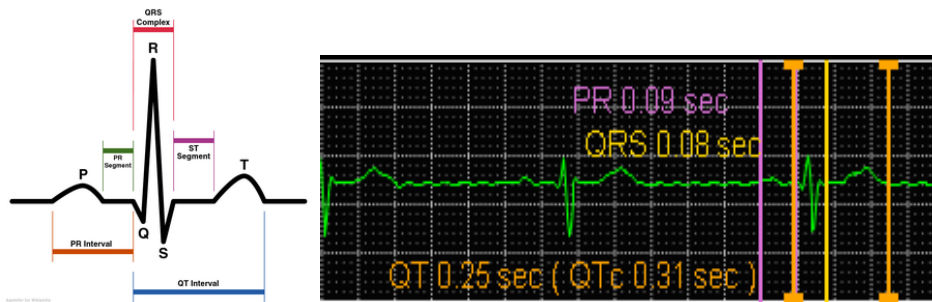
4. To finish, Click **OK** in the **Save** dialog box.

Calipers

Calipers

Calipers provide various measurement tools to analyze and document strips. Analysis must be done in advance to allow **QTC** or **Rate** measurements.

- **Rate** – used in the **Compressed** view or in the **Strip** view.
- **QRS** – used to measure the duration of the QRS complex in **Strip** view only.
- **QT** – used to measure the duration of the QT interval in **Strip** view only.
- **PR** – used to measure the duration of the PR interval in **Strip** view only.
- **Amplitude** – used to measure the height of a waveform.



Note: You must first click **Analyze** before a heart rate calculation. If you try to use calipers without an analysis first, then ??? is shown.

To calculate the heart rate, the calipers must contain at least one R-R interval. To enclose the R-R interval, place the first caliper before an R wave and place the caliper end-point just after the second R wave. Avoid caliper placement on the R wave.

Placement of the calipers to calculate the heart rate

- (1) First caliper placement before the R wave
- (2) One R-R interval
- (3) End-point placement of the caliper after the second R wave



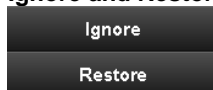
Note: Multiple R waves can be included within the caliper start and end points to calculate the heart rate.

1. Click the type of measurement and then move the cursor over the waveform area.
2. Click the start point on the waveform and place the cursor.
3. Move the cursor to the end-point and click again. The measurement lines and annotations show on the waveform.



4. Select the measurement line and then fine-tune the caliper location with the arrows. The type of caliper determines which arrows are active.
5. Click the **Lock** check box for the specific caliper measurement. This selection enables you to match the measurement intervals to other complexes on the strip to evaluate continuity.
6. Click **Save** to add strips to the **Saved Events** tab for printing with measurement annotations.
7. To finish, click the **Calipers** button.

Ignore and Restore



Ignore and Restore provides the opportunity to mark areas of ECG waveform data to be excluded from analysis. This exclusion is sometimes necessary due to poor signal quality, noise, excessive artifact, or intermittent signal from the ECG. Restore ignored areas using the same process.

1. Click **Ignore** or **Restore**.
2. Click the start and end points to be ignored or restored.

Once you have completed marking the areas to be excluded or included, the analysis must be done to update the changes.

Save



Save allows strips or compressed waveforms to be labeled and saved.

1. Click **Save**.
2. Place cursor on start and end points to be saved if in **Compressed** view.
3. Edit the **Title** and **Comments** as necessary in the **Save** dialog box.
4. Select **Strip** view or **Compressed** view, and the **Print while saving** check box, if desired.
5. Click **OK** to finish.

Print

Print

Print provides printing of strips or compressed waveforms over specified timeframes (on the current display only).

1. In **Compressed** view click **Save**.
 - Click **OK** when the **Information dialog** box opens. Then click the start and end points of the waveform to be saved.
 - Enter the title and comments, and select **Strip** view or **Compressed** view. You can also select **Print** while saving.
 - Click **OK** to finish.-OR-
2. In **Compressed** view click **Print**.
 - Click **OK** when the **Information** dialog box opens. Then click the start and end points of the waveform to be saved.
 - Click **OK** to the message **Print request has been submitted**.
3. In **Strip** view, click **Save** or **Print**.
 - The **Information** dialog box opens. This message shows: **Please select the midpoint of six-second range**.
 - Click **OK**.
 - Click a point in the waveform that indicates the midpoint of the waveform segment you want to capture. A six-second range is highlighted in the waveform.
 - If **Print** was selected, the **Print Report** dialog box opens; if **Save** was selected, the **Save** dialog box opens.

Print Report

Print Report

Print Report allows printing over specified time frames such as during resuscitation.

1. Click **Print Report**.
2. Select the **End Date**, the **End Time**, and the **Duration**.
3. Click **OK** to finish. The report is sent to the default printer.

Note: The **Select Time** dialog box also appears from the **Trends** tab when you use **Print Report**.

Arrhythmia Tab



This tab provides retrospective analysis of ECG waveform events. To view analyzed events, waveforms must be analyzed over a designated time frame, not to exceed 24-hour segments.

1. Click **Analyze**.
2. Select the **End Date**, the **End Time**, and the **Duration**. The system default analysis range is 12 hours.
3. Click **Options** if analysis defaults need adjustment and adjust them in the **Analysis Options** dialog box.

Options are available in the **Analysis Options** dialog box to customize patient arrhythmia analysis. When selected, a dialog box opens to allow changes in analysis and clinical thresholds for the specific patient.

The areas that follow can be changed:

- **Channels to Analyze**
- **Rate Thresholds**
- **Pacer Spike – QRS Ranges**
- **Settings** (for Pacer Analysis and Pediatric Analysis)
- **Atrial Thresholds**
- **Telemetry Leads to Analyze**

Once you have made all your changes, click **OK** button to finish. These settings remain with the patient through the length of their stay.

- Click **OK** to finish.



Home

The **Home** view provides a consolidated thumbnail representation of individual event types for a patient. If you open a thumbnail event from the **Home** view, it always opens in the **Rhythm** view. In the **Home** view, recorded event types display in the order of the severity of the event.



Rhythm

Rhythm is available in **Thumbnails** view and **Strip** view. **Thumbnails** view provides snippets of specific arrhythmias with date, time, label, and data in each display. The **Strip** view is annotated with a calibration pulse and lead labels with scaled millivolt. To review the collected rhythms, use the various buttons on the toolbar.

- Click the **Strip** view or the **Thumbnails** view to determine the display view.



- To convert the data to a **Strip** view, click the check box in the **Thumbnails** sample.
- A thumbnail could have a *Stacked* label indicating various continuous alarm violations.



Type:

Longest R-R

Type and occurrences

- Selecting **Type** via the drop-down list provides quick access to specific types of arrhythmia that have been collected.
- If more than one strip has been collected, an extra drop-down list is available to review strips for each type of arrhythmia.
- The time of a selected waveform is synchronized to other applications, such as waveforms. This synchronization allows quick correlation to the duration of the event.
- The navigation bar is located just above the View Pane. The arrows provide navigation to the preceding, following, first, and last collected strip of the selected event type.

To **Save** or **Print** one or multiple thumbnails associated with patient events or clinical interventions, select the **Thumbnails** view check box. Click **Save** or **Print**.

To customize and print a report of **Rhythm** event types:

- Select the check box for an **Event Type** in the **Arrhythmia Event Report** dialog box. This action populates the **Event** column with all of the associated events selected. Clear the check boxes for those events you do not wish to print.

Note: As you select events to print, the total selection shows in the message bar near the bottom left of the **Arrhythmia Event Report** dialog box.

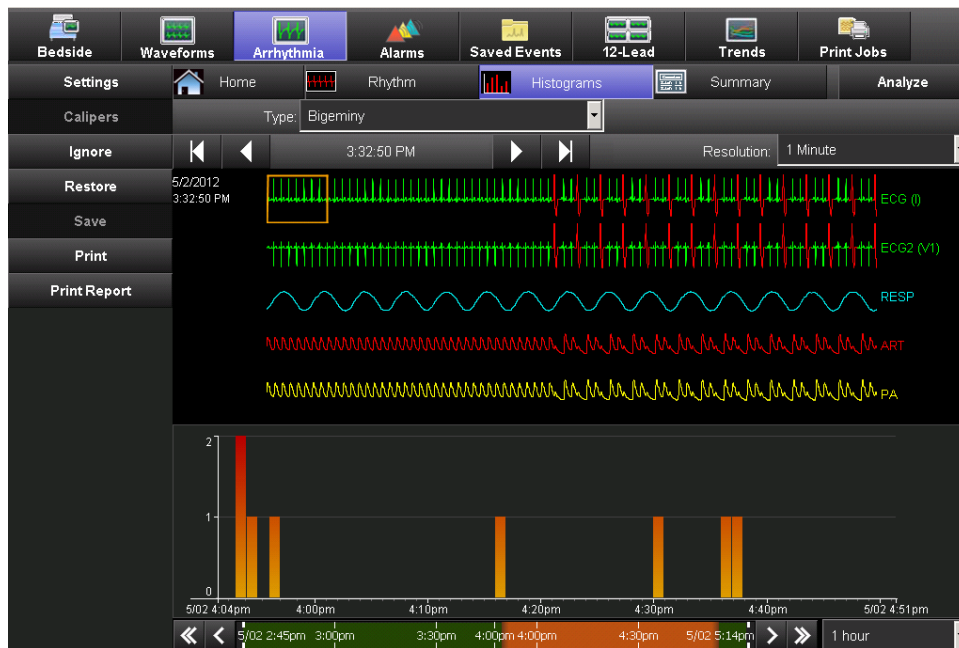
To print only selected events:

- To clear all events of one type, clear the **Event Type** check box. To highlight it, click the **Event Type** label. Then select the check box in the **Event** column next to the specific events you want to print. The message bar near the bottom left informs you of the number of selected events in the report.
- Click **OK** to send the print request to the default printer.



Histograms

Histograms provides patient data in two views: a compressed view and a histograms view. When you click **Histograms**, a compressed view waveform of the most severe recorded event automatically displays above its corresponding histogram. To see other recorded event types, select from the **Type** drop-down list. Various time intervals are also available. To evaluate the timing, frequency, and number of collected events during the analyzed period, use the graph at the bottom of the display.



Managing information in Histograms

- **Histograms** shows any events present for the patient. Only the identified events are listed for the histogram. Select a histogram in the drop-down list and the compressed waveforms and graph opens for review.
- To move from one event to the next, click the arrows on the navigation bar, or the histogram bar directly above the histogram scale.
- The height of the histogram bar displays the value of events during the resolution timeframe. The scale on the left is a quick identifier of the data range.
- To change the time period of the trend, select the trend time interval in the lower right corner of the display. The choices are from **1 hour** to **24 hours**.
- The View Controls for the **Histograms** and the selected **Resolution** times change the width of the histogram bars and correlating waveforms in the View Pane.



Summary provides numeric results of patient waveform analysis. The time periods and analysis options are selectable using **Analyze** and **Options**.

To obtain supporting strips, click a summary event heading, which opens the collected **Rhythm** type. Print the report directly to the designated printer.

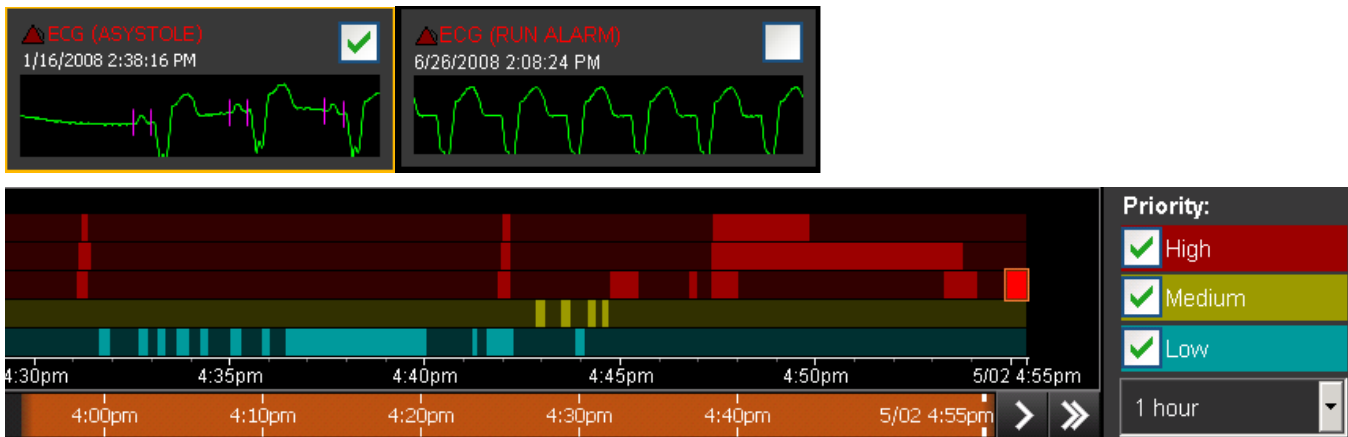
When monitoring a telemetry patient, there are two types of summary reports. What is shown in the summary report depends on what is selected in the **Analysis Options** window.

- 1) **RETROSPECTIVE REPORT SUMMARY.** This is a retrospective analysis of the ECG waveform data for bedside patients and Ultraview SL telemetry patients.
- 2) **XHIBIT TELEMETRY REPORT SUMMARY.** Provides the enhanced results of a real-time analysis by the 96280 Xhibit Telemetry Receiver. In this instance, QRS detections and QRS classifications from the real-time analysis are used. Rhythm and summary data are generated from the QRS information. The Xhibit Telemetry System, with the 96280 receiver, is required for this report summary.

Note: You have the option to choose **Retrospective** for an Xhibit Telemetry patient. In this instance, the analysis is the same one used for a bedside monitor or an Ultraview™ SL telemetry patient where retrospective analysis of the ECG waveform data is performed.

Alarms Tab

To begin, click the **Alarms** tab. This tab shows all bedside alarms that are set to Alarm Watch at the bedside monitor. To display the **Thumbnails** view of selected parameter alarms in the upper part of the display, click the **Alarms** tab. To see the **Strip** view for that alarm, click each thumbnail. The lower part of the display shows a trend of the Alarm history. The priorities of alarms are indicated by associated colors in the band graph. Refer to the examples that follow:



Note: If it is a technical notification only, a low alarm thumbnail does not have a waveform.

The ways that information is filtered for documentation and viewing are as follows:

The View Controls are at the top of the display.

- **Parameter** – Select waveforms available in alarm history from the drop-down list.
- **Type** – Select alarms for display according to the alarm type.
- **Strip / Thumbnails** – Toggle between **Strip** view and **Thumbnails** view.
- **Select All** – Save, print, or remove all thumbnails from the display.
- **Current** – Display all alarms from the selected patient.
- **Removed** – Display all previously removed alarms from the selected patient.

The Action Buttons are on the left side of the display.

- To select strips or thumbnails for removal from the display, click **Removed** in the **Current** view. Check the thumbnail check box and click **Remove**.
Note: Alarms are removed from the **Current** view, but are not deleted.
- To retrieve selected strips or thumbnails back to the **Current** view, click **Restore** in the **Removed** view.
- To locate quickly and document alarm history, manipulate the banded alarm graph on the lower display.
- To display alarm strips for that time or to display the correlating **Thumbnails** view, select a specific alarm by clicking the highlighted area of the graph.
- To select a specific time on the timeline, drag the orange slider or use the scroll arrows at the bottom of the timeline.
- To modify the alarm view, select or deselect **High**, **Medium**, or **Low**.
- Change the graph time by selecting a new time in the graph drop-down list on the lower right of the display.



Saved Events Tab

To begin, click the **Saved Events** tab. This tab provides views of all events that have been saved in other views for future use. The events are shown in chronological order based on the time of the event and not the time of the save. The most recent is first in the chronology.

The View Controls are at the top of the display.

- Scrolling arrows to see saved events.
- **Strip** views and **Thumbnails** views.
- **Select all** check box.

The Action Buttons are on the left side of the display.


- **Edit** – After reviewing a saved strip, click the **Edit** button to change the **Title** or **Comments** associated with the saved event. **Title** displays in the **Thumbnails** view and **Comments** display in the **Strip** view.
- **Delete** – After marking the thumbnail click the **Delete** button to remove it from the saved folder. There is a confirmation message before the process is completed.
- **Print** – Click to print the marked saved events.



12-Lead Tab

To begin, click the **12-Lead** tab. This tab provides all 12-Lead ECGs, sent from the bedside, for viewing, comparisons, and printing. You can configure the ECG modules to display or not display measurements and interpretations. There is a drop-down list in the View Controls toolbar to select an available ECG in the patient history.

The View Controls are on the top of the display.

- **Report** – Select the specific ECG for to display.
- **Compare** – Visible after the **Compare Setup** action is completed.
- **Edit Interpretation**  – Changes the interpretation. Measurements cannot be edited.
- **Show Original** – Show the original report before edits are made.
- **Editing User** – Show the **User Name** of the clinician that made the edit to the currently viewed ECG.

The Action Buttons are on the left side of the display.

- **Settings** – Set up the report format.
 - **Grid** – On or Off
 - **Format** – Standard or Cabrera
 - **Orientation** – Portrait or Landscape
- **Compare Setup** – Compare a primary to a secondary ECG Report. Use drop-down list to select reports and then click **OK**. The **Compare** button shows in the View Controls toolbar, which allows you to toggle between selected reports.
- **Delete** – Delete the ECG from view. A confirmation dialog box confirms the decision. This action permanently deletes a report.
- **Print** – Send the request to the default printer.



Trends Tab

To begin, click the **Trends** tab. This tab provides storage of all monitored vital signs data in a tabular and graphic format. There are two software options available in the trends application: Basic and Custom Trends. Basic Trends are included in Smart Disclosure. All trends are configurable for each patient. The View Pane can show both tabular and graphical data.

Trends View Controls allows selection of preconfigured Trends templates, the duration of shown data, and the resolution interval selection. To begin:



1. Click **View** and highlight the view from the list.
2. To select the data duration, click **Duration**.
3. Click **Interval** and highlight the frequency of data you want shown.

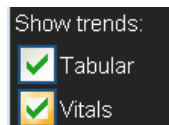
When lengthy durations or frequent intervals are selected, use the scroll bars on the right and bottom of the display to see all the information.

Each **View** can have multiple categories of data available, which do not need to display continuously. To adjust the shown content, you can select **Parameters** and **Show trends**.



Toggle **Parameters** categories to open and close them.

1. To close all tabular trended parameters in the view, click the first arrow. To open all trended parameters in the view, click the second arrow.
2. To open and close individual categories, use the arrow control on the category row.



Show Trends

The graphic Trends are available for view when the check box is selected.

1. To show the tabular data on the display, click the **Tabular** check box.
2. To show the graphic trend onscreen, click any other check box. Up to four graphic trends can be shown at one time.



Automatic Refresh

To show updated data in the **Trends** view, select the **Automatic Refresh** check box. Columnar data in the **Trends** view updates and shows at the interval selected in the **Interval** drop-down box.

Displays

- Click any tabular column to highlight the data and locate corresponding data in the graphic display. Click a point in the graphic display to highlight the nearest tabular column based on the time interval shown.
- All data colors in tabular trends are the same in the graphic trends for ease of viewing.
- The orange bar on the timeline represents the duration set in trends. To move to a new timeframe, click a point on the timeline or drag the orange bar.



Settings opens a dialog box to customize patient trends. The default is to have the **Tabular** view open.

The **Settings** box contains buttons to configure patient specific categories of trends and the order of the trends.

Tabular View

- To change the order of the trend information, click a parameter and the up or down arrow.
- **New Category** opens a dialog box to name a specific trend grouping. Click **New Category**, and then enter the label of the trend category. Click **OK**.

- To rename the highlighted category, click **Rename Category** to open a dialog box.
- Click **Remove Category** or **Remove Parameter** to eliminate data groups from the trend.
- Click **Add Parameters** to open the listing of data choices. To add to the new category, open the required category and select the check boxes for the specific data.

Select the appropriate check box to use standard categories or limit parameters to those available for the selected patient.

- Click **Add Note** to add notes to the data presented on display. The cursor changes to a pencil when **Notes** are active.

Add Note

- Click **Add Note** to add an extra comment to a specific cell. A free text dialog box opens. Add the text and then click **OK** when finished. A red flag (truncated note) appears in the cell to mark location of note. Any time the column or cell is clicked, the note is visible in the dialog box.

-OR-

- Click **Add Note** to add an entire row labeled **Notes** for free text as an ongoing commentary.

Parameters	12:15pm	12:30pm
HR , bpm	54	50
Abnormals, Abn/min	0	0
ST V6, mm	-0.1	-0.1
HR , bpm	54	50
ST I, mm	-0.1	-0.1
Notes	c/o cp	

Graphs View

These controls enable you to create graphs to match the patient condition.

- **New Graph** allows you to create a label for a new graph.
- **Add Parameters** allows you to select up to four parameters for each graph.
- Change the order by clicking the label and then the reorder arrow buttons.
- Change the scale of the graph by changing the values in the **Min/Max** scale boxes.

View Tabs That Are Not Part of Smart Disclosure



Bedside Tab

To begin, click the **Bedside** tab. This tab provides near real-time data for the selected patient.

To add a waveform:

1. To open the **Display Setting** dialog box, click **Settings**.
2. Click the check box of the waveform you want to show. Up to six waveforms are shown.
3. Click **OK** to finish.
4. To adjust the sweep speed and size, click the waveform label.
5. Click **OK** to finish. Alternatively, you can click the waveform label to open **Settings**.
6. To manage the waveforms you want to view, use the pause, start, fast forward, and reverse scroll buttons on the top of the display.

To remove waveforms:

1. Click to clear the parameter check box.
2. Click **OK** to finish.

To change the sweep speed or the size of an existing label:

1. To open the **Configuration Tool** dialog box, click the waveform label on the right side of the display.
2. Select changes to be made.
3. Click **OK** to finish.



Print Jobs Tab

To begin, click the **Print Jobs** tab. This tab provides all bedside-generated recordings that are stored for review. They recordings are listed by date and time, in chronological order, with the most recent at the top of the list. The print jobs are annotated with the **Description** (title).

The Action Buttons are on the left side of the display.

1. Click the **Print Jobs** tab.
2. To review the selection and confirm your choice, select a print job and click **Preview** or double-click a print job from the list.
 - You can select a percentage from the **Zoom** dropdown list to change the magnification of the print format.
3. After review, click Print or click Close to return to the Print Jobs view.
4. For print requests greater than 10 pages, Print Manager generates an alert message and a request for confirmation to continue to print. This applies to all Clinical Access views except print requests from the **Print Jobs** view. The **Print Jobs** view handles print requests greater than 10 pages.

