

NetKonnnect Surveillance

NKS-001

OPERATOR'S MANUAL

Rx ONLY



NB 2797

Revision E

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NIHON KOHDEN DIGITAL HEALTH SOLUTIONS | 14 BUNSEN | IRVINE | CA 92618

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2 GENERAL

2.1 INTENDED USE/INDICATIONS FOR USE

NetKonnnect Surveillance is intended to interface connected medical devices with a user interface to annunciate and display patient information to medical personnel. Patient data is collected from medical devices located inside or outside a hospital.

NetKonnnect Surveillance is intended for use of live monitoring of patient data, such as vital signs, alarms, and waveforms. NetKonnnect Surveillance extends the operational possibilities without replacing or altering the functions of the independently approved, connected medical devices.

Rx only
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2.2 INTENDED USERS

The intended users of NetKonnnect Surveillance are healthcare providers (nurses, telemetry technicians, physicians, and advanced practice providers) for use on patients as determined by qualified medical personnel. Regardless of the job title, all intended users will interact with the software in the same way and utilize the same functions. NetKonnnect Surveillance is not intended to be used by laypersons.

Patient Target Groups

NetKonnnect surveillance is intended for use with patients of all ages who require monitoring of patient data such as vital signs, alarms and waveforms as determined by qualified medical personnel.

2.3 INTRODUCTION

NetKonnnect Surveillance is designed to be a viewer for live data (vitals and waveforms) from bedside monitors alongside the calculated metrics received from the Nihon Kohden Digital Health Solutions' Data Platform.

2.4 WARNINGS

Do not diagnose a patient based only on data displayed on NetKonnnect Surveillance. Overall judgment must be performed by medical personnel who understand the features, limitations, and characteristics of NetKonnnect Surveillance and by reading the biomedical signals acquired by other instruments, such as bedside monitors.

Accessing the instructions for use electronically will provide the user with the most recent version. Downloaded and/or paper versions of the instructions for use are only valid on the day of downloading or printing.

Note to Users:

Any serious incident that has occurred in relation to the device should be reported to the European Representative designated by the manufacturer and the Competent Authority of the Member State in which the user and/or patient is established.

2.5 LIFETIME

The software is designed and manufactured to operate safely and effectively for a period of 20 years from the date of first release. During this period, the software's performance and safety characteristics will not be adversely affected to such a degree that the health or safety of the patient, user, or other persons are compromised. Regular software maintenance will be performed per the manufacturers design control and post-market surveillance procedures to ensure continued compliance with safety and performance standards

3 OPERATIONAL RESTRICTION

Category	Description
General	- No patient data is stored on the web page. - Cannot modify any patient data. - One instance running NetKconnect Surveillance per client PC.
All Patients page	Can display a maximum of 48 patients.
Admit/Discharge	Updates patient info on Nihon Kohden bedside monitors and supported devices.
Mute Audible Alarms and Remote Alarm Silence	Can either mute audible alarms on NetKconnect Surveillance or remotely silence Nihon Kohden Bedside monitors and supported devices.

4 ACCESSING NETKCONNECT SURVEILLANCE

NetKconnect Surveillance is a web application intended for use on Chromium based web browsers, such as Google Chrome and Microsoft Edge. To access NetKconnect Surveillance on a web browser, navigate to the URL for NetKconnect Surveillance provided by the site administrator.

5 LOGIN PAGE

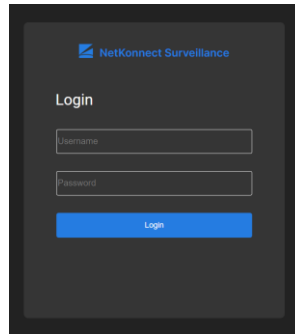


Figure: Login page.

If installation is configured with authentication enabled, a login page will appear when first visiting the web page. Enter the username and password provided by the administrator. If the web page is in the background or closed for more than the permissible session time (15 minutes by default), the session will be terminated, and another login will be required for access.

6 ALL PATIENTS PAGE

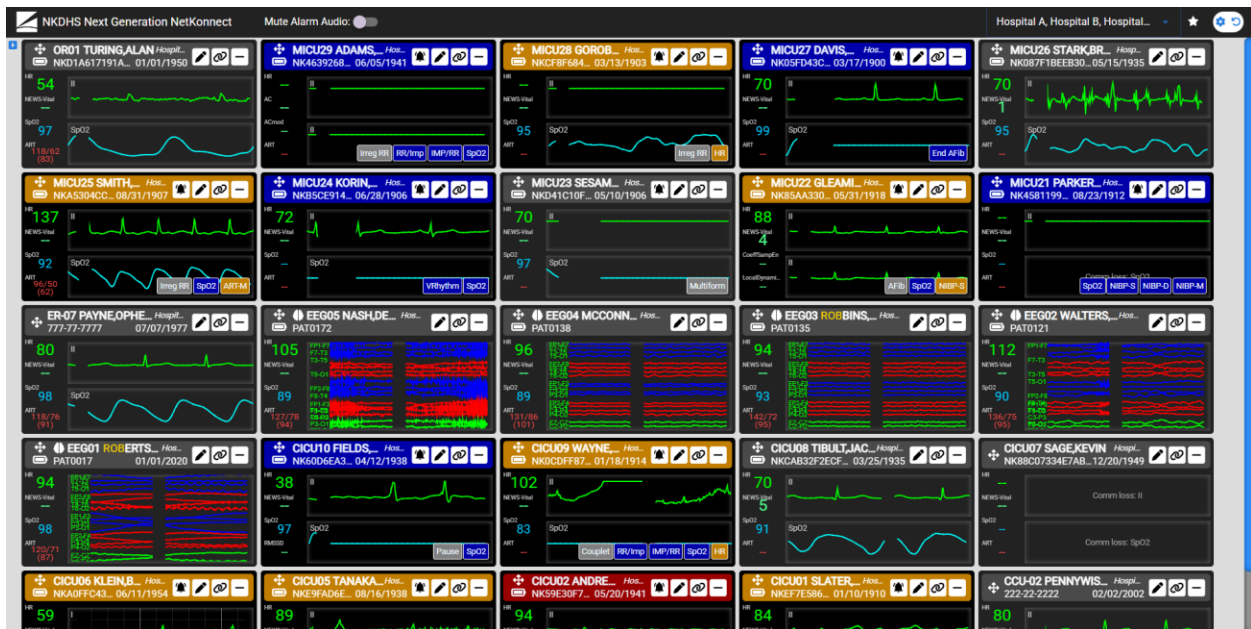


Figure: All Patients page.

The All Patients page is a scrollable grid display that contains a maximum of 48 patient tiles that have been selected by the user. Each patient tile can display a maximum of 4 vital signs and 2 waveforms. It also displays a patient's name, patient's date of birth, bed name, and site name in the patient tile header. Patient tiles are ordered based on user preference and follow a left to right from top to bottom placement.

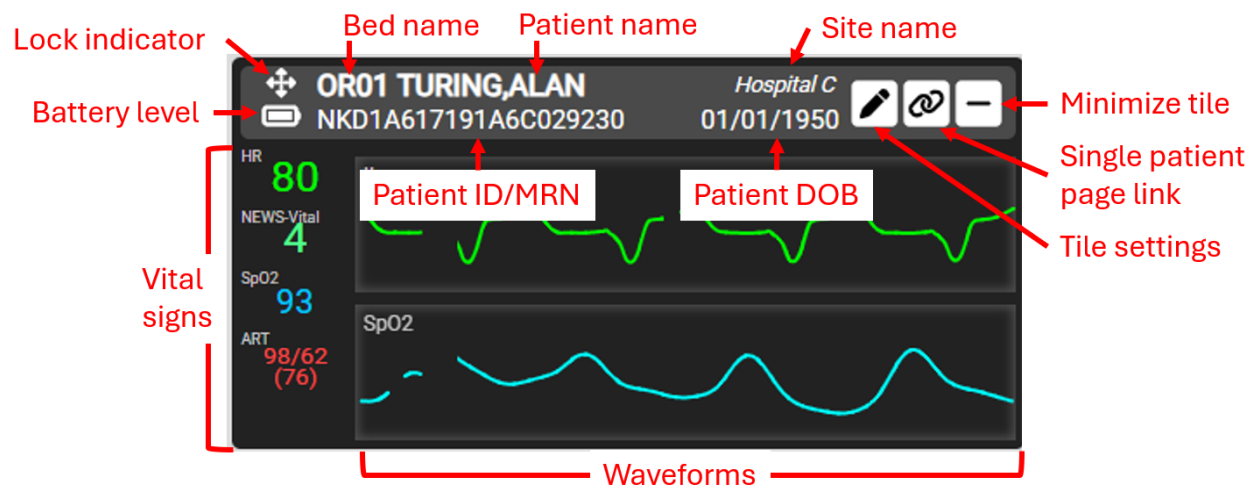


Figure: Patient tile.

If bed side monitor or device associated with the patient tile provides battery level indication, the battery level will be displayed in an icon showing full, 2/3 full, 1/3 full and empty (if provided). The battery level icon will be displayed on the patient tile, Slide Out view, and Single Patient Page.



Figure: Battery level indicator for monitoring devices that provide battery level information (i.e. telemetry devices).

If two or more patients share the same first three letters of their names, the first three letters will be highlighted yellow to indicate the presence of similar patient names.

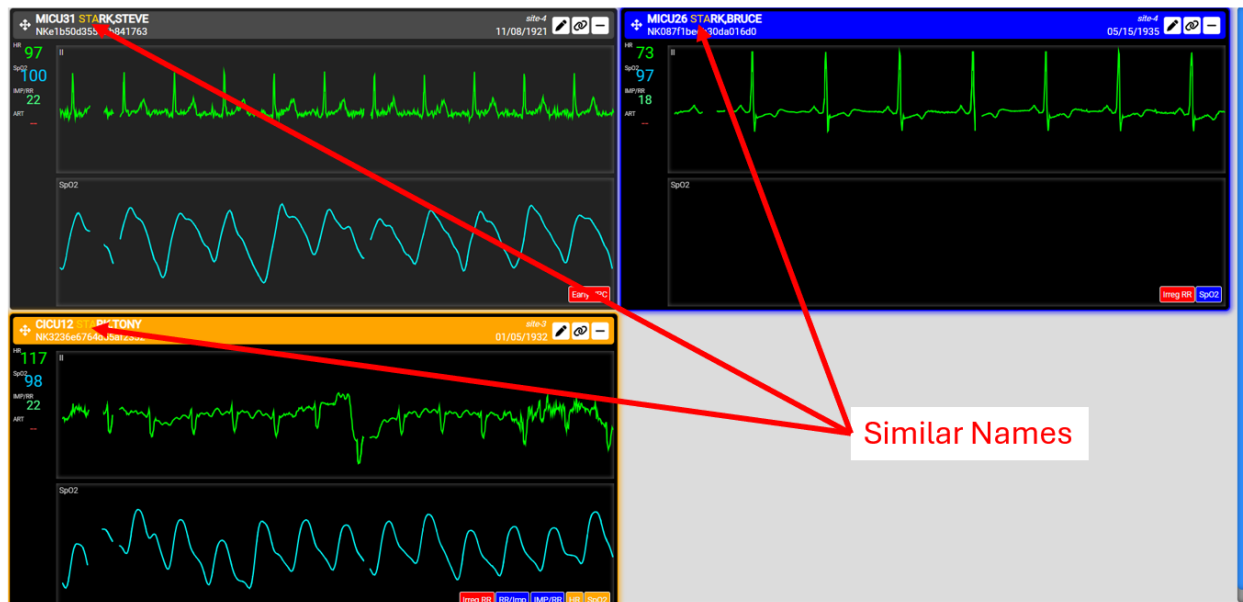
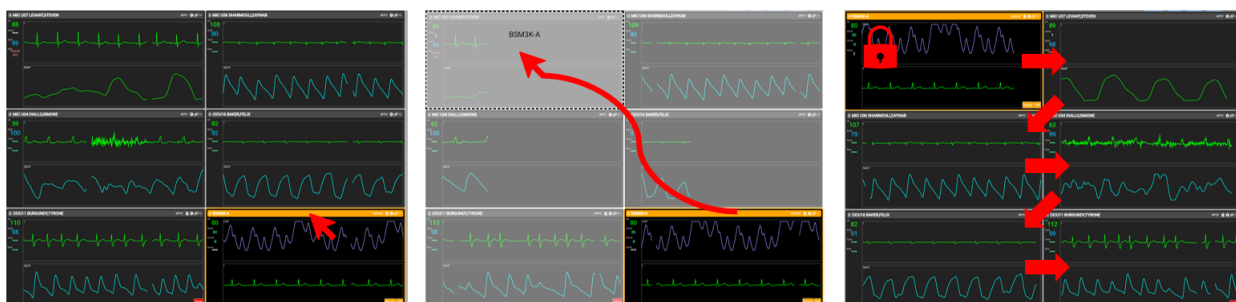


Figure: Similar patient name indication.

6.1 MOVE A PATIENT TILE

A patient tile “A” can be dragged and dropped into a specific position in the ordered list of all patient tiles by clicking and holding on the center of the patient tile header, then moving/dragging the patient tile to a new position on top of a different patient tile “B”, then releasing the click. Patient tile A will now be placed in the position that patient tile B was in, and patient tile B will be moved to the adjacent position unless other moved patient tiles are adjacent to the new position of patient tile A. Moved tiles are marked with a lock icon .

Drag and drop with no locked patient tiles



Click patient tile to move

Drag to new location

Release click to lock and shift all unlocked patient tiles

Drag and drop with adjacent locked patient tile

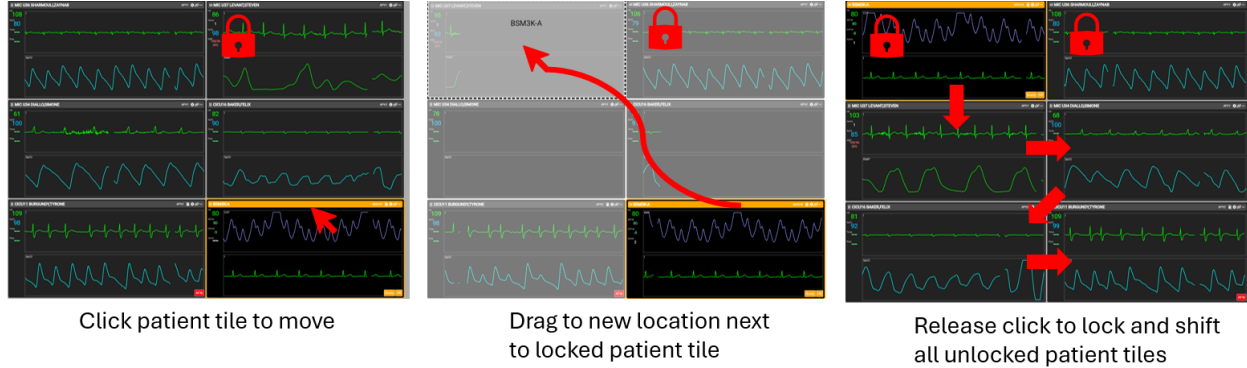


Figure: Move patient tiles with drag and drop to lock in a certain order.

6.2 LOCKING A PATIENT TILE POSITION

In the top left corner of the patient tile header, a “locked” patient tile is indicated with a lock icon and an unlocked patient tile with a cross directional arrow icon. Click on the cross directional arrow icon to lock a patient tile in its current position.

Click on the lock icon to switch a patient tile from locked to unlocked states. Switching a patient tile to unlocked state may make that patient tile move in position after locked patient tiles depending on the selected sort order.

A locked patient tile can still be moved by moving and locking other patient tiles before or on top of the locked patient tile.

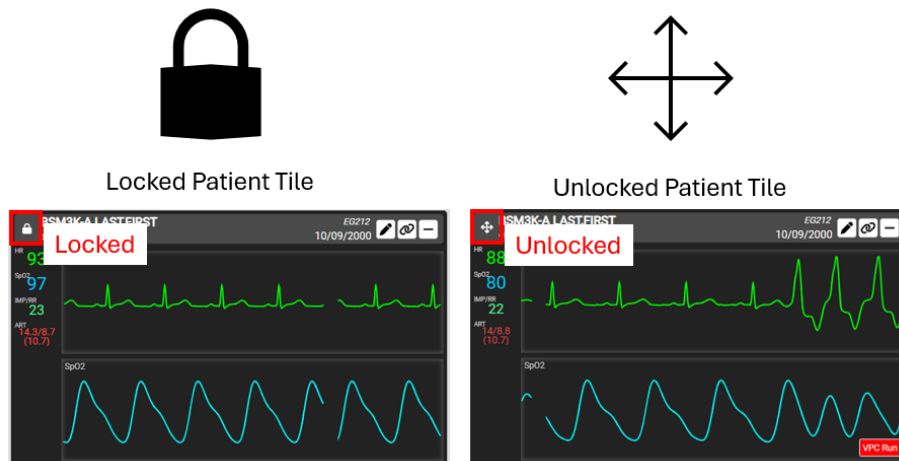


Figure: Locked vs unlocked patient tiles.

6.3 MINIMIZING A PATIENT TILE

To minimize a patient tile, click the minimize icon located in the top right of the patient tile. After the patient tile has been minimized, the patient will be displayed in the minimized patient tile section as highlighted below.

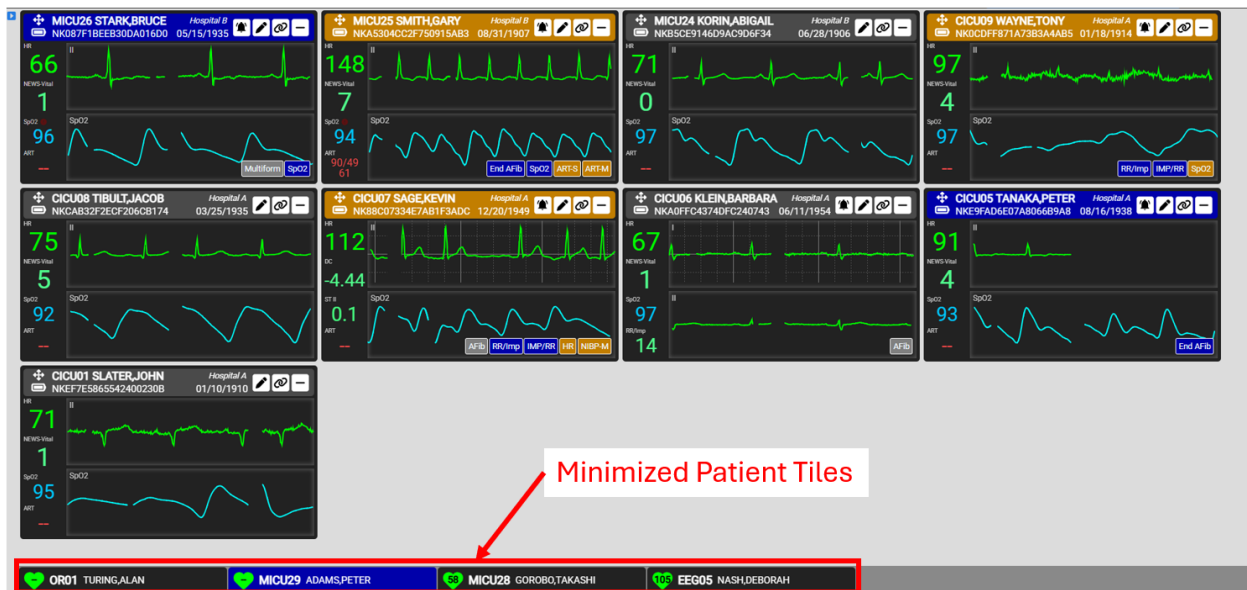


Figure: Minimized Patient Tile Display.

6.4 EXPANDING A MINIMIZED PATIENT TILE

To expand a minimized patient tile, click on the minimized patient tile. Once the tile has expanded, it will return to its original place based on the current sort ordering of the All Patient tiles.

6.5 ALARMS

Vital sign, technical, and arrhythmia alarms are displayed on a patient tile by changing the header color. A crisis alarm will be red, a warning alarm will be orange, and an advisory alarm will be blue. At the bottom right corner of the patient tile, the vital sign parameter or arrhythmia reason for the alarm will also be stated as individual alarm indicators. Each alarm indicator will be colored with its corresponding priority.

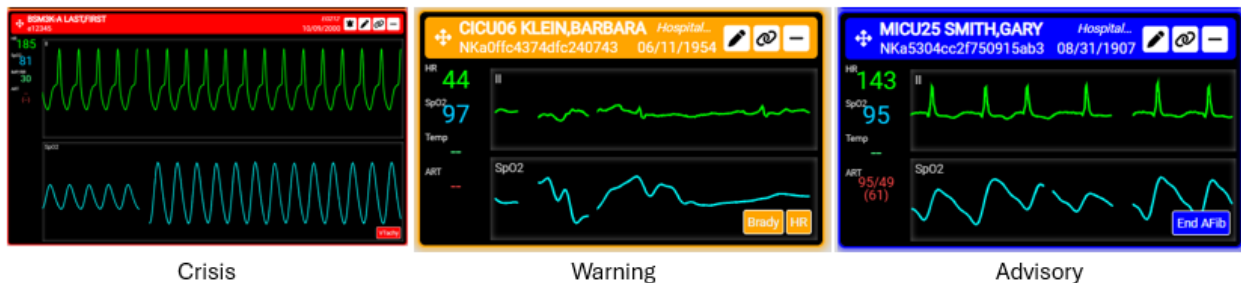


Figure: Alarm indications for crisis, warning, and advisory alarm priorities.

Alarms are also indicated on a minimized patient tile by highlighting the border with the highest priority color.

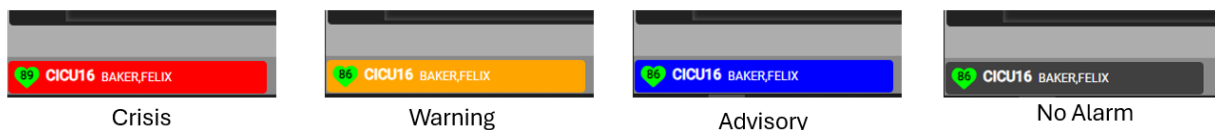


Figure: Alarm indications for crisis, warning and advisory alarm priorities on minimized patient tiles.

6.6 SILENCING ALARMS

An alarming patient tile will display an alarm icon  in the top right corner of the patient tile. The alarm icon will appear if the bed is licensed for alarm silence feature. Clicking on the alarm icon will silence all audible and visual alarms on the bedside monitor for a period based on monitor settings (typically 2 minutes). The bedside monitor will display a silenced alarm state.



Figure: Alarming patient tile displaying alarm icon.

If silencing all alarms bedside is intended, confirm the pop-up dialog that appears after clicking the alarm icon.

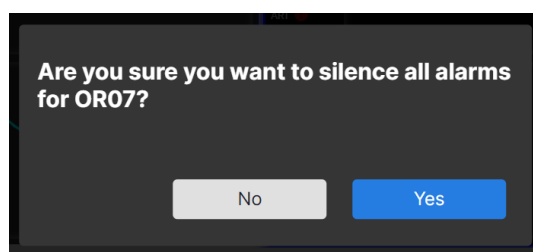


Figure: Confirm silence alarm at bedside popup dialog.

If silenced, either by user interaction on NetKonnnect Surveillance or at the bedside monitor, the patient tile will indicate that the alarm has been silenced by displaying “Silenced” next to a disabled silenced alarm icon . The vital sign parameter or arrhythmia reason for an alarm will still be indicated on the patient tile in the bottom right corner, for as long as the alarm condition is met.



Figure: Silenced patient tile indicating alarm is silenced at bedside monitor.

Once the alarm silence period has ended, and if an alarm condition is still occurring on the bedside monitor, the patient tile will enable the alarm icon to allow for another alarm silence request.

6.7 MUTING AUDIBLE ALARMS

If enabled, audible alarms will sound on NetKconnect Surveillance when any patient tile is alarming. Alarms that are silenced on the bedside monitor, will not audibly alarm on NetKconnect Surveillance. If enabled, a Mute Alarm Audio slider will be displayed in the top header when in the All Patients page. Select the Mute Alarm Audio to mute audible alarms. Note that muting audible alarms on NetKconnect Surveillance does not silence or suspend the alarm(s) on the bed side monitor(s).

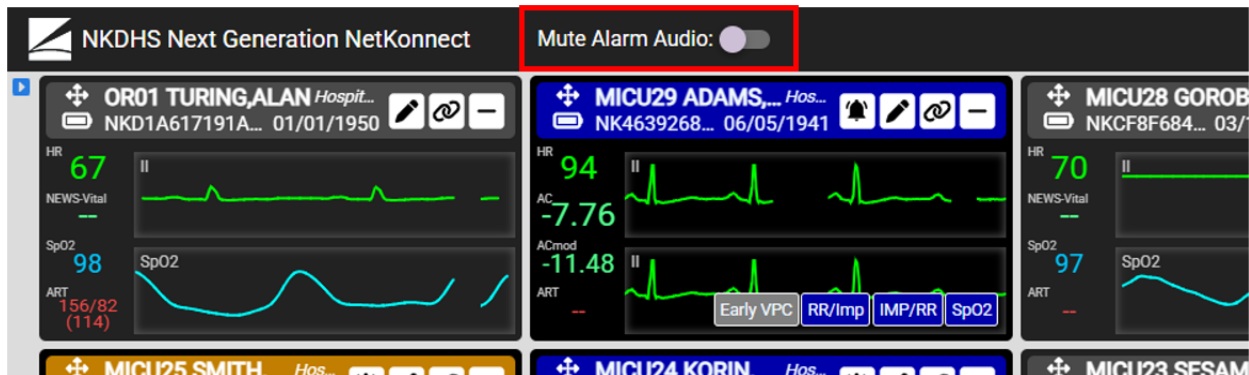


Figure: Mute audible alarms slider. Select to mute audible alarms on NetKconnect Surveillance.

When muted, a timer will appear counting down 2 minutes until the mute is disabled. Note that all audible alarms will be muted during this time, including those that would be triggered by new alarms from any patient tile.

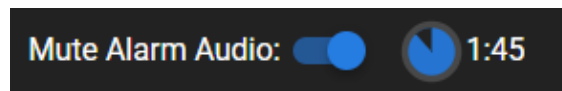


Figure: Mute audible alarms timer.

When audible alarms are enabled, a message may appear when navigating to NetKconnect Surveillance about sound permissions. Internet browsers do not allow audio to be played automatically on a site

unless the user has first interacted with the site or has explicitly allowed the site to auto play audio in the browser settings. To allow NetKconnect Surveillance to auto play sounds on a Chrome Browser, first select the Site Settings, then select “More settings and permissions” option in the menu. Then for the Sound permission, select “Allow” instead of “Automatic (default)”.

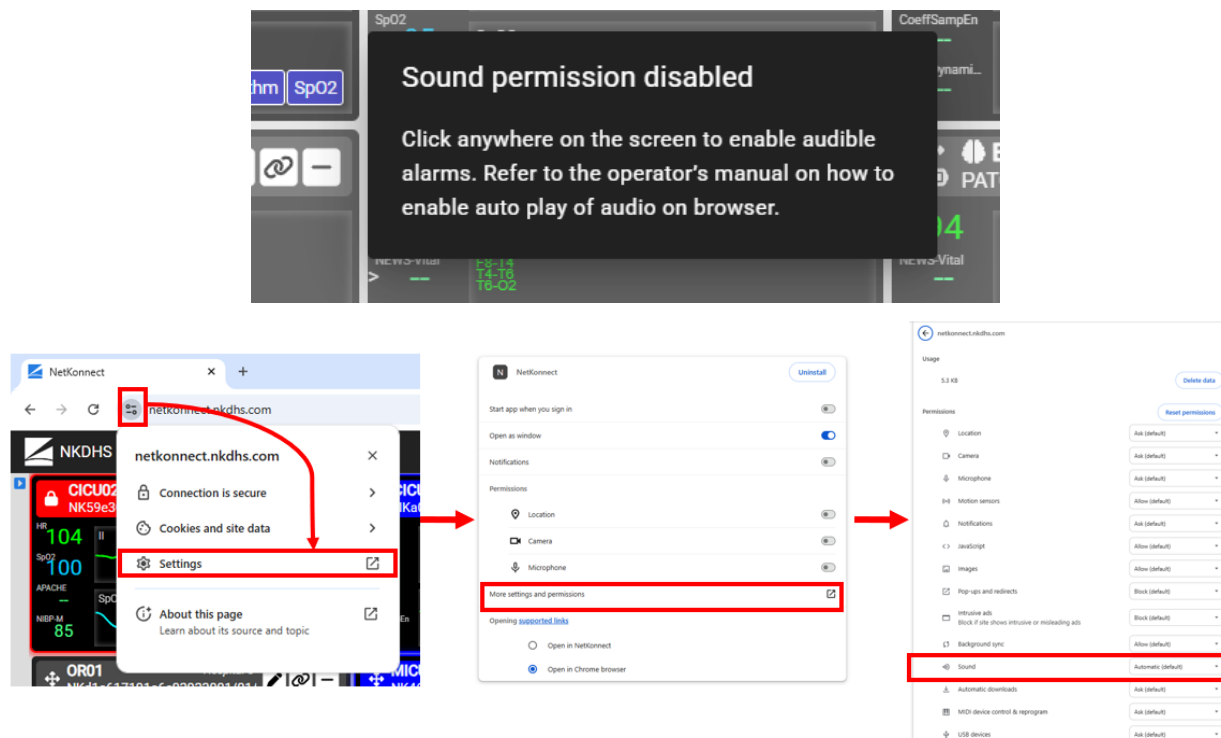


Figure: Audible alarms auto play permissions popup message. Allow auto play in browser settings to prevent message from appearing and enable auto play in NetKconnect Surveillance.

Warning: If NetKconnect Surveillance browser tab is placed in the background or minimized, the PC or browser may suspend NetKconnect Surveillance and prevent audible alarms from playing.

Warning: To hear audible alarms, use and enable an appropriate audio device (i.e. external or built-in speakers) with the client PC running NetKconnect Surveillance.

6.8 CUSTOMIZING A PATIENT TILE

To customize the vital signs and waveforms displayed for each patient tile, click on the edit icon  in the top right corner of a patient tile. Then select the preferred vital signs (max 4) and waveforms (max 2) from the list of available parameters. If 4 vital signs or 2 waveforms are already selected, first deselect parameters to replace and not show in the patient tile. Once a selection is made, click APPLY to confirm, or CANCEL to exit the menu.

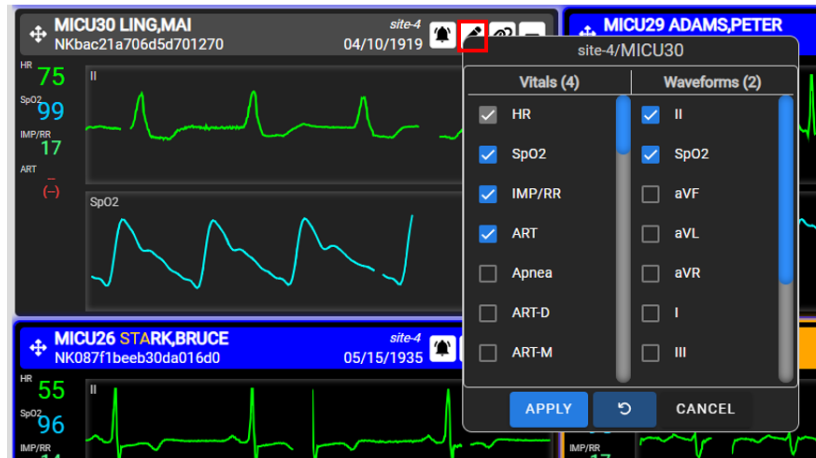


Figure: Patient tile vital signs and waveforms customization.

On mobile devices, only 4 vital signs can be selected. No waveforms are displayed on patients tiles in the All Beds screen.

6.9 OPENING A SINGLE PATIENT PAGE

To open a new web browser tab containing a Single Patient page, where only one patient is displayed, click on the URL link icon  in the top right corner of a patient tile. This view will contain all functionality of a patient Slide Out view. The Single Patient page can also be accessed by external applications or directly inputting the patient/bed specific URL into a web browser tab (i.e. [HTTPS://<NetKonnct Surveillance ADDRESS OR HOSTNAME>/bed/<BED NAME>](https://<NetKonnct Surveillance ADDRESS OR HOSTNAME>/bed/<BED NAME>)).



Figure: Single Patient Page.

To close the Single Patient page, click on the close web browser tab icon displayed on the browser tab.

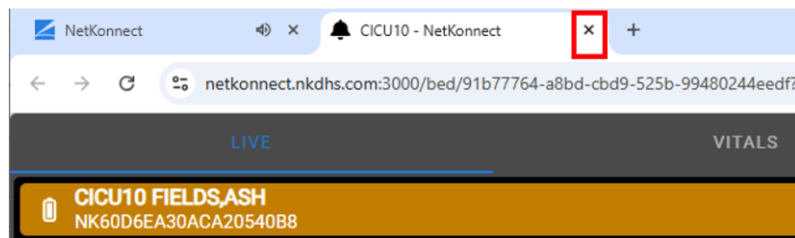


Figure: Close Single Patient Page.

6.10 SITE FILTERS

The top right corner of the All Patients page contains the Site/Unit Dropdown for filtering displayed patient tiles by their associated site. If a Site is selected, a check mark will appear next to the site name, the Site will be highlighted, and all selected patient tiles associated to the site will be displayed.

The Site selections only filter patient tiles that have been selected in the Bed Selection tab to be viewed on the All Patients page. Selecting a Site does not select all possible patient tiles associated to that site from the Bed Selection List.

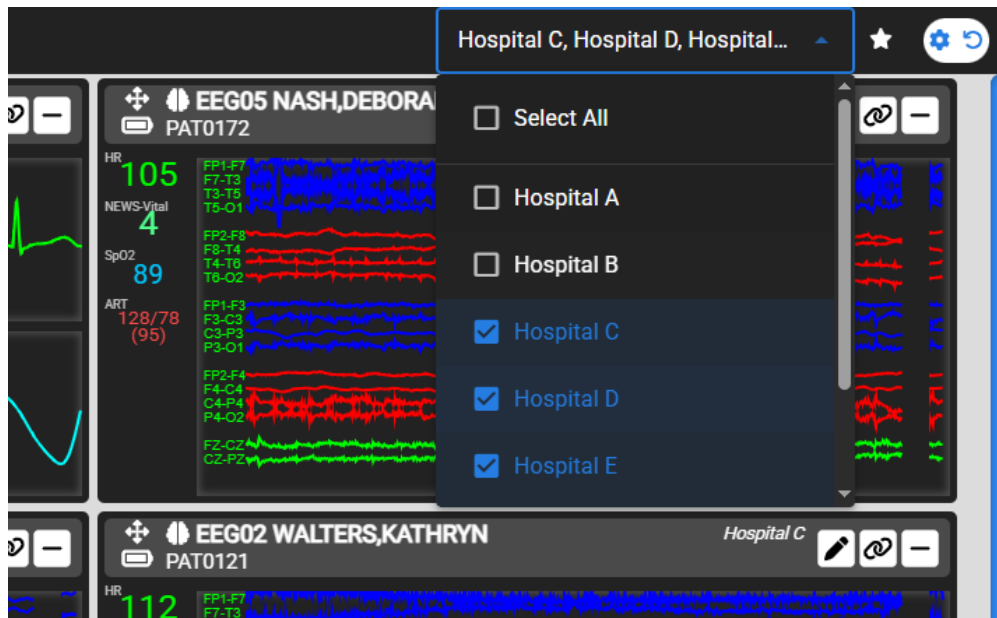


Figure: Site Tab filters show or hide selected patient tiles based on their associated site/unit.

To hide patient tiles for a certain site, uncheck the Site associated with those patient tiles.

To select all patient tiles for display, check the “Select All” option.

6.11 STARRED TAB FILTER

Next to the Site filter dropdown is the Starred Tab filter button. Patient tiles that have been starred will be displayed when the Starred Tab filter is selected. All non-starred patient tiles will be hidden and all Site Tabs will be deselected.

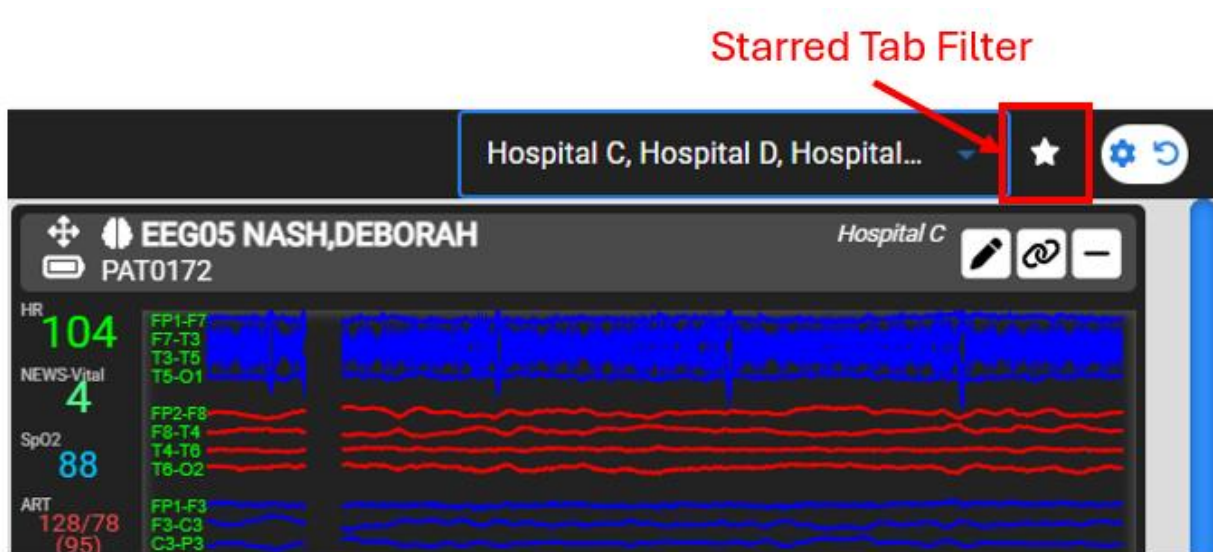


Figure: Starred Tab Filter.

To star a patient tile, click on the patient tile to open the Slide Out View and select the star icon  next to the bed name. A starred patient tile will have a yellow star, and an unstarred patient tile will have a white star.

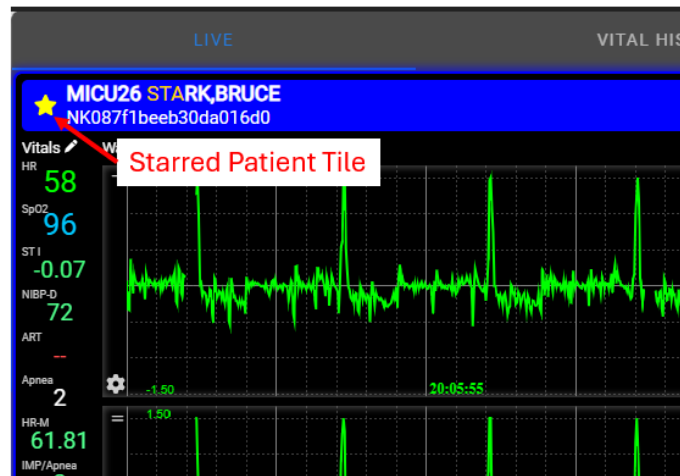


Figure: Patient tiles can be starred by clicking on the star icon in the Slide Out View.

7 PATIENT SORT LIST

The Patient Sort List is available on the All Patients Page by clicking on the Left Side Panel button.

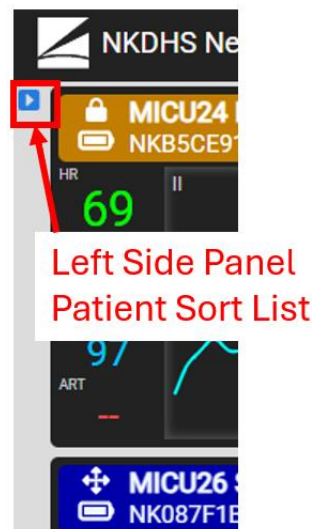


Figure: Click the Left Side Panel Button to view the patient sort list.

The Patient Sort List contains various options to select for sorting the patients displayed on the All Patients page. The patients can be sorted by patient name, bed name, alarm priority and count, or a particular vital sign parameter value. Each sort option can be toggled to sort by ascending or descending order by clicking on the sort option. The sort direction is indicated by an arrow next to the sort option name.

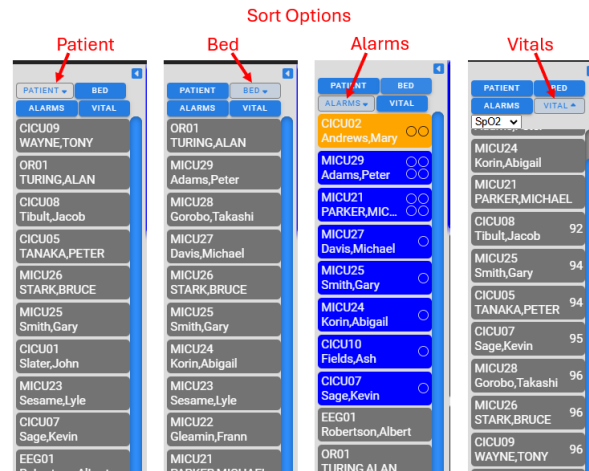


Figure: Patient sort options in the Left Side Panel.

Clicking on a patient listed in the Patient sort list will open the Slide Out View for that patient. To close the Patient sort list, click on the Left Side Panel button again.

8 THE SLIDE OUT VIEW

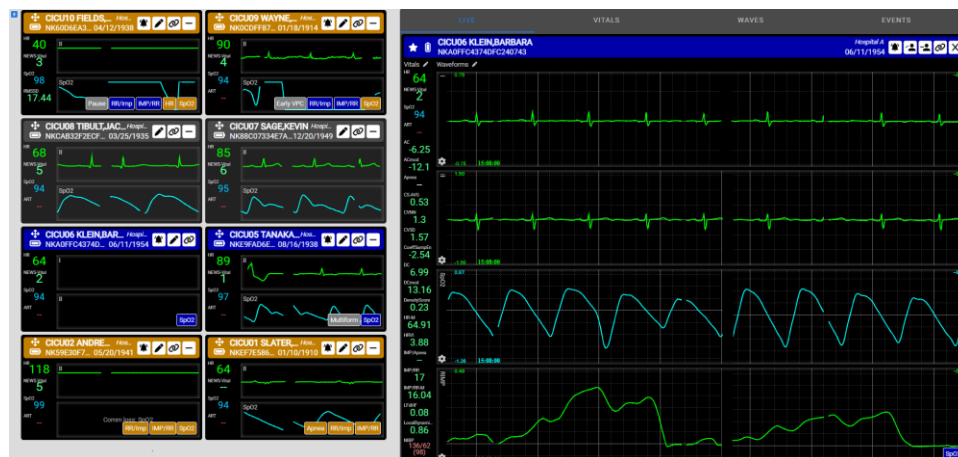


Figure: Slide Out View.

The Slide Out View is a partial-screen view of a single patient tile. It can display more vital signs (number of vitals depends on the screen size) and waveforms than a patient tile. To display the Slide Out View, click on any patient tile in the All Patients page or a patient listed in the Patient Sort list. To change the Slide Out View to a different tile, click on the desired patient tile on the left side of the screen.

When the Slide Out View is opened, the patient tiles are placed on the left side of the screen in a scrollable view. In the scrollable patient tile view, a darkened patient tile with no alarm means a specific patient tile was selected for the Slide Out View. *Note: an alarm will still be displayed on the darkened patient tile and other alarming patient tiles are also darkened.*

The Slide Out View will indicate alarms the same way a patient tile does. When one or more alarms are present, it will be indicated by highlighting the border of the Slide Out View with the highest priority alarm color, and the alarm(s) reason will be displayed in the bottom right corner.

8.1 ADDING A WAVEFORM(S) TO THE SLIDE OUT VIEW

Add waveforms by clicking the Waveforms  (Pencil Icon) located on the top left of the Slide Out View.

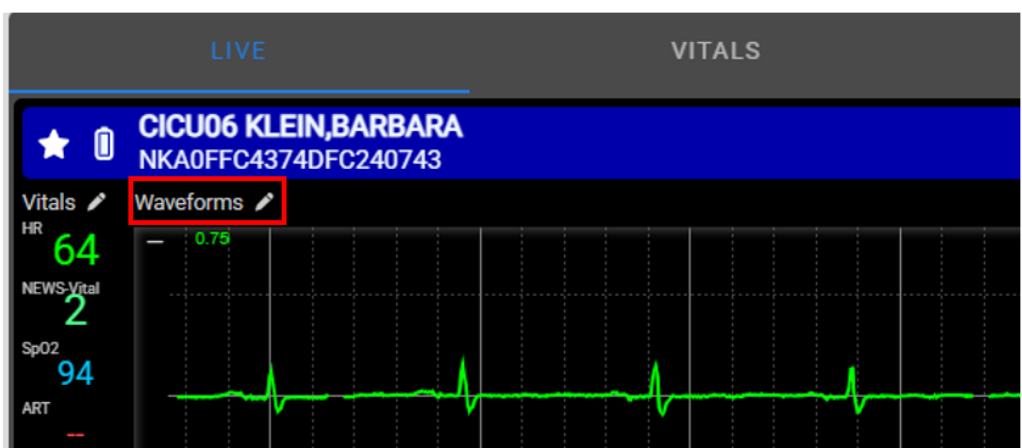


Figure: Waveform Selector menu.

The Waveform Selector menu contains all available waveforms for the patient. Add waveforms by clicking on their corresponding check boxes. To remove displayed waveforms, simply uncheck them. Waveforms will be displayed in the order they are selected.

Close the Waveform selector menu by clicking on the CANCEL button at the bottom of the Waveform selector menu.

To apply the changes made, click the APPLY button. Any additions/removals made in the Waveform Selector will be remembered by NetKconnect Surveillance, meaning if user switches to another bed or exit the Slide Out View and then comes back to that specific bed, then those changes will still be in effect.

Note: The NetKconnect Surveillance will still remember Slide Out View waveform changes when user refreshes the screen only if user uses the same computer/workstation and user login.



Figure: Waveform Selector.

If more waveforms have been selected than can fit on a screen, then NetKonnct Surveillance will make the wave display area scrollable to view the other selected waveforms. Use the mouse wheel or the blue scroll bar to view all selected waveforms.

8.2 CHANGING A WAVEFORM'S PREFERENCES

To open a waveform's preferences menu, click on the gear icon  located in the bottom left corner of any displayed waveform.

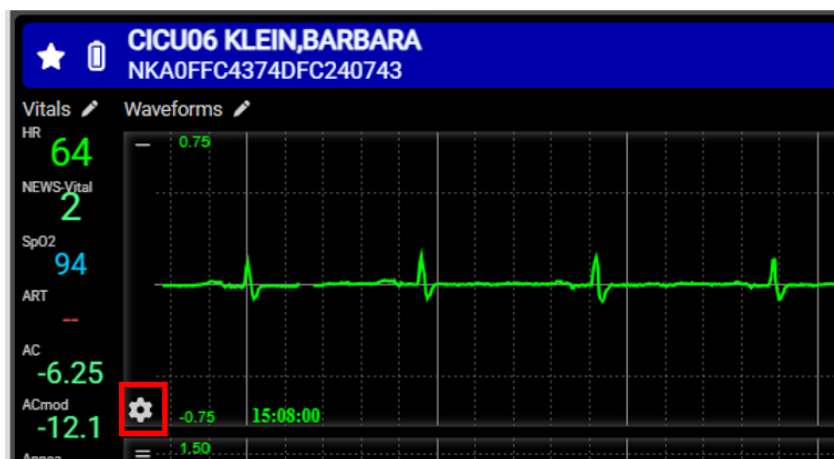


Figure: Waveform Preferences Gear Icon.

These preferences include different scaling or limit options and a grid toggle. The scaling options change the scale/amplitude of the waveform, the limit options change the y-axis range, and the grid toggle will display or hide the grid.

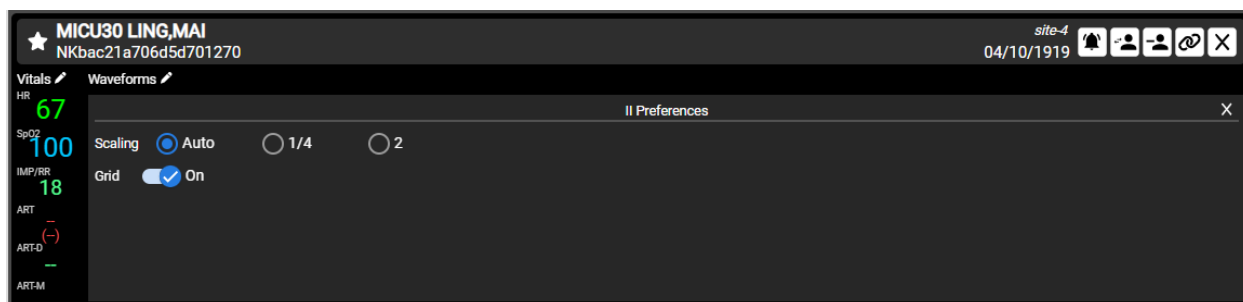


Figure: Waveform Scaling and Limit Preferences.

To change the waveform scaling to a different multiplier click on the corresponding radio button that denotes the scaling factor. Some waveforms will have choices for limits instead of the default scaling options. Change the waveform limits by clicking on the desired radio button. To alter the waveform limit options, contact the NetConnect Surveillance administrator. To toggle if the waveform grid is displayed or not, click on the switch.

To close the Waveform Preferences menu, click on the close (X) icon on the top right of the corresponding displayed waveform.

8.3 CHANGING THE VITAL SIGN ORDERING

To change how the vital signs are ordered in the Slide Out View, click on Vitals  (Pencil Icon) located at the top left of the Slide Out View area.

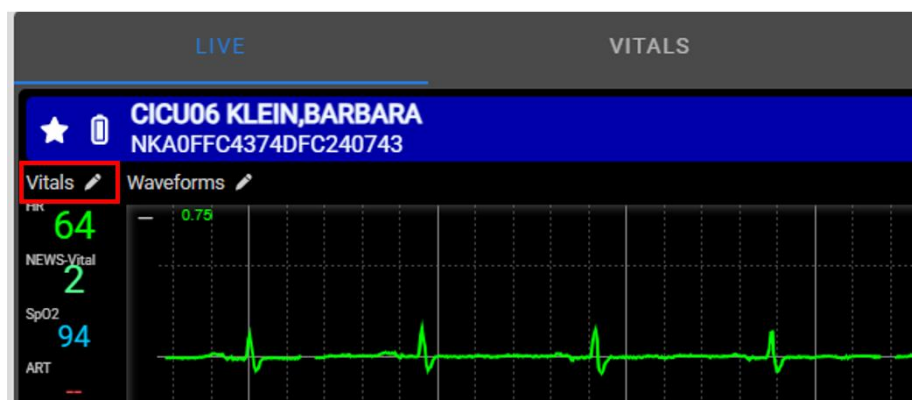


Figure: Vital Selector Sort Icon.

The Vital Selector menu contains all available vital signs for a patient. Clicking on unchecked vital signs will push those vital signs up to the top where the rest of the check-marked vital signs are listed. Unchecking the vital signs will make them sort back to alphabetical ordering.

Vital signs clicked first will take priority in terms of ordering. For example, if BIS was clicked first, Apnea second, and CVP third, then the ordering will be BIS, Apnea, and CVP from top to bottom, then all other unchecked vital signs.

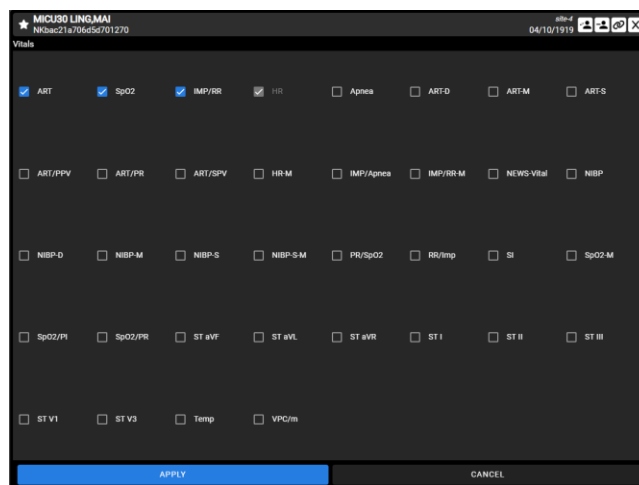


Figure: Vital Selector.

The size of the screen determines the number of vital signs that can be viewed. Not all checked vital signs may be viewed. If the number of vital signs checked exceeds the maximum number of viewable vital signs, first uncheck enough unwanted vital signs to be able to see all preferred vital signs.

To close the Vital Selector menu, click on the CANCEL button at the bottom of the Vital Selector menu.

To apply the changes made, click on the APPLY button. Any additions/removals made in the Vital Selector menu will be saved per bed. Closing the Slide Out View for the edited patient will show the same edits upon next open.

Note: The NetKonnnect Surveillance will still remember Slide Out View vital sign changes when user refreshes the screen only if user used the same computer/workstation and user login.

8.4 ADMIT/DISCHARGE/TRANSFER (ADT) – SLIDE OUT VIEW

The top right corner of the Slide Out View contains the Admit/Discharge/Transfer (ADT) buttons. The buttons will be visible for beds that are licensed for the ADT feature.

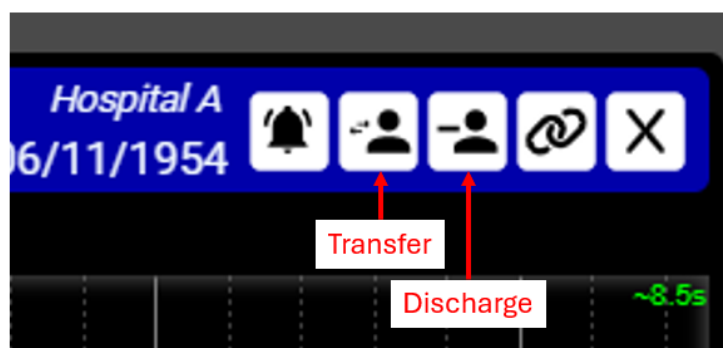


Figure: Transfer and Admit/Discharge in Slide Out View.

If a bed has an admitted patient, the Discharge icon  will be visible. If a bed does not have an admitted patient, the Admit icon  will be visible. For admit/discharge workflow, see The Settings Page -> Admit/Discharge Patients - From Bed Selection List below.

Click on Transfer icon  to discharge patient from existing bed and admit them to an empty bed available in the same facility.

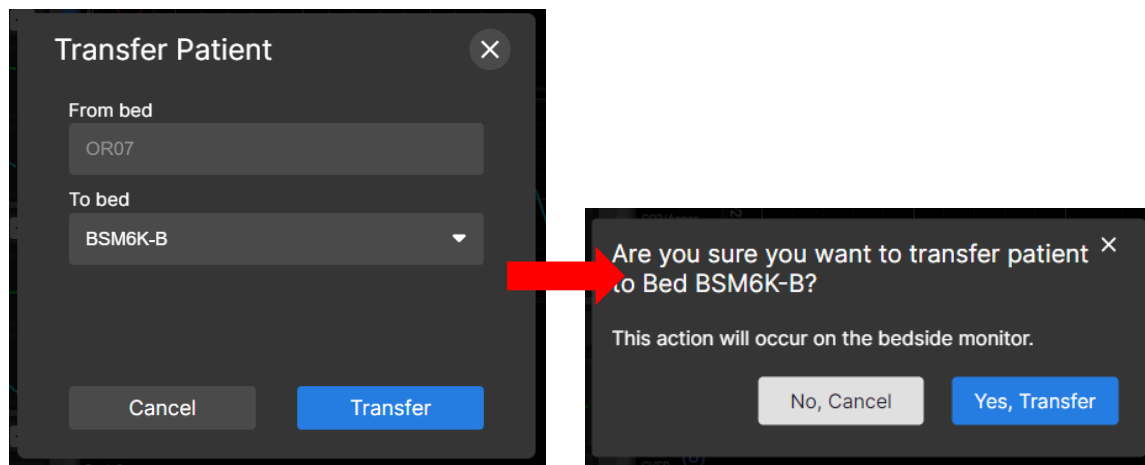


Figure: Transfer patient popup dialog.

8.5 VITAL HISTORY

To view vital history, also referred to as graphical trend data, click on the VITALS tab on the Slide Out View. The vital history plots will display the history of 4 default vitals selected in the Settings Configuration screen, unless the patient tile has been customized to show other vitals. By default, the vital history plots show the latest 1 hour of data.

The amount of data points displayed will be downsampled to reduce point overlap when viewing larger windows of time. An indicator "Downsampled" will be shown at the bottom right of the plots to indicate that the data points are downsampled.

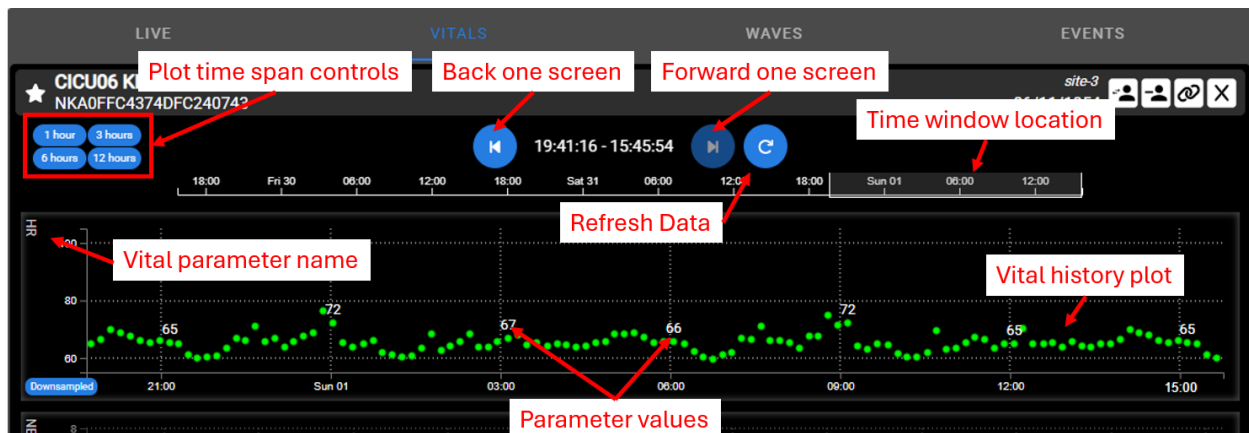


Figure: Vital History tab showing history of the 4 vitals selected for this patient.

The time window controls at the top of the vital history plots can be used to change the time window of the plotted data. The time window is indicated on a timeline at the top of the vital history plots. Slide the time window along the timeline to view vital history at different sections of time.

Select the 1, 3, 6, or 12 hour(s) buttons to change the time window size to the corresponding time value. Select the Back one Screen button to slide the time window by the time window size back in time. Select the Forward one Screen button to slide the time window by the time window size forward in time.

Select the Refresh Data button to load the latest vital history data and move the time window to the latest time.

Vital sign parameters for pressure that contain diastolic and systolic values will be combined and plotted together in one plot as two separate trends.

Hover over a data point on the vital sign plots to show the value and time at that point within a popup tooltip. In the tooltip, select the View Waveform(s) link to navigate to the waveform history centered at that time point.

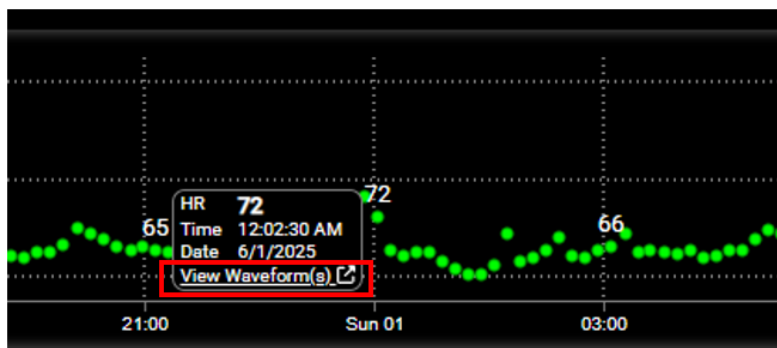


Figure: Vital History tooltip showing vital sign value and time information. Select View Waveform(s) to navigate to wave history.

8.6 WAVE HISTORY

To view wave history, click on the WAVE tab on the Slide Out View. The wave history plots will display the history of 2 default waves selected in the Settings Configuration screen. Additional waves can be added using the Wave Selector menu in the LIVE tab.

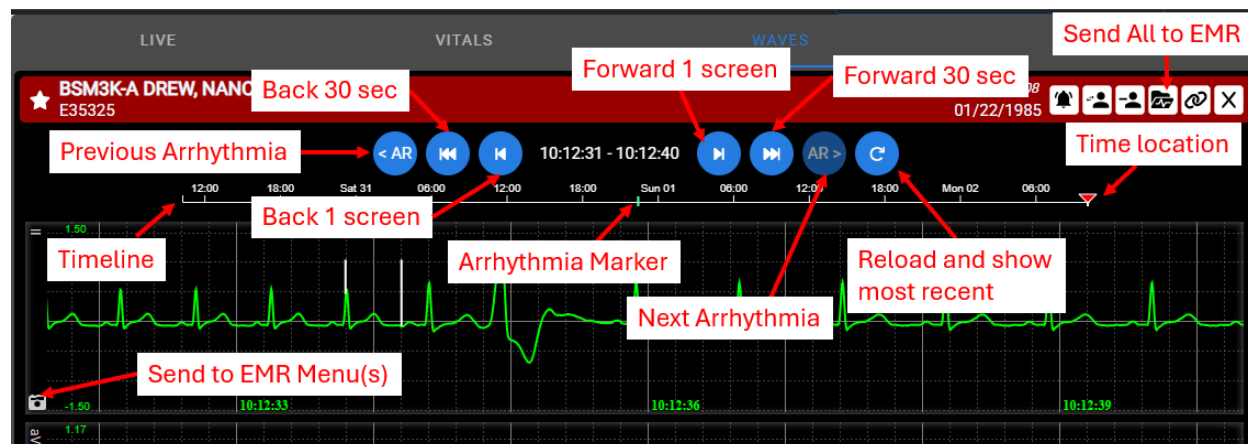


Figure: Wave History tab showing the waveform history of the waveforms selected for this patient.

Slide the time location indicator along the timeline at the top of the waveform history plots to see waveforms at different time points. The time range of the plotted waveforms is indicated above.

Select the Back 30 seconds button to shift back in time by 30 seconds. Select the Back 1 screen button to shift the time back by the window of time plotted for the waveforms. The window of time is based on the screen size of the monitor used to display.

Select the Forward 30 seconds button to shift forward in time by 30 seconds. Select the Forward 1 screen button to shift time forward by the window of time plotted for the waveforms.

Select the Refresh button to show the most recent waveform time segment.

If arrhythmia recall events are present in the available history, an arrhythmia marker will be displayed on the timeline (green line). Select the Previous Arrhythmia (< AR) button to shift time back to the previous arrhythmia recall event if one is present. Select the Next Arrhythmia (AR >) button to shift time forward to the next arrhythmia recall event if one is present.

8.7 SEND WAVEFORM SNIPPET TO EMR

To send a waveform snippet to an EMR, first click on the EMR Snapshot camera icon  for a certain waveform to open the Waveform Snippet menu. The EMR Snapshot camera icon will be present for beds that have the Send to EMR feature enabled.

The Send Waveform Snippet to EMR menu contains a Send to EMR paper airplane icon/button, a Measure Time stopwatch icon , a Measure Amplitude ruler icon , an Add Note chat bubble icon , an Undo icon  and a Cancel/Close icon .

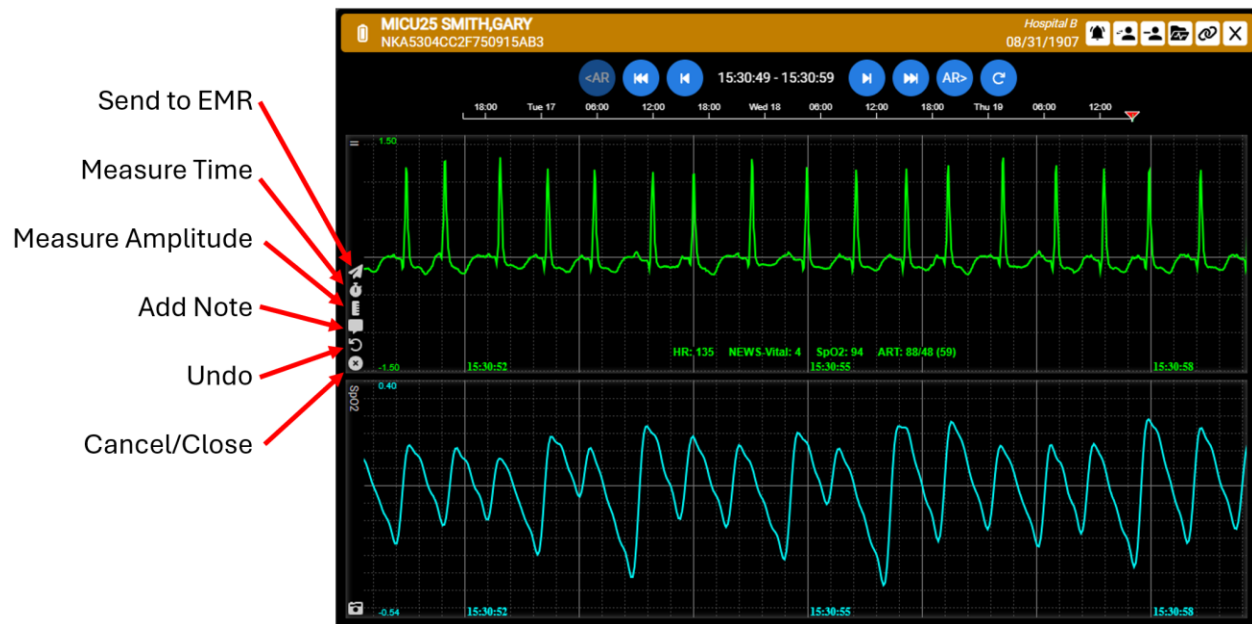


Figure: Send Waveform Snippet to EMR menu.

Clicking the Measure Time button will enable placement of a time measurement annotation. Click a location on the plot, move the mouse along the x-axis (along time) and click again to place a time measurement between the two click points. Clicking the Measure Amplitude button will enable placement of an amplitude measurement annotation. Click a location on the plot, move the mouse along the y-axis (amplitude) and click again to place an amplitude measurement between the two click points.

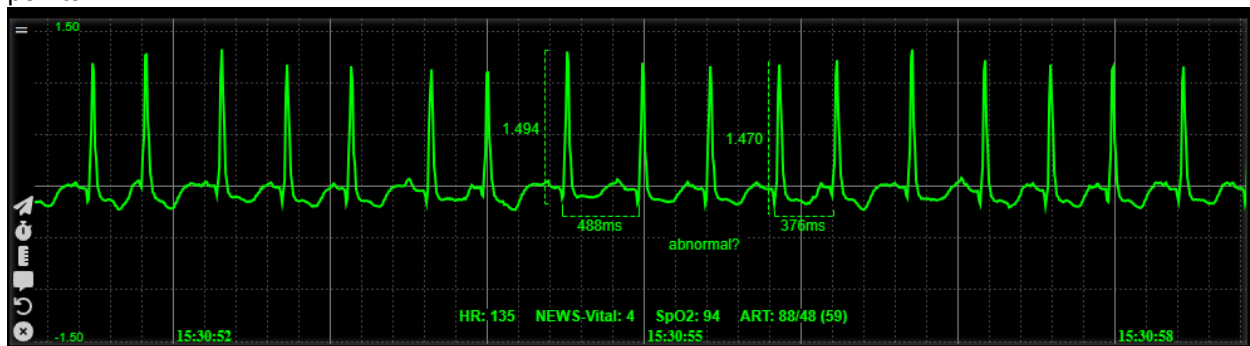


Figure: Add Measure Time, Amplitude, and Note Annotations to Waveform Snippets.

Clicking the Add Note button will enable placement of a note annotation. Click a location on the plot and a text input field will appear at the mouse cursor. Type the note annotation with a max of 50 characters, click at different location on the plot if note needs to be relocated, then hit Enter on the keyboard to place the note annotation.

Clicking the Undo button will revert the last annotation placement for time, amplitude or note. Clicking the cancel button will exit the Send Waveform Snippet to EMR menu and unfreeze the waveform to return to live view mode.

Clicking the Send to EMR button will open the Send Waveforms to EMR preview menu. If the preview is acceptable, click the Send to EMR button to send a request to an EMR interface.

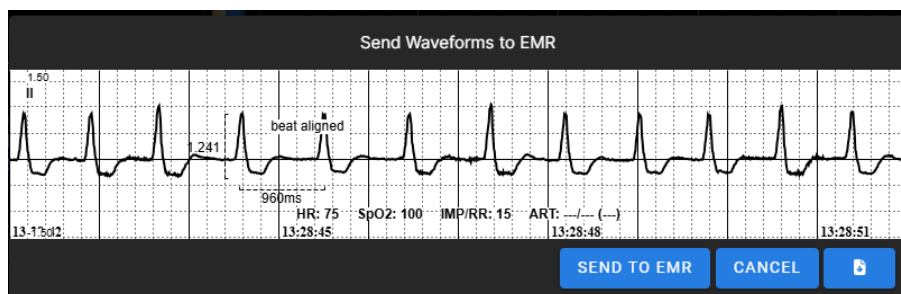


Figure: Send Waveforms to EMR preview menu.

To cancel sending the waveform to EMR, click the CANCEL button. The preview can also be downloaded as a PNG image by clicking the download icon button on the far right.

If NetKonnct Surveillance can send the waveform snippet/strip message, a popup message will appear at the bottom of the screen confirming the message was sent.

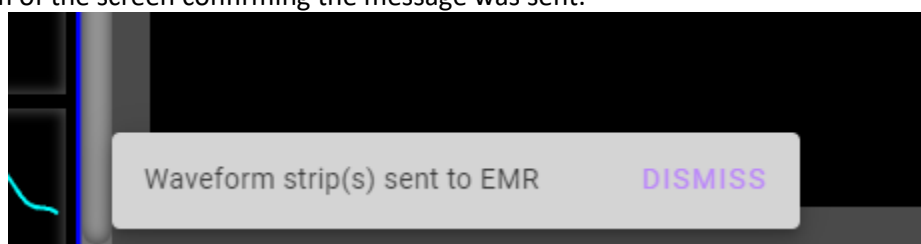


Figure: Waveform strip message sent to EMR.

8.8 SEND ALL WAVES TO EMR

All displayed waveforms in the WAVE HISTORY tab can also be sent by clicking on the Send All Waves to EMR button in the top right of the Slide Out View. The Send All Waves to EMR button will be visible if the bed is licensed for the Send to EMR feature.

Each wave will be sent as a single message and will contain the default vitals selected in the Settings Configuration screen. No caliper time or amplitude measurements, and no custom notes can be added when using the Send All Waves to EMR function.

A preview of the waveforms that will be sent to EMR will be displayed. If the waveform is acceptable, click on Send To EMR button. Otherwise, click Cancel to close the preview menu. The preview can also be saved as a PNG image by clicking on the download icon button on the far right.

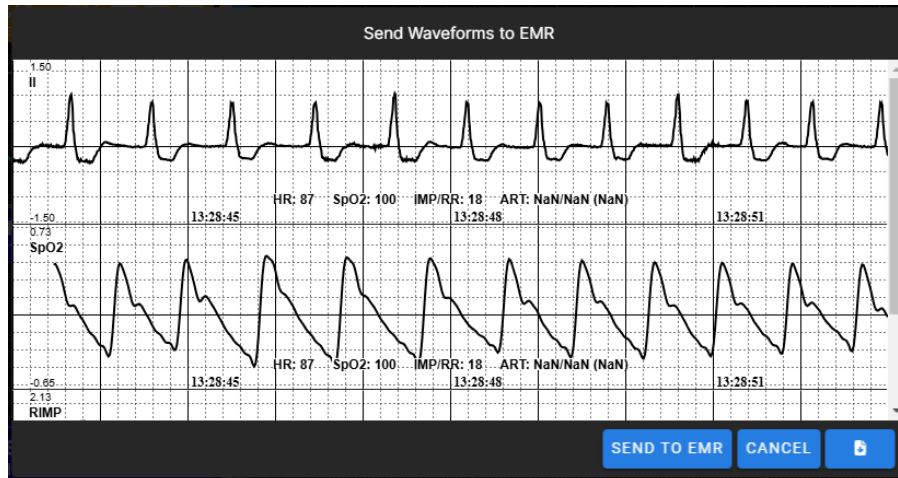


Figure: Clicking on the Send All Waves to EMR button will display the Send Waveforms to EMR preview menu.

8.9 EVENT HISTORY

To view event history, select the EVENTS tab on the Slide Out View. Event history includes vital sign, technical, and arrhythmia alarms, as well as arrhythmia recall events. Events are aggregations of an occurrence of an alarm, in which the time the event started and duration of the event in minutes will be listed. If an event exists within consecutive minutes, they will be aggregated to a single event.

Arrhythmia recall events are singular events with no duration, in which the bedside monitor has indicated a presence of an arrhythmia.

If more events exist than can fit on one Event list view, the list will be paginated, and the remaining events will be listed on additional pages that can be displayed using the page navigation at the bottom of the list.

Applied sorts and filters

Events filter

Priority	Name	Type	Time & Date	Duration (minutes)
●	Brady	Arrhythmia Recall	6/2/2025 10:24:52	
●	VPC	Arrhythmia Recall	6/2/2025 10:23:34	
●	VPC	Arrhythmia Recall	6/2/2025 10:23:29	
●	VFachy	Arrhythmia Recall	6/2/2025 10:23:24	
●	VFachy	Arrhythmia	6/2/2025 10:23:00	2
●	VPC Run	Arrhythmia	6/2/2025 10:23:00	1
●	Brady	Arrhythmia Recall	6/2/2025 10:22:21	
●	HR	Vital sign	6/2/2025 10:22:00	3
●	Brady	Arrhythmia	6/2/2025 10:22:00	3
●	VFib	Arrhythmia Recall	6/2/2025 10:21:17	

Page navigation

Items per page: 10 1-10 of 14498 < > 1 >>

Figure: Event history view, which may show vital sign, technical, arrhythmia alarms as well as arrhythmia recall events.

To sort the events list, select the Events filter button . Events can be sorted by priority, name, type or start time of event in ascending or descending order by selecting the Sort By dropdown and selecting an option.

Events can be filtered by priority, name, type or time by either selecting or inputting the preference. For time filtering, specify a start date and time, then select a duration from the start time from the Duration drop down menu. Select Reset Time to clear the time input options. Select Apply to apply the sort or filter options. Select Cancel to cancel all sort and filter options.

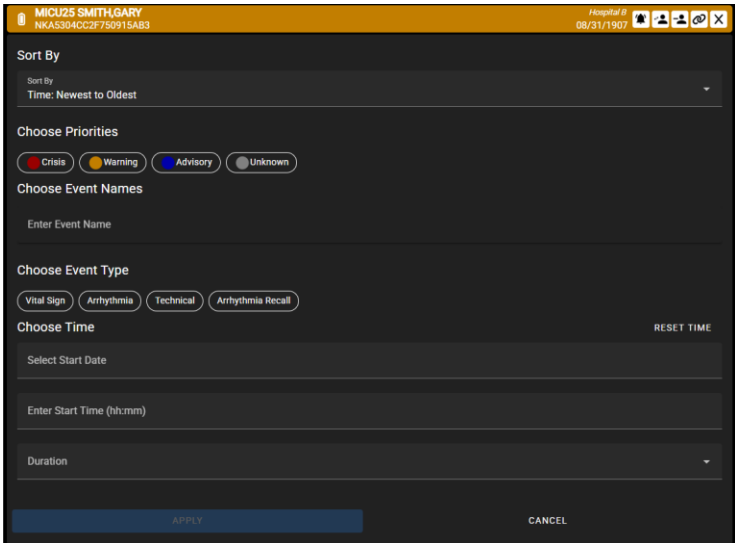
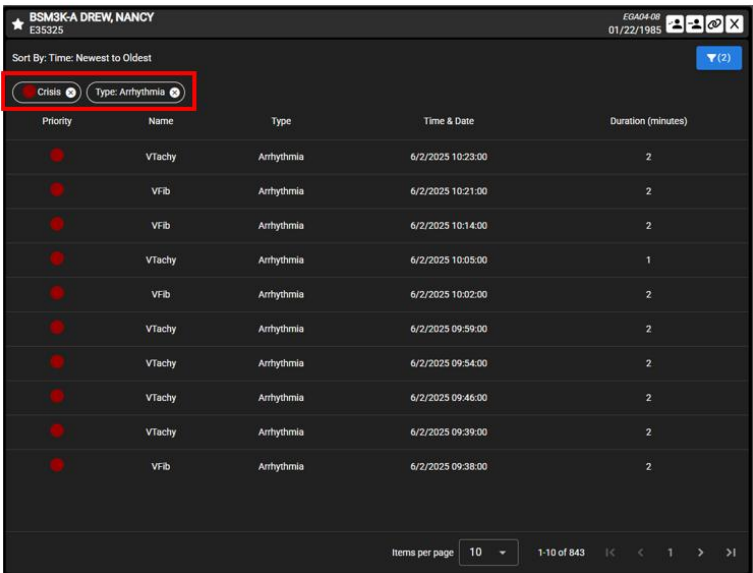


Figure: Event history filter menu. Events can be sorted and filtered by priority, name, type, or time.

Applied filters will be shown on the Event history view. To remove an applied filter, select the close button (X) of the filter.



Priority	Name	Type	Time & Date	Duration (minutes)
Crisis	VTachy	Arrhythmia	6/2/2025 10:23:00	2
Crisis	VFB	Arrhythmia	6/2/2025 10:21:00	2
Crisis	VFB	Arrhythmia	6/2/2025 10:14:00	2
Crisis	VTachy	Arrhythmia	6/2/2025 10:05:00	1
Crisis	VFB	Arrhythmia	6/2/2025 10:02:00	2
Crisis	VTachy	Arrhythmia	6/2/2025 09:59:00	2
Crisis	VTachy	Arrhythmia	6/2/2025 09:54:00	2
Crisis	VTachy	Arrhythmia	6/2/2025 09:46:00	2
Crisis	VTachy	Arrhythmia	6/2/2025 09:39:00	2
Crisis	VFB	Arrhythmia	6/2/2025 09:38:00	2

Figure: Applied filters to the event history list are displayed in Event history view. Select them to remove.

Select an event from the event history list to view the Event Details view. The Event Details view contains waveform and vital sign history centered at the event start time. The waveform(s) and four vital sign parameters viewable in the WAVE and VITALS history tabs are the parameters that will be shown in the event history details view.



Figure: Event history waveform and vital sign details view.

The Event Details view contains a Send to EMR button, if enabled, that can be used to send an image of the Event Details view with an event details header as shown below. Selecting the Send to EMR button will open the Send to EMR preview menu that is similar to the view created from Wave history tab.

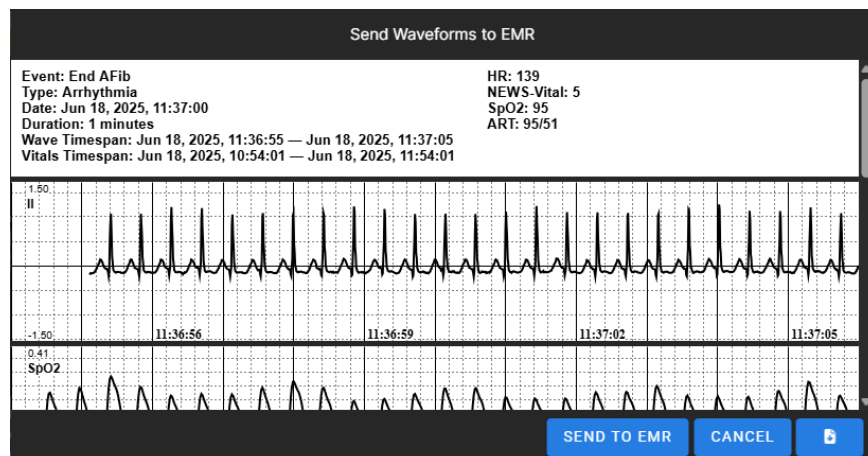


Figure. Preview of Event Details view image to send to EMR.

8.10 CLOSING THE SLIDE OUT VIEW

To close the Slide Out View, click on the close X icon in the top right corner of the Slide Out view. This will display the default All Patients Page.

9 THE SETTINGS PAGE

The Settings Page allows users to update certain behaviors and UI elements of the NetKconnect Surveillance website. It is split into three sections: Configuration, Bed Selections, and About. The Configuration section contains general UI settings and default waveforms and vital signs. The Bed Selections section is where users can add/remove patient tiles that are displayed in the All Patients page. The About section displays NetKconnect Surveillance's product information and a link to the Nihon Kohden Digital Health Solution (NKDHS) privacy policy.

To navigate to the Settings page, click on the blue gear icon on the top right of the header. This settings icon is present while on the All Patients page.

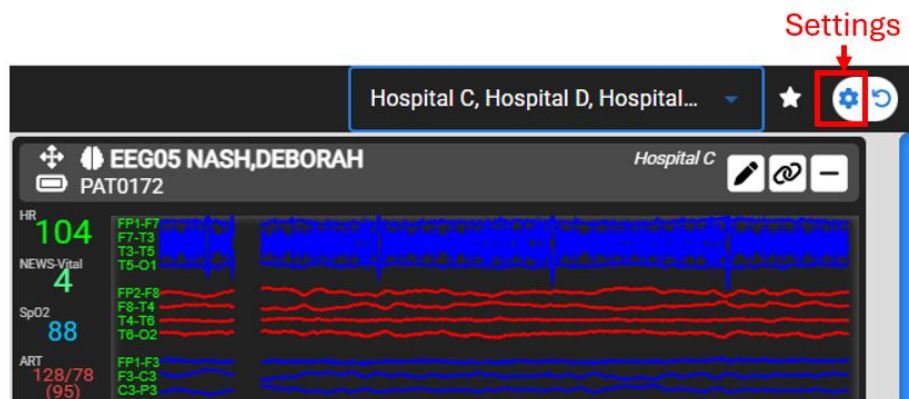


Figure: Navigating to the Settings Page from the All Patients page.

The Settings Page should initially start in the Bed Selections list, as shown below.

9.1 ADDING/REMOVING A PATIENT

Click on the Bed Selections tab on the Settings Page. The Bed Selections tab displays a list of beds and their corresponding patient, site, and status information. The list contains the following columns:

Display: Shows an eye icon for any selected beds. Header contains a count of selected beds out of the 48 bed max.

Bed: The bed name of each bed as it appears on the bedside monitor itself or through a particular data feed.

Patient Name: The name of the patient admitted to the bed.

Site: The site name of the bed based on NetKonnnect installation configuration.

Inactive: Displays an unplugged icon if no data is received from the device for some time.

Admit / Discharge: Displays admit icon for beds that have no patient admission, and the discharge icon for beds that do have a patient admission.

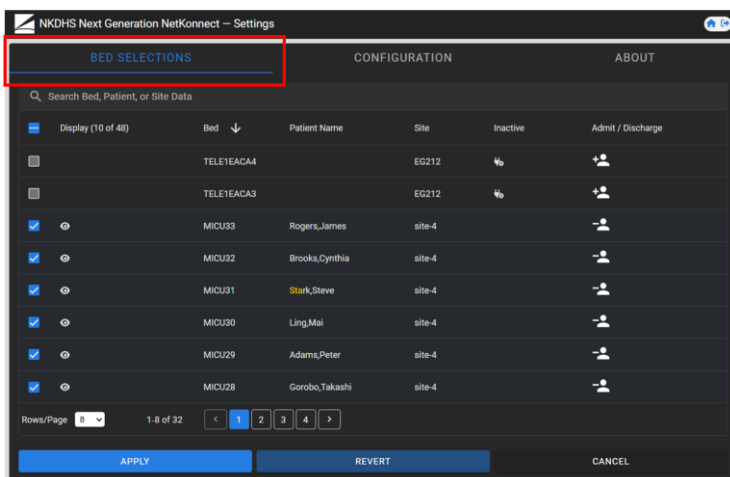


Figure: Bed Selections Screen.

Displayed beds are check marked, have the eye icon under the display column, and have a dark blue background. These beds will appear as patient tiles in the All Patients page. Hidden beds are unchecked, do not have the eye icon under the display column, and have a black background.

To add a patient, click on the associated empty check box on the left-most column. To remove a patient, click on the associated check marked box.

Note: At least one bed must be selected, and a maximum of 48 beds can be selected.

Use the left-most column header checkmark , minus-sign , or empty box icon to automatically select or de-select all available beds.

There are three different header checkbox states to toggle:



Empty: No beds are selected. Note that there will be a pop-up notification at the bottom stating “No Bed Selected.” The APPLY button is also disabled since there must be at least one patient tile displayed in the All Patients page.



Minus Sign: Some beds are selected and other beds are not. Click to select all.

Checkmark: All beds (max 48) are selected and will be displayed if user clicks on the APPLY button. If user exceeds 48 beds, the APPLY button will be disabled until 48 or less beds are selected. Click to deselect all.

Click on the APPLY button to save changes and navigate back to All Patients page. Click on the REVERT button to set selection back to previous saved. To cancel and exit out of the Settings Page, click on the CANCEL button.

9.2 SEARCHING/ORDERING THE PATIENTS

In the Bed Selections section, user is able to search patients by utilizing the Bed Selections search bar. Click on the search bar with the message “Search Bed, Patient, or Site Data,” and start typing. The search filter works for bed name, patient name, or site.

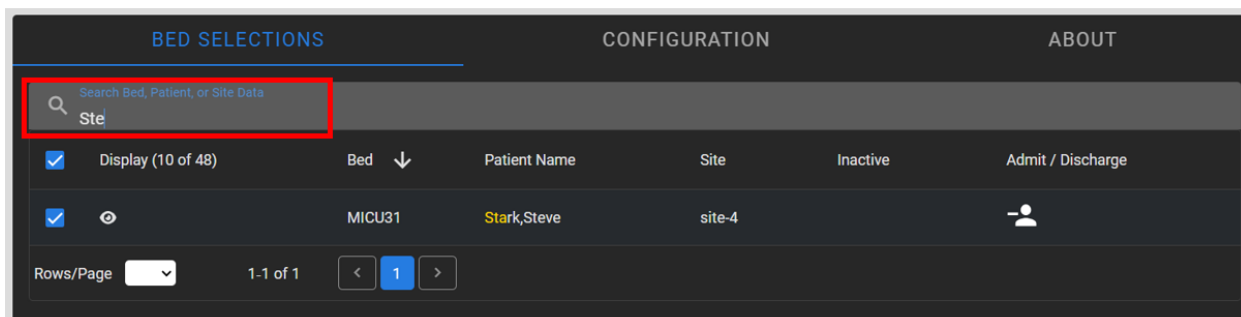


Figure: Bed Selections Search Bar Example.

To sort the bed list, click on the desired column header: Display, Bed, Patient Name, Site, Inactive, or Admit/Discharge. This will sort the beds by that specific column in ascending order. To sort by descending order, click on the same column header again. Toggle ascending and descending order by clicking on the corresponding column header.

Note: this ordering only affects the Bed Selections section and does not affect the ordering of the All Patients page.

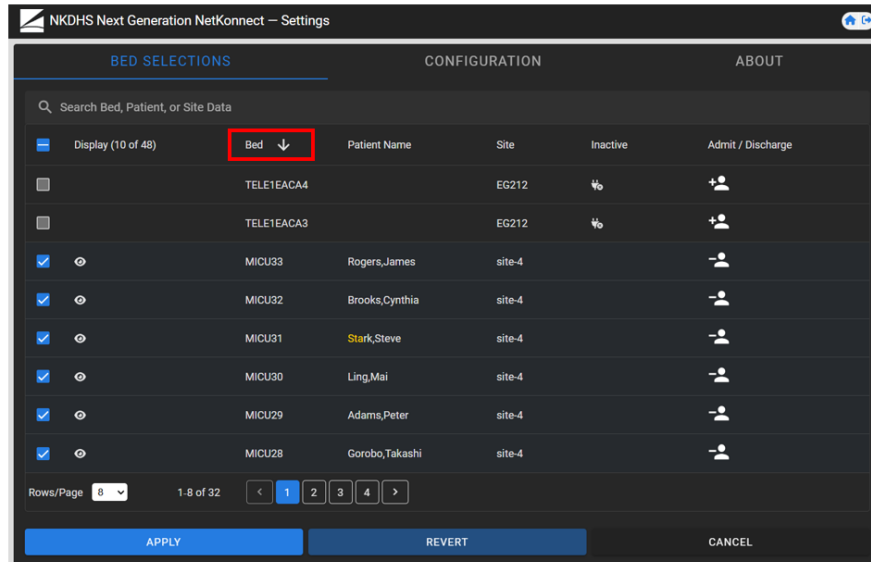


Figure: Bed Selections Ordering Example.

9.3 ADMIT/DISCHARGE PATIENTS – FROM BED SELECTION LIST

A bed with an admitted patient will have patient name displayed (if available on monitor) and an Admit icon  in the Admit/Discharge column. A bed with no patient admission will have a Discharge icon  in the Admit/Discharge column. The Admit or Discharge Patient icons will be visible if the bed is licensed for the ADT feature.

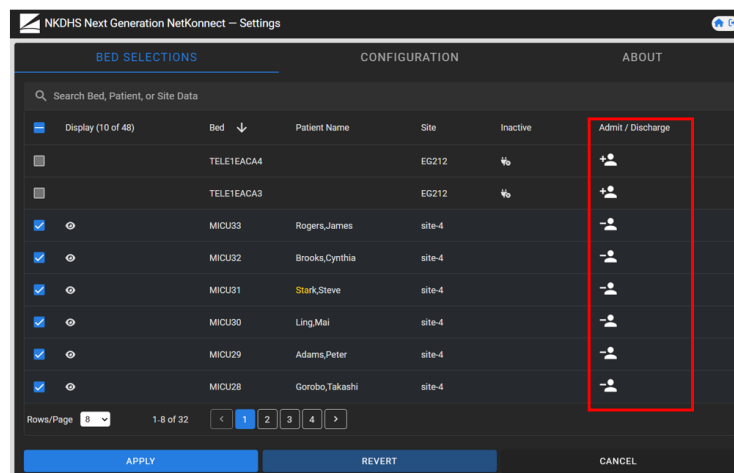


Figure: Beds with Admitted and Discharged patients and column indicator.

If a bed has no admitted patient, click on the Admit Patient Icon to open the Admit Patient dialog. Enter patient name, ID (i.e. MRN), and date of birth and click Admit, then confirm in next dialog to admit the patient. Patient information will appear on the bedside monitor, and the change will propagate to NetKonnnect Surveillance.

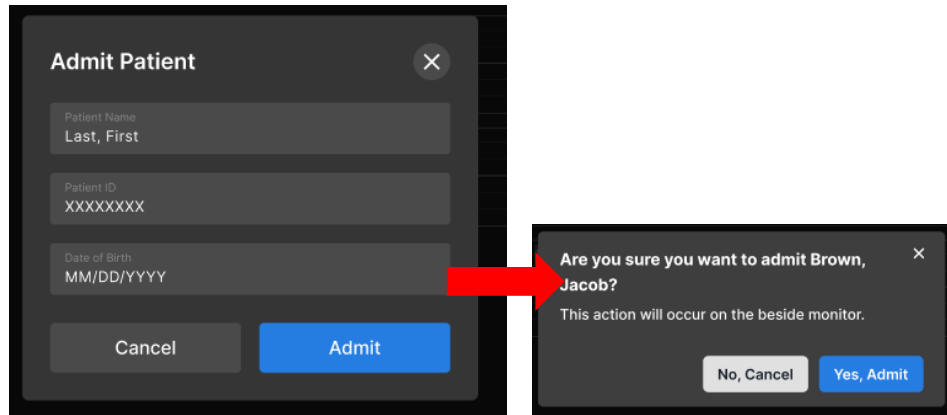


Figure: Admit patient popup dialog.

If a bed has an admitted patient, click on the Discharge Patient Icon to open the Discharge Patient dialog. Verify the patient information that will be removed from the bedside monitor before clicking Discharge and confirming in the next dialog.

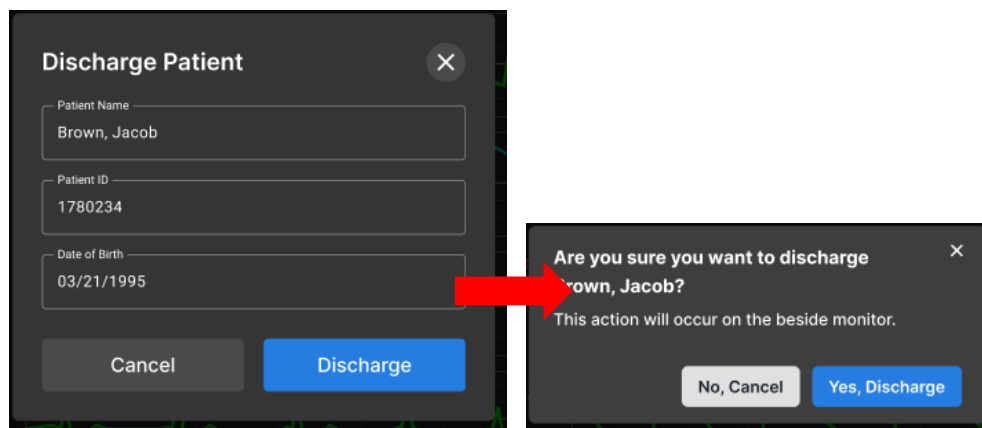


Figure: Discharge patient popup dialog.

9.4 BED SELECTIONS LIST PAGINATION

The Bed Selections list contains a page selection option if the number of patients available to select exceeds the set number of rows in the bed selection list table. To select a different page, select either the page number or navigate the pages using the arrow buttons. The number of rows to display in the Bed Selection list can also be changed using the Rows/Page dropdown selector.

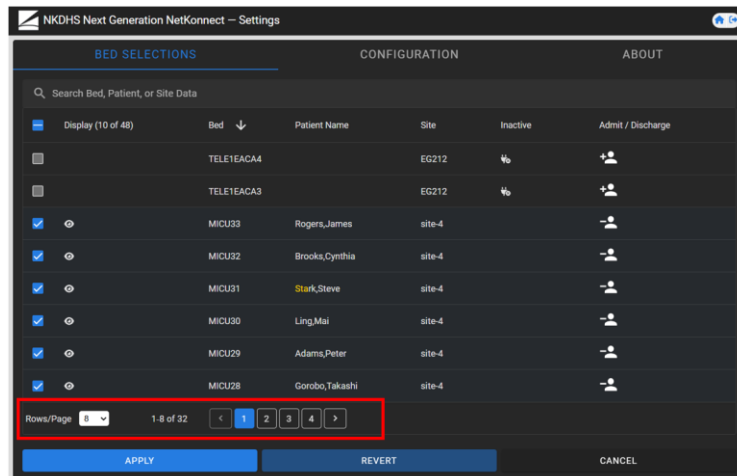


Figure: Bed Selection list number of rows to display and page selection.

9.5 SHOW/HIDE PATIENT NAMES

In the Configuration settings, a user has the option of either showing or hiding patient names in the All Patients page. A user can do this by clicking on the “Patient Names” switch.

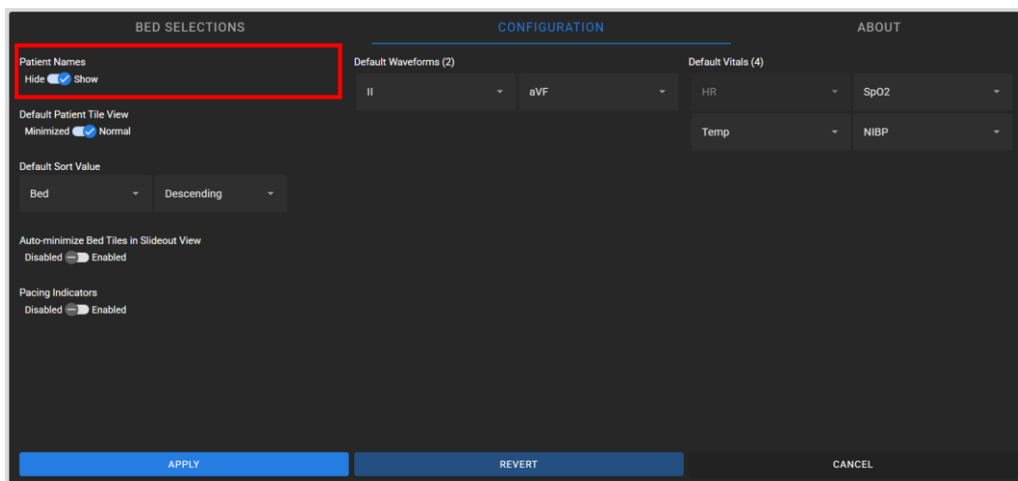


Figure: Patient Names Setting Show/Hide.

9.6 CHANGE DEFAULT PATIENT TILE VIEW

In the Configuration settings, to change the default patient tile view between Minimized and Normal click on the Patient Names slider. In Minimized view, the All Patients Page will display all patient tiles at first as minimized, after selection from the Bed Selection list. It will also minimize all existing patient tiles in the All Patient Page after clicking APPLY. In Normal view, the patient tiles will appear expanded to show waveforms and all 4 vital signs in the All Patients Page by default.

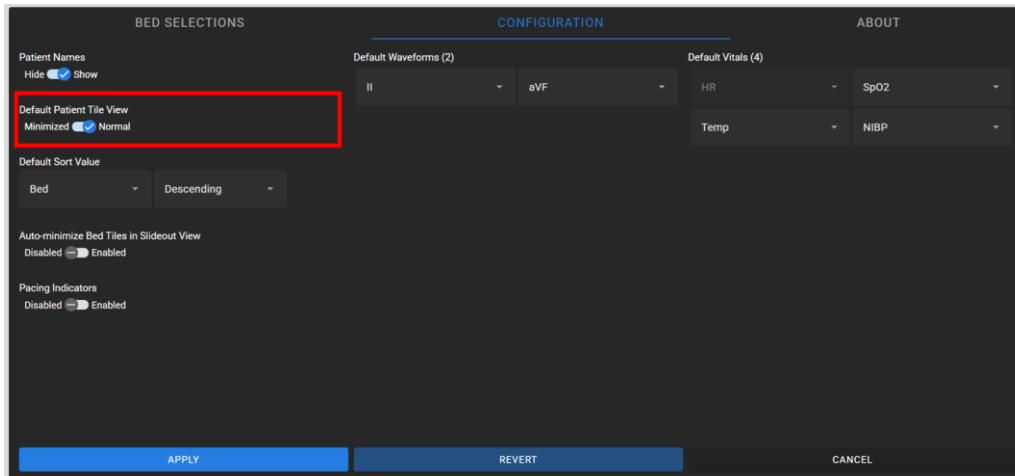


Figure: Default Patient Tile View.

9.7 CHANGE DEFAULT SORT PARAMETER AND ORDER

In the Configuration settings, to change the sort parameter and value of patient tiles in the All Patients page click on the Default Sort Parameter slider. The patient tiles can be sorted by Patient, Bed, or Site name, and in either ascending or descending order. The sort parameter and order will be used in conjunction with patient tiles that have been locked by the user into a specific position within the ordered list.

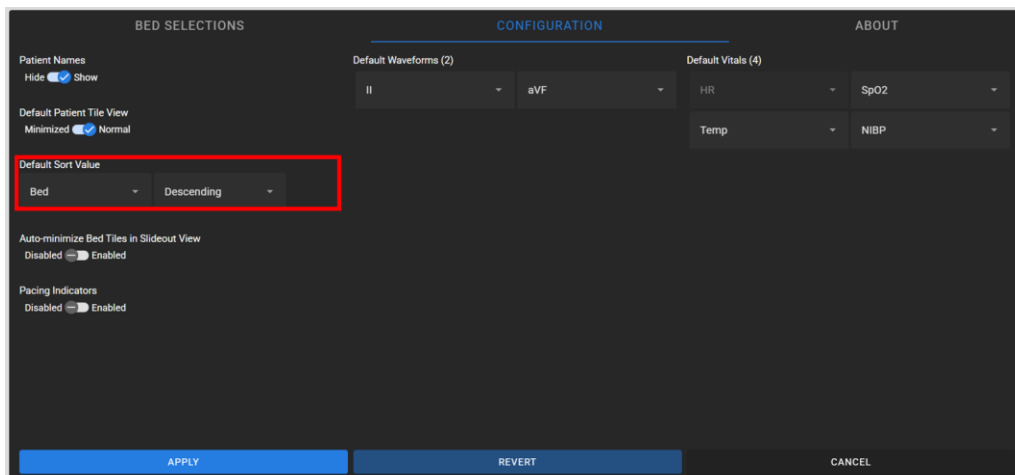


Figure: Default Sort Parameter and Order.

9.8 AUTO-MINIMIZE BED TILE IN SLIDE OUT VIEW

In the Configuration settings, to automatically minimize the patient tiles in the All Patients Page when opening the Slide out view by selecting a patient tile, enable the Auto-minimize Bed Tiles in Slide out View slider. If disabled, patient tiles will remain as normal (maximized) when opening the Slide out view.

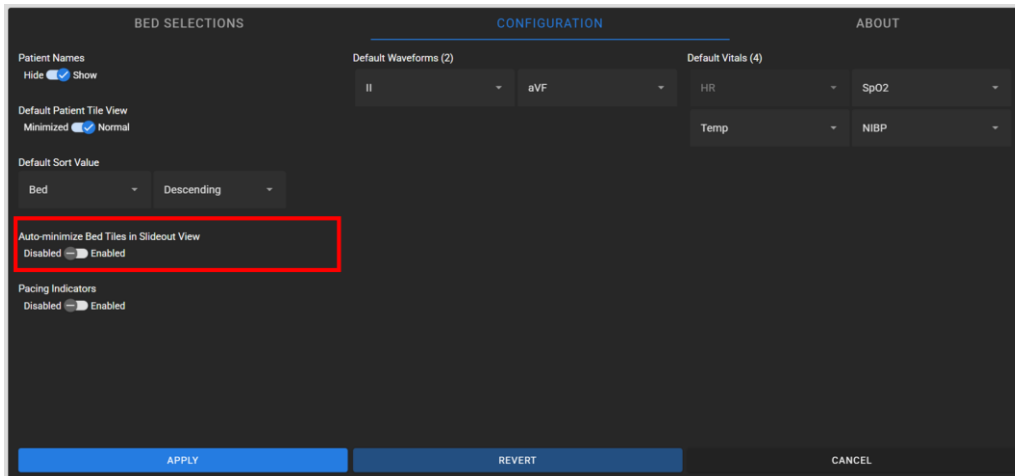


Figure: Auto-minimize Bed Tiles in Slide out view.

9.9 SHOW/HIDE PACING MARKERS ON EKG

In the Configuration settings, to show or hide pacing markers on EKG waveforms in live and history plots toggle the Show Pacing Markers slider. Pacing will be shown if available in waveform data feed for patient/bed.

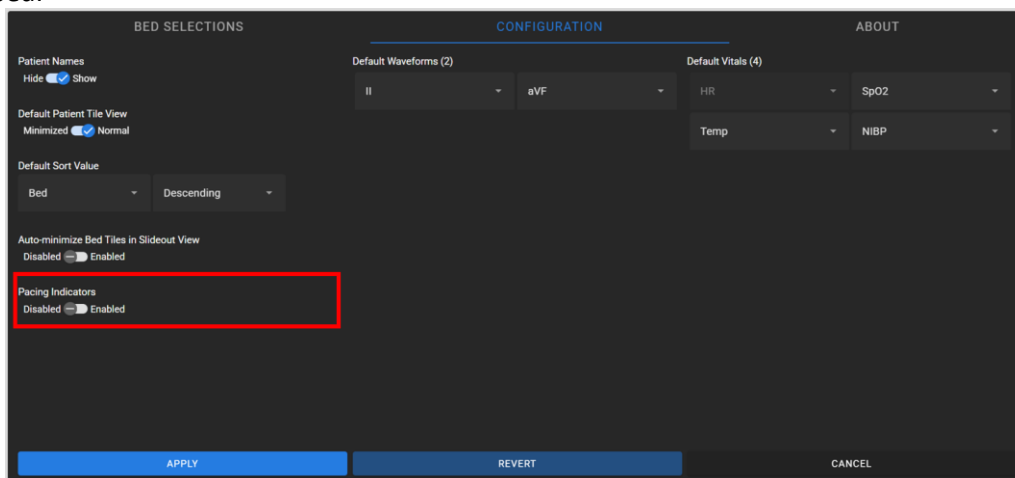


Figure: Pacing indicators for EKG waveforms.

If enabled, pacing indicators are displayed on EKG waveforms in the Slide out view live and historical wave views.



Figure. Pacing markers on EKG waveforms

9.10 CHANGE THE DEFAULT WAVEFORMS

In the Configuration settings, change the default waveforms the patient tiles display. To add a default waveform, click on one of the dropdown selectors and select the desired waveform. *Note: There is a maximum of 2 default waveforms to be displayed on a patient tile in the All Patients Page.*

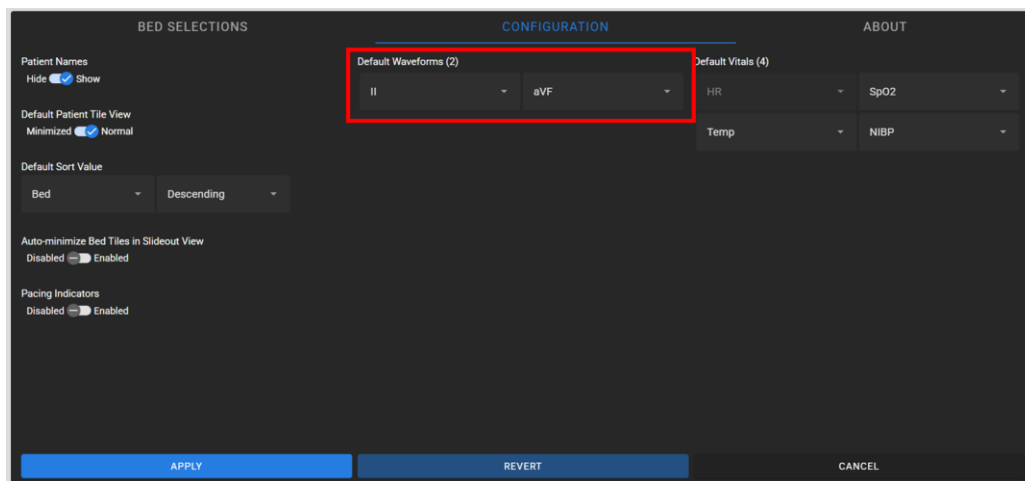


Figure: Default Waveforms Setting.

9.11 CHANGE THE DEFAULT VITAL SIGNS

In the Configuration settings, change the default vital signs the patient tiles display. To add a default vital sign, click on one of the dropdown boxes (except for HR) and select a new option.

There is a maximum of 4 default vital signs and the HR vital sign must be displayed at all times (this is the reason why the HR vital dropdown selector is disabled).

Note: In the Slide out view's Vital Sign Selector and the patient tile, the vital sign parameters to be displayed for a specific user can be customized.

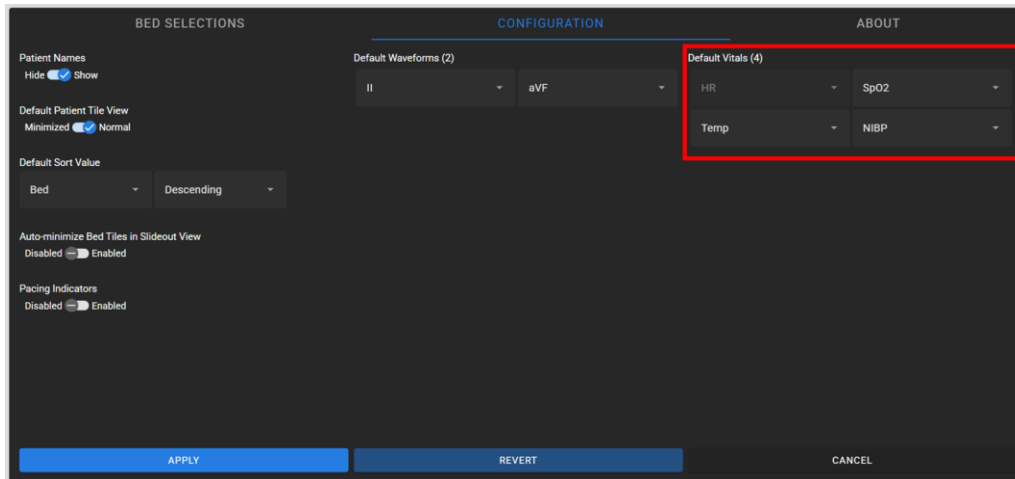


Figure: Default Vitals Setting.

To apply the changes, click on the APPLY button on the bottom of the page. To undo changes and go back to the previous settings, click on the REVERT button. To cancel and exit out of the Settings Page, click on the CANCEL button.

9.12 ABOUT SECTION

The About section contains product information about NetKonnnect Surveillance, such as the product name, part number, software revision number, product Unique Device Identifier (UDI), and a link to the NKDHS privacy policy page.

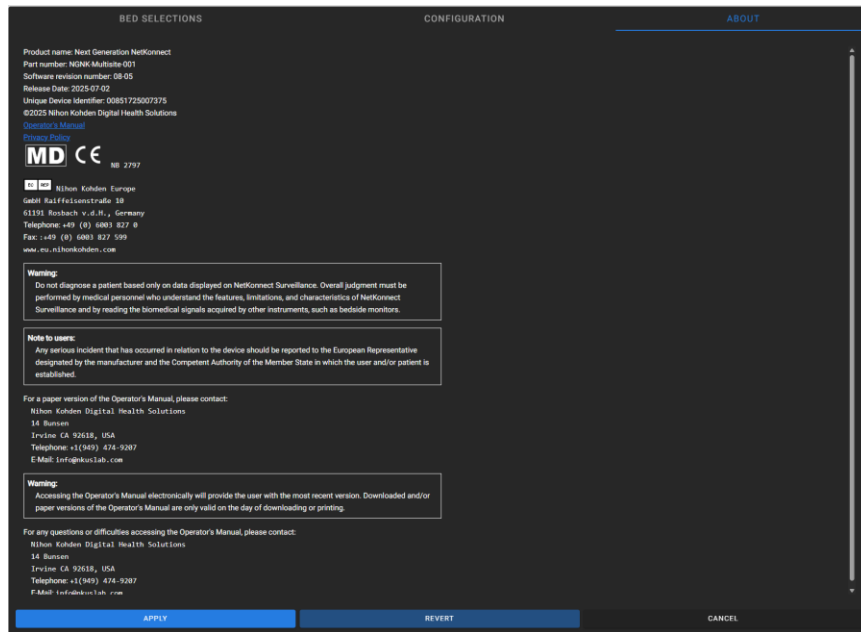


Figure: Product Info Screen.

The privacy policy page explains what personal information that NetKonnnect Surveillance collects, how that information is used, how that information is protected, and choices regarding personal information. This information is presented in a Q&A format. The privacy policy page also provides NKDHS contact information.

9.13 NAVIGATING TO THE ALL PATIENTS PAGE

To navigate to the All Patients page from the Settings page, click on the website title “NKDHS Next Generation NetKonnnect - Settings” or the NKDHS icon left to the title or the Home icon on the top right of the header. Clicking on the APPLY or Cancel button will also navigate back to the All Patients page.

10 MOBILE USER INTERFACE

NetKonnnect Surveillance is a responsive web application that modifies the user interface dependent on the available screen size. On a mobile device, some of the NetKonnnect SurveillanceS screens will be resized to adapt to screen size and touch actions. This section details the views that will appear different on a mobile device.

The features available on mobile devices may be limited depending on the configuration of the installation.

10.1 ALL PATIENTS PAGE – MOBILE

The All Patients Page on a mobile device displays the patient tiles in a single column. The patient tile list view is scrollable by swiping up and down in the patient tile view area. Navigation menus at the bottom of the screen can be used to navigate to the starred patients or the settings screen. There is no patient tile minimization capability on a mobile device.

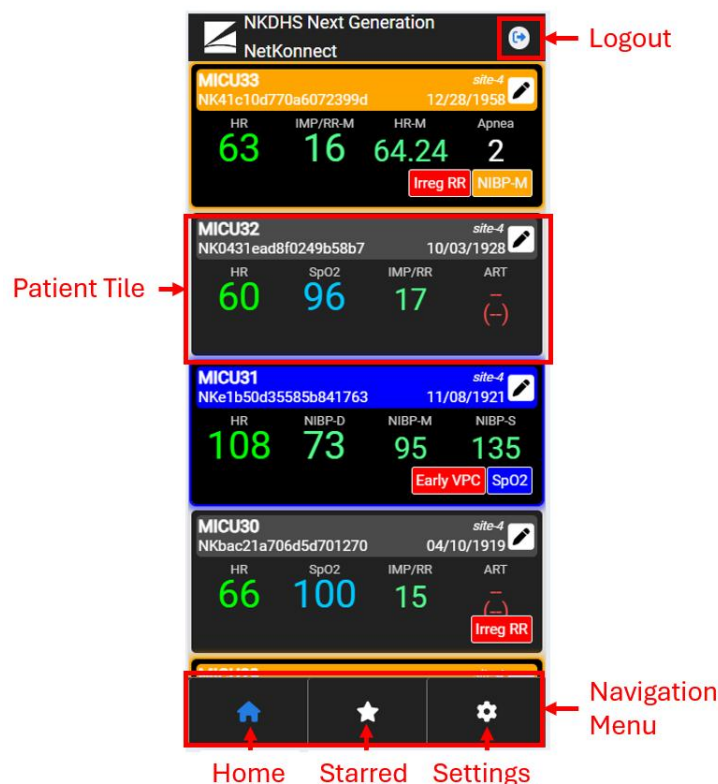


Figure: All Patients Page / Home on a mobile device.

10.2 SINGLE PATIENT VIEW – MOBILE

On a mobile device, the Slide Out View is replaced with a Single Patient View. The Single Patient View only displays the selected patient, and no additional patient tiles will be displayed. The Single Patient View will have the same features as the Slide Out View, unless the installation configuration specifies a reduced feature list (i.e. no silencing and ADT functionality) on mobile devices.

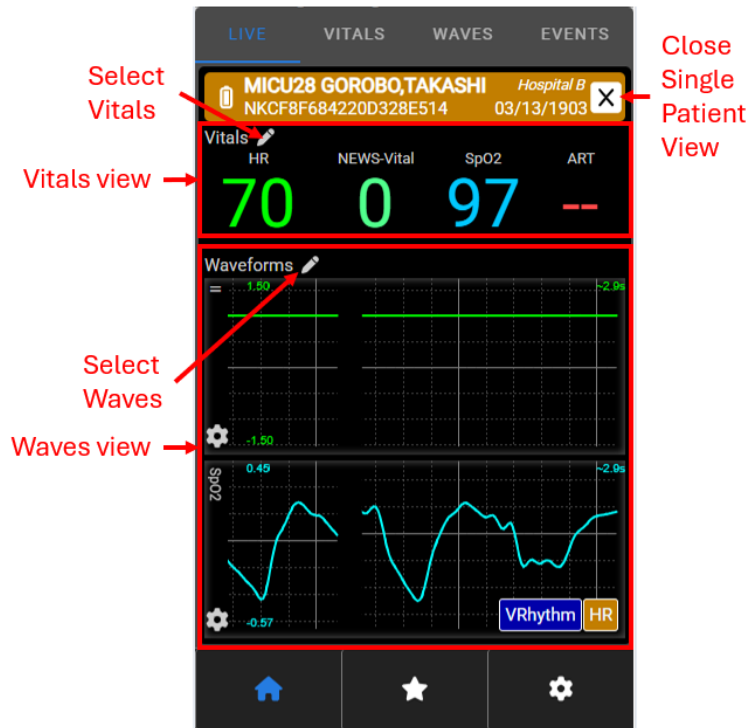


Figure: Single Patient View on a mobile device.

The Single Patient View will display only 4 vital sign parameters. To change the vital sign parameters displayed, press on the Vitals  (Pencil Icon) button area to view the vital sign parameter dropdown selectors. The Single Patient View can display all available waveforms in a scroll view area, in which typically only 2 waveforms are in view at one time. To change the waveforms displayed, press on the Waveforms  buttons area to view the waveforms parameter check box selectors.

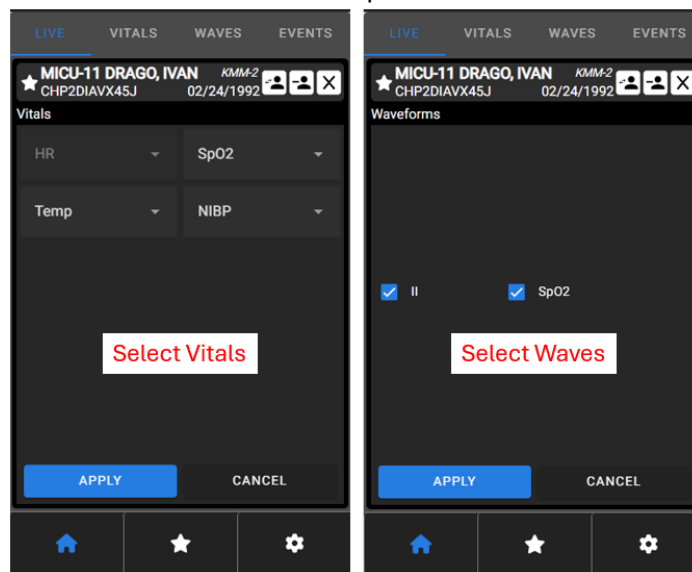


Figure: Vital sign and waveform parameter selection views on a mobile device.

To close the vital sign or waveform parameter selection views, press on the close button (✕). The exit out of the Single Patient View, press on the similar close button as well.

The Event list on a mobile device will be displayed as a continuous card list instead of a paginated table view. Any applied event filters will not be displayed on top of the list, but the number of filters applied displayed in the filter button will increment with each applied filter.

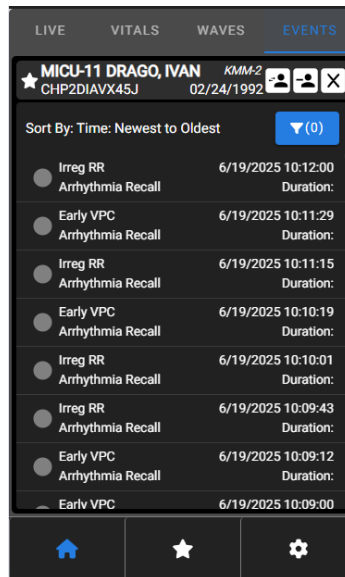


Figure: Events list view on a mobile device.

10.3 SETTINGS PAGE — MOBILE

The Settings Page on mobile changes to a simplified view for the Bed Selections list. Some of the additional information, such as bed name, patient name, facility/site ID and patient DOB, presented in the full (desktop) user interface is condensed to a single card per patient. A user can search for a specific user and select one or multiple patients similar to the full user interface.

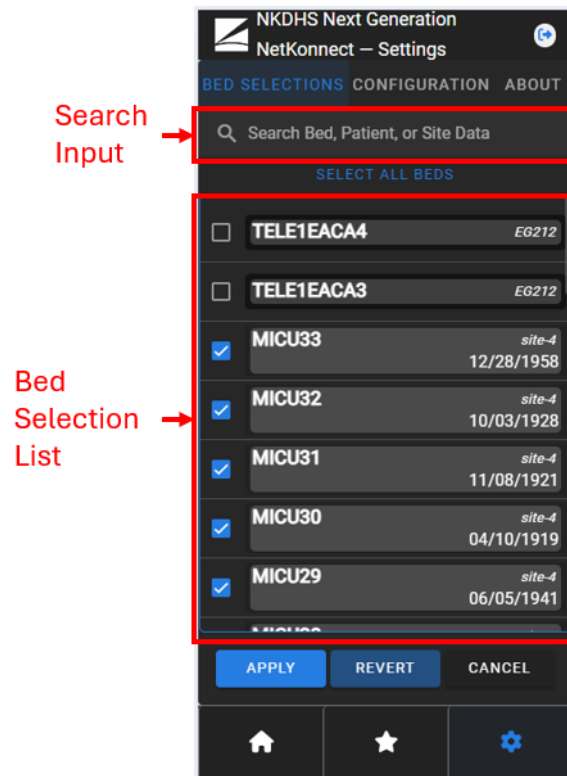


Figure: Settings Page Bed Selections View on a mobile device.

The Configuration View of the Settings Page on mobile contains all of the same configuration options as the desktop view except for the Default Patient Tile View and Auto-minimize in Slide out option, since the minimized patient tile capability is not available on mobile devices.

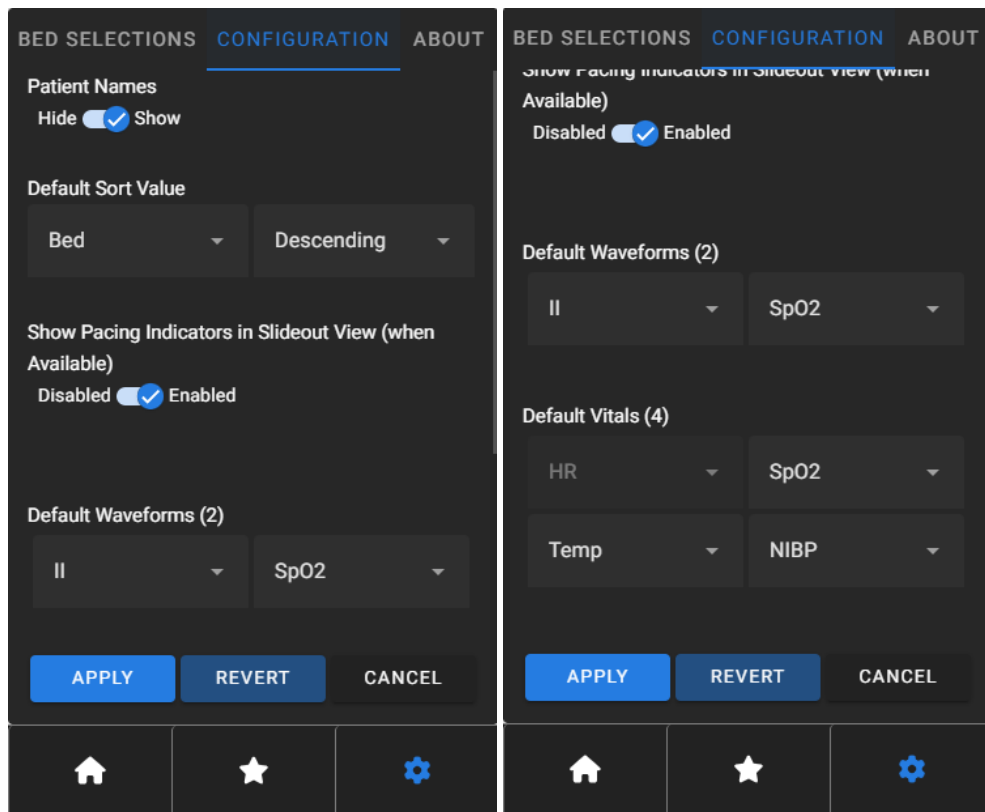


Figure: Settings Page Configuration View showing available options on mobile device.

11 SPECIALIZED DEVICE VIEWS

NGNK may display a specialized view for certain patient tiles, Slide Out and Single Patient page depending on the device type providing the data. For instance, an EEG device providing data with a preconfigured set of waveform parameter names will display the EEG montage waveform view.

11.1 EEG MONTAGE VIEW

A device sending EEG data can be configured to show the specialized EEG Double Banana montage view.

A patient tile associated with a device configured for the EEG view will display a brain icon  in the header. The view displays a differential pair of neighboring electrodes in either the left, right, or central part of the brain. If available, the view will also contain a plot of the reference EKG electrode in the Slide Out view and Single Patient page. Waveforms cannot be customized or edited in this view. Wave history is displayed with the standard wave display, with each wave shown in a separate waveform plot.

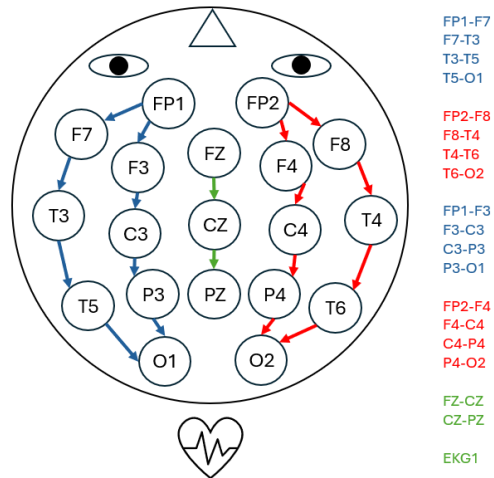


Figure: EEG Double Banana montage view electrode configuration.

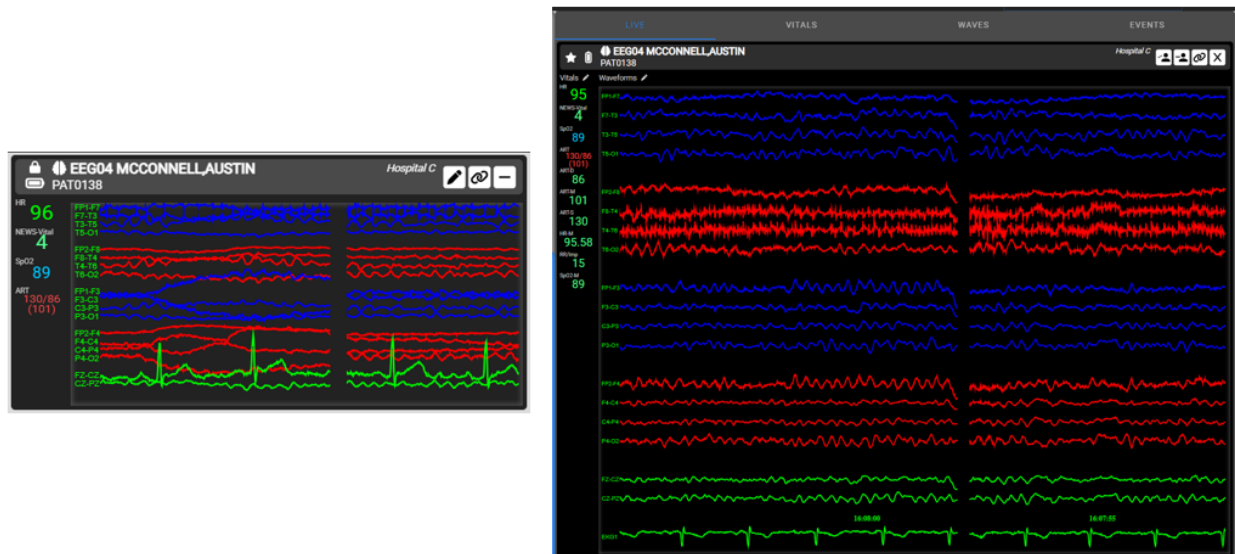


Figure: EEG Double Banana montage view in NetKonnnect Surveillance.

12 TROUBLESHOOTING

Problem	Solution
Waveforms are frozen and not updating	The web browser has put the page to sleep, please click on any patient to wake the page and view live waveforms again.
Server Down message on the home page, not receiving any data	Contact administrator.
Waveforms show Comm Loss on all or most patient tiles	Refresh browser. Contact administrator if issue persists.
Vital signs on all or most patient tiles show "--"	Refresh browser. Contact administrator if issue persists.
No patient tiles visible	Navigate to Bed Selection list in Settings, review selected patients and click/press the APPLY button. If no beds available to select from, contact administrator if issue persists.
Silence alarm icon not appearing on an alarming bed	Contact administrator to check if bed is licensed for Alarm Silence feature.
Admit/Discharge/Transfer icon not appearing on slide out view for bed	Contact administrator to check if bed is licensed for ADT.
Send to EMR or Send All Waves to EMR icon not appearing in Slide Out view WAVE HISTORY tab	Contact administrator to check if bed is licensed for Send to EMR.
No vital sign history is appearing for a patient	If a patient has been admitted to a bed for more than 1 minute, and no vital history is displayed, contact administrator to troubleshoot connection between NetKonnnect Surveillance and Digital Health Platform Data Cache
No wave history is appearing for a patient	Contact administrator to troubleshoot connection between NetKonnnect Surveillance and Digital Health Platform Data Cache
Admit/Discharge/Transfer patient request did not add patient info to the patient/bed tile	Data from the bedside monitor must arrive on NetKonnnect Surveillance to view the latest patient info and bed admission status. If vital sign and waveform data are arriving but patient info has not been set, contact administrator to troubleshoot connection between NetKonnnect Surveillance and HL7 interface for the site belonging to that bed.

13 SPECIFICATION

13.1 BROWSER

Minimum Chrome Internet Browser Version 114.

13.2 COMPUTER

Minimum 8GB of RAM and 4 core processor.

13.3 MONITOR

Minimum 27-inch monitor with 60Hz refresh rate for desktop user interface.

Mobile device with 4.7-inch minimum screen size for mobile user interface.

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