BeneVision N22/N19/N17/N15/ N12 Quick Reference Guide

mindray
NORTH AMERICA

Note: The BeneVision N22/N19/N17/N15/N12 Quick Reference Guide is not intended as a replacement to the Operating Instructions. This document is a guideline only to be used as an aid to comprehensive Inservice Training.

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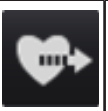
QUICK KEYS

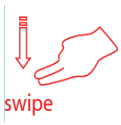
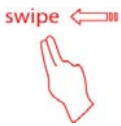
	Main Menu Opens the main menu.		**More** Shows more quick keys.
	Alarm Setup Opens the **Alarm** dialog.		**Alarm Reset** Acknowledges alarms.
	Audio Pause Pauses alarm tone.		**Alarm Pause** Pauses the current and future alarms for a preconfigured time.
	Review Opens **Review** dialog for the patient's historical data.		**Standby** Opens **Standby** mode.
	Patient Management Opens the **Patient Management** dialog.		**Screen Setup** Opens the **Screen Setup** dialog.
	NIBP Start/Stop Starts an NIBP measurement or stops the current NIBP measurement.		**Stop All** Stops all NIBP measurements.
	NIBP Starts NIBP STAT measurement.		**NIBP Measure** Opens the **NIBP Measure** dialog.
	Zero IBP Zeros all IBPs.		**C.O. Measure** Starts cardiac output procedure.
	PAWP Opens the **PAWP** screen.		**Loops** Opens the respiratory **Loops** screen.

	Venipuncture Opens the **Venipuncture** dialog.		**Start TOF** Starts/stops TOF measurement.
	Parameters Setup Opens the **Parameters Setup** dialog.		**Remote View** Opens the split-screen view of another patient(s).
	Manual Event Triggers a manual event.		**Minitrends** Opens the **Minitrends** screen.
	OxyCRG Opens the **OxyCRG** screen.		**ECG Full- Screen** Opens the 12-lead ECG full screen.
	Privacy Mode Enters the privacy mode.		**Night Mode** Enters the night mode.
	CPB Mode Enters the CPB mode.		**Intubation Mode** Enters the intubation mode.
	Volume Opens the **Volume** dialog.		**Freeze** Freezes waveforms.
	Calculations Opens the **Calculations** dialog.		**Load Config** Opens the **Load Config** dialog to load preconfigured settings.
	Print Initiates a real-time report.		**Record** Starts/Stops a recording.

	Unit Opens the **Unit** dialog.		**Rotate Screen** (for N22/N19) Changes the screen orientation (between portrait and landscape).
	ECG Lead/Gain Opens the ECG Lead/Gain dialog.		**Call Help** Calls for help.
	HemoSight Opens the **HemoSight** dialog.		**EWS** Opens the **EWS** screen.
	GCS Opens the **GCS** dialog.		**SepsisSight** Opens the **SepsisSight** dialog.
	Enters the **Discharged Patients** dialog.		**ECG 24h Sum** Views the 24-hour ECG summary.
	Discharge Patient Opens the **Discharge Patient** dialog to discharge the patient and restore default settings.		

GESTURES

The following gestures on the touchscreen are enabled:

	Swipe down the touchscreen with two fingers to access the **Discharge Patient** dialog box.
	Swipe from left to right on the touchscreen with two fingers to change the screen from normal screen, to minitrends screen, to big numerics screen, to normal screen.
	Swipe from right to left on the touchscreen with two fingers to change the screen from normal screen, to big numerics screen, to mini trends screen, to normal screen.

PATIENT SETUP

Admit Patient And Enter Demographics (Manual Entry)

The **Patient Management** dialog allows the clinician to admit a patient and enter patient demographics. Admitting also restores default (preconfigured) settings and clears the previous patient's information.

After a patient is manually discharged, the monitor automatically admit a new patient. To manually admit a patient on the N Series bedside monitor:

a. The monitor prompts to admit a new patient in the following situations:

- After being switched off for the selected time period*, the monitor automatically discharge the previous patient and admit a new patient at startup.
- If the monitor has not detected certain patient vital signs (ECG, SpO_2, PR, RR, NIBP) for 30 minutes, the clinician will be prompted to admit a new patient once continuous monitoring is detected.

***Time period configurable.**

b. To open the **Patient Management** dialog:

- Select the patient information area at the top left corner of the screen.
- Select the **Patient Management** quick key.

- Select the **Main Menu** quick key, and select **Patient Management** from the **Patient Management** column.
- Select **Patient Management** from the discharge screen.

c. Select **Patient Category** and select **OK** to confirm.

d. Select patient field(s) and enter patient information as required using the onscreen keyboard.

e. Select button to accept the information.

f. Select **OK** to confirm and return to the main screen.

Note: If the patient's barcode is scanned, the medical number and associated information is entered into the monitor.

Enter Demographics from the Central Monitoring System (CMS)

If the N Series bedside monitor is connected to the CMS, entering patient information at the CMS will enter the patient information into the N Series bedside monitor. In addition, entering demographic information into the N Series monitor will automatically enter information into the CMS.

Enter Demographics from the ADT Database

If the N Series bedside monitor is connected to a hospital's ADT server the patient demographic information can be imported into the N Series bedside monitor. To import patient information from the Hospital's ADT server:

a. Enter the **Find Patient** dialog in either of the following ways:
- Select the **Main Menu** quick key, and select **Find Patient** from the **Patient Management** column.
- Select **Find Patient** from the **Patient Management** dialog.

b. Verify the **ADT** tab is selected.

c. Enter search field such as patient ID.

d. Select **Search** to display a list of the search results.

e. Select a patient from the patient list.

f. Select adjacent to the patient information N Series bedside monitor to import that patient's information and return to patient management.

g. Select **OK** to confirm and return to the main screen.

Note: Find patient from the ADT server is only enabled if **ADT Query** is supported.

Note: Loading patient information from the ADT server updates only patient information in the N Series bedside monitor. The patient's monitoring data is unaffected.

Discharge a Patient

The Discharge function clears all patient information and restores default (preconfigured) settings.

- Swipe down the touchscreen with two fingers, and select **Discharge** to confirm.
- Select the **Discharge Patient** quick key, and select **Discharge** to confirm.
- Select the **Patient Management** quick key, and select **Discharge Patient**.
- Select the **Main Menu** quick key, and select **Discharge** from the **Patient Management** column.
- Select **Discharge patient** from the standby screen.

And select **Discharge** to confirm.

STANDBY

Enter Standby

The Standby function allows the clinician to suspend monitoring on a patient. While in standby, the patient is not being monitored; however, all data and settings are preserved.

To place a patient into Standby on the N Series bedside monitor:

a. Select the **Standby** quick key.

Or

a. Select the **Main Menu** quick key, and select **Standby** from the **Patient Management** column.

b. Set **Location** from the drop down list to define where the patient is when the monitor enters the standby mode.

c. Select **OK** to confirm.

Resume Monitoring

To remove a patient from Standby and resume monitoring on the N Series bedside monitor, select **Resume Monitor**.

Once a patient is discharged the monitor automatically enters the Standby mode. To resume monitoring select **Resume Monitor**.

RECORD

Realtime Waveforms

To record a waveform on a patient with the recorder:

- Press the hardkey on front of the recorder.
- Select at the top left corner of a currently opened dialog if available.
- Select Record quick key.

Adjust Recorder's Waveforms

To adjust recorded waveforms on a patient with the recorder:

a. Select **Main Menu** quick key.

b. Select **Record Setup** from the **Report** column.

c. Select **Waveform 1.**

d. Select the desired waveforms from drop down list or select off to turn off the waveform recording.

e. Repeat steps c and step d for remaining waveforms as necessary.

f. Select the **Main Menu** quick key or ✕ to return to the main display.

PRINT

Realtime Waveforms (Laser printer connection required)

To print a real time report for a patient on the N Series bedside monitor:

a. Select quick key.

Or

a. Select **Report Setup** from **Main Menu** quick key.

b. Select **Realtime Reports** tab.

c. Select **Print.**

Adjust Printed Waveforms

To adjust the waveforms printed for a patient on the N Series bedside monitor:

a. Select the **Main Menu** quick key, and select **Report Setup** from the **Report** column.

b. Select **Realtime Reports** tab.

c. Select **Current Waveforms.**

d. Select **Print.**

To print selected waveforms for a patient on the N Series bedside monitor:

a. Select the **Main Menu** quick key, and select **Report Setup** from the **Report** column.

b. Select **Realtime Reports** tab.

c. Select **Selected Waveforms.**

d. Select the desired waveforms to add/delete from the selected list.

e. Select to return to the previous page

f. Select **Print.**

End Case Report

The following reports can be set as end case reports:

- ECG Report
- Realtime Report
- Tabular Trends Report
- Graphic Trend Report

If **Print End Case Report** are enabled, the N Series bedside monitor will automatically print the selected reports when a patient is discharged.

To set reports to print as an End Case Report:

a. Select the **Main Menu** quick key, and select **End Case Report** from the **Report** column.

b. Select the desired report tab.

c. Enable **Set As End Case Report**.

d. Select the **Main Menu** quick key or to return to the main display.

ECG

Adjust ECG Lead

The N Series bedside monitor allows the clinician to adjust the leads being viewed on the main display. To adjust the ECG Lead:

a. Select the ECG numeric area or waveform area to enter the **ECG** dialog.

b. Select the **Setup** tab.

c. Set **Lead Set** according to the lead type you will be used.

d. Select **ECG1** to adjust first lead.

e. Repeat step d or remaining displayed leads.

f. Select the **Main Menu** quick key or to return to the main display.

Enable Pacemaker Detection

The N Series bedside monitor allows the clinician to enable pacemaker detection. The symbol is displayed when the pacemaker detection is enabled.

To enable the pacemaker detection on the N Series bedside monitor:

a. Select the ECG numeric area or waveform area to enter the **ECG** dialog.

b. Select the **Pacer** tab.

c. Set **Paced** to **Yes**.

d. Select the **Main Menu** quick key or to return to the main display.

Initiate ECG Relearn

To initiate ECG relearning manually on the N Series bedside monitor:

a. Select the ECG numeric area or waveform area to enter the **ECG** dialog.

b. Select **Relearn** at the bottom left corner of the dialog.

c. Select the **Main Menu** quick key or to return to the main display.

Initiate ST Analysis

To initiate ST analysis on the N Series bedside monitor:

a. Select the ECG numeric area or waveform area to enter the **ECG** dialog.

b. Select the **ST** tab.

c. Select the **Setup** tab.

d. Enable **ST Analysis**.

e. Select the **Main Menu** quick key or ✕ to return to the main display.

Initiate QT Analysis

To enable the QT monitoring on the N Series bedside monitor:

a. Select the ECG numeric area or waveform area to enter the **ECG** dialog.

b. Select the **QT** tab.

c. Select the **Setup** tab.

d. Enable **QT Analysis**.

e. Select the **Main Menu** quick key or ✕ to return to the main display.

Selecting Leads for QT Calculation

To select one lead or all leads for QT calculation:

a. Select the QT numerics area, ECG numeric area, or ECG waveform area to enter the **ECG** dialog.

b. Select the **QT** tab.

c. Select the **Setup** tab.

d. Set **QT Leads**.

e. Select the **Main Menu** quick key or ✕ to return to the main display.

Initiate and Print a 12-lead ECG Report

To perform a Resting 12-lead ECG Analysis on the N Series bedside monitor:

a. Select the **ECG Full-Screen** quick key.

b. Select **Setup** to enter patient information or adjust **Report** options.

c. Select **Analyze**.

d. Select **Print** to print out the 12-lead ECG report.

Or

a. Select the ECG numeric area or waveform area to enter the **ECG** dialog.

b. Select the **Setup** tab.

c. Verify **Lead Set** to **12-Lead**.

d. Select **12-Lead** button.

e. Select **Setup** to enter patient information or adjust **Report** options.

f. Select **Analyze**.

g. Select **Print** to print out the 12-lead ECG report.

NIBP

Initiate A Non-Invasive Blood Pressure Measurement (NIBP)

To initiate a NIBP measurement:

a. Press the **NIBP Start/Stop** quick key.

Or

a. Select NIBP tile on the main screen to access the **NIBP** dialog.

b. Select **Start NIBP.**

c. Select the **Main Menu** quick key or ✕ to return to the main display.

Stop Non-Invasive Blood Pressure Measurement (NIBP)

To stop the *current* NIBP measurements,

a. Press the **NIBP Start/Stop** quick key during the NIBP measurement.

Or

a. Select NIBP tile on the main screen to access the **NIBP** dialog.

b. Select **Stop NIBP.**

c. Select the **Main Menu** quick key or ✕ to return to the main display.

To stop *all* NIBP measurements on a patient on the N Series bedside monitor:

a. Press the **Stop All** quick key.

Or

a. Select NIBP parameter area to access the **NIBP** dialog.

b. Select **Stop All**.

c. Select the **Main Menu** quick key or ✕ to return to the main display.

Select NIBP Start Mode

Start mode defines how NIBP auto mode works. To set the start mode,

a. Select the NIBP tile on the main screen to enter the **NIBP** dialog.

b. Set **Start Mode.**

- **Clock**: after the first measurement, the monitor automatically synchronizes NIBP automatic measurements with the real time clock.
- **Interval**: after the first measurement, the monitor automatically repeats measurements at set interval.

c. Select the **Main Menu** quick key or to return to the main display.

Set A Non-Invasive Blood Pressure Measurement Interval

The N Series bedside monitor allows the clinician to set a pre-configured interval for a NIBP measurement to be obtained automatically. To set an automatic interval on the N Series bedside monitor:

a. Select the **NIBP Measure** quick key.

b. Select the desired interval.

Or

a. Select NIBP tile on the main screen to access the **NIBP** dialog.

b. Select **Interval** to select the desired interval from the dropdown list.

- Intervals include: **1 min**, **2 min**, **2.5 min**, **3 min, 5 min**, **10 min**, **15 min**, **20 min**, **30 min**, **1 h**, **1.5 h**, **2h, 3h, 4h, 8h**: The monitor automatically measures NIBP based on the specified time interval.
- Select **Sequence** to automatically measure NIBP based on the sequence customized by the user in the **Sequence** tab.

c. Select the **Main Menu** quick key or to return to the main display.

Configure A Custom Sequence

To configure a custom sequence:

a. Select NIBP tile on the main screen to access the **NIBP** dialog.

b. Set **Interval** to **Sequence**.

c. Select **Sequence** tab.

d. Set **Duration** and **Interval** for each phase in the measurement cycle.

e. Select the **Main Menu** quick key or to return to the main display.

Factors that Affect Blood Pressure Measurement Accuracy

The accuracy of non-invasive blood pressure (BP) measurement has been shown

to be affected by numerous factors. Some of the more important aspects (based on published literature) to consider while measuring BP are:

- The cuff should fit snugly, but with enough room for two fingers to be placed between the cuff and the patient's arm (on adults), and loosely on neonates with little or no air present within the cuff.
- Use the Guidance Table provided to select the proper size cuff. Too small a cuff has been shown to result in the overestimation of BP (systolic and diastolic) while too large a cuff results in the underestimation of BP.

Ensure that the cuff is wrapped directly over the patient's skin. BP measurement could be 10 to 40 mmHg higher or lower than actual when the cuff is applied over clothing.

- The cuff should be applied so that the center of the bladder in the cuff is over the brachial artery. Use the reference marker for ver.
- For best results, the cuff should be placed on the arm at heart level and the lower arm supported passively. Published data indicates that BP can increase about 2 mmHg for every inch that the cuff is below heart level and decrease by the same amount if above heart level.
- Avoid compression or restriction of the pressure hose. Do not place the NIBP cuff on a limb that is being utilized for any other medical procedure, for example, an I.V. catheter.
- Have the patient sit quietly for several minutes before BP measurement and remain still during measurement to avoid unnecessary motion artifact. If the patient has not rested before measurement, BP could be elevated by 10 to 20 mmHg.
- Do not talk to the patient during BP measurement as talking has been shown to result in a 10 to 15 mmHg overestimation of BP.
- The patient's back and feet should be properly supported with the legs kept uncrossed. Unsupported back and feet could increase BP by up to 15 mmHg, while crossed legs could result in a 4 to 12 mmHg increase.
- Other factors that have been shown to result in an overestimation of BP are labored breathing (5 to 8 mmHg), full bladder (10 to 15 mmHg), pain (10 to 30 mmHg).

Guidance Table

Cuff Description	Limb Circumference
Child	10 - 19 cm
Small Adult	18 - 26 cm
Adult	25 - 35 cm
Large Adult	33 - 47 cm
Thigh	46 - 66 cm
Adult Long	25 - 35 cm
Large Adult Long	33 - 47 cm

References:

1. American Association on Critical-Care Nurses (AACN): **Practice Alert, Non-Invasive Blood Pressure Monitoring** (April 2010)- http://www.aacn.org/wd/practice/docs/practicealerts/non-invasive-bp-monitoring.pdf?menu=aboutus
2. Pickering Thomas G, Hall John E, Appel Lawrence J, Falkner Bonita E, Graves John, Hill Martha N, Jones Daniel W, Kurtz Theodore, Sheps Sheldon G, Roccella Edward J. **Recommendations for blood pressure measurement in humans and experimental animals: Part 1: Blood pressure measurement in humans: A statement for professionals from the Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research**. J Hypertens 2005; 45: 142-161.
3. O'Brien Eoin, Asmar Roland, Beilin Lawrie, Imai Yutaka, Mallion Jean-Michel, Mancia Giuseppe, Mengden Thomas, Myers Martin, Padfield Paul, Palatini Paolo, Parati Gianfranco, Pickering Thomas, Redon Josep, Staessen Jan, Stergiou George, Verdecchia Paolo. **European Society of Hypertension recommendations for conventional, ambulatory and home blood pressure measurement.** J Hypertens 2003; 21: 821-848.

INVASIVE BLOOD PRESSURES (OPTIONAL)

The N Series bedside monitor allows a clinician to monitor up to 8 invasive blood pressures (IBP) simultaneously.

Adjust Invasive Blood Pressure Label

To adjust the label on an invasive blood pressure:

a. Insert IBP Module as needed.

b. Select the IBP parameter by:

- Main Menu

  -Select the **Main Menu** quick key and select **Setup** from the **Parameters** column.

  -Select the Invasive Blood Pressure (ART, CVP, etc.).

- Waveform/Numeric tile

  -Select the IBP waveform/numeric tile.

  -Select the **Setup** tab.

c. Select **IBP Label** and adjust the label.

d. Select the **Main Menu** quick key or ✕ to return to the main display.

Zero Invasive Blood Pressure

To zero an invasive blood pressure transducer on the N Series bedside monitor:

a. Insert IBP Module as needed.

b. Connect the invasive blood pressure cable to the invasive blood pressure transducer set.

c. Position transducer and open the invasive line in accordance with hospital policy.

d. Open the Zero IBP dialog:

- Select the →0← key on the IBP module.
- Select the **Zero IBP** quick key.
- Select IBP waveform or numeric tile to open **IBP** dialog and select **Zero**.

e. Select the **Main Menu** quick key or ✕ to return to the main display.

CONTINUOUS CARDIAC OUTPUT (OPTIONAL)

The N Series bedside monitor allows a clinician to interface with the Edwards Vigilance II, Vigileo and EV1000 monitors for continuous cardiac output and SvO_2 monitoring. Refer to the operations manual for complete instructions.

Adjust the Displayed Parameters

To adjust the parameters displayed with the CCO parameter on the N Series bedside monitor:

a. Select CCO numeric tile on the main screen to enter the **CCO** dialog.

Or

a. Select **Parameter Setup** quick key, and select **CCO** from **Parameters Setup** dialog.

Or

a. Select the **Main Menu** quick key, select **Setup** from the **Parameters** column, and select **CCO** from **Parameters Setup** dialog.

b. Select **Select Parameter** tab**.**

c. **Select tile and select desired parameters from adjacent list.**

d. Select the **Main Menu** quick key or ✕ to return to the main display.

CENTRAL VENOUS OXYGEN SATURATION (OPTIONAL)

The N Series bedside monitor allows a clinician to monitor $ScvO_2$ through the use of a fiberoptic probe and a CeVOX optical module. Refer to the operations manual for complete instructions.

Print Oxygenation Parameters

To print the oxygenation parameters on the N Series bedside monitor:

a. Select the **HemoSight** quick key.

Or

a. Select **$ScvO_2$** numeric tile on the main screen to enter the **$ScvO_2$** dialog, and select **HemoSight**.

Or

a. Select **$ScvO_2$** from **Parameters Setup** dialog (quick key), and select **HemoSight.**

b. Select to print oxygenation parameters through the printer.

c. Select the **Main Menu** quick key or ✕ to return to the main display.

BISPECTRAL INDEX (OPTIONAL)

The N Series bedside monitor allows a clinician to monitor the depth of awareness during anesthesia and sedation administration.

Adjust BIS Waveform Area

To adjust the display in the BIS waveform area to include EEG, BIS Trends, or Superimposed BIS Trends on the N Series bedside monitor:

a. Select **BIS** waveform or numeric tile on the main screen to enter the **BIS** dialog.

Or

a. Select **BIS** from **Parameters Setup** dialog (quick key).
b. Select **Setup** tab.
c. Select **Display.**
d. Scroll and select option.
e. Select the **Main Menu** quick key or to return to the main display.

BIS Expand View (Bilateral Sensor Required)

To expand the BIS view on the N Series bedside monitor:

a. Select BIS waveform or numeric tile on the main screen to enter the **BIS** dialog.
b. Select **BIS Expand.**

Adjust Parameters

To adjust the parameters displayed in the BIS numeric tile on the N Series bedside monitor:

a. Select BIS waveform or numeric tile on the main screen to enter the **BIS** dialog.

Or

a. Select **BIS** from **Parameters Setup** dialog (quick key).
b. Select **Select Parameter** tab.
c. Select tile and select desired parameter from adjacent list.
d. Select the **Main Menu** quick key or to return to the main display.

ALARMS

Setting Parameter Alarm Properties

The **Alarm** dialog allows the clinician to configure alarm properties on the N Series bedside monitor.

To adjust the alarm properties of parameters on the N Series bedside monitor:

a. Select the **Alarm Setup** quick key.

Or

a. Select the **Main Menu** quick key, and select **Limits** from the **Alarm** column.

b. Select parameter and select

- **On/Off** – to enable or disable parameter's alarm responses.
- Select **High** or **Low** limit and adjust value using the drop down value list
- **Priority**– to adjust the audio and visual alarm indicators. Level options include High (Red), Medium (Yellow), Low (Yellow) and Prompt (audio absent).
- **Alarm Output** – to activate an automatic recording/printing when the alarm occurs.

c. Select the **Main Menu** quick key or ✕ to return to the main display.

Changing Arrhythmia Alarm Settings

To adjust a patient's arrhythmia alarm on the N Series bedside monitor:

a. Select **Alarm Setup** quick key, **ECG** waveform/numeric tile or **Main Menu** quick key.

b. Select **Arrhythmia** tab.

c. Scroll and select individual arrhythmia.

d. Select

- **On/Off** – to enable or disable arrhythmia's alarm responses.
- **Priority**– to adjust the audio and visual alarm indicators. Level options include High (Red), Medium (Yellow), Low (Yellow) and Prompt (audio absent).

Note: If alarm is locked, alarm cannot be turned off or priority altered.

- **Alarm Output** – to activate an automatic recording when the alarm occurs.

e. Select the **Main Dialog** quick key or ✕ to return to the main display.

To adjust a patient arrhythmia threshold setting on the N Series bedside monitor:

a. Select **Alarm Setup** quick key, **ECG** waveform/numeric tile or **Main Menu** quick key.

b. Select **Arrhythmia** tab.

c. Select **Threshold** tab.

d. Select arrhythmia threshold and adjust value using the drop down value list.

e. Select the **Main Menu** quick key or to return to the main display.

Disable Non-Lethal Arrhythmia Alarms

To disable all arrhythmia alarms ***except lethal*** arrhythmias on the N Series bedside monitor:

a. Select **Alarm Setup** quick key, **ECG** waveform/numeric tile or **Main Menu** quick key.

b. Select **Arrhythmia** tab.

c. Select **Lethals Only.**

d. Select the **Main Menu** quick key or to return to the main display.

Accessing Help When Technical Alarms Occur

In the technical alarm list, alarm messages followed by **Detail** includes help information.

a. Select the technical alarm information area to enter the **Alarms** dialog.

b. Select the **Technical Alarms** tab.

c. Select the desired alarm.

d. Select the **Main Menu** quick key or to return to the main display.

RESET ALARMS

To reset ***an alarm for the duration of the alarm*** on the N Series bedside monitor, select the **Alarm Reset** quick key.

PAUSE ALARMS/PAUSE ALARM TONES

To pause *alarms* or alarm tones on the N Series bedside monitor, select **Alarm Pause** quick key to pause all the alarms, or select **Audio Pause** quick key to pause audible alarm tones.

WARNING: Selecting alarm pause or audio pause may affect current and future

alarms, including arrhythmias, depending on your department's configuration.

TRANSFER

The N Series bedside monitor has the ability to transfer patient data through the MPM (Multi-Parameter Module), N1 or T1 patient monitor.

To transfer patient data from one patient monitor to another patient monitor:

a. Remove MPM/N1/T1 from the original patient monitor.

b. Insert MPM/N1/T1 into a new patient monitor.

c. Select from the **Select Patient** dialog:

- **Continue Patient in Monitor** to continue with the patient data and settings in the new monitor and delete all patient data in the original MPM/N1/T1. All patient data from the new monitor will copy into the MPM/N1/T1.
- **Continue Patient in MPM or Continue Patient in Transfer Module** to continue with the patient data and settings in the original MPM/N1/T1, and clears all patient data in the new monitor. All patient data from the original MPM/N1/T1 will copy into the new monitor.
- **New Patient** to delete all patient data in the original MPM/N1/T1, and in the new monitor as well as restore default settings.
- **Same Patient** to merge the patient data from the original MPM/N1/T1 with the patient data in the new monitor.

d. Select the **Main Menu** quick key or to return to the main display.

HEMODYNAMIC MONITORING

Initiate A Cardiac Output Measurement

Cardiac Output (C.O.) is the amount of blood ejected from the left ventricle each minute, expressed in liters per minute (l/min). Cardiac Index (CI) is the Cardiac Output divided by the patient's body surface area.

To initiate a Cardiac Output measurement on the N Series bedside monitor:

a. Insert the C.O. Module.

b. Connect the C.O. cable to the C.O. connector on the monitor and Interconnect the C.O. cable, thermodilution catheter, and injectate.

c. Select C.O. tile on the main screen to enter the **C.O.** dialog.

Or

c. Select the quick key to enter the **C.O.** dialog.

d. Verify the computation constant or adjust the computation constant in the **C.O.** dialog.

e. Inject solution when **Inject Now** message is displayed (Auto measuring mode is enabled in the **C.O.** dialog).

Or

e. Select **Start** and inject solution within 4 seconds to perform a cardiac output measurement when **Ready for new set of measurement** is displayed (**Manual** measuring mode is enabled in the **C.O.** dialog)

Note: Cardiac index is calculated if height/weight has been entered in the Patient Setup dialog.

f. Wait 1 minute between injections to allow baseline stabilization.

g. Perform additional Cardiac Output measurements as needed.

h. Select **Stop** to stop the current measurement as needed.

i. Select measurement to include/exclude in the Cardiac Output average (a √ in the box indicates cardiac output measurement is selected).

j. Select **HemoSight** to access the **HemoSight** dialog.

k. Select the **Main Menu** quick key or to return to the main display.

Note: Blood temperature alarms are inactive when a cardiac output measurement is initiated.

Initiate Pulmonary Artery Wedge Pressure (PAWP)

Pulmonary Artery Wedge Pressure (PAWP) is a pressure measurement obtained from a PA catheter when the PA distal balloon is inflated and the catheter advances and occludes a distal pulmonary artery. PAWP pressure is a reflection of the pressure in the left ventricle at end-diastole.

To initiate a PAWP measurement on the N Series bedside monitor:

a. Insert IBP Module as needed.

b. Select **PAWP** quick key .

Or

b. Select **PA** from **Parameters Setup** dialog (quick key), and select **PAWP.**

c. Select **Setup** to adjust PA sweep speed, PA scale, or reference waveforms (as needed).

d. Inflate balloon to obtain wedge waveform.

e. Select **Freeze** to freeze the waveform.

f. Select **Accept** to save the PAWP value.

g. Select **Hemo Calcs** to access the **Hemodynamic** page of the **Calculations** dialog.

h. Select the **Main Menu** quick key or ✕ to return to the main display.

Note1: PA alarms are inactive when a PAWP measurement is initiated.

Note2: Follow manufacturer's suggested procedures and hospital policy for PAWP balloon inflation.

Initiate Hemodynamic Calculations

Hemodynamic calculations are a set of values that are used to determine the hemodynamic status of the patient.

To initiate hemodynamic calculations on the N Series bedside monitor:

a. Select **Hemo Calcs** from the **PAWP** screen or **Hemodynamic** tab from **Calculations** dialog (**Calculations** or **Main Menu** quick key).

b. HR, Art (Mean), PA (Mean), CVP, and average CO measurements are automatically entered from the current values along with height and weight if previously entered.

c. Select remaining parameter and enter value.

d. Select **Calculate** to complete calculation.

e. Select to print the currently displayed Hemodynamic Calculations through the printer.

f. Select the **Main Menu** quick key or ✕ to return to the main display.

SCREEN DISPLAY

To enter the screen selection dialog and adjust the main screen's layout on the N Series bedside monitor:

a. Select the **Screen Setup** quick key.

Or

a. Select the **Main Menu** quick key, and select **Choose Screen** from the **Display** column.

b. Select the desired screen.

- **Normal Screen:** Real time waveforms and numeric parameters on the main display (Configurable).
- **Big Numerics:** Up to 6 waveforms and numeric parameters in an expandable view on the main display (Configurable).
- **Minitrends:** Split screen with continuously displayed graphic minitrends on left side beside real time waveforms and numeric parameters on the main display (Configurable).
- **OxyCRG:** Split screen with OxyCRG (HR trend, SpO_2 trend, and RR trend/ RR waveform) on the lower portion of the display with real time waveforms and numeric parameters.
- **Remote View (Optional):** Split screen with viewing information from another bed(s) on the lower portion of the display with real time waveforms and numeric parameters on the host monitoring device.
- **ECG Half-Screen:** (5, 6, or 12 lead wire set): 7 Leads or 8 leadsof ECG on the upper portion with real time waveforms and numeric parameters on the main display.
- **ECG Full Screen:** (5, 6, or 12 lead wire set): 7 leads or 8 leads of ECG with numeric parameters on the main display.
- **ECG 12-Lead (Optional)**: 12 leads of ECG with numeric parameters on the main display.
- **PAWP (Optional)**: Split screen with PAWP measurement screen on the lower portion of the main display with real time waveforms and numeric parameters.
- **Respiratory Loops(Optional)**: Split screen with Respiratory loop screen on the left side with real time waveforms and numeric parameters on the main display.
- **Integrated Devices (Optional):** Split screen with viewing information from external device, such as a ventilator and anesthesia machine, on the left portion of the display with real time waveform and numeric parameters. on

the main display.

- **EWS (Optional):** Split screen with **EWS** scoring tool on left side of display with real time waveform and numeric parameters on the main display.

c. Select the **Main Menu** quick key or ✕ to return to the main display.

Note1: The first waveform is always an ECG lead and HR is always located in the first digital tile in the **Normal Screen** selection.

Note2: Digital and waveform display selections on the N Series bedside monitor and Central Monitoring System are independent.

REVIEW

Tabular Trends

To display Tabular trends on a patient:

a. Select **Review** quick key, or select the **Main Menu** quick key.

b. Select **Tabular Trends** tab from the **Review** column.

c. Select **Trend Group** and specify trend category or select **Custom** for user defined parameters to be displayed.

d. Select **Interval** to specify the time interval tabular trends are to be displayed.

e. Select the **Main Menu** quick key or ✕ to return to the main display.

To record Tabular trends on a patient on the N Series bedside monitor to the integrated or independent recorder:

a. Select **Review** quick key, or select the **Main Menu** quick key.

b. Select **Tabular Trends** tab from the **Review** column.

c. Select and confirm specified time period.

d. Select **Record** to print to the integrated recorder.

e. Select the **Main Menu** quick key or ✕ to return to the main display.

To print Tabular trends on a patient on the N Series bedside monitor to the printer:

a. Select **Review** quick key, or select the **Main Menu** quick key.

b. Select **Tabular Trends** tab from the **Review** column.

c. Select and confirm specified settings.

d. Select **Print** to the independent printer.

e. Select the **Main Menu** quick key or to return to the main display.

Arrhythmia and Alarm Events

The **Events** page stores 1000 physiological and arrhythmia events on a patient based on the **Alarm Setup** dialog.

To view and print an alarm event on a patient on the N Series bedside monitor:

a. Select **Review** quick key, or select the **Main Menu** quick key.

b. Select **Events** tab from the **Review** column.

c. Scroll and select event.

d. Select **Detail** to view the details of selected events.

e. Select

- to print to the integrated or independent recorder.
- to print to the independent printer.

f. Select the **Main Menu** quick key or to return to the main display.

Note: The waveforms printed are determined by the **Record Setup** and **Print Setup** dialogs on the N series bedside monitor.

Full Disclosure

The N series bedside monitors have the ability to store configured waveforms and associated numeric information for up to 48 hours.

To adjust waveforms to be stored and print waveforms stored on a patient:

a. Select **Review** quick key, or select the **Main Menu** quick key.

b. Select **Full Disclosure** tab from the **Review** column.

c. Select **Setup.**

d. Select the **Storage** tab and set the desired waveforms to be stored in the monitor.

e. Select the **Display(Maximum: 3)** tab and set the desired waveforms to be displayed on the Full Disclosure page.

f. Select to return to the **Full Disclosure** page.

g. Select
   - to print to the integrated or independent recorder.
   - to print to the independent printer.

h. Select the **Main Menu** quick key or to return to the main display.

OxyCRG

The **OxyCRG** page stores up to 48 hours' trend curves. To view and print an OxyCRG alarm event on a patient on the N Series bedside monitor:

a. Select **Review** quick key, or select the **Main Menu** quick key.

b. Select **OxyCRG** tab from the **Review** column.

c. Scroll and select event.

d. Select **Zoom** to set the resolution of trend curves.

e. Select **Waveform** to set the resolution of trend curves.

f. Select and confirm specified settings.

g. Select **Print** to the independent printer.

h. Select the **Main Menu** quick key or to return to the main display.

VIEWING OTHER BEDS

Entering the Remote View Screen

The clinician can observe alarm conditions and view real time physiological data from patients on other networked monitoring devices. To enter **Remote View** screen:

a. Select the **Remote View** quick key.

Or

a. Select the **Main Menu** quick key, and select **Choose Screen** from the **Display** column.

b. Select **Remote View** and select to return to display the **Remote View** screen.

Adding a Bed

To add a remote bed (device):

a. Select **Select Bed** from the **Remote View** screen.

b. Select a desired department. All the beds under this department will be listed.

c. Select a desired tile from the A-W1, A-W2 or A-W3 group. A-Wx indicates an Alarm Watch group. These beds can be displayed on the main screen in the Alarm Watch tiles.

d. Select a bed from the bed list. The selected bed will appear in the previously selected tile.

e. Repeat the step as necessary for A-W1, A-W2, and A-W3 groups.

f. Select the **Main Menu** quick key or ✕ to return to the main display.

Note: A √ check mark at the left of the bed list indicates the bed has been included in an Alarm Watch bed.

Resetting Alarms for Remote Devices

To reset (acknowledge) the alarms on the remote devices, select **Alarm Reset** in the **Remote View** screen if enabled.

WARNING: Selecting **Alarm Reset** for the Remote View device will reset the alarms on the remote device and the CMS if enabled.

Removing a Bed

To remove a remote device,

a. Select **Select Bed** from the **Remote View** screen.

b. Select a desired bed at the A-W1, A-W2 or A-W3 areas.

c. Select **Clear Bed** to remove the selected bed, or select **Clear All Beds** to remove all beds.

b. Select the **Main Menu** quick key or ✕ to return to the main display.

Saving a Manual Event

To save a manual event,

a. Select the desired device to view from the **Remote View** screen.

b. Select **Manual Event**.

c. Select ✕ to return to the main display.

Displaying the Alarm Watch Tile on the Main Screen

The alarm watch function provides the alarm notification by color and sound. To display the alarm watch tile on the main screen,

a. Select the **Main Menu** quick key.
b. Select **Tile Layout** from the **Display** column.
c. Select the numeric tile.
d. Select **Alarm Watch** from the drop down list and select **A-W1**, **A-W2**, or **A-W3**.
e. Select the **Main Menu** quick key or to return to the main display.

VOLUMES

The alarm volume, key volume, and QRS volume can be adjusted on the N Series bedside monitor.

Alarm Volume

To adjust the alarm volume on the N Series bedside monitor:

a. Select **Volume** quick key or select **Setup** tab in **Alarm Setup** quick key.
b. Select **Alarm Volume**.
c. Select volume ranging from X*-10 (0=Off 10=Max).
d. Select the **Main Menu** quick key or to return to the main display.

***The minimum volume range(X) is configurable.**

Key Volume

To adjust the key volume on the N Series bedside monitor:

a. Select **Volume** quick key.
b. Select **Key Volume.**
c. Select volume ranging from 0-10 (0=Off 10=Max).
d. Select the **Main Menu** quick key or to return to the main display.

Beat Tone

To adjust the beat tone (QRS tone) volume on the N Series bedside monitor:

a. Select **Volume** quick key.
b. Select **QRS Volume**.
c. Select volume ranging from 0-10 (0=Off 10=Max).

d. Select the **Main Menu** quick key or ✕ to return to the main display.

Or

a. Select ECG waveform or ECG numeric tile to enter **ECG** dialog**.**

b. Select **Setup** tab.

c. Select **QRS Volume**.

d. Select volume ranging from 0-10 (0=Off 10=Max)

e. Select the **Main Menu** quick key or ✕ to return to the main display.

Or

a. Select SpO_2 waveform or SpO_2 numeric tile to enter **SpO_2** dialog**.**

b. Select **PR Setup** tab.

c. Select **QRS Volume**.

d. Select volume ranging from 0-10 (0=Off 10=Max).

e. Select the **Main Menu** quick key or ✕ to return to the main display.

*** The minimum volume range (X) is configurable.**

Note: The QRS tone is derived from either the HR or PR, depending on which is the selected source of the QRS tone. When monitoring SpO_2, there is a variable pitch tone changes as the patient's saturation level changes. The pitch of the tone rises as the saturation level increases and falls as the saturation level decreases.

DATE AND TIME

The N Series bedside monitor allows the clinician to adjust the date and time if the N Series bedside monitor is not connected to the network. To adjust the system time, date, and format:

a. Select the **Main Menu** quick key and select **Time** from the **System** column.

b. Set **Date** and **Time**.

c. Set **Date Format**.

d. Enable **24 Hour Time** if desired.

e. Enable **Daylight Saving Time** if desired.

f. Select the **Main Menu** quick key or ✕ to return to the main display.

If the monitor is connected to a central monitoring system (CMS) or hospital clinical system (HIS), the date and time are automatically obtained from the network.

PARAMETER COLORS

The N Series bedside monitor provides the ability to adjust the parameter's numeric and waveform (if applicable) color.

To adjust the parameter's color on the N Series bedside monitor:

a. Select **Main Menu** quick key.

b. Select **Param Color** from the **Parameters** colume.

c. Select parameter.

d. Select color.

e. Select the **Main Menu** quick key or ✕ to return to the main display.

LOAD DEFAULT (PRESET) SETTINGS

The N Series bedside monitor settings are automatically restored either when the patient size is adjusted or when Discharge is performed.

A clinician may restore default settings on a patient currently being monitored on the N Series bedside monitor by:

a. Select **Main Menu** quick key, and select **Load** from the **Configuration** column**.**

Or

a. Select **Load Config** quick key.

b. Select preset configuration from displayed list.

c. Select **Load**.

d. Select **OK** to confirm.

Note: All patient data preserved.

LOCK/UNLOCK TOUCHSCREEN DISPLAY

To lock the touchscreen, hold and press the **Main Menu** quick key and slide to the left as directed by the arrow. A padlock symbol displays at the top of the **Main**

Menu quick key if the touchscreen is disabled.

To manually unlock the touchscreen, hold and press the **Main Menu** quick key and slide to the right as directed by the arrow.

The touchscreen can be unlocked automatically when the lock period is over if enabled. To set a preconfigured lock period,

a. Select the **Screen Setup** quick key, and select the **Display** tab.

Or

a. Select the **Main Menu** quick key, and select **Display** from the **Display** column.

b. Select **Screen Lock Duration** and set duration from drop down list.

c. Select the **Main Menu** quick key or to return to the main display.

PAIR THE TM80 TELEMETRY MONITOR

Pair the TM80

The N Series bedside monitor allows the TM80 telemetry pack to be displayed on the main screen when they are paired.

To pair the TM80 with the N Series bedside monitor,

a. Select the **Main Menu** quick key.

b. Select **Wireless Module**, if detected, from the **Parameters** column.

c. Select the desired TM80 under the **Device Name** column. If the desired TM80 is not displayed, select **Update List**.

d. Select **Add** adjacent to the desired TM80.

e. Select

- **Continue Patient in Monitor** to use the patient information and parameters settings from the monitor.
- **Continue Patient in Telemetry** to use the patient information and parameters settings from the TM80 and CMS.

f. Select the **Main Menu** quick key or to return to the main display.

Unpair the TM80 Telemetry Monitor from the N Series Bedside Monitor

To unpair the TM80 and the N Series bedside monitor:

a. Select the **Main Menu** quick key.

b. Select **Wireless Module**, if detected, from the **Parameters** column.

a. Select the desired TM80 under the **Device Name**.

b. Select **Remove**.

c. Select

- **Continue Patient in Monitor** to disconnect the patient from the TM80 and continue with the patient monitor. The patient will be discharged from the TM80.
- **Continue Patient in Telemetry** to disconnect the patient from the N Series bedside monitor and continue with the TM80. The patient will be discharged from the N series bedside monitor.

d. Select the **Main Menu** quick key or to return to the main display.

Unpair the N Series Bedside Monitor from the TM80 Telemetry Monitor

To unpair the N Series bedside monitor from the TM80 telemetry monitor:

a. Press the main menu button on the front panel of the TM80.

b. Enter the password for the screen lock dialog if enabled.

c. Select

- **Yes**: the TM80 telemetry monitor disconnects from the N Series bedside monitor but does not discharge the patient. The TM80 remains admitted on the Central Monitoring System to continue patient monitoring.
- **No**: the TM80 telemetry monitor disconnects from the N Series bedside monitor and discharges the patient. The patient remains admitted on the N Series bedside monitor and Central Monitoring System.

PAIR BP10 NIBP MODULE

Pair the BP10 Module with the N Series Bedside Monitor

To pair a BP10 with the N Series bedside monitor:

a. Press the MPAN button on the right panel of the BP10.

b. Select the **Main Menu** quick key.

c. Select **Wireless Module**, if detected, from the **Parameters** column.

d. Select **Device Name** column.

e. Select the desired BP10 module.

Note: If the desired BP10 is not displayed, select **Update List**.

f. Select **Add** adjacent to the BP10.

g. Select the **NIBP Start/Stop** quick key to start an NIBP measurement. Verify the NIBP measurement on the N Series bedside monitor screen and BP10 module are consistent.

Unpair BP10 Module from the N Series Bedside Monitor

Method 1:

To unpair the BP10 from the N Series bedside monitor:

a. Select the **Main Menu** quick key

a. Select **Wireless Module**, if detected, from the **Parameters** column.

b. Select the desired BP10 module.

c. Select **Remove**.

Method 2:

To unpair the BP10 from the N Series bedside monitor, press the MPAN button on the right side of the BP10 module.

CLEANING/DISINFECTING

Cleaning the Main Unit/Module/SMR

Clean your equipment in accordance with the hospital's equipment cleaning policy.

To clean the equipment:

a. Dampen a soft lint-free cloth with one of the recommended cleaning and disinfecting agents listed in the Operator's Manual.

b. Wipe the display screen.

c. Wipe the external surface of the monitor, modules, or SMR with the damp cloth, avoiding the connectors and metal parts.

d. Dry the surface with a clean cloth. Allow the equipment to air dry in a ventilated and cool place.

Note: Lock the touchscreen before cleaning the monitor screen.

Disinfecting the Main Unit/Module/SMR

Disinfect your equipment as required in your hospital's servicing schedule using one of the recommended disinfecting agents listed in the Operator's Manual. Cleaning equipment before disinfecting is recommended. Always dilute and use disinfectants according to the manufacturer's instructions.

Note: Lock the touchscreen before cleaning the monitor screen.

Cleaning and Disinfecting the Accessories

For information regarding cleaning and disinfecting accessories, please refer to the manufacturer's packaging or the Operator's Manual.

STERILIZATION

Sterilization is not recommended for this equipment, related products, accessories, or supplies unless otherwise indicated in the Instructions for Use documentation accompanying the products, accessories or supplies.

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