




VERSION: 2.7.5.0

DATE: 21.12.2023



Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 2 of 44

NEMS-Q Instructions for Use

For software version: 2.7.5.0

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Document Number: NV-500.275.018

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Disclaimer

This system is intended as a decision support system for persons who have received appropriate medical training and should not be used as a sole basis for making clinical decisions pertaining to patient diagnosis, care, or management. Any application of medical information from the program, other than the original design or intended use thereof, is not advised and considered misuse of the software product.

Norav Limited Warranty

Norav products are warranted to be free from manufacturing and material defects for a period of one (1) year from the date of shipment from Norav or the dealer to the original purchaser.

Excluded from this warranty are expendable supply items including, but not limited to, electrodes, lead wires, patient cables, and batteries. This warranty does not apply to any product that Norav determines to have been modified or damaged by the customer.

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Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 3 of 44

Table of Contents

1. Introduction	4
Document Conventions	4
Warnings Cautions and Notes	4
Abbreviations and Acronyms	5
Intended Use	5
NEMS-Q Intended Use	5
PC-ECG 1200 Intended Use	6
Holter NH-301 Intended Use	6
ABPM Devices Intended Use	7
Norav Recorder (NR) Intended Use	7
2. Overview	7
Package Contents	7
Compatible Applications	7
Compatible PC-ECG 1200 Devices	7
Recommended PC Specifications	8
3. NEMS-Q Installation	8
4. Getting Started	9
5. Operation	10
Login to the NEMS-Q System	10
Login as a Different User	10
NEMS-Q Main Screen Operations	10
NEMS-Q Setup	24
Working with the NH-301 Holter Analysis System	28
Working with the PC-ECG 1200 System	29
6. ABPM Module	31
Product Functions	31
Setup	31
ABPM Settings Screen	33
ABPM Customized Report	33
Preparing ABPM Recorder for Test	34
Downloading ABPM Recording	35
Previewing Test Results	36
Reviewing ABPM Recording	36
Report Types	37
7. Working with the HRV, Late Potential, and ECG “Monitoring” Applications	42
8. Working with the NSpiro™ Application	42
Appendix – Interfacing with Information Systems	43


Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 4 of 44


1. Introduction


Document Conventions

Warnings Cautions and Notes

Pay particular attention to specific points in a procedure when one of the following messages is displayed:

	Warnings call attention to possible hazards involving potential damage or injury to persons.
Warning	

	Cautions refer to practices necessary to protect against potential damage to equipment or loss of equipment. Pay careful attention to instructions.
Caution	

	Notes provide pertinent information to help obtain optimum software performance or signify an important step or procedure requiring special attention.
Note	

Abbreviations and Acronyms


Abbreviation	Meaning
ABPM	Ambulatory Blood Pressure Monitoring ¹
BPM	Beats Per Minute
BP	Blood Pressure
DB	Database
ECG	Electrocardiogram
EHR	Electronic Health Record
EMR	Electronic Medical Record
EMS	ECG Management System
GDT	Gerätedatentransfer (device data transfer) A format to transfer data among medical devices and software systems.
HL7	Health Level Seven – platform for connectivity between software and EHR
HR	Heart Rate
HRV	Heart Rate Variability
ID	Patient Identification
IFU	Instructions For Use
LP	Late Potential
LQTS	Long QT Syndrome
MI	Myocardial Infarction
NEMS	Norav ECG Management System
METS	Metabolic Stress Estimation
MRN	Medical Record Number
QT	Time from the start of the Q wave to the end of the T wave
Record	Rest/Stress/Holter ECG/ABPM test
SN	Serial Number
ST Segment	The ST segment encompasses the region between the end of ventricular depolarization and beginning of ventricular repolarization on the ECG
USB	Universal Serial Bus

¹ – Throughout this document, "Monitoring" is used as a part of the names for certain applications and devices and does not imply monitoring features.

Intended Use

NEMS-Q Intended Use

The NEMS-Q Management System software is intended for marketing to medical professionals and for point-of-care use. The software is designed to work with local/remote Norav management database that commonly stores, retrieves, displays, edits, and prints high-resolution records data received from devices.

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 6 of 44

NEMS-Q is used as an archive system allowing managing tests and patients as well as displaying real-time status of tests, it can generate reports, download/prepare Holter devices, managing users/sites/modalities/departments, receive worklist from HER, and more.

Furthermore, NEMS-Q allows creating new patients, viewing existing patients and their test records, opening a test through the Norav Testing Tools, and performing additional operations like comparing tests, analyzing tests, etc.

NEMS-Q can be integrated with EHR systems via HL7.

PC-ECG 1200 Intended Use

ECG Intended Use

ECG is intended to disclose either normal condition or patterns of arrhythmia, myocardial ischemia, rate abnormalities, or features of prognostic value in the following cases:

- Patients with suspected cardiac abnormalities
- Populations of patients at an age or period in which a routine baseline evaluation of ECG characteristics is desired.

PC-ECG 1200 has been tested to measure Heart Rate Variability (HRV) and Late Potential (LP) within a tolerance of 1 millisecond. The clinical significance of Heart Rate Variability and Late Potential measures should be determined by a physician.

Stress Testing Intended Use

Stress testing is the most widely used method to decide whether this chest pain is related to myocardial ischemia, and thus to coronary artery disease.

In Stress testing, the contractile capability of the heart muscle is captured by ECG during patient exercise. Patients exercise using bicycle, treadmill, or other means while the ECG is continuously recording. Exercise loads are determined by predefined protocols.

ECG signals are recorded for the rest, exercise, and recovery phases of the exercise protocol. The changes in ECG waveforms are compared with the resting ECG records.

ST segment evaluation of myocardial ischemia in patients with known or suspected coronary artery disease.

The ST segment algorithm has been tested for accuracy of the ST segment data, and a database is used as a tool for performance testing.


The significance of the ST segment changes must be determined by a physician.

Holter NH-301 Intended Use

The Holter NH-301 analysis system is intended for patients requiring ambulatory (Holter) recordings from 1 to 336 hours.

Such recording is most frequently used for the following indications:

- Evaluation of symptoms suggesting arrhythmia or myocardial ischemia.
- Evaluation of ECG documenting therapeutic interventions in individual patients or groups of patients.
- Evaluation of patients for ST segment changes.
- Evaluation of patient's response after resuming occupational or recreational activities, e.g., after MI or cardiac surgery.
- Clinical and epidemiological research studies.

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 7 of 44

ABPM Devices Intended Use

The NBP One, Oscar 2, and NBP-24 NG devices are noninvasive oscillometric ambulatory blood pressure devices intended for use with NEMS-Q for recording and displaying up to 250 measurements (or 24 hours) of systolic and diastolic blood pressure and heart rate.

They are intended for use as aids or adjunct to diagnosis and treatment when it is necessary to measure an adult and pediatric (over 4 years) patient's systolic and diastolic blood pressures over an extended period.

The systems are only for measurement, recording, and display to assist a licensed physician in making a diagnosis.

Norav Recorder (NR) Intended Use

Norav Recorder is intended for recording ECG, Rest, Stress, and Holter tests.

2. Overview

Package Contents

The NEMS-Q package contains the following elements:

- Software installation media:
 - ◆ NEMS-Q software installation package
 - ◆ Instructions for Use
 - ◆ Readme.txt
- Software key

Compatible Applications

- PC-ECG 1200 (Rest, Stress, HRV, LP, and ECG “Monitoring” application)
- NEEG Cardiograph
- NM-700 Telemetry
- Holter NH-301
- NSpiro™

Compatible PC-ECG 1200 Devices

- NBP-24 NG
- NBP One
- Oscar 2
- NSpiro™ Spirometry


Recommended PC Specifications

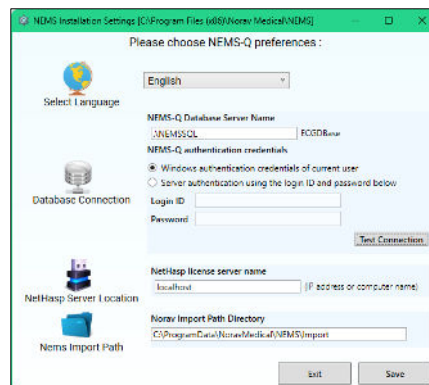
Component	NEMS-Q Client
CPU	i5 @ 2.0 GHz 10 th generation
RAM	4 GB
Free Disk Space	8 GB
Operating System	Windows 10 Pro 32/64 bit or Windows 11 Pro
Free USB/LAN Ports	1
Prerequisites	.NET Framework v4.72
Installed Drivers	HMS ABPM device NBP One device Norav driver Sentinel driver Norav printer driver
Database	SQL 2019 and later
Additional Software (3 rd parties)	SQL Management Studio HMS IEM ABPM PDF Viewer


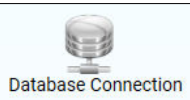
3. NEMS-Q Installation



The software package works under Windows 10/11 operating systems.

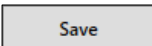
For complete installation of NEMS-Q Server and Client side, see the **NEMS-Q Installation Guide** provided with the NEMS-Q installation package.

After installation is completed, the NEMS-Q icon  is displayed on the desktop and the following dialog box is displayed.



	Selecting the NEMS-Q user interface language.
	<p>NEMS-Q Database Server Name</p> <p>Enter the name of the SQL Server, installed on the NEMS Server.</p> <p>Selecting NEMS-Q authentication credentials</p>

	When selecting <input type="radio"/> Server authentication , fill in your Login ID and Password .
	The Test Connection button is used for testing the connection to the SQL Server.
	The name or IP address of the PC to which NetHasp is connected.
	The path of the import directory used by NVDataPump to take files for import.

At the end of selecting the preferences, click  to apply the selection.

Clicking  applies the default values.

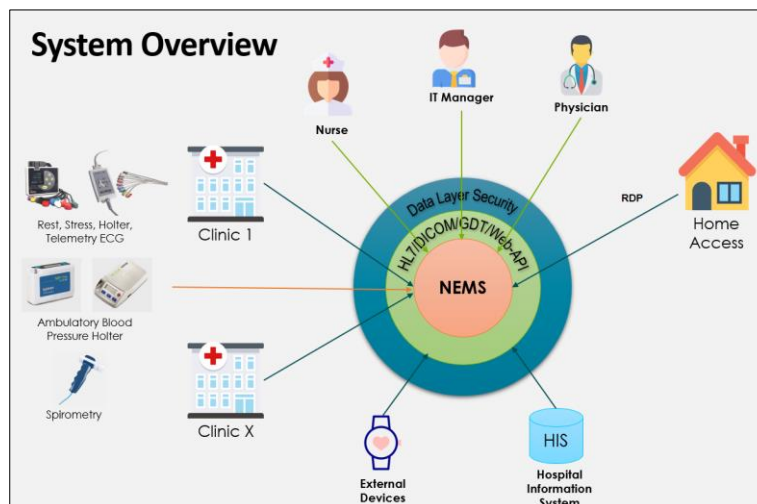
You can change the default values in the **Settings.XML** of NEMS-Q after the installation is completed.

4. Getting Started

Overview


Norav Medical ECG Management System (NEMS) is a comprehensive management solution that combines studies and patient records in a single application, allowing the automation of processes, storage, and ECG display, improving patient care while reducing processing times and costs.

NEMS supports a wide range of cardiac medical devices and records such as Resting ECG, Stress ECG, Holter ECG, and Ambulatory Blood Pressure, Spirometry, including non-Norav PDF Reports.



Features

- Patients' management
- Records management
- Advanced search engine for patients and records
- Holter devices management
- HL7 and DICOM® support
- User access level – Administrator, Physician, Report Viewer, and Technician

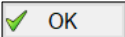
Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 10 of 44

- Multisite support
- Data statistics
- Back-office management system for creating users, groups, sites, physicians, etc.

5. Operation


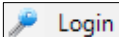
Login to the NEMS-Q System

When opening the NEMS-Q client, you are prompted to provide login information that includes username and password you received from your system administrator.

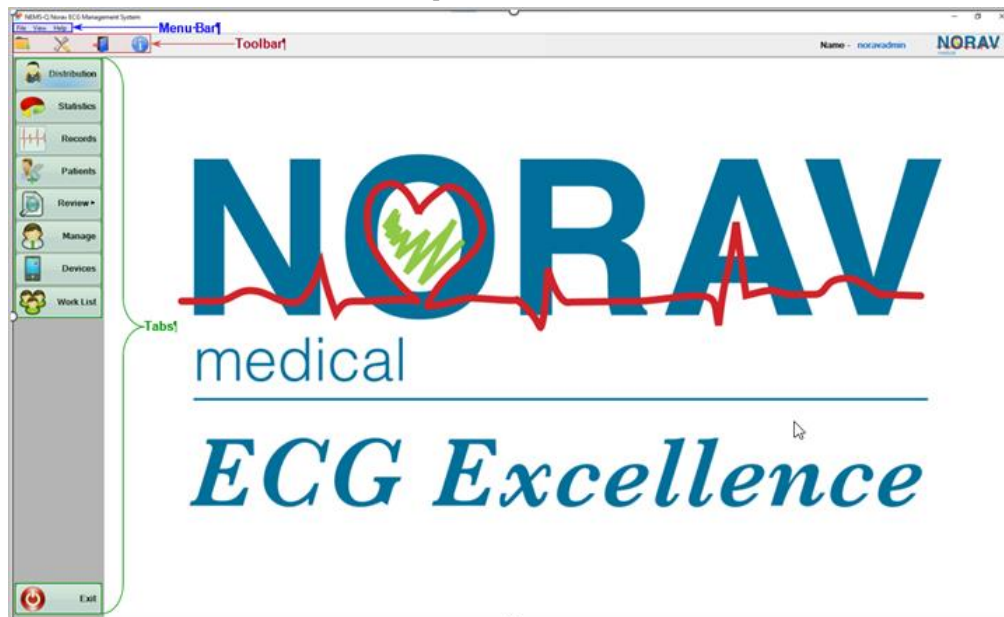
1. Type your username.
2. Type your password.
3. Click .


Login as a Different User

When you have **already logged in** to NEMS-Q and you want to log in as a different user (without exiting the software):

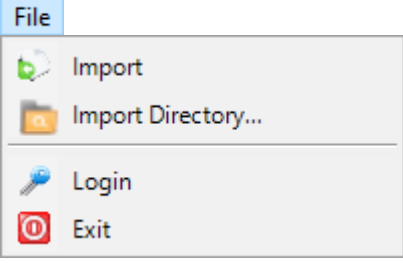
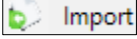
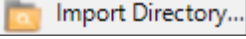
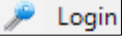
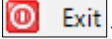

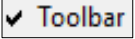
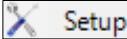
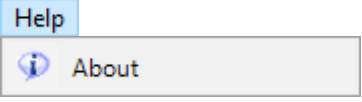
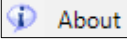
1. Click  on the **Menu Bar**.
2. Click  on the menu items.
3. Enter the new login details.





NEMS-Q Main Screen Operations



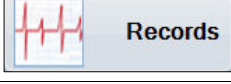
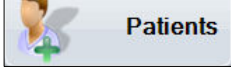
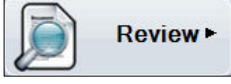



Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 11 of 44





Menu Bar Operations

Button	Description
	Click File : <ul style="list-style-type: none"> To import a record, click . To import a directory, click . To login to NEMS-Q, click . To exit NEMS-Q, click .
	Click View : <ul style="list-style-type: none"> To view or hide the Menu bar, click . To set up NEMS-Q, click .
	Click Help , and then click  to view the About page: This menu is important to view the NEMS-Q Version and Norav Software Permissions.

Button	Description
	Click to import a record (test) file. File types allowed: <code>ECG files (*.rst;*.str;*.hlt;*.hl4;*.lp;*.mnt;*.hrv;*.mnr;*.res;*.dat;*.erf;*.zip;*.nrr;*.xml;*.bp;*.nbp)</code> .
	Click to open the Setup Dialog Box
	Click to exit NEMS-Q.
	Click to view the About page.

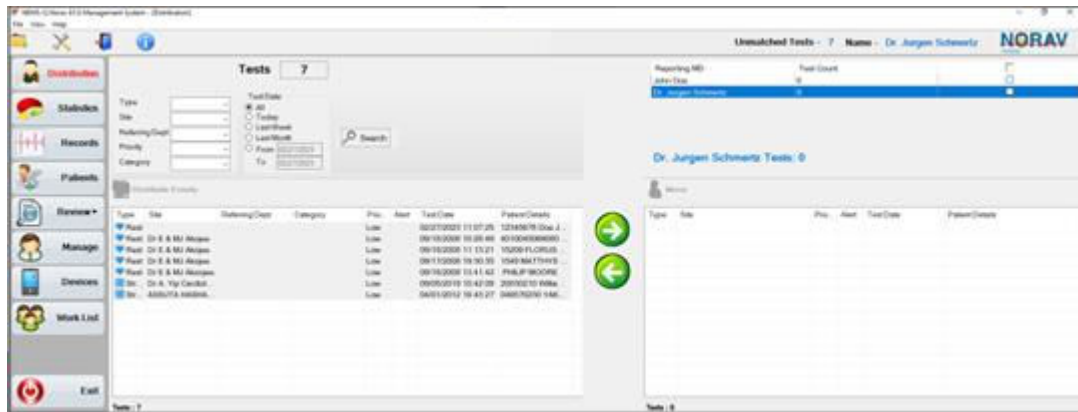
Tab	Description
	Displaying new tests to be distributed for review by physician(s)
	Statistics Module
	Finding a test according to various parameters
	Searching a patient by patient ID, MRN, First Name, Last Name, Group, Birth Date range, and/or Gender as well as editing patient details, adding new patient, deleting patient, moving patient to another group, performing new test, viewing test, comparing Resting ECG tests, viewing report, and reviewing test results
	Reviewing Rest/Stress test results

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 12 of 44


Tab	Description
 Manage	Manage users and passwords, groups, sites, Referring Departments, Referring Physicians, and Test Category
 Devices	Downloading ECG and BP recordings from the recorder
 Work List	Scheduled tests: viewing test order list, searching test by Test Type, Ward, Order, Visit Number, Birth Date range, Patient ID, MRN, First Name, and Last Name
 Exit	Exiting NEMS-Q.

Distribution Tab

The Distribution module allows **attaching new tests per physician** for review purposes, to reduce the number of tests for review (per physician), usually used in scanning centers.



To distribute test(s) to physician(s):

1. Log in with your physician details.
2. Select your details on the top right of the screen.
3. Select the test(s) for distribution.
4. Click .

The selected test(s) are moved to the selected physician's list on the right pane.



Note

Each physician can distribute tests **ONLY** to the selected physician.

Statistics Tab

The Statistics Tab allows displaying data statistics about the test types/status/confirmation, statistics can be displayed by **Site** or by **Reporting Physician**.

The results can be filtered by: **Test Date/Site/Reporting Physician**.

Records Tab

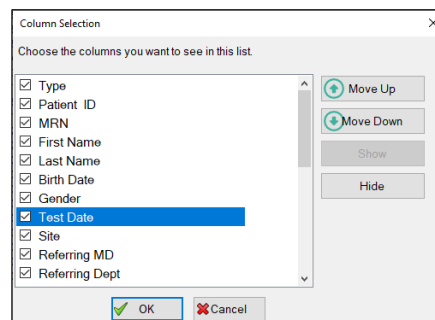
The purposes of the record screen are:

- Search records by different filter types.
- Search record by scanning a barcode.
- Operation on record – In addition to open/review/delete, right-click to view details.

The Records Tab allows displaying records by applying filters on the top pane and performing actions on a specific record.




1. To sort each column in the tests table, right-click on the column header, and select **Sort ascending**, **Sort descending**, or **Unsort** to cancel sorting.
2. To select the columns for view in the tests table and change their order in the table, click **Select Columns...**. The **Column Selection Dialog Box** is displayed.













3. Select the of the column you wish to view.
4. To change the placement of the column in the table, select (highlight) the column, and then click **Move Up** to move the column to the left or select **Move Down** to move the column to the right.
5. To hide a column in the table, click **Hide**.
6. To view the hidden column again, click **Show**.
7. Click **OK**.
8. To view record details, right-click the record.
9. Click **Properties**.

The **Properties** window is displayed showing all the test details under the **General** Tab

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 14 of 44



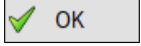

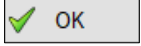
10. To view the test file details and the report name, click the **Tab**.

11. To view the test conclusions, click the **Description** Tab.

Tab	Description
 View	Viewing the selected record within the relevant app
 Print	Printing the selected record.
 Export	Exporting the selected record (marked ).
 Copy	Copying the selected record to backup
 Move	Moving selected record to backup only by administrator
 Delete	Deleting the selected record only by administrator
 Reassign	Reassigning the selected record to another patient
 Review	Reviewing the selected record only by physician
 View Report	Viewing the selected report



Copying a Record


The purpose of the copy operation (administrator or physician) is to reproduce records for backup, for review by another physician outside the NEMS-Q system, or for transfer to another location.

- To copy a record to backup, select it, and click  **Copy**.
The **Copy Dialog Box** is displayed.
- Click .
The **Backup Dialog Box** is displayed.
- Assign a name to the record and then click  **OK**.
The Backup dialog box is closed.
- Click  on the **Copy Dialog Box**, select a folder, and add remarks in the **Remarks** field.
- Click .

Removing a Record

The purpose the move operation (administrator only) is to remove a record to another location outside the NEMS-Q system due to unsuccessful test, the record is required elsewhere, or transfer a record from an old system to a new system. After removal, the record cannot be viewed in NEMS-Q, and only an indication remains of the removed record.


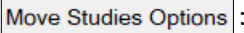
- To move a record to backup, select it (highlight), and click  **Move**.
The **Move Dialog Box** is displayed.
- Click .

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 15 of 44

The **Backup Dialog Box** is displayed.

- Assign a name to the record and then click .


The **Backup Dialog Box** is closed.

- Click , select a folder, and add remarks in the **Remarks** field.
- Select an option from the :

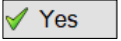
- Remove study , but leave properties
- Remove entire study

- Click .

Deleting a Record


- To delete a record (administrator only), select (highlight) it, and click .

The **Delete Dialog Box** is displayed.

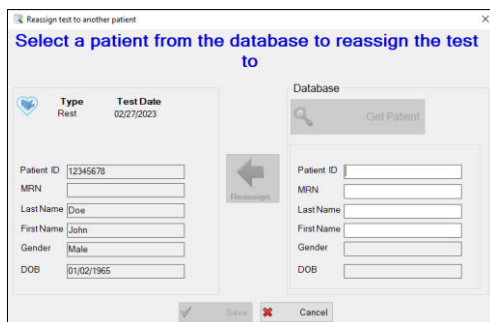
- Select one of the **Remove** options.
- Click .

Reassigning a Record

Reassigning a record is required when the nurse/technician makes a mistake like assigning a record to the wrong patient.

- To reassign a test to another patient, select (highlight) the destination patient, and click .

The **Reassign Dialog Box** is displayed.



- Type the source **Patient ID** and click .

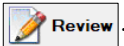
The **Reassign Dialog Box** with the source patient's details is displayed.

- Click .

The **Reassign Dialog Box** is displayed with warning of destination patient's data change.

- Click .

Reviewing a Record

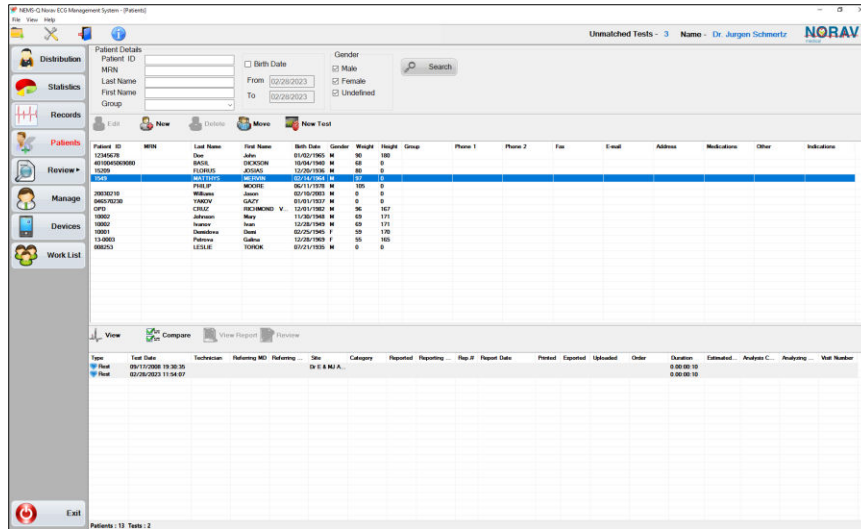
- To review a record, select it (highlight), and click .










The selected record is opened within the relevant app.

- Review the record and add remarks within the relevant app.

Patients Tab


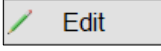
The purpose of the patient module is to manage the patients, search for specific patient or group, view the patient tests, and perform actions on specific tests (e.g., View, Compare, Review).




Tab	Description
 Edit	Editing patient details
 New	Adding new patient
 Delete	Deleting patient
 Move	Moving patient to another group
 New Test	Creating new test for selected patient
 View	Viewing patient's test
 Compare	Comparing patient's tests
 View Report	Viewing the selected report
 Review	Reviewing the selected test

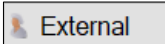
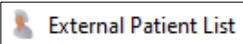
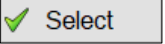
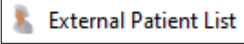
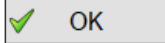
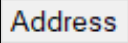
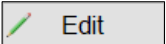
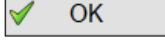
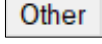
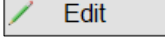
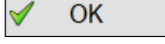
Editing Patient

To change the patient information, follow the next steps:


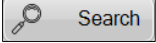
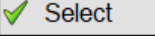
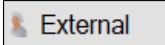
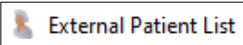
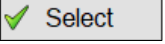
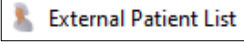
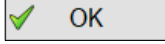
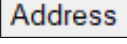

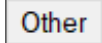
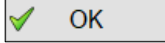
- To edit the patient details (administrator only), select (highlight) the patient, and click  Edit. The **Patient Details Dialog Box** is displayed.
- Under the **Personal** tab, click  Edit and edit the details.

Or


Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 17 of 44

- Click , select a patient from the  dialog box, and then click  on the  dialog box.
- Click  on the **Patient Details Dialog Box**.
 - To edit the patient address, click the  tab.
The **Address Dialog Box** is displayed.
 - Under the **Address** tab, click  and edit the details.
 - Click  on the **Address Dialog Box**.
 - To edit the patient **Medications, Indications, and Other**, click the  tab.
 - Under the **Other** tab, click  and edit the details.
 - Click  on the **Other Dialog Box**.

Adding New Patient

- To add a new patient, click .
The **Personal Dialog Box** is displayed.
- Add new patient details such as: Patient ID, MRN, Last and First Name, Gender, Weight, Height, Birth, Address,
- To look for an existing patient, open the **Patients Screen**, fill in the **Patient ID**, and then click .
The patient is displayed on the patient list, after selecting the patient please click .
Or
- Click , select a patient from the  dialog box, and then click  on the  dialog box.
- Click  on the **Personal Dialog Box**.
- To add the new patient address, click the  tab.
The **Address Dialog Box** is displayed.
- Fill all details.
- Click  on the **Address Dialog Box**.
- To edit the patient **Medications, Indications, and Other**, click the  tab.
The **Other Dialog Box** is displayed.
- Fill all details.
- Click  on the **Other Dialog Box**.


Deleting Patient

To delete a patient along with all attached tests (administrator only), select (highlight) the patient, and click .

The selected patient with all attached tests is deleted.

Moving Patient from One Group to Another

1. To move a patient to another group, select (highlight) the patient, and click .

The **Groups Window** is displayed on the screen under the  button.

2. Click (select) a group from the **Groups Window**.

The selected patient is moved to the selected group.

Creating New Test

1. To create a new test, select (highlight) the patient and click .

The **Test Type List Window** is displayed under the  button.


Test Type
Rest
Stress
Holter
NBP-24 NG
LP
HRV
Monitoring ¹
Spirometer NSpiro™
ABPM

2. Select the required test type from the list.

The corresponding test application is opened.

¹ – Here, “Monitoring” is the name of the app’s module.

Viewing Patient Test

To view a patient's test, select the required test on the bottom pane and click  on the bottom pane.

The corresponding test application is opened, allowing viewing the test.

Comparing Patient Tests

To compare two or more patient **Rest** tests, select (highlight) the tests, and then click



The Resting ECG application is opened, displaying the compared tests.




Viewing Report

To view patient test report, select (highlight) the test, and then click .

The report of the selected test is displayed.

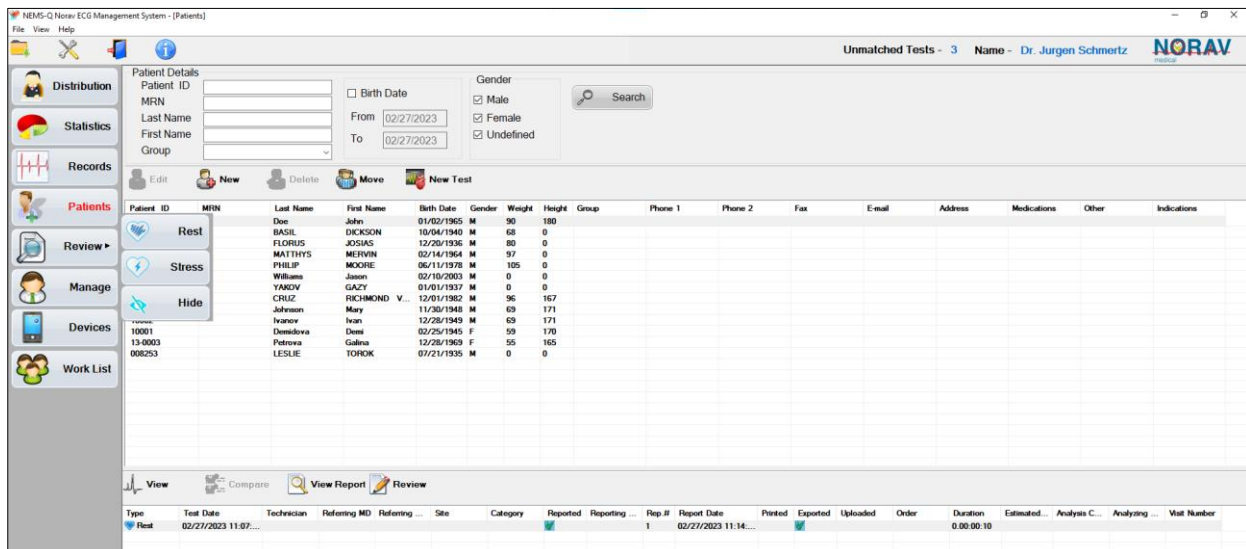
Reviewing Test

To review patient test report (physician only), select the test, and then click .


The corresponding application is opened, displaying the test for physician review, and allowing adding remarks.


Review Tab




The Review Tab allows a physician to open the **Rest** or **Stress** applications for reviewing several test files and writing conclusions.



Patient ID	MRN	Last Name	First Name	Birth Date	Gender	Weight	Height	Group	Phone 1	Phone 2	Fax	E-mail	Address	Medications	Other	Indications
		John	Johan	01/02/1955	M	90	180									
		BASIL	DICKSON	10/04/1940	M	68	0									
		FLORUS	JOSIAS	12/20/1936	M	80	0									
		MATTHYS	MERWIN	02/14/1958	M	97	0									
		PHILIP	MOORE	06/11/1978	M	105	0									
		Williams	Jason	02/18/2003	M	0	0									
		YAKOV	GACY	01/01/1937	M	0	0									
		CRUZ	RICHMOND V.	12/01/1962	M	96	167									
		Johnson	Mary	11/30/1948	M	69	171									
		Ivanov	Iran	12/28/1949	M	69	171									
		Dimitrova	Dani	02/25/1945	F	59	170									
		Petrova	Galina	12/28/1969	F	55	165									
		LESLIE	TOROK	07/21/1935	M	0	0									

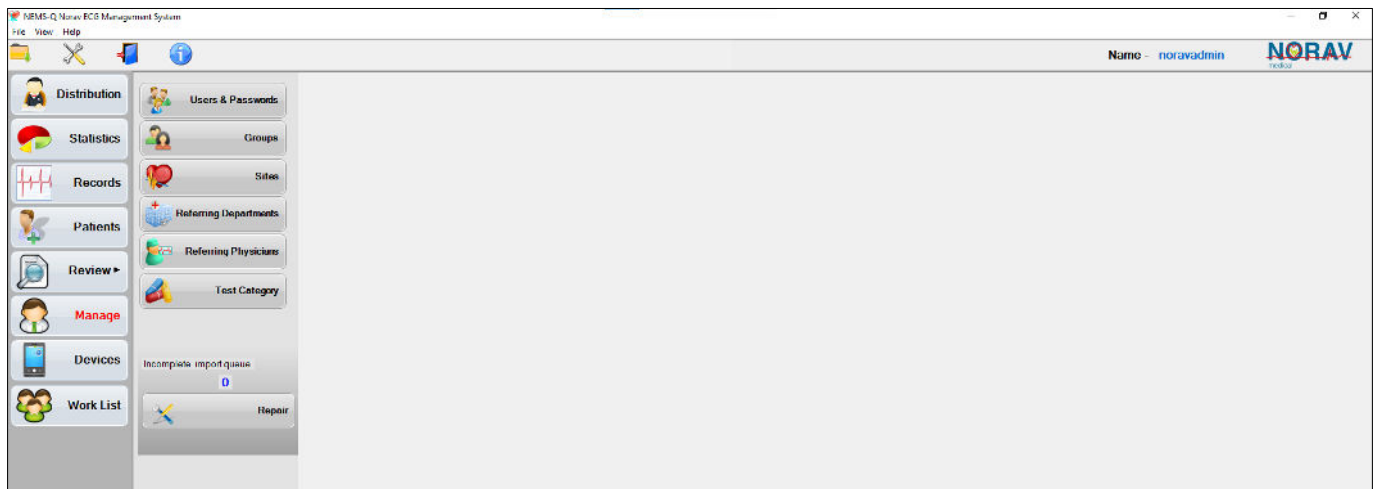
Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 20 of 44

Click the  **Review** tab, and then select from the following options:

































































- To review Rest tests, click  **Rest** .
- To review Stress tests, click  **Stress** .
- To hide these options, click  **Hide** .



Manage Tab


The Manage Tab allows the administrator to Add, Edit, and Delete users and passwords, groups, sites, referring departments, referring physicians, and test categories.

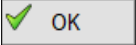
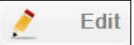


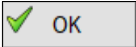
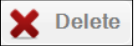
User Group	Permissions
Administrators	Responsible for all management activities, have all permissions excluding review tests and distribute tests.
Customers	View confirmed reports, patients, unconfirmed recordings, worklist, download test, scan recorders, create a patient, open existing test, search patients and records, change own password.
Physicians	View and edit confirmed reports, patients, unconfirmed recordings, worklist, download test, scan recorders, create a patient, open existing test, start new test, search patients, compare, confirm, and review a record, search records, change own password, search a worklist, and start a new test.
Report Viewers	View confirmed reports, visitors, persons outside the organization, QA persons, patients, unconfirmed recordings, worklist, view patient, search patients, and search a record.
Technicians	View confirmed reports, patients, unconfirmed recordings, worklist, download devices, scan recorders, create a patient, open existing test, start new test, search patients, compare, confirm, and review a record, search records, change own password, search a worklist, and start a new test.

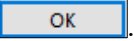
Tab	Description																									
 Users & Passwords	<p>Users and Passwords</p> <table border="1"> <thead> <tr> <th>User Name</th> <th>Name</th> <th>User Type</th> </tr> </thead> <tbody> <tr> <td>noravadmin</td> <td>noravadmin</td> <td>Administrator</td> </tr> <tr> <td>Pulbzd</td> <td>John Doe</td> <td>Physician</td> </tr> <tr> <td>d</td> <td>Dr. Jurgen Schmetz</td> <td>Physician</td> </tr> </tbody> </table> <p>  Add  Edit  Delete </p>	User Name	Name	User Type	noravadmin	noravadmin	Administrator	Pulbzd	John Doe	Physician	d	Dr. Jurgen Schmetz	Physician													
User Name	Name	User Type																								
noravadmin	noravadmin	Administrator																								
Pulbzd	John Doe	Physician																								
d	Dr. Jurgen Schmetz	Physician																								
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 Sites	<p>Sites</p> <ul style="list-style-type: none"> Sites Dr A. Yip Cardiology Practice Inc. Dr E & MJ Akojee Dr E & MJ Akojee <p>  Add  Edit  Delete </p>																									
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 Referring Physicians	<p>Referring Physicians</p> <ul style="list-style-type: none"> Referring Physicians Dr. John Pritchard Dr. Jurgen Schmetz <p>  Add  Edit  Delete </p>																									
 Test Category	<p>Category</p> <ul style="list-style-type: none"> Category ABPM Holter Rest Stress <p>  Add  Edit  Delete </p>																									
<p>Incomplete import queue</p> <p>1</p> <p> Repair</p>	<p>File Name TwoMinutes-30-120HR-500.rst</p> <p>  Import  Skip  Trash </p> <table border="1"> <thead> <tr> <th>Type</th> <th>Name</th> <th>New</th> <th>Add</th> <th>Link</th> </tr> </thead> <tbody> <tr> <td> Site</td> <td>Rambam</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Referring MD</td> <td>Ref Doctor 1</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Referring Dept</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Category</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Type	Name	New	Add	Link	 Site	Rambam				 Referring MD	Ref Doctor 1				 Referring Dept					 Category				
Type	Name	New	Add	Link																						
 Site	Rambam																									
 Referring MD	Ref Doctor 1																									
 Referring Dept																										
 Category																										

- To add a user, click  Users & Passwords and then click  Add .
The **Add User Dialog Box** is displayed.

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 22 of 44

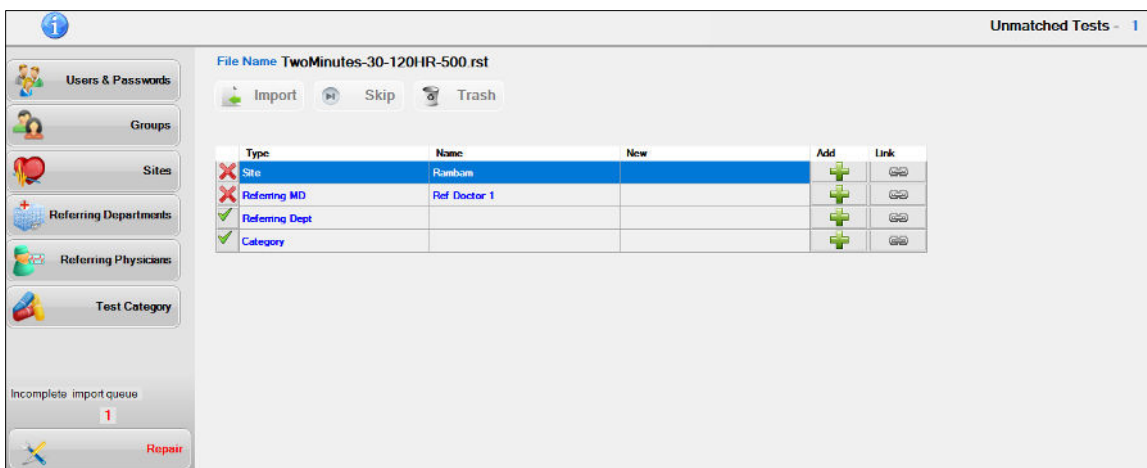
- ◇ **Name** – Full name of the user
 - ◇ **User Name** – NEMS-Q login username
2. Fill the required fields, select the user type from the drop-down list, and then click .
 3. To edit a user, click .


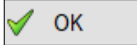

The **Edit User Dialog Box** is displayed.
 4. Edit the required fields, select the user type from the drop-down list, and then click .
 5. To delete a user, click .

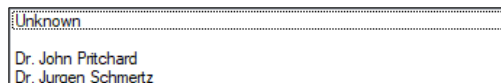
The **Delete User Dialog Box** is displayed.
 6. Click .

To manage  **Groups**,  **Sites**,  **Referring Departments**,  **Referring Physicians**, and  **Test Category**, click the corresponding tab, and perform Step 0 through Step 6 above.


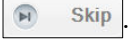
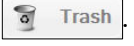
The  button allows correcting incomplete import queues.



1. To **Add** the missing or mismatching **Site** click  and then click .
2. To **Link** the missing or mismatching **Referring Physician (MD)** click  and select the physician from the list.

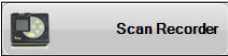


The errors are corrected.

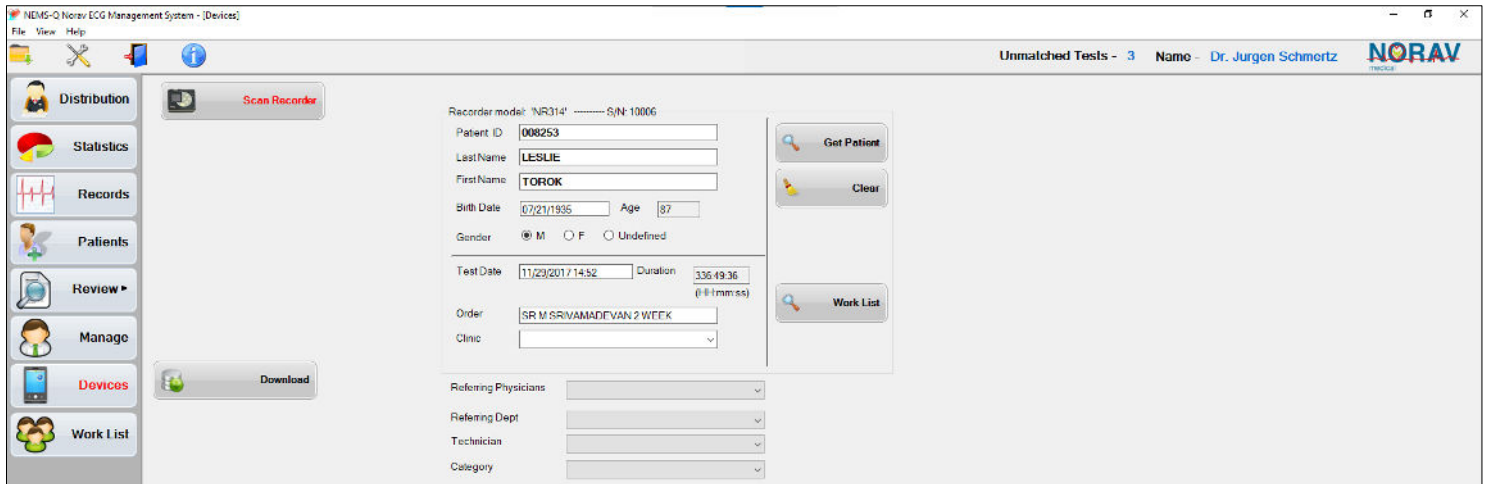
- To import a test file, click .
- To skip a test file, click .
- To delete an incomplete imported test file, click .


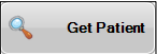
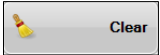
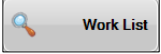
Devices Tab

The Devices Tab allows scanning connected Holter Recorder and downloading patient test to NEMS-Q.


1. Connect the recorder to the PC and click the  button.

The **Patient Details Screen** is displayed.

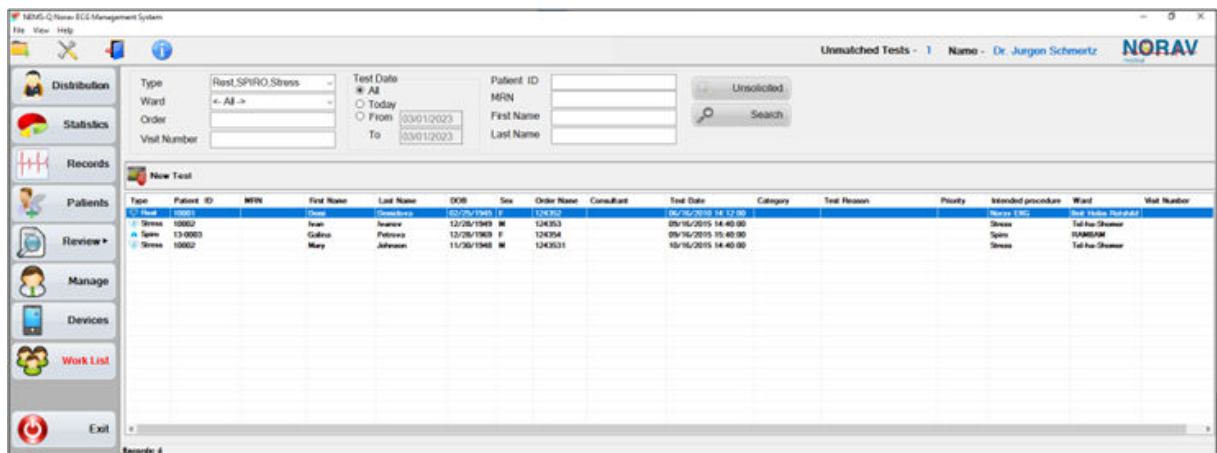


2. To download the test (record) to NEMS-Q, click .
3. To replace the patient details if the patient already exists in the DB, type the first digit of the patient's ID and click .
- The **Patient List Window** is displayed.
4. Select the patient from the list.
The selected patient's details are displayed on the **Patient Details** screen.
5. To **clear** the patient's details, click .
6. To search and attach patient from Work List, click .


Work List Tab

The Work List contains the list of patients pending a test, displaying which test is pending, and allowing to initiate test by clicking the  button.

The Work List source is the Modality Worklist Server DICOM® or HL7 ORM.



Type	Patient ID	MRN	First Name	Last Name	DOB	Sex	Order Name	Consultant	Test Date	Category	Test Reason	Priority	Intended procedure	Ward	Visit Number
Stress	10002		Iran	Jarwan	12/28/1969	M	124353		09/16/2015 14:40:00		Stress		Rest_SPIRO.Stress	Tal Aun (Shamir)	
Stress	13-0003		Gilino	Petrows	12/28/1969	F	124354		09/16/2015 10:40:00		Stress		Stress	ICM&S&M	
Stress	10002		Wery	Jarwan	11/30/1968	M	124353		10/16/2015 14:40:00		Stress		Rest_SPIRO.Stress	Tal Aun (Shamir)	

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 24 of 44


When clicking the **Rest** or **Stress** test type, the testing tool is opened with the patient's and test demographics.


When clicking Holter or ABPM test type, the Patient Details window is opened prompting to Prepare Device.

The Work List tab allows viewing the list of patient tests.


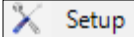

1. Select a patient on the list and click .

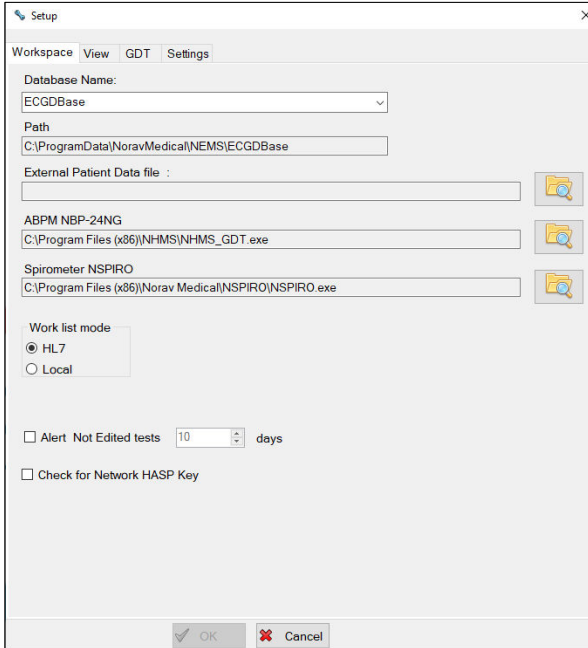
The corresponding test application is opened displaying the patient's details.

2. Verify the details and click .

3. To begin the test, click .


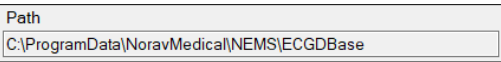

NEMS-Q Setup


To set up NEMS-Q, click  on the **Menu Bar** at the top left, and select  from the drop-down list. Or click  on the **Toolbar**. The **Setup Dialog Box** is displayed.

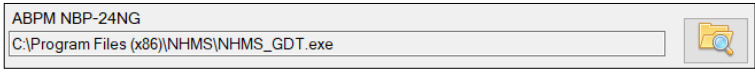
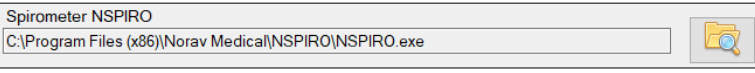
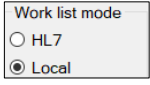




Workspace Tab

The Workspace tab includes the following options.

Workspace Tab Options	Description
	The NEMS-Q database name.
	Default data directory. This folder contains tests and report files.
	Location of the PatientFile.ini external patient data file used for creating the Work List.

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 25 of 44

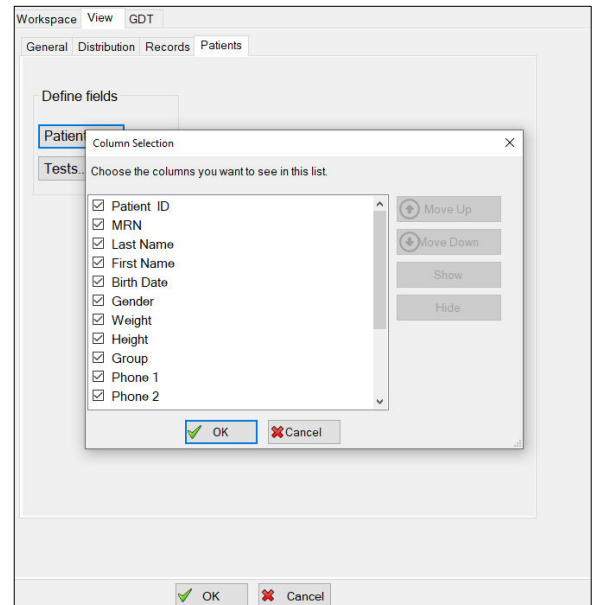
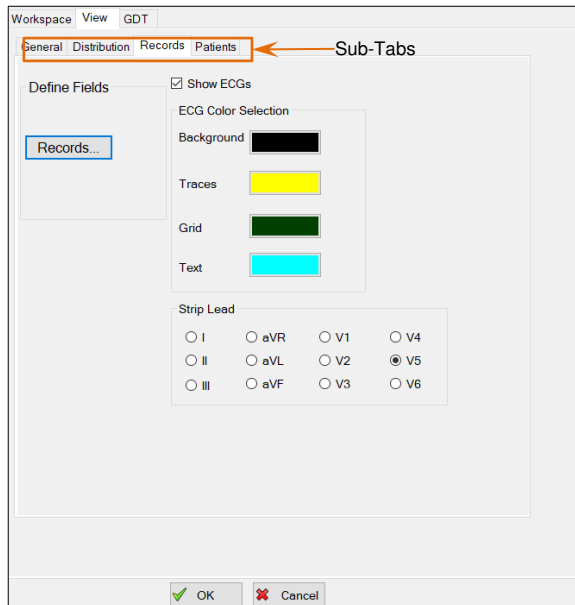
Workspace Tab Options	Description
	The PatientFile.ini contains patients' data used in the Work List when Work list mode is set to <input checked="" type="radio"/> Local .
	Location of the main executable of NHMS blood pressure recording program.
	Location of the main executable of NSpiro™ program.
	Selects Work List preparation mode: via HL7 orders or by reading the PatientFile.ini.
	Select the checkbox and select the number of days for alerting on unedited tests.
	Select the checkbox for prompting to check for the NetHASP key.

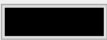



The following parameters are taken from the **Settings.XML** file on your PC in the following path: **C:\ProgramData\NoravMedical\NEMS**

View Tab

The View tab includes the following options.

Parameter	Settings.XML File
Database Name	<DatabaseName>ECGDBase</DatabaseName>
ABPM NBP-24 NG	<NBP>C:\Program Files (x86)\NHMS\NHMS_GDT.exe</NBP>
Spirometer NSPIRO	<NSpiro>C:\Program Files (x86)\Norav Medical\NSPIRO\NSPIRO.exe</NSpiro>



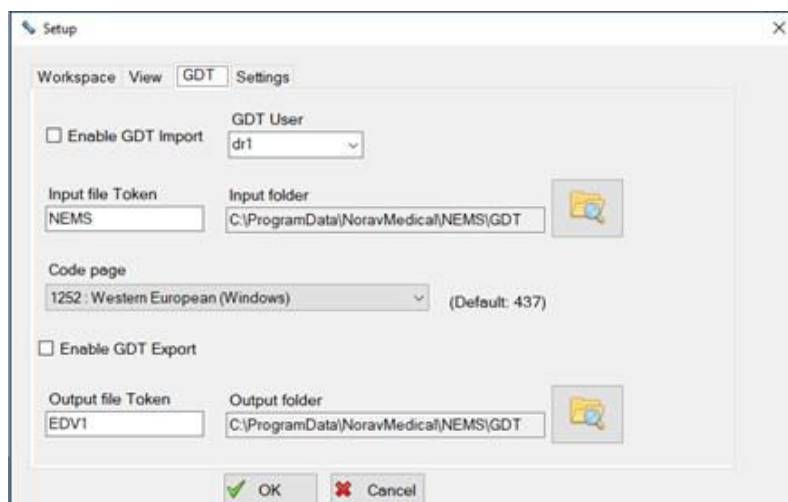
Sub-Tab	Options	Description
General	<input checked="" type="checkbox"/> Main Toolbar	Show the main toolbar buttons.
	<input checked="" type="checkbox"/> Auto Save Settings	Remember the user adjusted screen layout upon exiting the program.
	Save as Default Settings	Save settings as default settings.
Distribution	<input checked="" type="checkbox"/> Auto Selection 10	Number of recordings selected automatically on Distribution screen.
Records	<input checked="" type="checkbox"/> Show ECGs	Preview waveforms of Resting ECG tests.
	ECG Color Selection Background  Traces  Grid  Text 	Set color scheme of ECG waveforms preview window.
	Strip Lead <input type="radio"/> I <input type="radio"/> aVR <input type="radio"/> V1 <input type="radio"/> V4 <input type="radio"/> II <input type="radio"/> aVL <input type="radio"/> V2 <input checked="" type="radio"/> V5 <input type="radio"/> III <input type="radio"/> aVF <input type="radio"/> V3 <input type="radio"/> V6	Set default strip lead on ECG waveforms preview window.
	Define Fields Records...	Select and arrange data columns for display on Records... screen table.
Patients	Define fields Patients... Tests...	Select and arrange data columns for display on Patients... and Tests... screen tables.


GDT Tab



GDT is a communication protocol between the entity that orders the test and NEMS-Q that transfers the test results file (GDT report files generated by NEMS-Q).

The entity that orders the test places the file (patient details and test type) in a specific location from which NEMS-Q reads and displays the file onscreen.

Then the user performs the test after which the test results file is created, and the entity that orders the test receives the test results file. The GDT tab includes the following options.



Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 27 of 44

Options	Description
<input type="checkbox"/> Enable GDT Import	Select checkbox to receive GDT commands from EMR.
GDT User <input type="text" value=""/>	Select the NEMS-Q username to associate it with procedures started via GDT.
Input file Token <input type="text" value="NEMS"/>	First four characters expected in filename of GDT inbound files generated by EMR.
Input folder <input type="text" value="C:\ProgramData\NoravMedical\NEMS\GDT"/> 	Inbound folder to accept GDT inbound files received from EMR.
Code page <input type="text" value="1250 : Central European (Windows)"/> (Default: 437)	Select the Code page, used in the country or related to the country.
<input type="checkbox"/> Enable GDT Export	Select to send GDT reports from NEMS-Q to EMR (NBP-24 NG reports only).
Output file Token <input type="text" value="EDV1"/>	First four characters in filename of GDT report files generated by NEMS-Q.
Output folder <input type="text" value="C:\ProgramData\NoravMedical\NEMS\GDT"/> 	Output folder for placing the GDT report files generated by NEMS-Q.

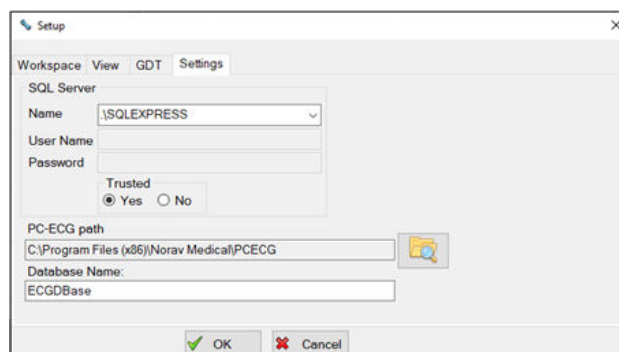
The following parameters are taken from the **Settings.XML** file on your PC in the following path: **C:\ProgramData\NoravMedical\NEMS**


Parameter	Settings.XML File
Input Folder and Output Folder	<pre> <GDT_CodePage>1250</GDT_CodePage> <GDT_Import enabled="TRUE"> <GDT_InputToken>NEMS</GDT_InputToken> <GDT_InputFolder>C:\ProgramData\NoravMedical\NEMS\GDT</GDT_InputFolder> <GDT_User>noravadmin</GDT_User> </GDT_Import> <GDT_Export enabled="TRUE"> <GDT_OutputToken>EDV1</GDT_OutputToken> <GDT_OutputFolder>C:\ProgramData\NoravMedical\NEMS\GDT</GDT_OutputFolder> </GDT_Export> </pre>

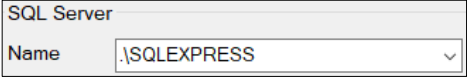
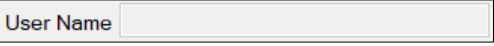
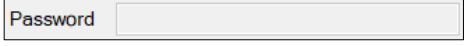
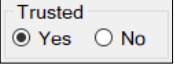
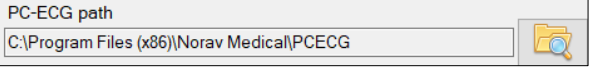

Settings Tab

The settings are used for connecting a NEMS-Q Client to the NEMS DB using SQL-Server.

The settings tab includes the following.



Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 28 of 44

Settings Tab Options	Description
	The instance name of the SQL server where the NEMS-Q database is installed.
	Username to login to the NEMS-Q SQL server.
	User password to login to the NEMS-Q SQL server.
	Select the trusted or mixed authentication mode of NEMS-Q SQL server user login.
	PC-ECG 1200 Stress ECG and Resting ECG applications executable files path/.
	The name of SQL database where the NEMS-Q data tables are located.

The following parameters are taken from the **Settings.XML** file on your PC in the following path: **C:\ProgramData\NoravMedical\NEMS**

Parameter	Settings.XML File
SQL Server Name	<SQLServer>.\SQLEXPRESS</SQLServer>
Username	<UserName />
Password	<Password />
Trusted	<Trusted>Yes</Trusted>
PC-ECG path	<StressPdfFolder>C:\Program Files (x86)\Norav Medical\PCECG</StressPdfFolder>
Database Name	<DatabaseName>ECGDBase</DatabaseName>

Working with the NH-301 Holter Analysis System

The following operations are specific for operating NEMS-Q together with the NH-301 app.

Preparing Holter Recorder for New Patient

1. Make sure the Holter recorder is connected to the PC, or the recorder Memory Card is connected to the PC via the Card Reader device.
2. You can choose to prepare the device with the patient and test details directly from the **Work List**, by selecting the patient from the **Work List**.

Or


Select the patient from the **Patients Screen**, and then click .

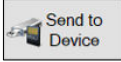
The **Patient Details Window** is displayed.



Note

It is important to complete patient demographics (**Patient ID, First Name, Last Name, Birth Date, and Order** if exists).


Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 29 of 44

3. Validate the onscreen patient details, and then click the  button.
4. Wait until the device has completed the prepare operation, then a status message appears.
5. Disconnect the **Holter Recorder** or the **Memory Card** from the PC.
- 6.

Downloading ECG Recording from Holter Recorder

To download a recording from the Holter device, follow the instructions provided in the [Device section](#).

Reviewing ECG Record using NH-301 Software



The NH-301 Holter software license is required.

Note

To open a Holter recording, click the  tab, select a Holter test, and then click the  button on the record list toolbar.


Working with the PC-ECG 1200 System

The PC-ECG 1200 software is required with the PC-ECG 1200 software license.

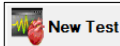
The following operations are specific for operating NEMS-Q with the PC-ECG 1200 system.


1. Starting New ECG Test
2. Opening ECG Record for Review

Starting New ECG Test


1. To start a new test from the **Patients** screen, select (highlight) the patient, click the  button, and then select the test type from the drop-down list.

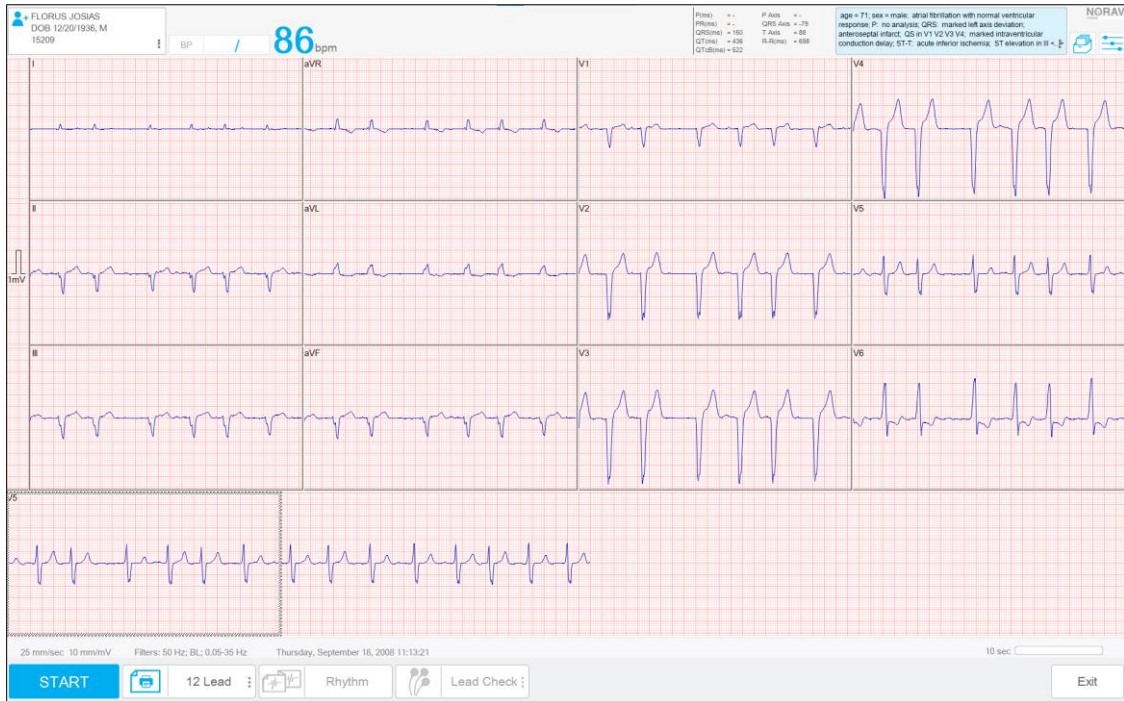
Or

To start a new test from the **Work List Screen**, select the patient and click the  button, which opens a new test of the existing test type.

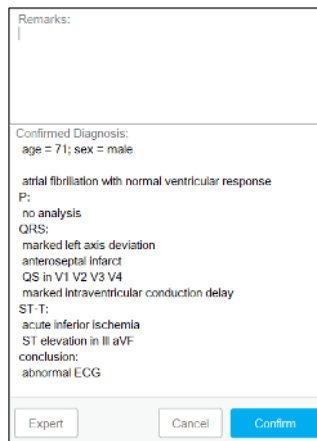
2. After the ECG recording is finished, click  to close the PC-ECG 1200 application. The ECG recording is automatically added to the database and displayed on the Records list.


Opening ECG Record for Review

1. Select an ECG test (only by physician) from the recording list and then click the  button. The ECG recording is opened in the PC-ECG 1200 program interface.
2. Click on the Interpretation window on the top right of the screen (highlighted blue).



The **Remarks Dialog Box** is displayed.



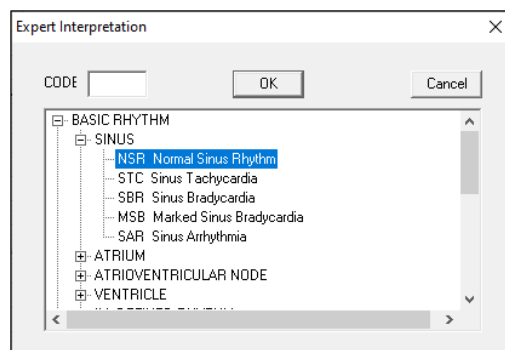
3. Write remark(s) and click .


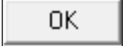
The written remark(s) are added.


Or

To add remark template(s), click .


The **Expert Interpretation Dialog Box** is displayed.



4. Select the appropriate remark template(s) from the  folder(s) and click .

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 31 of 44

The selected remark template(s) is displayed on the **Remarks Dialog Box**.

5. To save the added remark template(s), click 

6. ABPM Module

Product Functions

1. Connect to ABPM device (Oscar 2, NBP One) via USB.
2. Select/Create Patient
 - A. Select Patient -> New Test -> Select ABPM test.
 - B. Later – Select NBP-24 NG test.
3. Prepare recorder for ABPM test.
4. Download the ABPM recording from the recorder.
5. Preview the ABPM results in Record List.
6. Review the ABPM examination results.
7. Report types:
 - Ambulatory Blood Pressure Report
 - Patient Information
 - BP Profile
 - Bar Chart
 - Measurements
 - Diastolic vs Systolic Graph
 - Pie Chart
 - Summary Report

Setup


- ABPM-related parameters
- Measurement Schedule

Specifies when and how often the device takes readings.

For Awake Time and Asleep Time, select from the Hour drop-down menu to establish the start time for these periods.




From the Brachial BP Interval drop-down menus, select the desired interval between readings (5, 10, 15, 20, 30, 45, 60, 90, or 120 minutes).

- When downloading a test from the BP device, you can change the Awake Time, Asleep Time, or change the values.



Awake BP	140/90	mmHg	Physician Comments
Asleep BP	120/80	mmHg	
Awake Time	05:18-21:30	Change	
Asleep Time	21:30-05:18		

- Start study in 5 minutes option: the study starts automatically after programming.
- The physician is allowed to change day and night intervals (Prepare, Download, Edit).
- The measurements table out of limits is in red based on limit settings.
- Manual Measurement events are displayed in the Events field.

							
Print	Export	View Report					
#	Test Date	SYS	MAP	DIA	HR	Code	Notes
1	23-Dec-19 09:40:38	153	108	85	70	M	
2	23-Dec-19 09:40:38	153	108	85	70	M	

- Advanced Options:
 - ◆ **Max. Pressure** – Establishes the maximum inflation pressure for the device (160 mmHg to 280 mmHg).
Suggested setting is 30 mmHg above the highest expected systolic BP.
 - ◆ **Display Results** – When ON, allows viewing the results immediately after a measurement.
 - ◆ **Manual Readings** - When ON, allows the taking measurements outside the scheduled program using the Start/Stop button.
 - ◆ **Day/Night button** – When ON, enables the Day/Night button on the device allowing the patient to start the Awake and Asleep periods according to their daily schedule. A period can be started up to four hours before the programmed period begins.
 - ◆ **Audible Alerts** – Play an alert sound at the beginning and upon completion of each reading, during the Awake period only.
 - ◆ **Retry Attempts** – The device reattempts a measurement that initially failed.
 - ◆ Automatically open a patient file directly after the data is retrieved.
- Viewing an Ambulatory Blood Pressure study:
 - ◆ **ABP Data** – ABP measurement data from the device and relevant graphs.
 - ◆ **Patient Info** – Demographic info: patient name, DOB, sex, patient ID, contact information, physical description, medications, indications.
 - ◆ **Clinic Info** – Clinical information (site).
 - ◆ **Statistics** – Statistical analysis of the ABP study.
 - ◆ **Summary** –Interpretative summary settings and results for current study.
- Events Diary, containing managed list with Date and Time.



After changing, the raw data is saved.

Note

- Blood Pressure Limits for existing patients & global system limits.
The source of average values is the SQL tables (children and adults) hypertension limits.
The values can be changed by the user and have a button for Standard (which restores the values from SQL).
The average values are included in the review pane (Total = Round (Day+Night)/2).

Awake BP	<input type="text" value="140/90"/>	mmHg	Average Values			Physician Comments	
Asleep BP	<input type="text" value="120/80"/>	mmHg	Day	<input type="text" value="135"/>	<input type="text" value="/85"/>		mmHg
Awake Time	<input type="text" value="05:18-21:30"/>		Night	<input type="text" value="120"/>	<input type="text" value="/75"/>		mmHg
Asleep Time	<input type="text" value="21:30-05:18"/>		Total	<input type="text" value="130"/>	<input type="text" value="/80"/>		mmHg

- Various Export File types: CSV, PDF, NBP (Norav Blood Pressure)
- The ABPM module allows comparing current patient record(s) with multiple history records.
- Connection with other systems: HL7
- Ordering the ABPM devices:
 - NBP-24 NG

- NBP One
- Oscar 2

ABPM Settings Screen

Awake BP	<input type="text" value="140/90"/>	mmHg	Average Values		Physician Comments <input type="text"/>	
Asleep BP	<input type="text" value="120/80"/>	mmHg	Day	<input type="text" value="135"/> / <input type="text" value="85"/>		mmHg
Awake Time	<input type="text" value="05:18-21:30"/>		Night	<input type="text" value="120"/> / <input type="text" value="75"/>		mmHg
Asleep Time	<input type="text" value="21:30-05:18"/>		Total	<input type="text" value="130"/> / <input type="text" value="80"/>		mmHg

You can specify global thresholds for Systolic and Diastolic blood pressure.

When these values are exceeded, the measurements are marked accordingly in the analysis.

These values are automatically stored as limits for new patients.

Recent studies (Blood Pressure percentiles by Age and Height) have shown that the limit depends on age and gender in children and adolescents. The European Society for Hypertension (ESH) published comprehensive tables, which constitute the basis of the thresholds set for the Norav ABPM.

Important: The analysis **always** refers to the **current** age of the patient.

Displaying a patient's history requires one print per appointment.




Note

You can set BP limits for each patient individually on the Patient Information pane. BP Limits affect the calculation for the graphs and reports.

ABPM Customized Report

Customization allows defining the report **Header title**, **Footer title**, and **Physician Endorsement** with an option for digital signature.

1. On the **ABPM Review Screen**, click the  **Customized Report** button.

The **Customization Dialog Box** is opened.

Check the items to be included inside the report

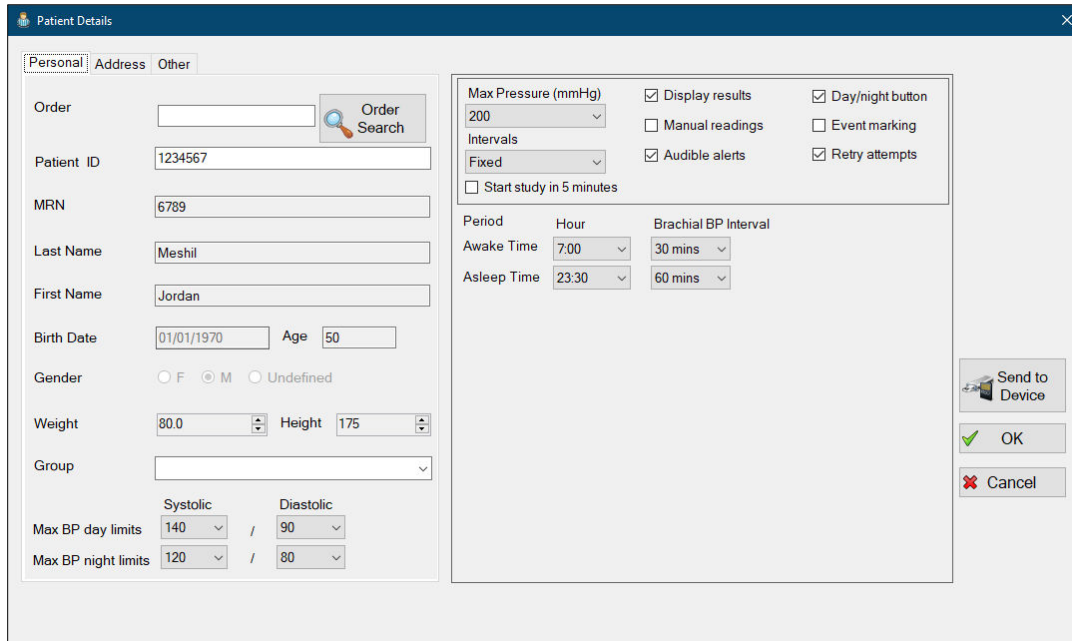
- BP Graph
- Patient Information
- BP Profile
- Bar Chart
- Table of Measurements
- Dia vs Sys
- Pie Chart
- Summary Report

2. Select the of the items to be included in the report.
The selected items are saved (as global settings). Default settings include all reports.
3. Click .

Preparing ABPM Recorder for Test


Preparing the ABPM recorder for an ABP study involves filling out an onscreen form to set the parameters for your study to be transferred to the device. You can also use a template to fill out the form.

UI Item	Description
Patient ID	Patient ID for reporting and referencing data.
Patient name	Enter patient name (first, middle, last).
Measurement Schedule:	Specifies when and how often the monitor takes readings. For Awake time and Sleep time, select from the Hour pull-down menu to establish the start time for these periods. From the BP Interval pull-down menu, select the desired interval between readings (none, 5, 10, 15, 20, 30, 45, 60, 90 or 120 minutes).
Start study in 5 minutes:	Slider denotes that the study will start automatically after programming; unchecked denotes that the study will be started with the first press of the Start/Stop button when the monitor is powered ON.
Max Pressure	Establishes the maximum inflation pressure for the monitor (options between 160 and 280 mmHg). Suggested setting is 30 mmHg above the highest expected systolic BP. NOTE: The ABP monitor will not inflate to Max Pressure with each reading; instead it inflates to 30 mmHg above the previous systolic reading.
Intervals	Set interval type. Select Fixed to set the intervals to exact times. Select Standard for +/- 5 minutes around the selected intervals.
Display results	When on, allows the patient to view the results immediately after a measurement. NOTE: Display Results is always on for the first 30 minutes of study.
Manual readings	When on, allows the patient to take measurements outside of the scheduled program using the Start/Stop key. If manual readings are disabled/off, Start Study in 5 minutes MUST be enabled/on. If Start study in 5 minutes is enabled/on, user can elect to enable/on or disable/off manual readings NOTE: Start study in 5 minutes requires the batteries to be inserted during programming. NOTE: Manual Readings is always ON for the first 30 minutes of the study.
Audible alerts	Play an alert sound at the beginning and upon completion of each reading, during the awake period only.
Retry attempts	The monitor will reattempt a measurement that initially fails.
Day/night button	When on, enables the Day/Night button on the monitor, allowing the patient to start the Awake and Sleep periods according to their daily schedule. A period can be activated to four hours before the programmed period begins. The monitor will also record the time the day/night button is pressed.
Event marking	When enabled, allows the patient to mark up to 30 events during the study.



Patient Details

Personal | Address | Other

Order: 

Patient ID:

MRN:

Last Name:

First Name:

Birth Date: Age:

Gender: F M Undefined

Weight: Height:

Group:

Max BP day limits: Systolic / Diastolic

Max BP night limits: Systolic / Diastolic

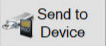
Max Pressure (mmHg): Display results Day/night button

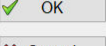
Intervals: Manual readings Event marking

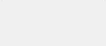
Start study in 5 minutes Audible alerts Retry attempts

Period: Hour Brachial BP Interval

Awake Time: Asleep Time: Brachial BP Interval

 Send to Device

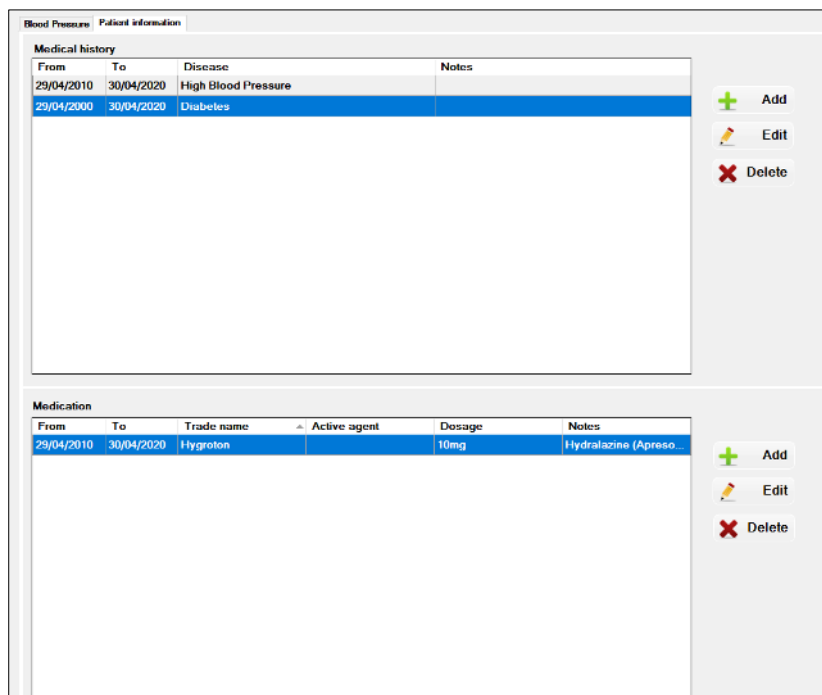
 OK

 Cancel

Editing Patient Medical Info History


The purpose is allowing the user to modify medical history and medications for awareness of the physician/clinicians.


The user can add/edit/delete medical history and medications.




Medical history

From	To	Disease	Notes
29/04/2010	30/04/2020	High Blood Pressure	
29/04/2000	30/04/2020	Diabetes	


 Add


 Edit


 Delete

Medication

From	To	Trade name	Active agent	Dosage	Notes
29/04/2010	30/04/2020	Hygroton		10mg	Hydralazine (Apresso...

 Add

 Edit

 Delete

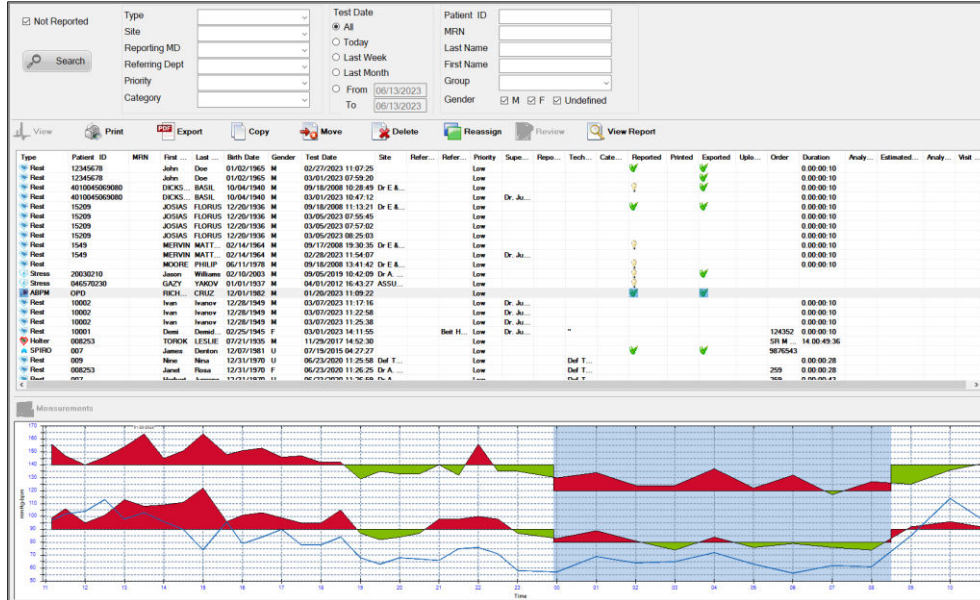
Downloading ABPM Recording

To download a recording from the ABPM device, follow the instructions provided in the [Device section](#).

Previewing Test Results

Preview the ABPM results in the Records window. The blood pressure profile graph is displayed when clicking on a specific patient record.

The common layout is like the Resting ECG preview window (setup-enabled).



The white areas represent **Awake Time**, and the blue-highlighted area represent **Asleep Time**.

The top chart is the **Systolic BP chart**, and the bottom chart is the **Diastolic BP chart**.

The **red** areas represent **BP higher than the BP Limit** (preset per patient before ABPM), which is represented by the straight horizontal line on the bottom of the **red** areas.

The **green** areas represent **BP lower than the BP Limit** (preset per patient before ABPM), which is represented by the straight horizontal line above the **green** areas.

The **blue** chart, which is superimposed on the bottom Diastolic BP chart, is the HR chart.

Reviewing ABPM Recording

You can access all functions from the main ABPM window. More windows may appear depending on the function.

- Patient & Test Information Panel (left side)
 - Patient ID, MRN, Last Name, First Name, Birth Date, Age, Gender, Weight, Height, Order (Test-ID), Test Date, ABPM Recorder Type, Serial Number
- Common Actions Toolbar (on top of BP measurements table)
 - Print Report, Export Report, Preview Report, View Report, Customized Report, Send Report, Save Report
- ABPM Review Panel
 - BP Measurements Table
 - BP Limits
 - Awake Time, Asleep Time
 - BP Graph (default)
 - Physician Comments

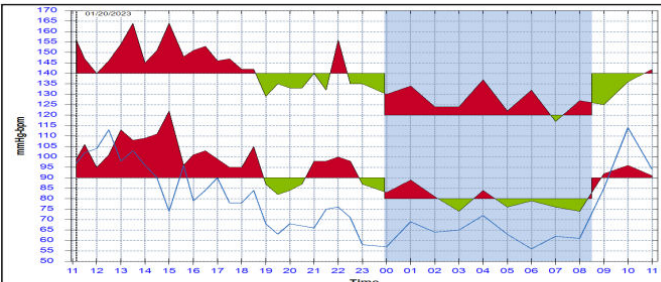
Report Types

Ambulatory Blood Pressure Report

Ambulatory Blood Pressure Report

Patient ID	OPD	Weight	96 kg	Height	167 cm
MRN		Address			
Last Name	CRUZ	Order			
First Name	RICHMOND VALDEZ	Print Date:	03/05/2023		
Birth Date	12/01/1982	Age	40	Test Date:	01/20/2023
Gender	Male				

Physician Comments



Period	Time	Samples	Average SYS mmHg (+/-Std.Dev)	Average DIA mmHg (+/-Std.Dev)	Average HR BPM (+/-Std.Dev)	BP Load Sys (%)	BP Load Dia (%)
Overall	11:09-12:00 (24:50)	41	140 (+/-11.6)	94 (+/-11.7)	79 (+/-16.4)	73	73
Awake Period	08:30-23:55 (15:25)	50	144 (+/-10.1)	99 (+/-9.2)	85 (+/-15.4)	68	82
Asleep Period	23:55-08:30 (08:35)	9	127 (+/-6.4)	80 (+/-5.1)	63 (+/-5.1)	89	44
Dipping	SYS = 11.39% DIA = 19.23%						

Referring MD	Reporting MD	Dr. Jurgen Schmetz	
Signature _____	Signature _____	Date _____	Date _____

BP Graph (Middle Pane)

The left-hand Y-axis with the mmHg units applies to systolic, diastolic, and mean BP values.

The X-axis applies to time (hour).

The daily intervals are highlighted (Awake Time in white, Asleep Time in light blue).

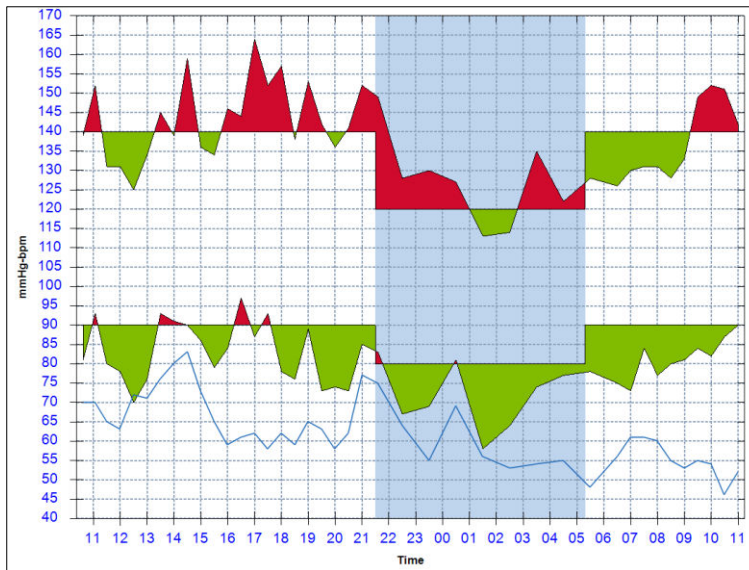
Day counts all daytime intervals together.



Note

You can set these values when preparing for a new ABPM test.

The blue-line (Y-axis) with the HR units (BPM) applies to heart rate.



Brachial BP Results (Bottom Pane)

Period – Overall (awake & asleep periods) **Awake Period**, **Asleep Period**, and **Dipping** (the percentage of low systolic and diastolic BP during night relative to daytime)

Time – from hour - to hour (number of hours)

Samples – The number of samples

Average SYS BP [mmHg] (+/-Std.Dev) – Average systolic BP in mmHg (\pm BP deviation)

Average DIA BP [mmHg] (+/-Std.Dev) – Average diastolic BP in mmHg (\pm BP deviation)

Average HR [BPM] (+/-Std.Dev) – Average HR in BPM (\pm BPM deviation)

BP Load Sys (%) –Percentage of abnormally elevated systolic BP readings relative to normal

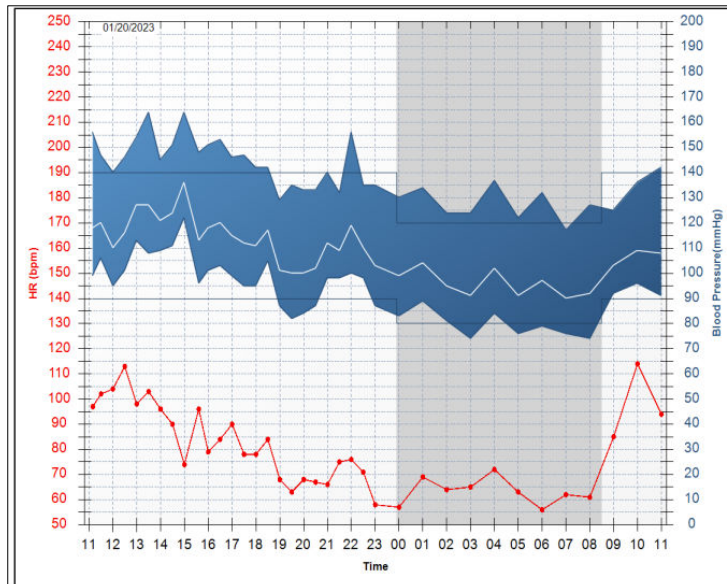
BP Load Dia (%) –Percentage of abnormally elevated diastolic BP readings relative to normal

Brachial BP Results							
Period	Time	Samples	Average SYS mmHg (+/-Std.Dev)	Average DIA mmHg (+/-Std.Dev)	Average HR BPM (+/-Std.Dev)	BP Load Sys (%)	BP Load Dia (%)
Overall	11:09-12:00 (24:50)	41	140 (+/-11.6)	94 (+/-11.7)	79 (+/-16.4)	73	73
Awake Period	08:30-23:55 (15:25)	50	144 (+/-10.1)	99 (+/-9.2)	85 (+/-15.4)	68	82
Asleep Period	23:55-08:30 (08:35)	9	127 (+/-6.4)	80 (+/-5.1)	63 (+/-5.1)	89	44
Dipping	SYS = 11.39% DIA = 19.23%						
Referring MD	Reporting MD			Dr. Jurgen Schmetz			
Signature	Date	Signature	Date				

Patient Information

Patient Information					
Patient ID	OPD	Weight	96 kg	Height	167 cm
MRN		Address		Order	
Last Name	CRUZ	Print Date:	05/18/2023		
First Name	RICHMOND VALDEZ	Test Date:	01/20/2023		
Birth Date	12/01/1982	Age	40		
Gender	Male				
Medical History					
From	To	Disease	Notes		
Medications					
From	To	Trade Name	Active Agent	Dosage	Notes

BP Profile



The right-hand Y-axis with mmHg units applies to Systolic, Diastolic, and mean BP values.

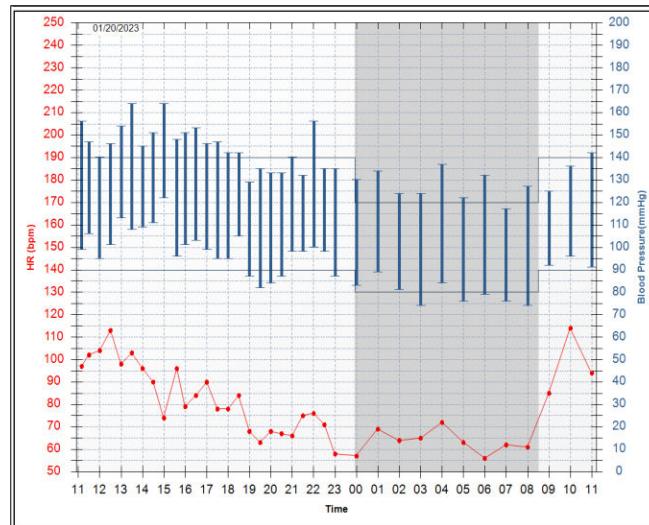
The left-hand Y-axis with the BPM units applies to heart rate (HR).

The X-axis applies to time.

The daily intervals are highlighted (Awake Time in white, Asleep Time in gray).

Day counts all three daytime intervals together.

Bar Chart



In this profile, the following values of the test series are displayed graphically in a bar chart as a function of time:

- Systolic values
- Median values
- Diastolic values
- Heart rate

The right-hand BP Y-axis with mmHg units applies to Systolic, Diastolic, and mean BP values. The left-hand HR Y-axis with BPM units applies to heart rate.

The X-axis applies to time (hours).

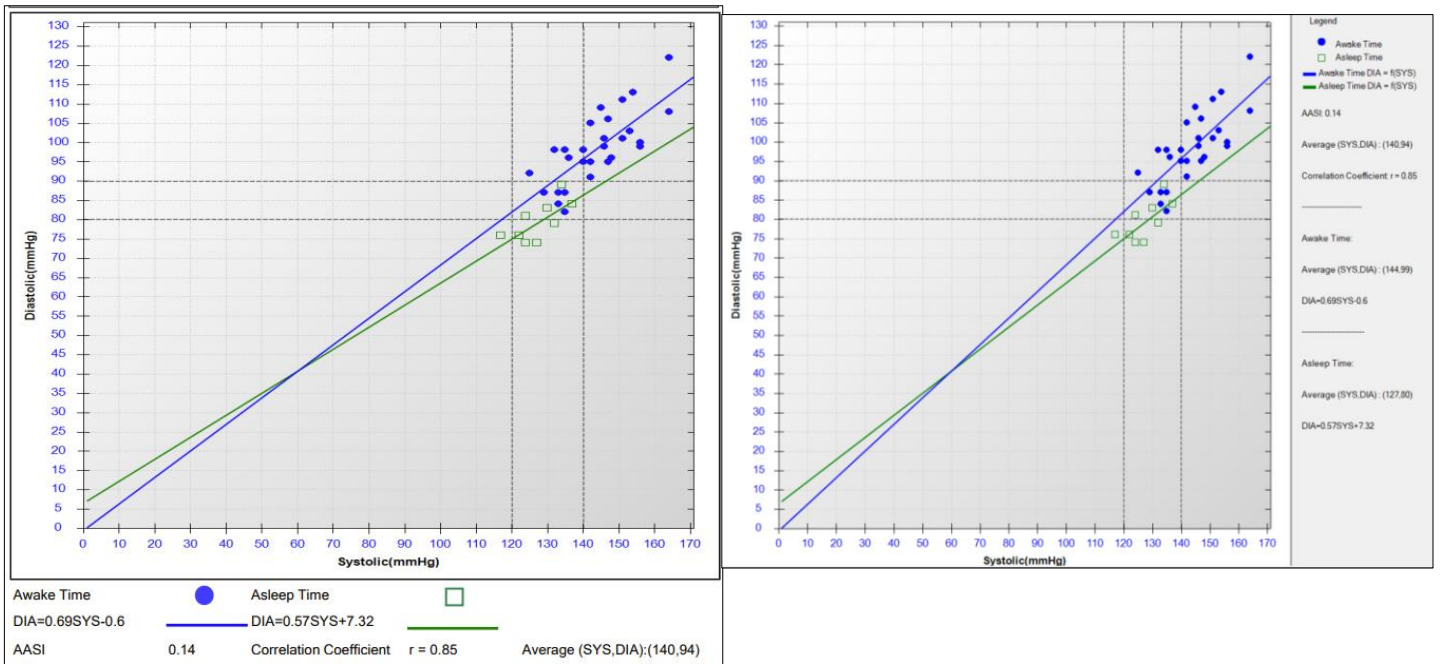
The daily intervals are highlighted (Awake Time in white, Asleep Time in gray).

Day counts all three daytime intervals together.

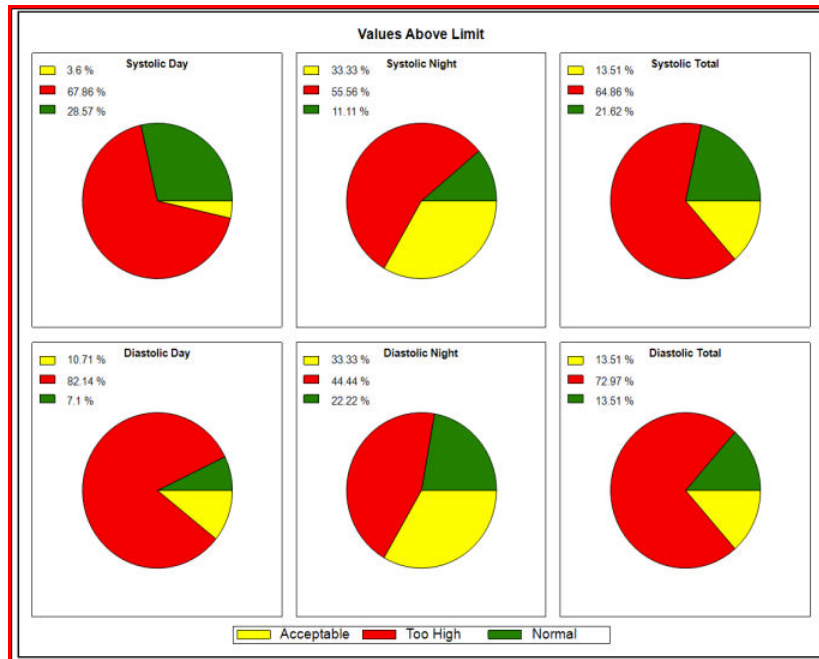
Measurements

Measurements							
#	Test Date	SYS	MAP	DIA	HR	Code	Notes
1	01/20/2023 11:09:22	156	118	99	97	A	
2	01/20/2023 11:30:03	147	120	106	102	A	
3	01/20/2023 12:00:03	140	110	95	104	A	
4	01/20/2023 12:30:03	146	116	101	113	A	
5	01/20/2023 13:00:03	154	127	113	98	A	
6	01/20/2023 13:30:03	164	127	108	103	A	
7	01/20/2023 14:00:03	145	121	109	96	A	
8	01/20/2023 14:30:03	151	124	111	90	A	
9	01/20/2023 15:00:03	164	136	122	74	A	
10	01/20/2023 15:30:03	146	114	98	84	E 4	Exceeded measurement time limit: 140 seconds
11	01/20/2023 15:36:07	148	113	96	96	A	
12	01/20/2023 16:00:03	151	118	101	79	A	
13	01/20/2023 16:30:03	153	120	103	84	A	
14	01/20/2023 17:00:03	146	115	99	90	A	
15	01/20/2023 17:30:03	147	112	95	78	A	
16	01/20/2023 18:00:03	142	111	95	78	A	
17	01/20/2023 18:30:03	142	117	105	84	A	
18	01/20/2023 19:00:03	129	101	87	68	A	
19	01/20/2023 19:30:03	135	100	82	63	A	
20	01/20/2023 20:00:03	133	100	84	68	A	
21	01/20/2023 20:30:03	133	102	87	67	A	
22	01/20/2023 21:00:03	140	112	98	66	A	
23	01/20/2023 21:30:03	132	109	98	75	A	
24	01/20/2023 22:00:03	156	119	100	76	A	
25	01/20/2023 22:30:03	135	110	98	71	A	
26	01/20/2023 23:00:03	135	103	87	58	A	

Diastolic vs Systolic Graph






Pie Chart



The values of one measurement series are analyzed according to the BP limits set.


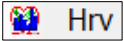

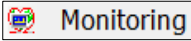
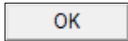
The Systolic and Diastolic pie charts show the percentages of measurements as follows:

- Acceptable 
- Too High 
- Normal 

Summary Report

Summary Report										
Patient ID	OPD		Weight	96	kg	Height	167	cm		
MRN			Address							
Last Name	CRUZ		Order							
First Name	RICHMOND VALDEZ		Print Date:	05/18/2023						
Birth Date	12/01/1982	Age	40	Test Date:	01/20/2023					
Gender	Male									
Summary										
Period	Time	Samples	Valid Samples	Valid Samples (%)	BP Load Sys (%)	BP Load Dia (%)	Maximum SYS	Maximum DIA	Minimum SYS	Minimum DIA
Overall	01/20/2023 11:09 01/21/2023 12:00 (24:50)	41	37	90	73	73	164	122	117	74
Awake Period	08:30-23:55 (15:25)	50	28	56	68	82	164	122	125	82
Asleep Period	23:55-08:30 (08:35)	9	9	100	89	44	137	89	117	74
Dipping	SYS = 11.39% DIA = 19.23% <0% Inverted; <10% Non-Dipper; <20% Normal; >=20% Extreme									
Average Values										
Measurements	Awake Period		Asleep Period		Overall					
	Value	Goal	Value	Goal	Value	Goal				
SYS (mmHg)	144	<135	127	<120	140	<130				
DIA (mmHg)	99	<85	80	<75	94	<80				
MAP (mmHg)	114		95		109					
HR (BPM)	85		63		79					
PP (mmHg)	45	<60	47		45					

7. Working with the HRV, Late Potential, and ECG “Monitoring” Applications

- Select the patient from the **Patients Screen**, click the  button, and then select the  or  or  test type correspondingly. The **Patient Data Dialog Box** is displayed.
- Validate the patient details and click .
- For detailed description, refer to the PC-ECG IFU.

8. Working with the NSpiro™ Application

For detailed description, refer to the [NSpiro™ Quick Guide](#), the [NSpiro™ Software IFU](#). Before working with the NSpiro™ device, install the NSpiro™ software on your PC.

Appendix – Interfacing with Information Systems

There are several ways to exchange information between NEMS-Q and Hospital Information System (HIS).

Demographic Data

HIS Preparing Patient Demographic Data for NEMS


This uses a text file named PatientFile.ini. The file location is defined in NEMS-Q setup.

The file consists of patient data segments. Maximum length is 999 patients.

Field Name	Type	Max. Length	Format	Comments
[PatientDataXXX]	Header	Fixed	[PatientData001] to [PatientData999]	Segment counter
ID	Alphanumeric	30	Cannot contain \ / ? * " < > _ symbols	ID number (MRN)
LastName	Alphanumeric	30	Cannot contain \ / ? * " < > _ symbols	
FirstName	Alphanumeric	30	Cannot contain \ / ? * " < > _ symbols	
BirthDay	Number	2	01 to 31 or 1 to 31	
BirthMonth	Number	2	01 to 12 or 1 to 12	
BirthYear	Number	4	YYYY	
Sex	Number	1	0 - Female, 1 - Male, 2 - Undefined	
Weight	Number	3	0 to 500 (integer)	kilograms
Height	Number	3	0 to 300 (integer)	centimeters
Address	String	256	Any text	
Phone1	String	15	Any text	
Phone2	String	15	Any text	
Fax	String	15	Any text	
E-Mail	String	30	Any text	
Medications	String	256	Any text	
Other	String	256	Any text	Any textual data
TechName	String	30	Cannot contain \ / ? * " < > _ symbols	Performing person
PhysName	String	30	Cannot contain \ / ? * " < > _ symbols	Attending physician
IDR	Alphanumeric	30	Cannot contain \ / ? * " < > _ symbols	Accession number
Case_ID	Alphanumeric	30	Cannot contain \ / ? * " < > _ symbols	Visit number
Employee_Resp	String	30	Any text	
Type	String	30	ECG, Stress, Rest, Holter, ABPM, SPIRO	Examination type
ScheduledDate	Number	12	YYYYMMDDHHMM	Scheduled date
Status	Number	1	0 - scheduled, 1 - in process, 2 - completed	Examination status
Location	String	30	Any text	Examination office
ReferPhys	String	30	Any text	Reference physician
AlternateID	String	30	Cannot contain \ / ? * " < > _ symbols	Alternate ID number

At least one of the **ID**, **LastName**, or **FirstName** fields must be completed.

When all these fields are blank, the section of this patient is ignored.

Document Title:	NEMS-Q ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-500.275.018	Document Rev.: 03	Document Date: 21.12.2023	Page 44 of 44

HL7 Orders and Reports

The HL7 interface enables NEMS-Q to receive test orders from HIS and return observation results to HIS. This exchange of data can be done via a TCP/IP socket or using a Shared Folder method.

Interface via TCP/IP

The HL7 Integration Engine optional software module is required.

Shared Folder Method

Communication is through two shared folders:

- **Inbound** folder (where HIS is sending the ORM^O01 format HL7 files)
- **Outbound** folder (where NEMS-Q is returning the observation results as ORM^R01 format HL7 files).

GDT Interface

NEMS-Q communicates with EMR programs for patient selection and data management. It handles medical signals (ECG, ABPM, spirometry, etc.), while EMR manages patient data.

New procedures are created, and existing ones edited in NEMS-Q; EMR updates with key data post-procedure.

Calling NEMS-Q from EMR via GDT

Configure EMR to call NEMS-Q Client with /GDT command line switch (e.g., C:\Program Files (x86)\Norav Medical\NEMS\EMSApplication.exe /GDT).

Functionality

1. EMR prepares and places a GDT command file in the GDT Inbound folder.
2. Launch NEMS-Q Client with /GDT switch.
3. NEMS-Q executes procedures from the GDT command file.
4. GDT report generated in GDT Outbound folder post-procedure.
5. Exit NEMS-Q Client manually or automatically.

Opening Patient Data in NEMS-Q Interface via GDT

1. Start EMR, select patient, perform Open Patient History command.
2. NEMS-Q processes patient records and procedures.
3. EMR auto-updates with results post-action.

Performing New Test via GDT

1. Initiate EMR, select patient, start desired procedure.
2. NEMS-Q displays procedure details for user validation.
3. Execute procedure; EMR auto-updates with results.

Displaying Existing Procedure via GDT

1. Start EMR, select patient, choose existing procedure.
2. Activate NEMS-Q for review via EMR commands.
3. Post-review, EMR auto-updates with results.