




VERSION: 2.7.5.0

DATE: 21.12.2023

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Document Title:	NEMS-A ver. 2.7.5.0 – Instructions for Use			
Document No.:	NV-400.275.028	Document Rev.: 03	Document Date: 21.12.2023	Page 2 of 33

NEMS-A Instructions for Use

For software version: 2.7.5.0

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Document Number: NV-400.275.028

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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.

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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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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	

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Abbreviations and Acronyms

Abbreviation	Meaning
ABPM	Ambulatory Blood Pressure Monitoring ¹
BP	Blood Pressure
ECG	Electrocardiogram
ECG Monitoring ²	Module for ECG testing during activity (ergometer, treadmill, etc.).
EMR	Electronic Medical Record
EMS	ECG Management System
GDT	Gerätedatentransfer (device data transfer) A format to transfer data among medical devices and software systems.
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


^{1,2} – 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-A Intended Use

The NEMS-A Management System software is intended to be marketed 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.

NEMS-A is used as an archive system allowing managing tests and patients as well as displaying real-time status of tests including reports confirmed by a physician, and unconfirmed reports.

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NEMS-A 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.

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 and Late Potential 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 collected 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 aids in assessing myocardial ischemia in patients with confirmed or suspected coronary artery disease. This involves an ST segment algorithm tested for ST segment data accuracy, utilizing a database for performance evaluation. 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.

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-A 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.

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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-A package contains the following elements:

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

Compatible Applications


- PC-ECG 1200 (Rest, Stress, HRV, LP, and ECG “Monitoring” application)
- NECG 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-A 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

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	Sentinel driver Norav printer driver
Additional Software (3rd parties)	HMS IEM ABPM PDF Viewer

3. NEMS-A Installation

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

For complete installation of NEMS-A, run the installation package as an administrator.

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

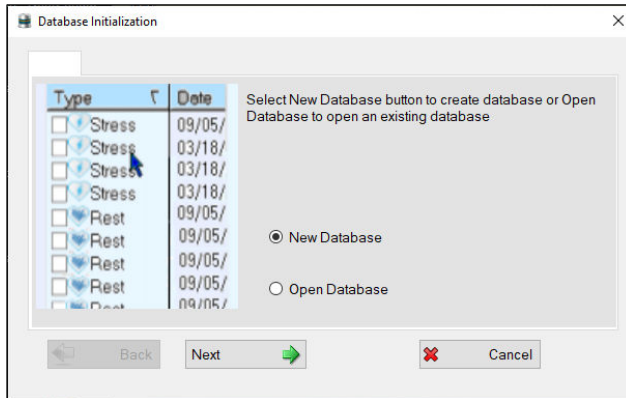
- Patients management
- Test Records management
- Advanced engine enabling search through patients' data and Records
- Holter and ABPM devices management
- Managing Patient Groups, Referring Physicians, Technicians, and Reporting MD lists.

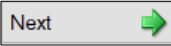
First Time Use

When using NEMS-A for the first time, you are prompted to confirm the location of the database.

1. If no database exists, select **New Database**
2. To work with an existing database, select **Open Database**.


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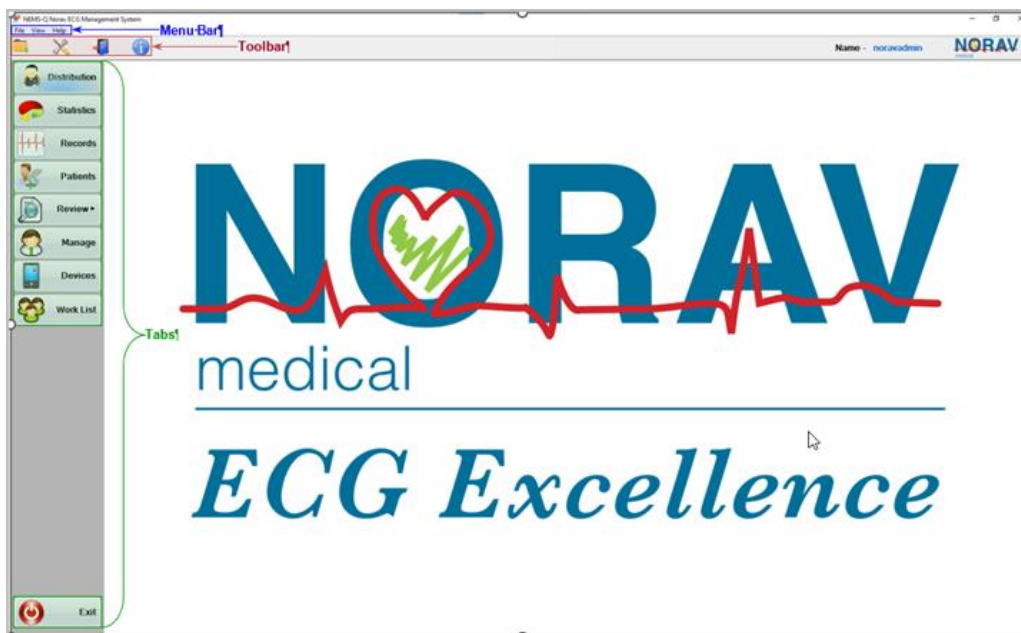
3. Click 

5. Operation









Opening NEMS-A



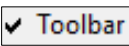
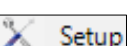
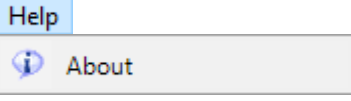

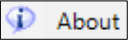
To open NEMS-A, double-click the  icon on the desktop.

The **NEMS-A Main Screen** is displayed.







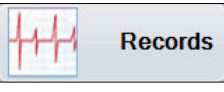




NEMS-A Menu Bar

Button	Description
<div style="border: 1px solid gray; padding: 5px;"> <p>File</p> <ul style="list-style-type: none">  Import  Import Directory...  Initialization wizard  Exit </div>	<p>Click File:</p> <ul style="list-style-type: none"> • To import a record, click  Import. • To import a directory, click  Import Directory.... • To open NEMS-A, click  Initialization wizard. • To exit NEMS-A, click  Exit.

Button	Description
	Click  : <ul style="list-style-type: none"> To view or hide the Menu Bar, click . To set up NEMS-A, click .
	Click  , and then click  to view the About page: This menu is important to view the NEMS-A Version and Norav Software Permissions.

NEMS-A Toolbar

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-A.
	Click to view the About page.

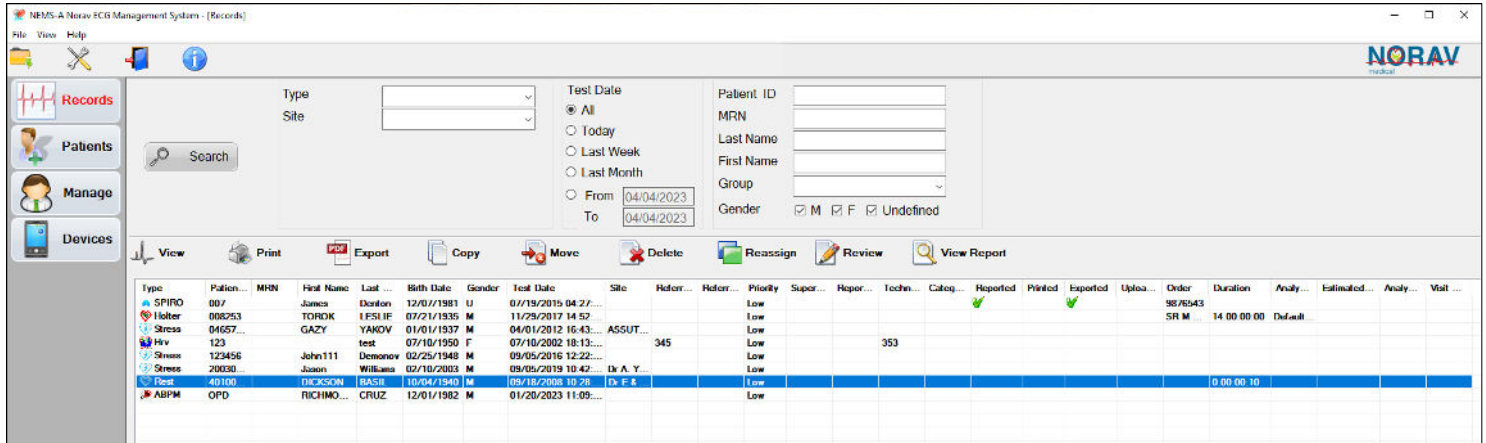
Tab	Description
	Finding a test according to various parameters.
	Searching a patient by patient ID, MRN, First Name, Last Name, Group, Birth Date range, and/or Gender as well as editing patient details, adding new patient, deleting patient, moving patient to another group, performing new test, viewing test, comparing Resting ECG tests, viewing report, and reviewing test results.
	Adding, editing, or deleting users and passwords, groups, sites, Referring Departments, Referring Physicians, and Test Category.
	Downloading ECG and BP recordings from the recorder.
	Exiting NEMS-A.

Records Tab

The purposes of the record screen are:

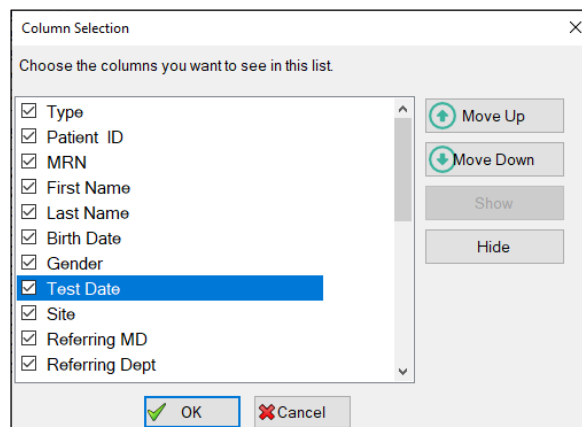
- Search records by different filter types.
- Search record by scanning a barcode.
- Operation on record – in addition to open/review/delete, right-click to view details.

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 (**Test Date** for example), 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.

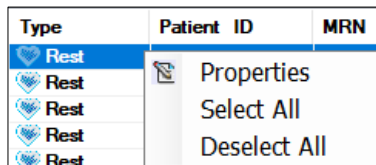



3. Select the of the column you wish to view.
4. To change the placement of the column in the table, select (highlight) the column, and then click **Move Up** to move the column to the left or select **Move Down** to move the column to the right.
5. To hide a column in the table, click **Hide**.
6. To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

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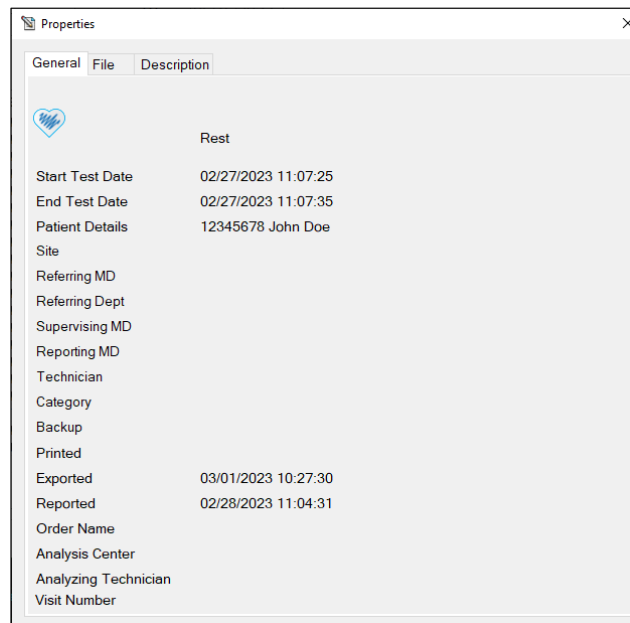
Tab	Description
 View	Viewing the selected record within the relevant app
 Print	Printing the selected record.
 Export	Exporting the selected record (marked ).
 Copy	Copying the selected record to backup
 Move	Moving selected record to backup
 Delete	Deleting the selected record
 Reassign	Reassigning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

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.




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

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

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Copying a Record

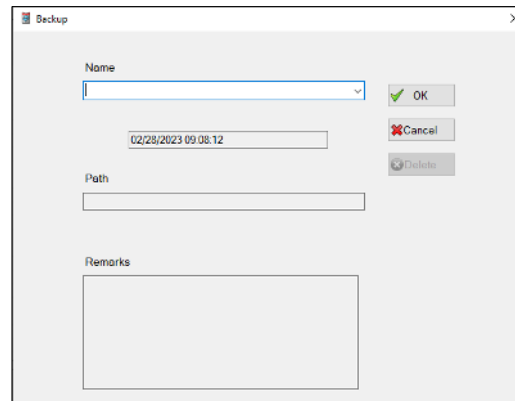
The purpose of the copy operation is to reproduce records for backup, for review by another physician outside the NEMS-A system, or for transfer to another location.

1. To copy a record to backup, select it, and click  **Copy**.

The **Copy Dialog Box** is displayed.


2. Click .

The **Backup Dialog Box** is displayed.



3. Assign a name to the record and then click .


The Backup dialog box is closed.

4. Click  on the **Copy Dialog Box**, select a folder, and add remarks in the **Remarks** field.

5. Click .

Removing a Record

The purpose the move operation is to remove a record to another location outside the NEMS-A 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-A, and only an indication remains of the removed record.

1. To move a record to backup, select it, and click  **Move**.


The **Move Dialog Box** is displayed.

2. Click .

The **Backup Dialog Box** is displayed.

3. Assign a name to the record and then click .


The **Backup Dialog Box** is closed.

4. Click , select a folder, and add remarks in the **Remarks** field.

5. Select an option from the **Move Studies Options**:

- Remove study , but leave properties
- Remove entire study

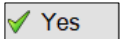
6. Click .

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Deleting a Record


1. To delete a record, select it, and click .

The **Delete Dialog Box** is displayed.

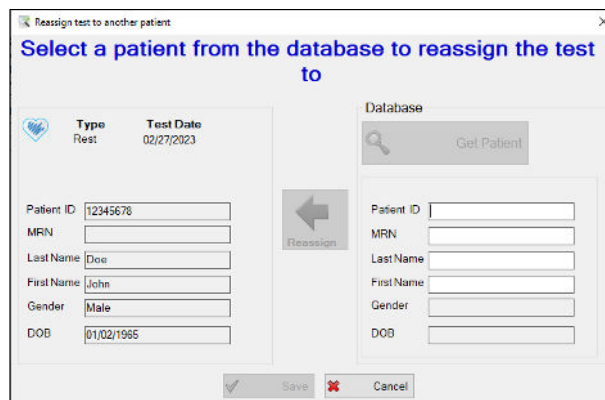
2. Select one of the **Remove** options.
3. Click .

Reassigning a Record

Reassigning a record is necessary if a nurse/technician incorrectly assigns it to the wrong patient.

1. To reassign a test to another patient, select the destination patient, and click .

The **Reassign Dialog Box** is displayed.

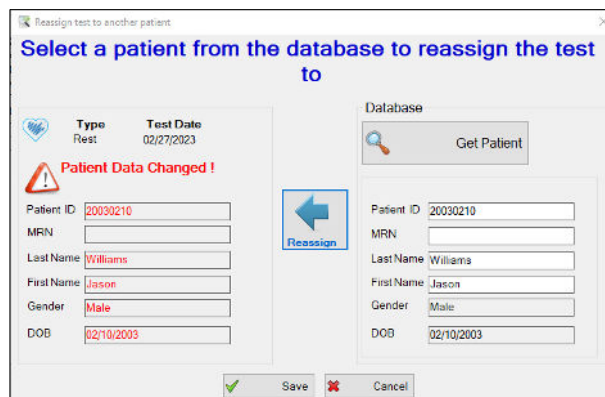


2. Type the source Patient ID and click .

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


3. Click .

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



4. Click .

Reviewing a Record

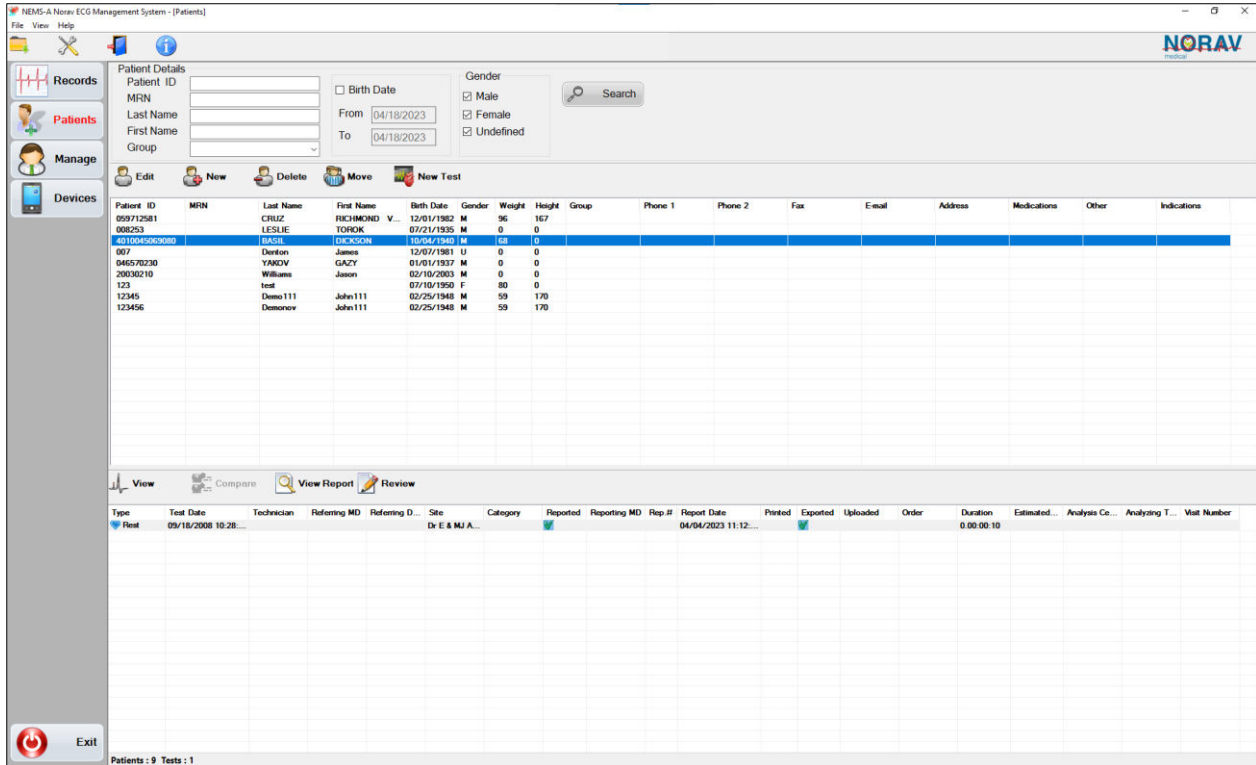
1. To review a record, select (highlight) it, and click .










The selected record is opened within the relevant app.

2. 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 of patients, view the patient tests, and perform actions on specific tests (e.g., View, Compare, Review).

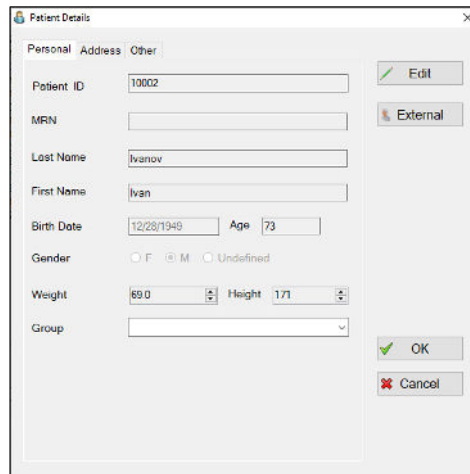


Tab	Description
 Edit	Editing patient details
 New	Adding new patient
 Delete	Deleting patient
 Move	Moving patient to another group
 New Test	Creating new test for selected patient
 View	Viewing patient's test
 Compare	Comparing patient's tests
 View Report	Viewing the selected report
 Review	Reviewing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

Editing Patient

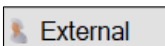
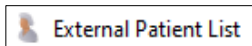
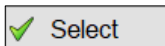
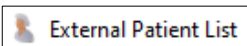
The user can change the patient demographic information in case of missing details or wrong input. To change the patient information, follow the next steps:

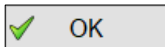
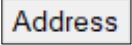
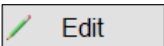
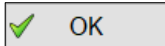
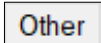
- To edit the patient details, select the patient, and click . The **Patient Details Dialog Box** is displayed.

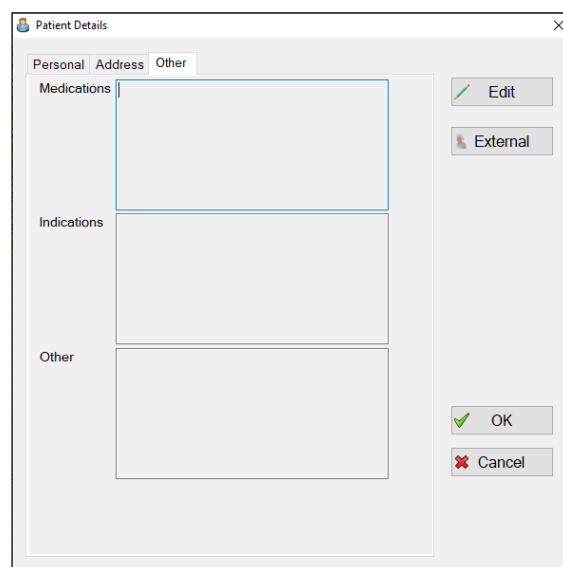



- Under the **Personal** tab, click  and edit the details.

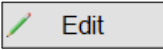
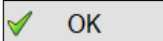
Or

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.



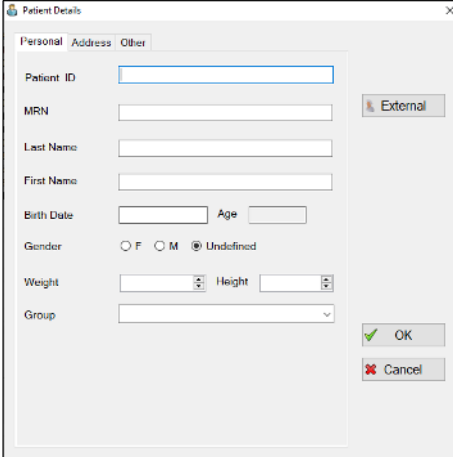
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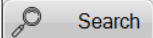
- Under the **Other** tab, click  and edit the details.
- Click  on the **Other Dialog Box**.

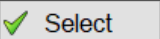
Adding New Patient

- To add a new patient, click .

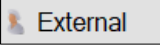

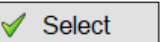
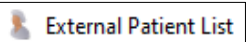
The **Personal Dialog Box** is displayed.

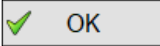
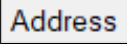
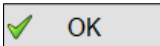

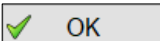


- Add new patient details such as: Patient ID, MRN, Last and First Name, Gender, Weight, Height, Birth, Address,
- To look for an existing patient, open the **Patients Screen**, fill in the **Patient ID**, and then click .


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, select the patient, and click  .
The selected patient with all attached tests is deleted.

Moving Patient from One Group to Another

- To move a patient to another group, select the patient, and click  .
The **Groups Window** is displayed on the screen under the  button.
- Click (select) a group from the **Groups Window**.
The selected patient is moved to the selected group.


Creating New Test

- To create a new test, select 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

- Select the required test type from the list.
The corresponding test application is opened.

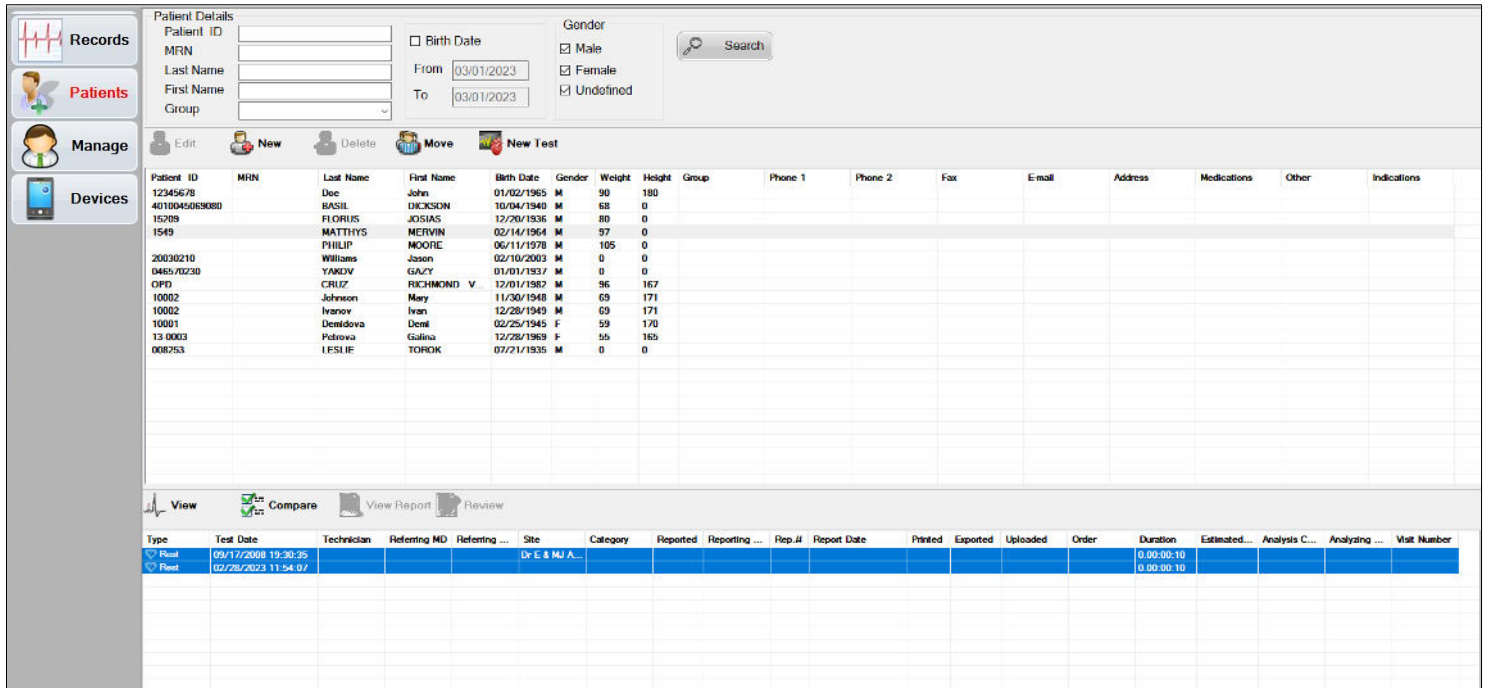
Viewing Patient Test

To view a patient's test (report), select (highlight) 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  .

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



The screenshot shows the NORAV software interface. On the left, there are navigation icons for Records, Patients, Manage, and Devices. The main area is divided into sections: Patient Details (with fields for Patient ID, MRN, Last Name, First Name, Group, Birth Date, Gender, and a Search button), and a table of test results. The table has columns for Patient ID, MRN, Last Name, First Name, Birth Date, Gender, Weight, Height, Group, Phone 1, Phone 2, Fax, E-mail, Address, Medications, Other, and Indications. Below the table, there are buttons for View, Compare, View Report, and Review. At the bottom, there is a table with columns for Type, Test Date, Technician, Referring MD, Referring Site, Category, Reported, Reporting, Rep.#, Report Date, Printed, Exported, Uploaded, Order, Duration, Estimated, Analysis C..., Analyzing, and Visit Number.

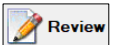
The Resting ECG application is opened, displaying the compared tests.




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

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Manage Tab

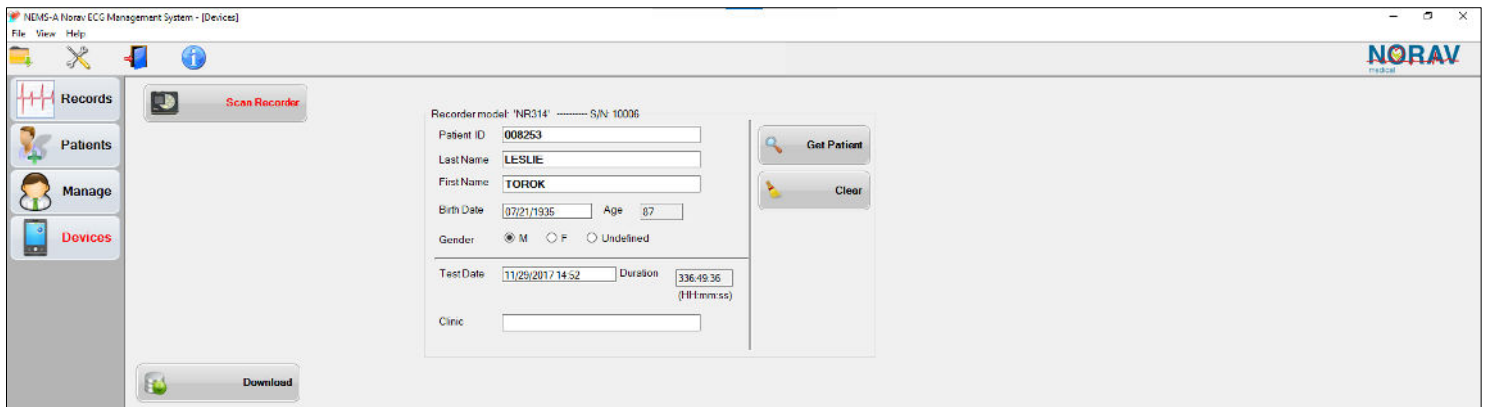
The Manage Tab allows you to create new groups.

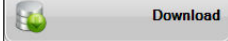

Devices Tab

The Devices Tab allows scanning a connected recorder and downloading patient details to NEMS-A.

1. Connect the recorder and click the  button.

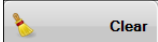
The **Patient Details Screen** is displayed.



2. To download the test (record) to NEMS-A, 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.


4010045069080	BASIL DICKSON
15209	FLORUS JOSIAS
20030210	Williams Jason
046570230	YAKOV GAZY
10002	Johnson Mary
10002	Ivanov Ivan
10001	Demidova Demi
13-0003	Petrova Galina
008253	LESLIE TOROK

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 .


NEMS-A Setup

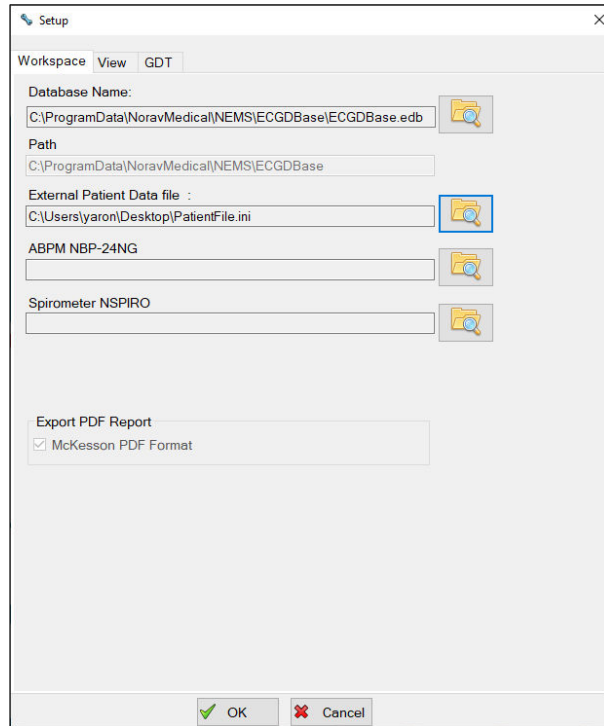
To set up NEMS-A, click  on the **Menu Bar** at the top left, and select  from the drop-down list.

Or

Click  on the **Toolbar**.

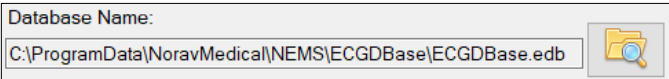
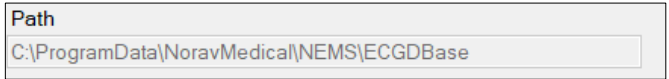
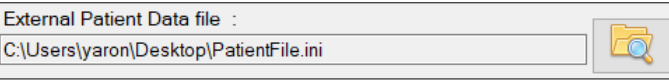
The **Setup Dialog Box** is displayed.

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Workspace Tab

The Workspace tab includes the following options.

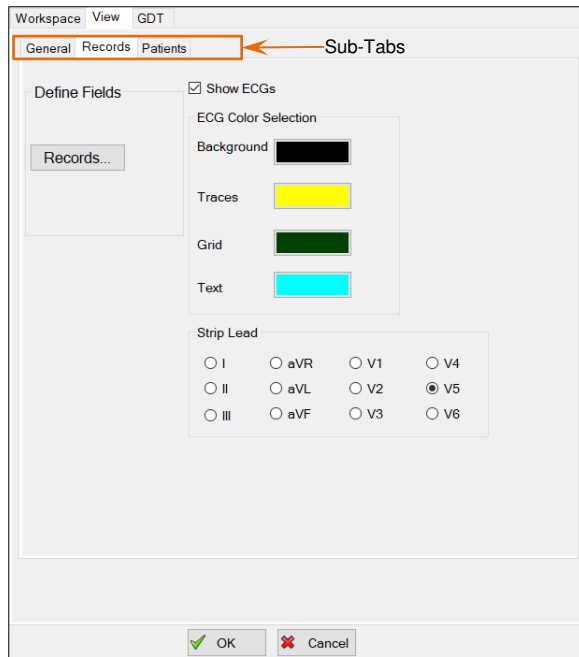
Options	Description
	The NEMS-A database name.
	Default data directory. This folder contains tests and report files.
	Location of the PatientFile.ini external patient data file. The PatientFile.ini contains patients' data.

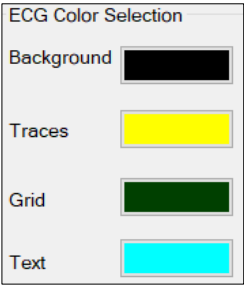
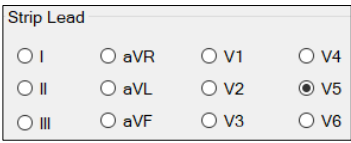

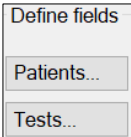
The following parameter is taken from the Settings.XML file on your PC in the following path: **C:\ProgramData\NoravMedical\NEMS**

Parameter	Settings.XML File
Database Name	<DatabaseName>ECGDBase</DatabaseName>

View Tab


The View tab includes the following options.



Sub-Tab	Options	Description
General	<input checked="" type="checkbox"/> Main Toolbar	Show the main toolbar buttons.
Records	<input checked="" type="checkbox"/> Show ECGs	Preview waveforms of Resting ECG tests.
		Set color scheme of ECG waveforms preview window.
		Set default strip lead on ECG waveforms preview window.
		Select and arrange data columns for display on Records... screen table.
Patients		Select and arrange data columns for display on Patients... and Tests... screen tables.

GDT Tab

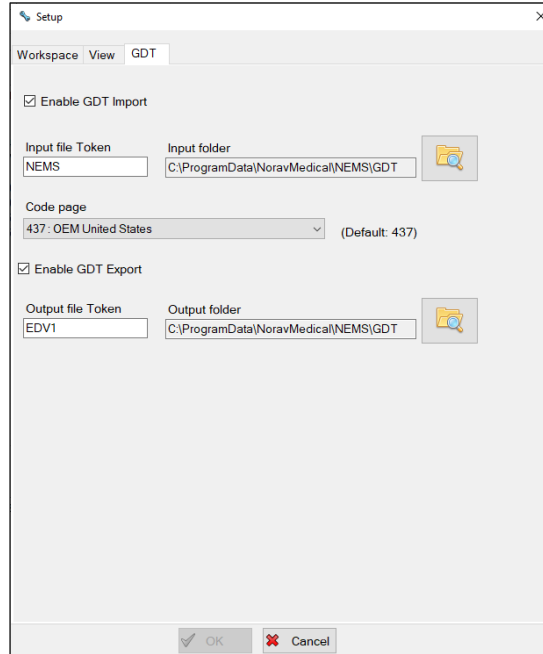
GDT is a communication protocol between the entity that orders the test and NEMS-A that transfers the test results file (GDT report files generated by NEMS-A).

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



Options	Description
<input type="checkbox"/> Enable GDT Import	Select checkbox to receive GDT commands from EMR.
Input file Token NEMS	First four characters expected in filename of GDT inbound files generated by EMR.
Input folder C:\ProgramData\NoravMedical\NEMS\GDT	Inbound folder to accept GDT inbound files received from EMR.
Code page 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-A to EMR (NBP-24 NG reports only).
Output file Token EDV1	First four characters in filename of GDT report files generated by NEMS-A.
Output folder C:\ProgramData\NoravMedical\NEMS\GDT	Output folder for placing GDT report files generated by NEMS-A.

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>

Local Configuration File

Some parameters are adjustable in the local configuration file Settings.XML located in **C:\ProgramData\NoravMedical\NEMS** folder


Config. Tag Name	Description
<InboxFileDirectory>	Inbound folder for automatic data import
<OutboxFileDirectory>	Outbound folder for automatic PDF reports export
<SQL_ACCESS>	Database mode. The value is always 0 for NEMS-A system
<StressPdfFolder>	PC-ECG software main folder path in Program Files
<NBP_database>	NHMS system database file name (for H2 Client database mode only)
<NSpiro_GDT>	GDT exchange folder path for the NSpiro™ spirometry program

Working with the NH-301 Holter Analysis System

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

- Preparing Holter Recorder for New Patient
- Downloading ECG Recording from Holter Recorder
- **Error! Reference source not found.**

Preparing Holter Recorder for New Patient

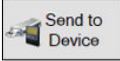
1. Make sure the Holter recorder is connected to the PC, or the recorder Memory Card is connected to the PC via the Card Reader device.
2. Select the patient from the **Patients Screen**, and then click .

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).

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.

Downloading ECG Recording from Holter Recorder

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


Working with the PC-ECG 1200 System

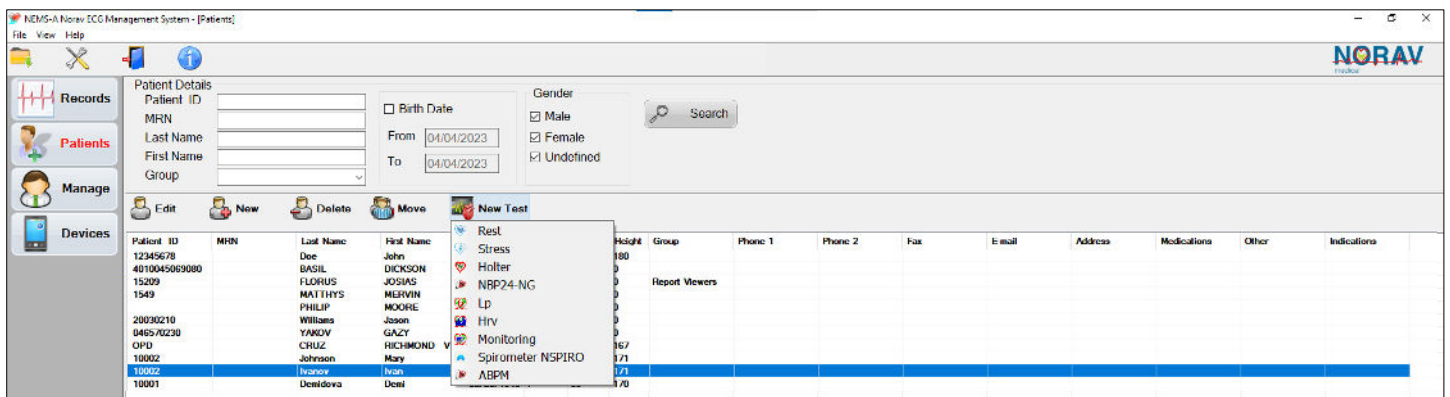
The PC-ECG 1200 software is required with the PC-ECG 1200 software license.


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

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


Starting New ECG Test

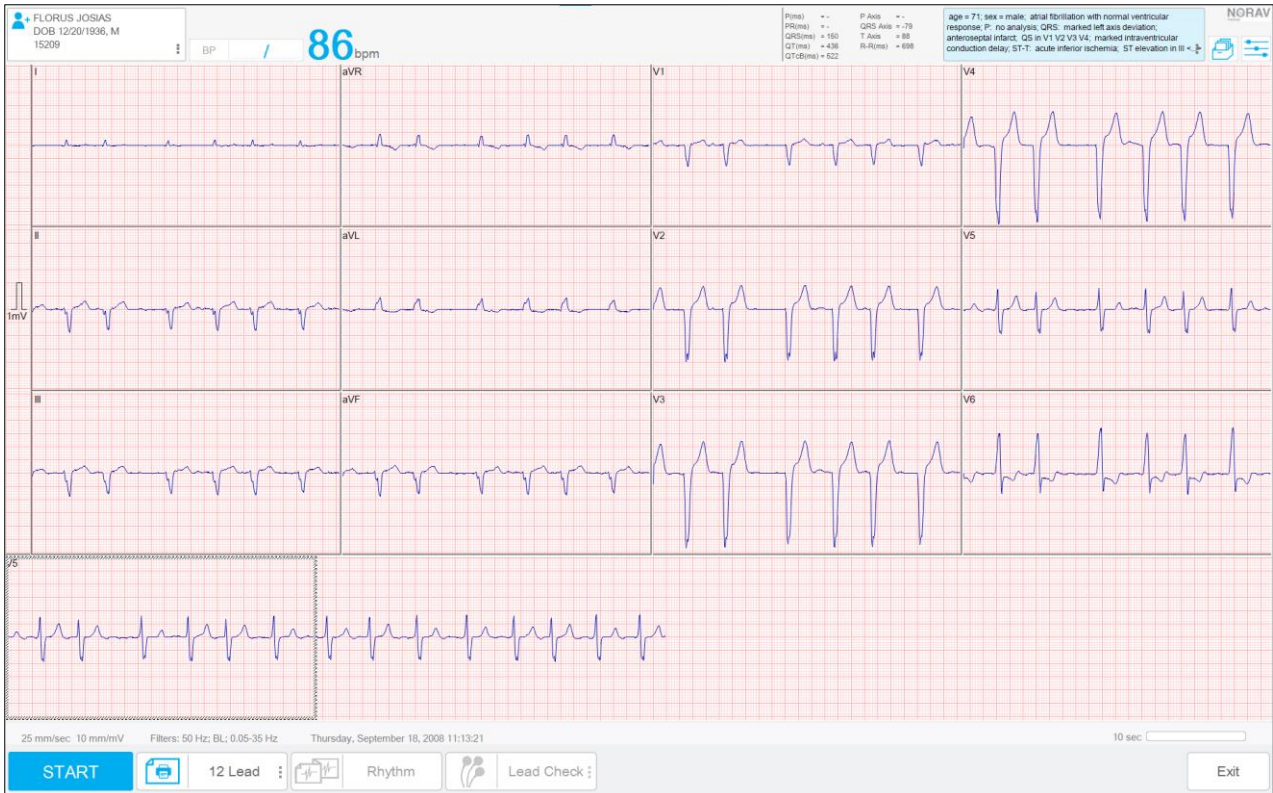
1. To start a new test from the **Patients Screen**, select (highlight) the patient, click the  button, and then select the test type from the drop-down list.



2. After the ECG recording is finished, click  to close the PC-ECG 1200 application.
The ECG recording is automatically imported from the database and displayed on the patient's recording list.

Opening ECG Record for Review

1. Select an ECG record 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 (with automatic Interpretation and Remarks) on the top right of the screen (highlighted blue).



The **Remarks Dialog Box** is displayed.

Remarks:
|

Confirmed Diagnosis:
age = 71; sex = male

atrial fibrillation with normal ventricular response
P:
no analysis
QRS:
marked left axis deviation
anteroseptal infarct
QS in V1 V2 V3 V4
marked intraventricular conduction delay
ST-T:
acute inferior ischemia
ST elevation in III aVF
conclusion:
abnormal ECG


- Write remark(s) and click .

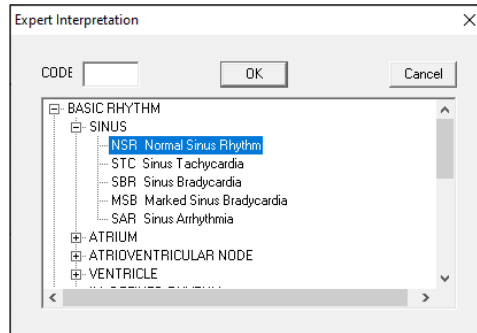
The written remark(s) are added.


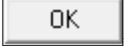

Or

- To add remark template(s), click .

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

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

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.

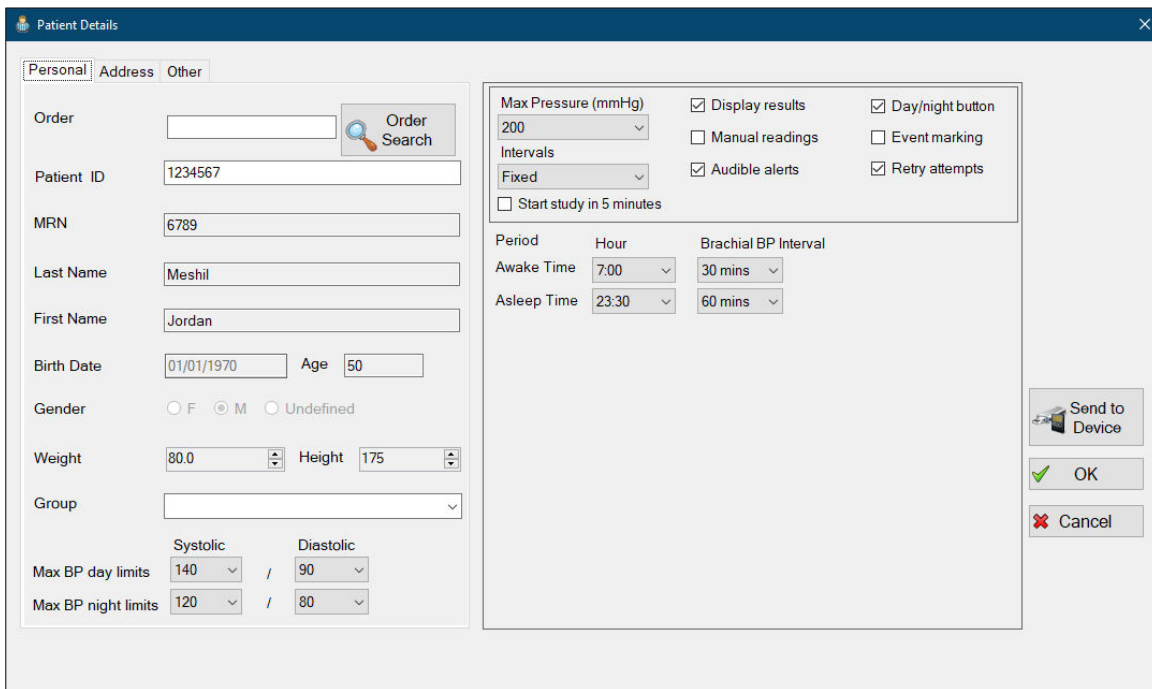
Check the items to be included inside the report

- 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.



Downloading ABPM Recording

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

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 (diseases) and medications.

Blood Pressure Patient information

Medical history

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

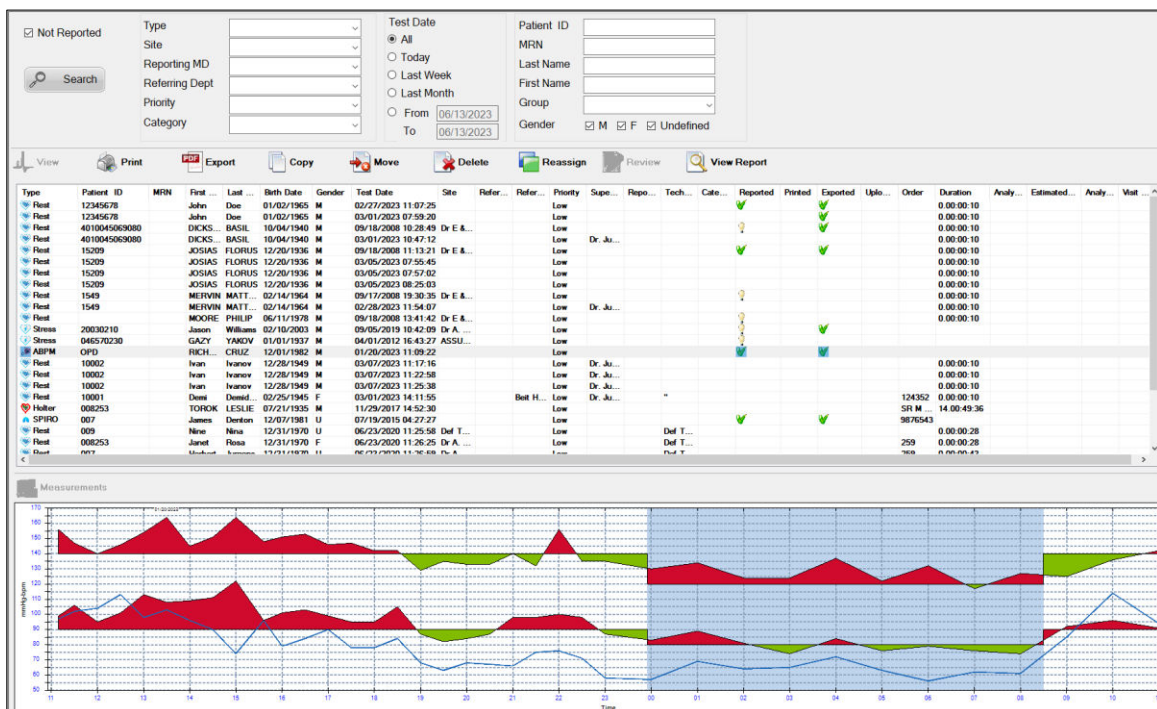
Medication

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

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.

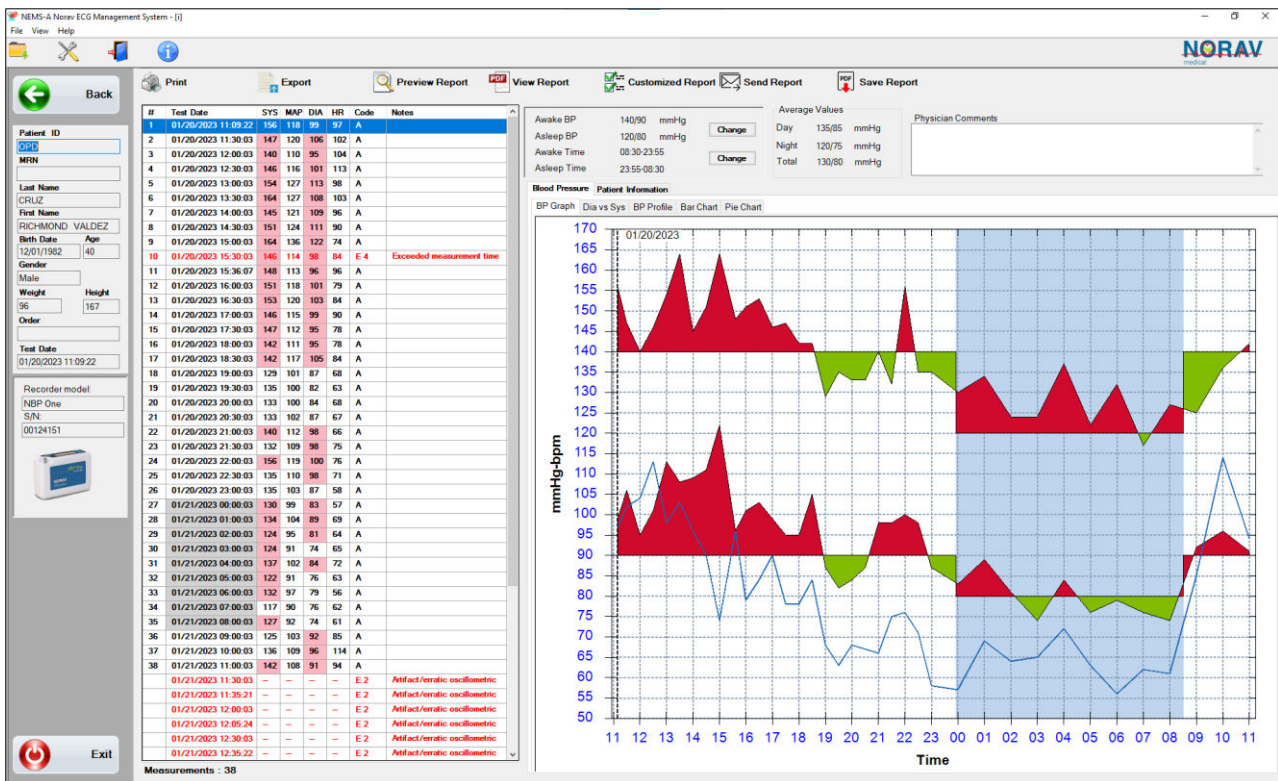
The **green** areas represent **BP lower than the BP Limit** (preset per patient before ABPM), which is represented by the straight horizontal line above the **green** areas.

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.





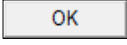
- Patient & Test Information Panel (left side)
 - Patient ID, MRN, Last Name, First Name, Birth Date, Age, Gender, Weight, Height, Order (Test-ID), Test Date, ABPM Recorder Type, Serial Number
- Common Actions Toolbar (on top of BP measurements table)
 - Print Report, Export Report, Preview Report, View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



The NBP-24 ABPM device lacks certain features in the preparation stage, thus rendering some options unavailable.

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

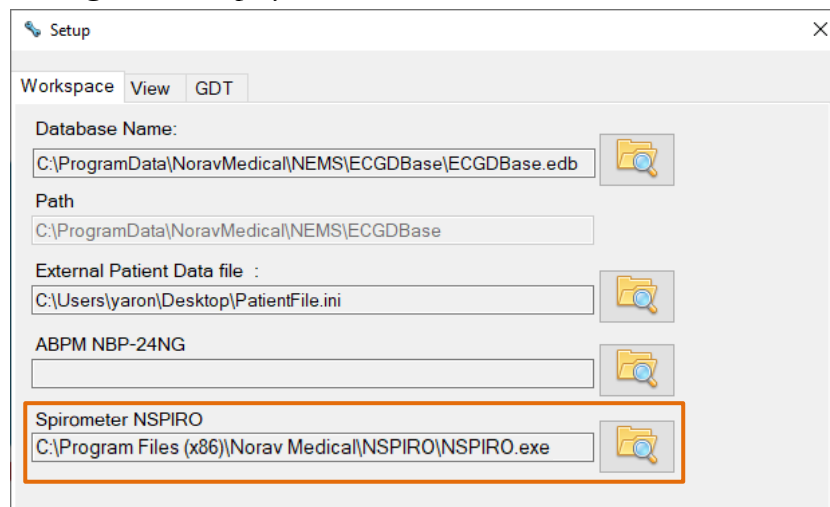
1. Select the patient from the **Patients Screen**, click the  button, and then select the  Hrv or  Lp or  Monitoring test type correspondingly.
The **Patient Data Dialog Box** is displayed.
2. Validate the patient details and click .
3. For detailed description, refer to the PC-ECG IFU.


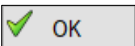

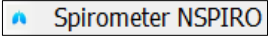
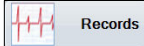
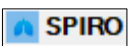

8. Working with the NSpiro™ Application


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

After the NSpiro™ Software is installed, continue in NEMS-A as follows.

1. Click  on the **Toolbar**.
The **Setup Dialog Box** is displayed.



2. To open the NSpiro™ software, click , then browse and select the **NSPIRO.exe** file on your PC.
3. Click .
4. Select the patient from the **Patients Screen**, click the  button, and then select the  Spirometer NSPIRO test type.
The **NSpiro™ Software** is opened, displaying the **NSpiro™ Main Screen**.
5. To review the test:
 - a. Click the  Records tab and select a  SPIRO recording.
The **SPIRO Recording Selection for Review Screen** is displayed.
 - b. Click the  Review button.

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For more details, refer to the [NSpiro™ Quick Guide](#).

9. Appendix – Interfacing with Information Systems

Importing PDF Reports

NEMS-A can accept PDF reports created by external systems. The patient and test information should be included in the PDF filename.

External PDF reports should be received to the NEMS-A database Import folder.

The import folder path is described in the <InboxFileDirectory> parameter of Settings.XML configuration file.

Three filename formats are available for importing PDF reports.

PDF Report Filename Format #1

Filename format: **ORDER_ID_LAST_FIRST_DOB_DATE_TIME_TYPE.PDF**

Example:

0001_12345_Vivaldi_Antonio_04-03-1978_15.07.2015_12~15~21_STRESS.PDF

PDF Report Filename Format #2

Filename format: **ORDER_ID_FIRST_LAST_DOB_SEX_DATETIME_TYPE.PDF**

Example:

000987_123_Mary_O'Hara_19691129_F_20131008094317_HOLTER.PDF

PDF Report Filename Format #3 (ABPM Reports only)

Filename format: **ID_LAST_FIRST_DOB_DATE_TIME_TYPE.PDF**

Example:

999999_Doe_John_1945-08-02_2007-05-29_12-18_24hABPM.pdf

Exporting PDF Reports

NEMS-A can export the PDF reports to be accepted by external systems. The patient and test information are included in the PDF filename.


The export folder path is described by <OutboxFileDirectory> parameter of Settings.XML configuration file.

PDF reports export filename format is according to Format #2.

GDT Interface

GDT interface enables NEMS-A to communicate with EMR programs. The patient is always selected in the EMR program. NEMS-A should be called after the patient's electronic recording file in the EMR program is selected. Patient data management is done in the EMR program, whereas medical signals (ECG, ABPM, spirometry data, etc.) are handled in NEMS-A.

New procedures are created via NEMS-A. Existing procedures can be edited via NEMS-A. Upon completion of a new procedure or after review of the existing procedure, the EMR program adopts the most important data of all new and edited procedures.

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Calling NEMS-A from EMR via GDT

Adjust the EMR configuration to call the NEMS-A Client with **/GDT** command line switch.

Example: **C:\Program Files (x86)\Norav Medical\NEMS\EMSApplication.exe /GDT**

Functionality

1. EMR prepares a GDT command file and then places it in the GDT Inbound folder.
3. Launch the NEMS-A Client application with **/GDT** command line switch.
4. NEMS-A starts and performs the procedure defined in the GDT command file.
5. After the procedure is completed, the GDT report is generated in the GDT Outbound folder.
6. Exit the NEMS-A Client application, which can be done automatically or by operator.

Opening Patient Data in NEMS-A Interface via GDT

1. Initiate the EMR program and select a patient.
2. Perform **Open Patient History** whatever command in the EMR program interface.
3. NEMS-A starts with the selected patient record or automatically creates a new patient record.
4. Start new procedure or review existing recordings in appropriate software application.
When the action is completed, the software application sends results to the EMR.
The EMR program automatically adopts the updated data.

Performing New Test via GDT

1. Initiate the EMR program and select a patient.
2. Start the desired procedure in the EMR interface that initiates the NEMS-A application.
NEMS-A displays the initiated procedure details to be validated by the user.
The user must confirm the selected procedure or select another procedure type for the patient.
Upon confirmation of the procedure type, NEMS-A starts the appropriate software application.
3. Perform the procedure (acquire ECG, spirometry test, prepare ABPM recorder, etc.).
When the procedure is completed, the software application sends results to the EMR.
The EMR program automatically adopts the new results.

Displaying Existing Procedure via GDT

1. Initiate the EMR program, select a patient, and then select the existing procedure from the list.
2. Perform **Review** or **Open** whatever command in the EMR interface.
This activates NEMS-A that displays the test details to be validated by the user.
3. Open the selected record, review, and then save the record.
When review is completed, the software application sends results to the EMR.
The EMR program automatically adopts the updated review report.