Patient Monitor Data Manager

User Manual

Introductions to User

Dear Users,

Thank you very much for purchasing our Patient Monitor. This manual is intended to assist the user in uploading data from Patient Monitor to PC in a safe and effective manner. Please read this manual carefully before running the system, and follow it to operate.

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This Patient Monitor Data Manager is application software running on a personal computer with Microsoft Windows operating system, so the user should be acquainted with some knowledge to operate computer.

3502-2560006

Information for Operation

- Please make sure that the connection between PC and the Patient Monitor is reliable and do not unplug the data cable during uploading at will.
- Low battery may interrupt the uploaded data while uploading.
- Key button operation is not allowed during uploading, or may affect data uploading.
- While installing printer driver, please quit the Patient Monitor Data Manager software if it's running.

Note:

- Connect/Disconnect data cable to the Patient Monitor gently and carefully, do NOT wiring or shake the data cable plug with force to insert into or unplug from data interface port.
- Before updating the Patient Monitor Data Manager software, please uninstall the previous Patient Monitor Data Manager procedure and USB driver procedure, and manually delete all the files in the default folder ("C: \Patient Monitor Data Manager\") or your destination folder for saving Patient Monitor Data Manager installing file.
- This software should be installed by the user who has the permission level of system administrator, or it may not be installed successfully.

Table of Contents

1 Overview..... 1

1.1 Introduction..... 1

1.2 Operating Prerequisite..... 1

1.3 Procedure of Data Upload..... 1

2 Installation, Connection and Settings..... 2

2.1 Installation of Patient Monitor Data Manager..... 2

2.2 Device Connection..... 4

3 Operations..... 4

3.1 Main Menu..... 4

3.2 Data Upload..... 6

3.2.1 Upload Data from Patient Monitor..... 6

3.3 System Setting..... 9

3.4 Data Review..... 11

3.4.1 Download List (summary of uploaded data records)..... 13

3.4.2 Trend Record..... 14

3.4.3 NIBP List..... 17

3.4.4 SE List..... 19

3.4.5 SpO_2 List..... 19

3.4.6 Event List..... 21

3.4.7 ARR List..... 23

3.4.8 ECG Record..... 26

3.5 Help..... 30

3.6 Exit..... 31

1 Overview

1.1 Introduction

This software “Patient Monitor Data Manager” can be used to upload the data stored in **Patient Monitor** to computer via data cable, the uploaded data can be archived, reviewed and analyzed further on computer side. It is convenient for user to recall the history data records, do some statistical analysis, and manage patients’ database.

1.2 Operating Prerequisite

Requirement for Computer:

Hardware requirement:

PC with Intel Pentium III CPU, 800MHz clock or higher; 256MB or higher memory; CD-ROM drive; at least 3GB space available in the hard disk to install Patient Monitor Data Manager software.

Software requirement:

Microsoft Windows XP, Windows 7, Windows 8 or Windows 10.

1.3 Procedure of Data Upload

1. Install the “Patient Monitor Data Manager” software.
2. Set the resolution of screen display as "1024x768" pixel or higher.
3. Connect the Patient Monitor and computer by data cable (refer to Figure 2-7).
4. Double-click Patient Monitor Data Manager icon “” to start running Patient Monitor Data Manager.
5. Click “Data Upload” button to acquire data, and then add the data to user archive for saving.
6. Click “Data Review” button to review and browse records.

Refer to each section for detailed operation.

2 Installation, Connection and Settings

2.1 Installation of Patient Monitor Data Manager

Insert the CD-ROM which contains the installation software into CD-ROM drive, and the software installation will be automatically running or directly running the program "setup.exe"(icon) in the root directory of CD-ROM drive, then the window of "Patient Monitor Data Manager Setup" will be prompted on the screen as shown in Figure 2-1.

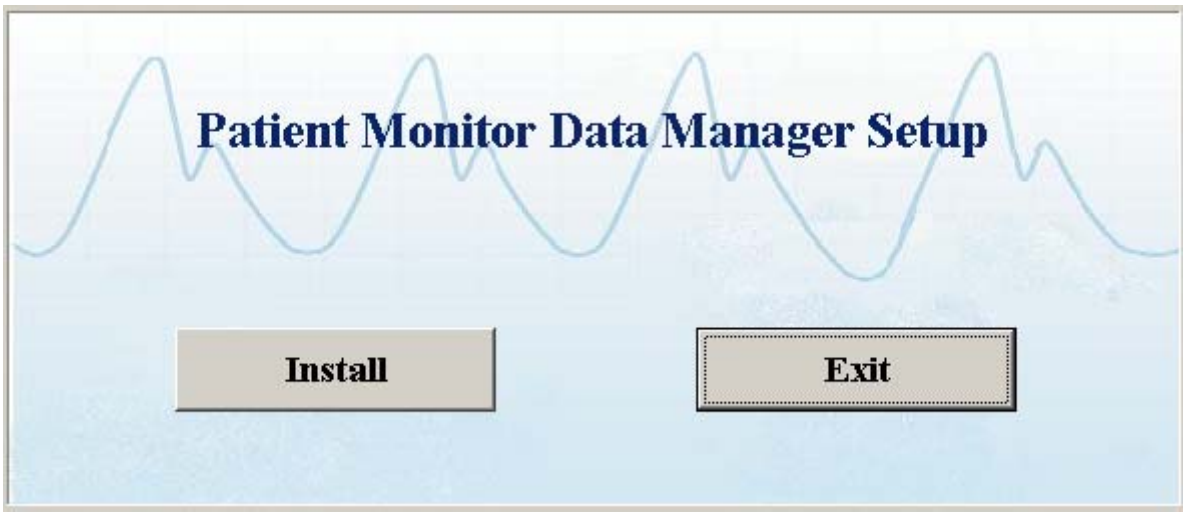


Figure 2-1 Patient Monitor Data Manager Setup Screen

On Patient Monitor Data Manager setup screen, it's unnecessary to select language (different from the previous version) because the installing program will use the language same as the current operating system language to complete the installation. The initializing screen is as shown in figure 2.2.

On Patient Monitor Data Manager Setup screen, firstly click on "Install" button to install main program and please follow the instruction to install. Installing screens are shown bellow: When clicking the "Finish" button to finish the installation of Patient Monitor Data Manager.

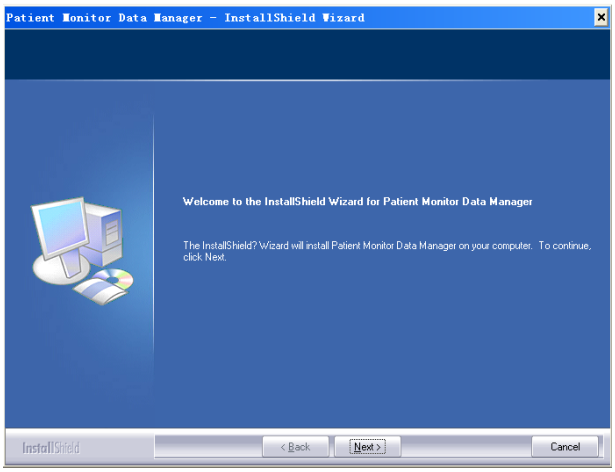


Figure2-2

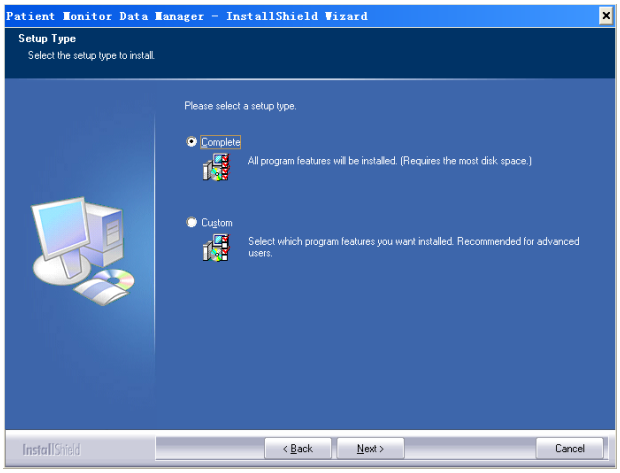


Figure 2-3

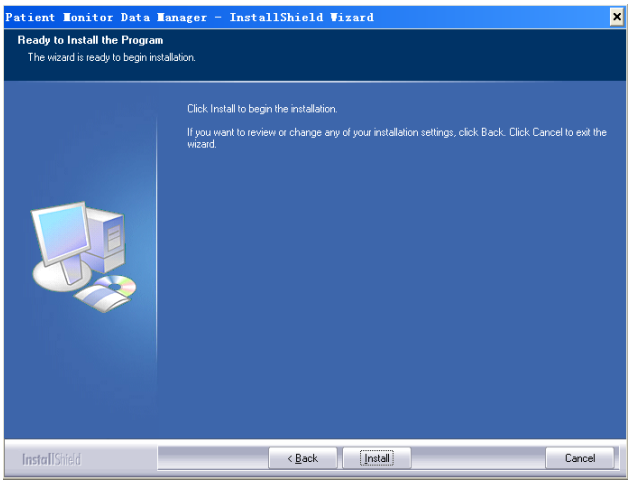


Figure 2-4

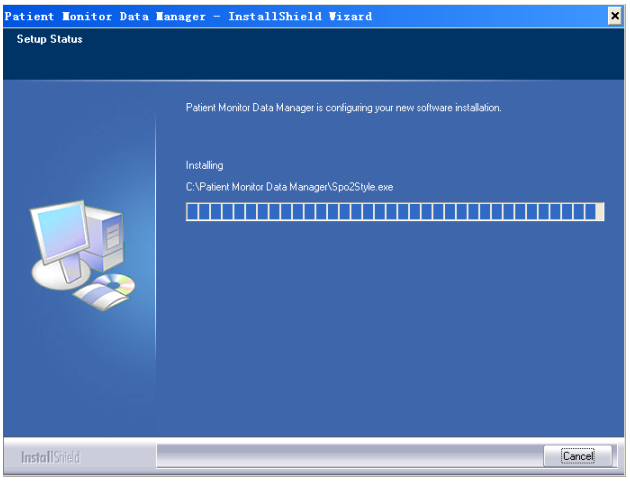


Figure 2-5

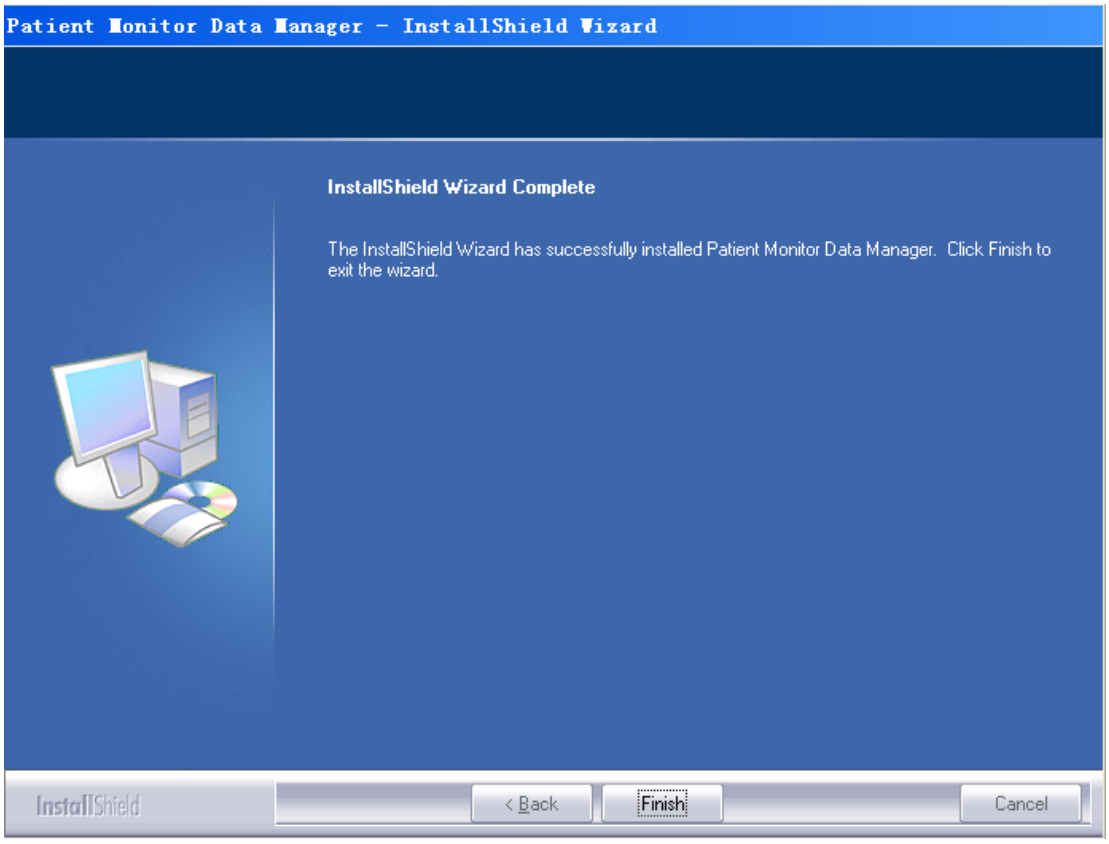


Figure 2-6

Note: If the user chooses the default installation, the software will be installed in the system disk drive under a sub-directory with, for example, the full path name “C:\Patient Monitor Data Manager\”. Otherwise, the user can choose "Custom” to specify the installing destination, then click "Next" to proceed the installation.

2.2 Device Connection

After installing Patient Monitor Data Manager, refer to Figure 2-7 to perform connection:

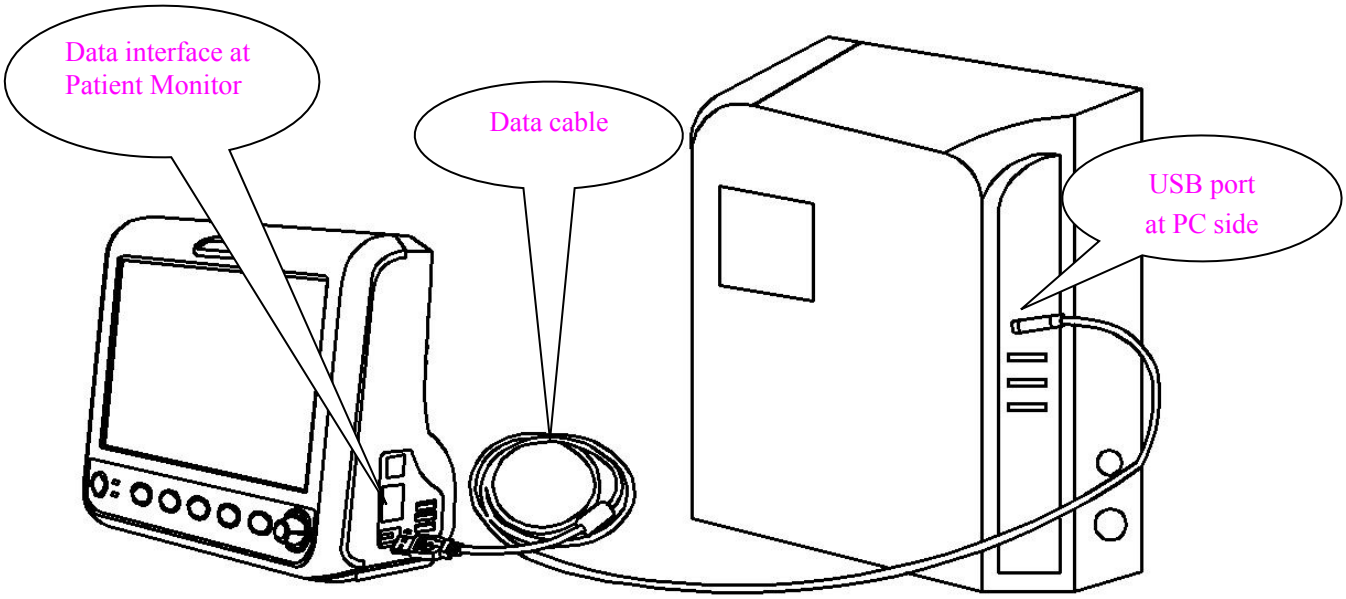


Figure 2.7 Device connection

If the data cable is well connected between the PC and the Patient Monitor, the Patient Monitor will be recognized automatically by PC as a disk device and prompt information will appear on the computer, a removable disk "

" appears on "My computer". Double click this disk, you can see a data file "

" which will be found out and retrieved later during the data uploading. Meanwhile, at the Patient Monitor side, the message "Data upload mode" will appear on its display screen.

3 Operations

3.1 Main Menu

Double-click the shortcut icon"" for on the desktop with the Mouse to start the software "Patient Monitor Data Manager", then the main menu screen displays will appear as shown in Figure 3-1. There are 5 functional menu buttons, including "Data Upload", "System Setting", "Data Review", "Help", and "Exit" on main menu bar. Refer to Form 3-1 for detailed description.

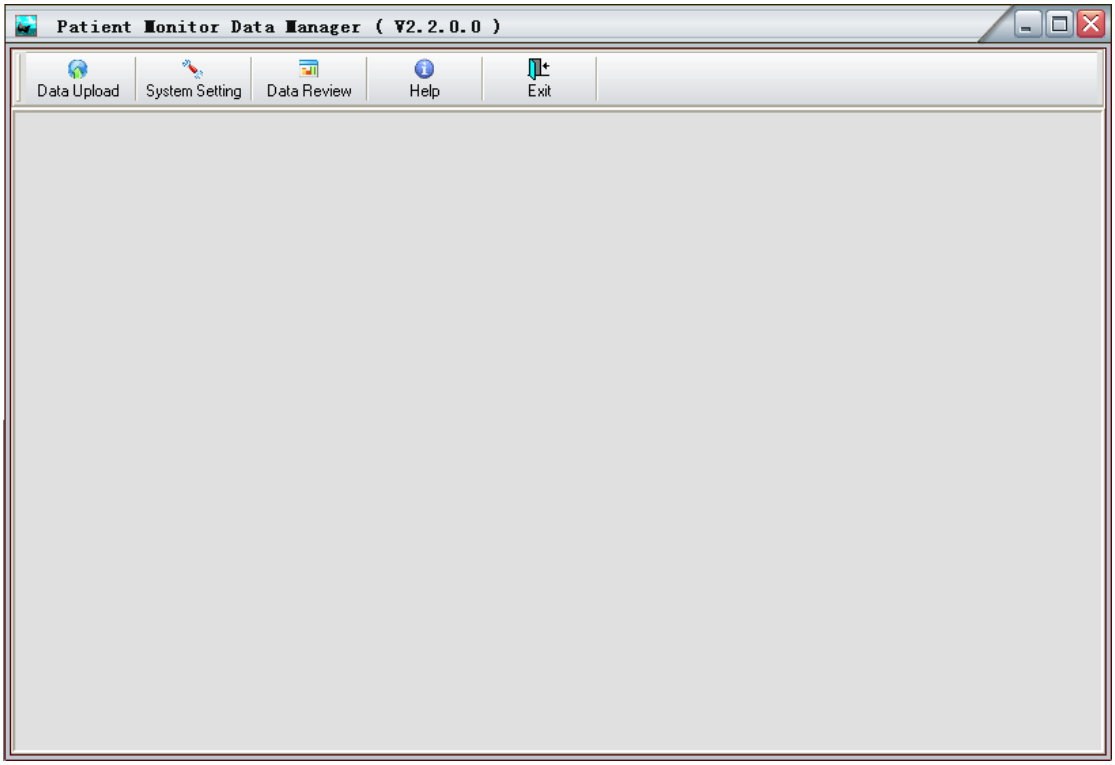


Figure 3-1 Main menu

Menu bar:



✧ **Menu instructions**

Menu	Functions	Description in detail
Data Upload	Read device data	Upload data directly from the Patient Monitor
	Read disk data	Read data from local disk or the mapped removable disk
	Create patient account	Create a new patient account
	Edit patient account	Modify the existed patient account
	Exit	Exit from main menu
System Setting	System parameters setting	To set the system parameters, such as unit, time and so on.
	Hospital information setting	To set the hospital information, such as hospital name, address and so on.
	Language	To set the display language of the Data Manager
Data Review	Record list review	The uploaded data records can be listed with time stamp, sequence No. and total numbers. the data records can be deleted or exported.
	Trend data review	View the trend of data such as HR, RR, SpO_2, PR and TEMP in graphic format, which can be previewed with zooming, added measuring marks, printed out, deleted and exported.
	NIBP list review	View the blood pressure measurement list with systolic, diastolic and mean arterial pressure value, which can be deleted and exported.
	SE (SpO_2 Event) list review	View the SpO_2 drop event with corresponding HR, PR, RR and TEMP value.

	Arrhythmia event list review	View ECG waveform segment identified with arrhythmia and related measuring result including other information, such as measuring time, lead, gain, filter etc., which can be previewed with measuring marks, printed out, deleted and exported.
	ECG record review	View ECG waveform and other information, such as time stamp, configuration (lead, gain, filter, etc.), which can be previewed with measuring marks, printed out, deleted and exported.
	SpO_2 list review	View list data and trend graph of SpO_2 and pulse rate, which can be printed, exported and deleted.
	Event list review	View the alarm events with its source, onset value of the alarming parameter, preset high and low alarm limits, which can be exported and deleted.
Help	Online update	Update the software to the latest version via internet
	User manual	View the User Manual for this Patient Monitor Data Manager.
	About system	View software information (including software version, disk space and so on.)
Exit	Exit form system	Exit form system

Note: The different models of patient monitors may use different data recording methods, so that the detailed reviewing of data record will be different, specifically for NIBP list and ECG waveform data. Refer to Section 3.4 for details.

3.2 Data Upload

3.2.1 Upload Data from Patient Monitor

Make sure the Patient Monitor is well connected to PC before you upload data from the device.

Click "Data Upload", the dialog box pops up on the screen, as shown in figure 3.2. After clicking "OK" button in figure 3.2, Patient Monitor Data Manager starts acquiring data from the Patient Monitor, at the same time, data acquiring progress will be displayed on the screen, as shown in Figure 3.3.

When the device searches the measuring data (.DAT file), the dialog box pops up on the screen, as shown in figure 3.4, otherwise, message "Data file not found"appears on the screen.

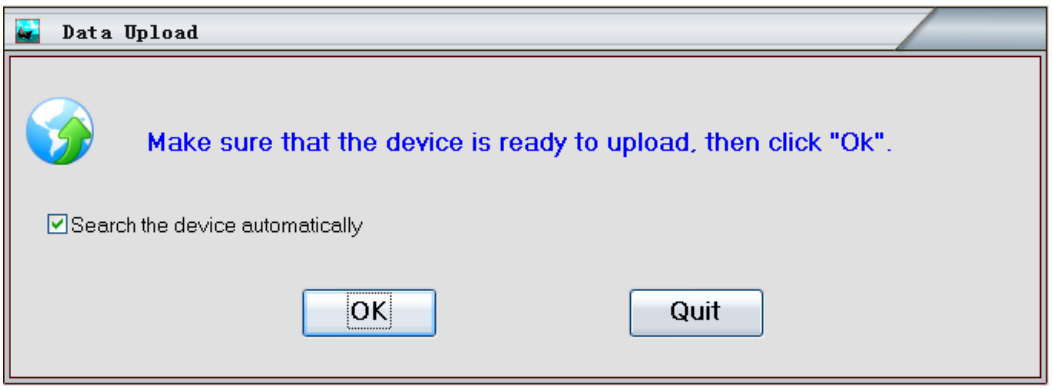


Figure 3-2 Uploading Data

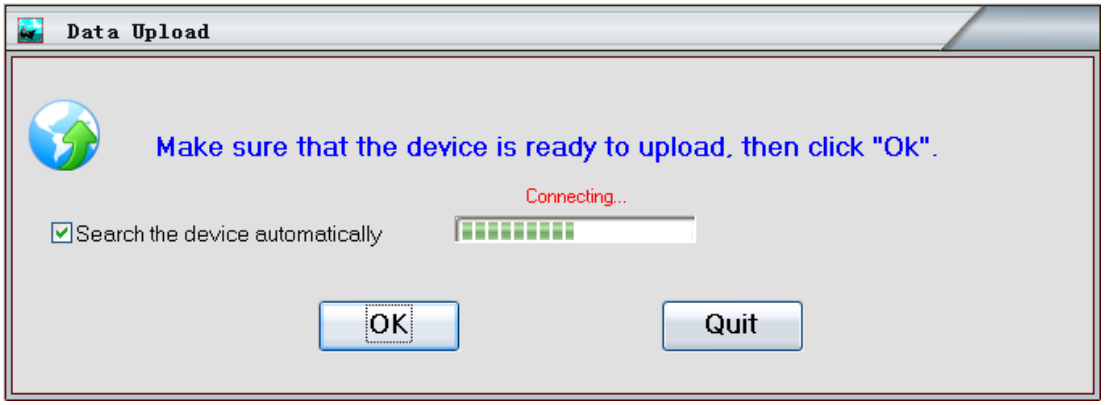


Figure 3-3 Connecting

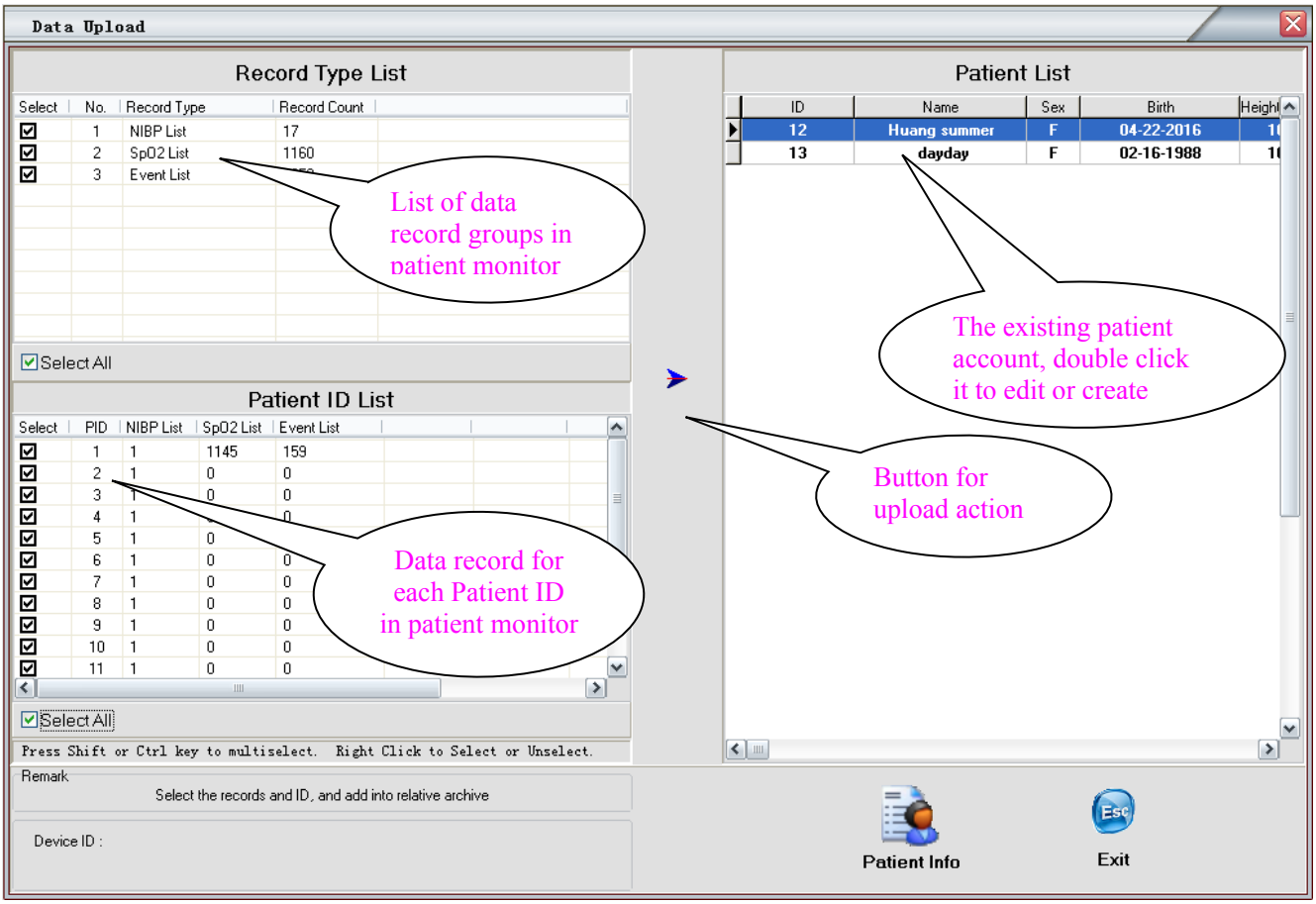


Figure 3-4 Uploading Data

In figure 3.4, there are 3 frames and 3 buttons: "Record Type List", "Patient ID List", "Patient list, upload ( ) button, "Patient info" button and "Exit" button. Record Type List is the summary of different types of data records stored in patient monitor for uploading; Patient ID List is the summary of data record (stored in patient monitor) under each patient account for uploading.

- Click "Select all" button to select/ not to select all records.
- Click "Exit" to return to the main menu screen.
- Click " " to start uploading data from patient monitor to PC.

Operation Instruction

1. Uploading data to PC

User can select one patient account in "Patient List" for uploading to, but if no patient account exists, the user can

create a new one (for detailed operation, please refer to the following instruction). Choose "All select" on record type list and patient ID list (multi-option is available), then click " " button to perform uploading. The uploaded data will be stored in the database and bound to the selected patient account.

Note: 1. The data record will be archive and bound to the selected patient account for each uploading, and the uploading time stamp will be attached as well.

2. Choose "All select" to select all records.

2. Create / Modify patient account

If no patient account is available, click " Patient Info " button, a dialog box pops up on the screen, as shown in figure 3.5.

- Click " Create " button, and when it becomes grey " Create ", then entering patient information can be performed. Information item including ID, Name, Sex, Birthday, Height, Weight, Telephone, Address, Allergies, Comments.

  Note: item with "*" is required.

  - **Name:** display or enter patient's name; the length of last name is less than 15bytes.
  - **ID:** detecting number; display or enter detecting number; the length of ID is less than 6 bytes.
  - **Sex:** click on "▼" to choose Male/Female in submenu.
  - **Birthday:** patient's birthday; display or enter patient's birthday. You can click on "▼" to choose birthday in its submenu, or click year value and use keyboard to enter birthday. The operation of Month and Day set are the same with Year set.
  - **Height:** patient's height; display or enter patient's height.
  - **Weight:** patient's weight; display or enter patient's weight.
  - **Telephone:** patient's telephone number; the length of phone number is less than 25 bytes.
  - **Address:** patient's address; length of address is less than 60 bytes.
  - **Allergies:** allergic symptom description of patient after using the Patient Monitor; if no allergies appear, just enter "No"; length of words is less than 100 bytes.

Comments: Description of diagnostic result; length of words is less than 100 bytes.

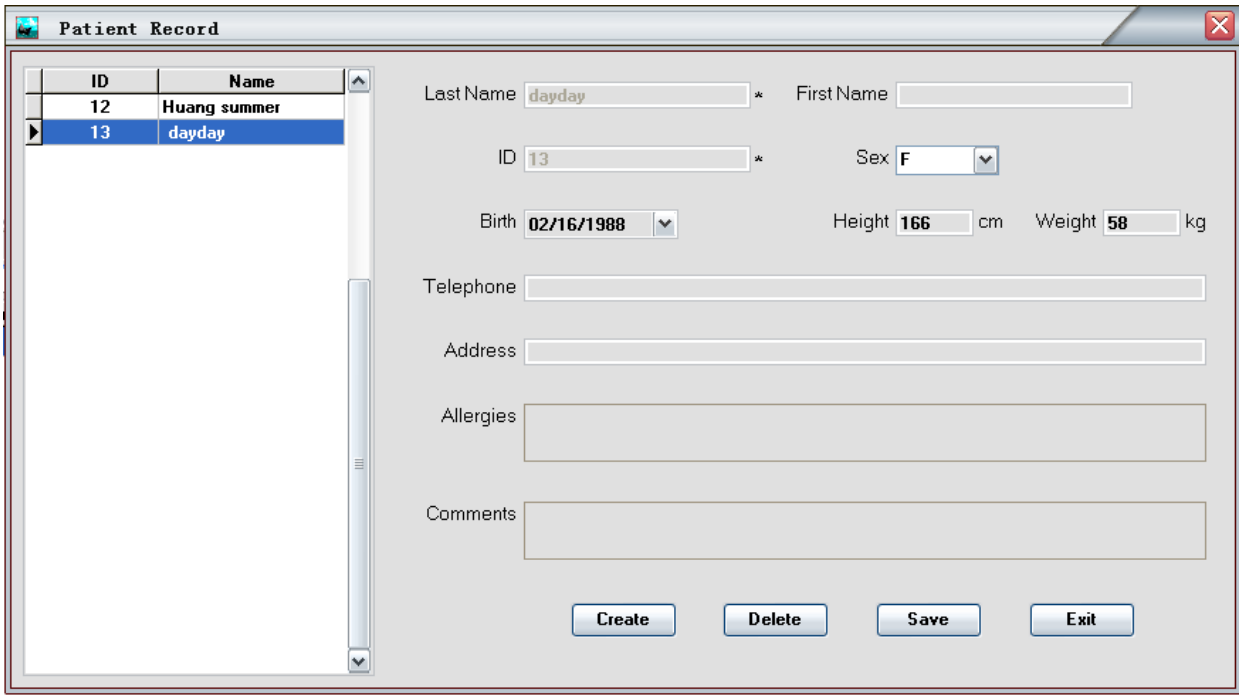


Figure 3-5 Create patient account

- ✧ **Create:** button for adding new patient account; if user needs to add a new patient account, please click this button and then enter patient's details in blank fields.
- ✧ **Delete:** delete the selected patient account and its corresponding data records.

  Note: if the selected patient account is deleted, all data records binding to it will be deleted and can not be recovered.
- ✧ **Save:** confirm and save the new or modified patient account with its information.

  Note: Patient ID and Name can not be modified for the existed patient account.
- ✧ **Exit:** Exit from the current screen and return to "Data upload" screen.

3.2.2 Upload data from local disk or removable disk

In figure 3.2, if "☐ Search the device automatically" is not selected, the window displays as figure 3.6A.

At first, select the path, and click the data file (*.DAT) to be uploaded, as shown in figure 3.6B. Click "OK", the data uploading screen pops up on the screen, as shown in figure 3.4. Following the operation instruction in that section can upload the data from disk to system.

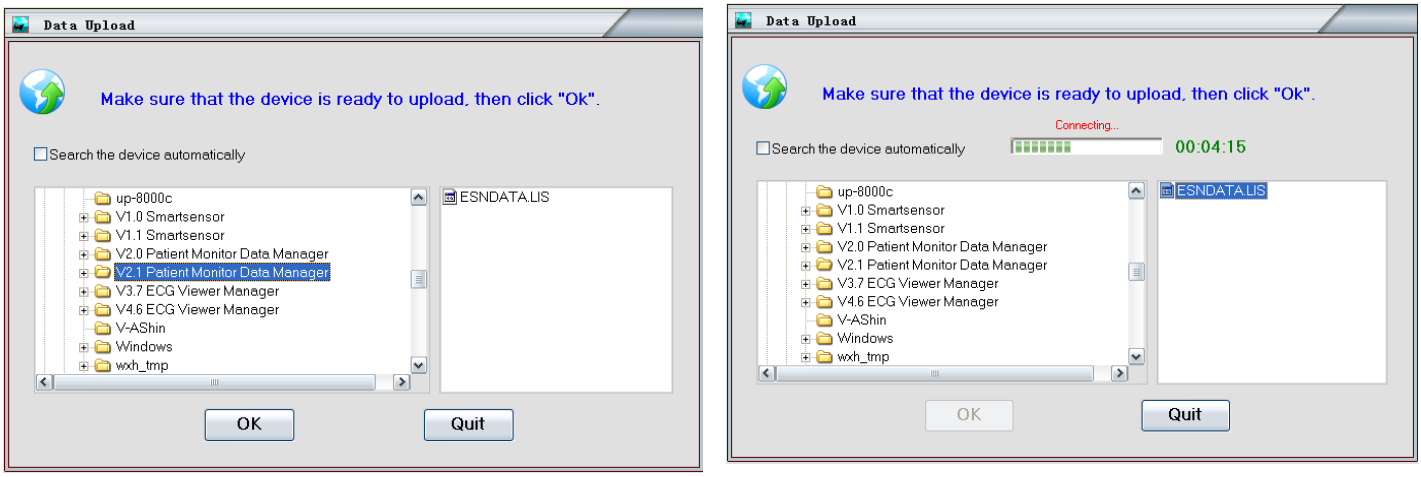


Figure 3.6 A/B Uploading ". DAT" file

3.3 System Setting

On main menu display, select "System setting" to enter into Settings screen, as shown in figure 3.7.There are two tabs, click on the tab to shift page to its relevant page.

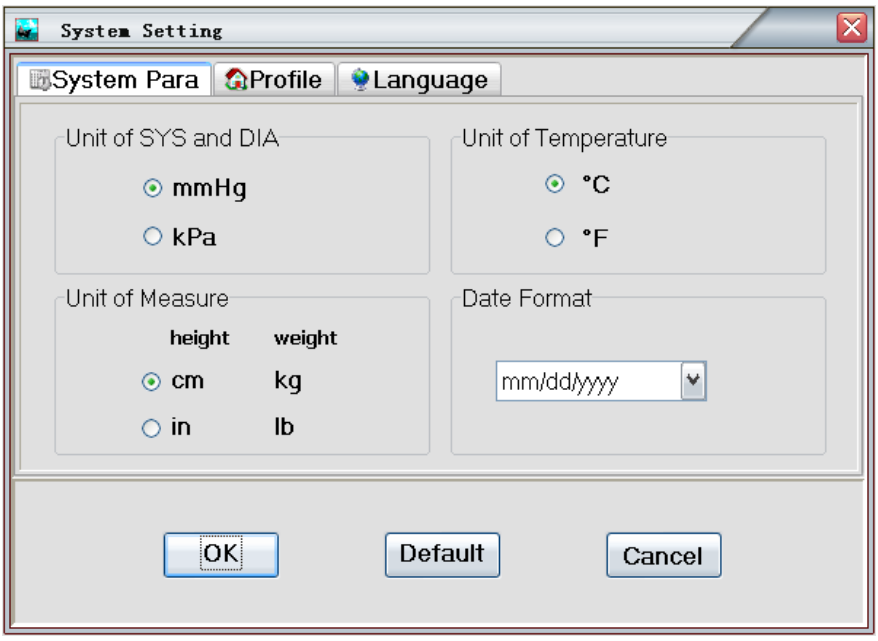




Figure 3-7 System Configurations

✧ **System Parameter**

- **Hospital information:** enter into hospital name, address, telephone and fax.
- **Unit of SYS and DIA:** set the units of systolic pressure and diastolic pressure: "mmHg" or "kPa".
- **Unit of Measure:** set the units of height and weight:

  "in and lb." or "cm and kg"

  Unit conversion: 1 cm = 0.39in 1kg = 2.2 lb.
- **Unit of temperature:** set the unit of temperature: "℃" or "°F". ℃ is Celsius; and °F is Fahrenheit.
- **Date format:** select the date format.

  The "mm/dd/yyyy", "yyyy/mm/dd" and "dd/mm/yyyy" format are optional.

✧ **Hospital Information**

- Hospital Name/Addr/Tel/Fax: entering the name, address, telephone number and fax number of the hospital.

  Click "OK" to save and "Cancel" to quit this operation.

✧ **Language**

- The operator can change the display language of this Data Manager, English, Traditional Chinese and Simplified Chinese for optional.

3.4 Data Review

On main menu window, select “Data Review” to enter into data review screen, as shown in Figure 3.8.

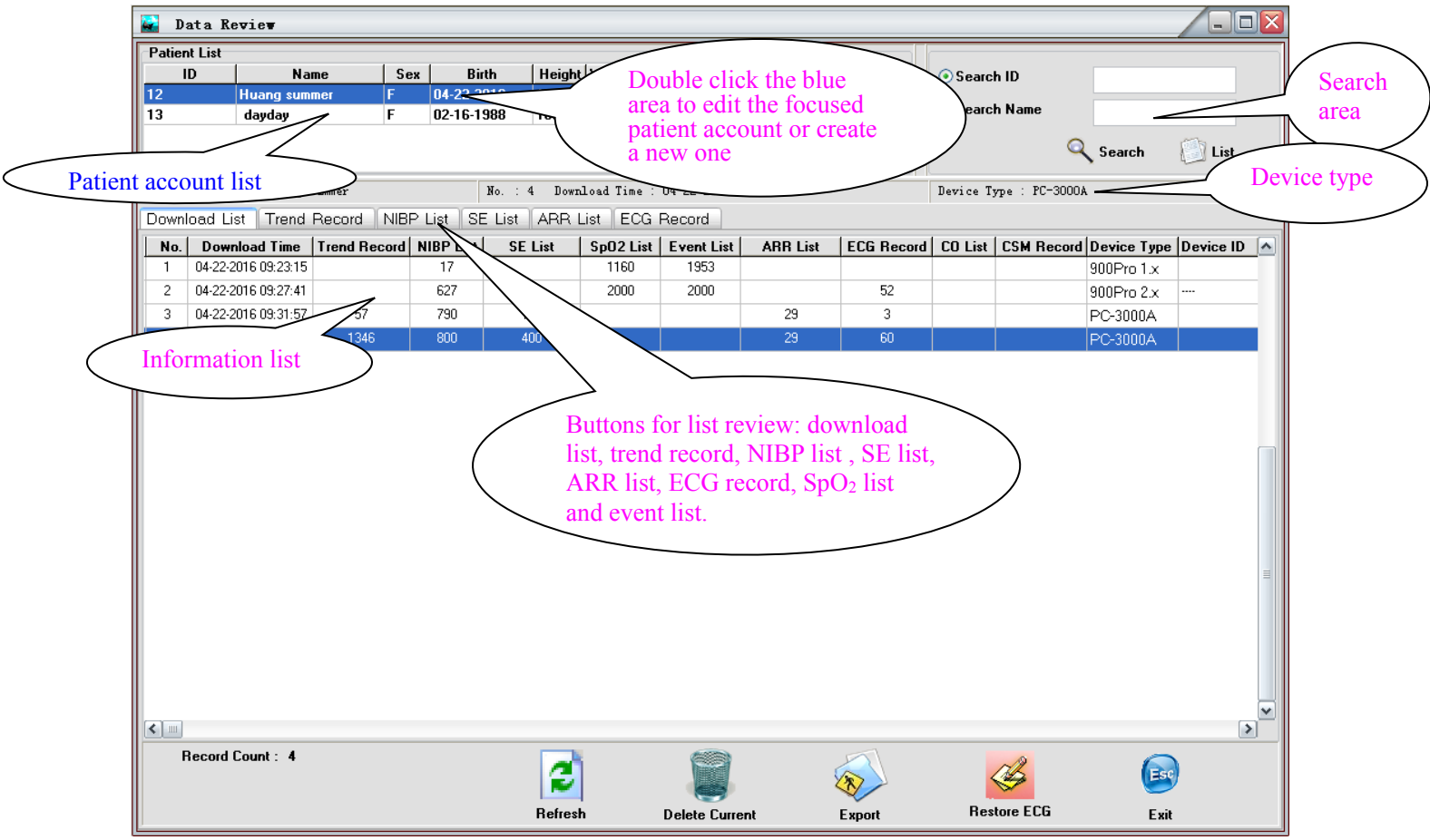


Figure 3.8 Data Review

1. Select a patient account

- On "Patient Information", select an account in the patient list, the upload list will appear simultaneously. On the upper right corner of the screen, select "search as ID" or "search as name" to enter query condition, then click "Search" for searching patient in the database.
- Click "List" icon to list all user accounts.

2. Select review item

Click "Review List" to review the patient's data records. There are five types of list reviews and one upload list: download list, trend record, NIBP list, SE list, ARR list and ECG record, as shown in figure 3.8.

- Click "Refresh" to refresh the current uploaded data record.

- Click "Delete current" to delete the uploaded data record, dialog box pops up on the screen, as shown in figure 3.9. In this screen, click "OK" to confirm deleting, and click "Cancel" to quit deleting.
- Click "Export" to export all uploaded records of the current account to a csv format data file. The pop-up screen is as shown in figure 3.10, the user can select the saving location and enter the file name. The file name will be "XXX.csv" which can be opened by general software tools such as "EXCEL". Click "Save(S)" to perform the exporting.
- Click "Restore ECG" to restore ECG data, that means the ECG data stored in local disk / removable disk can be loaded (restored) into the the current patient account, as shown in figure 3.11.

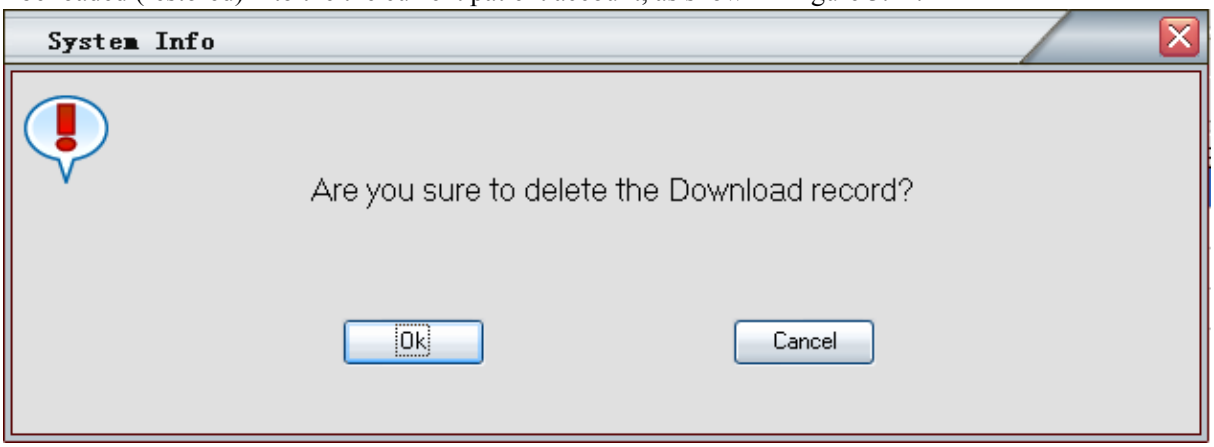


Figure 3.9 Delete download record

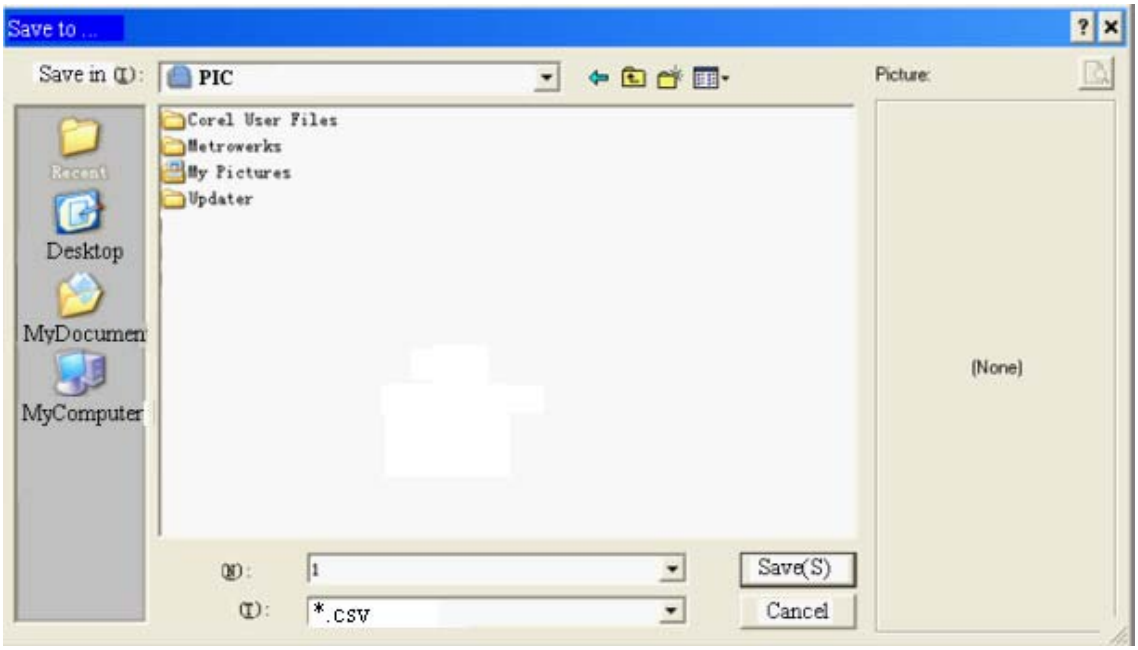


Figure 3.10 Exporting data

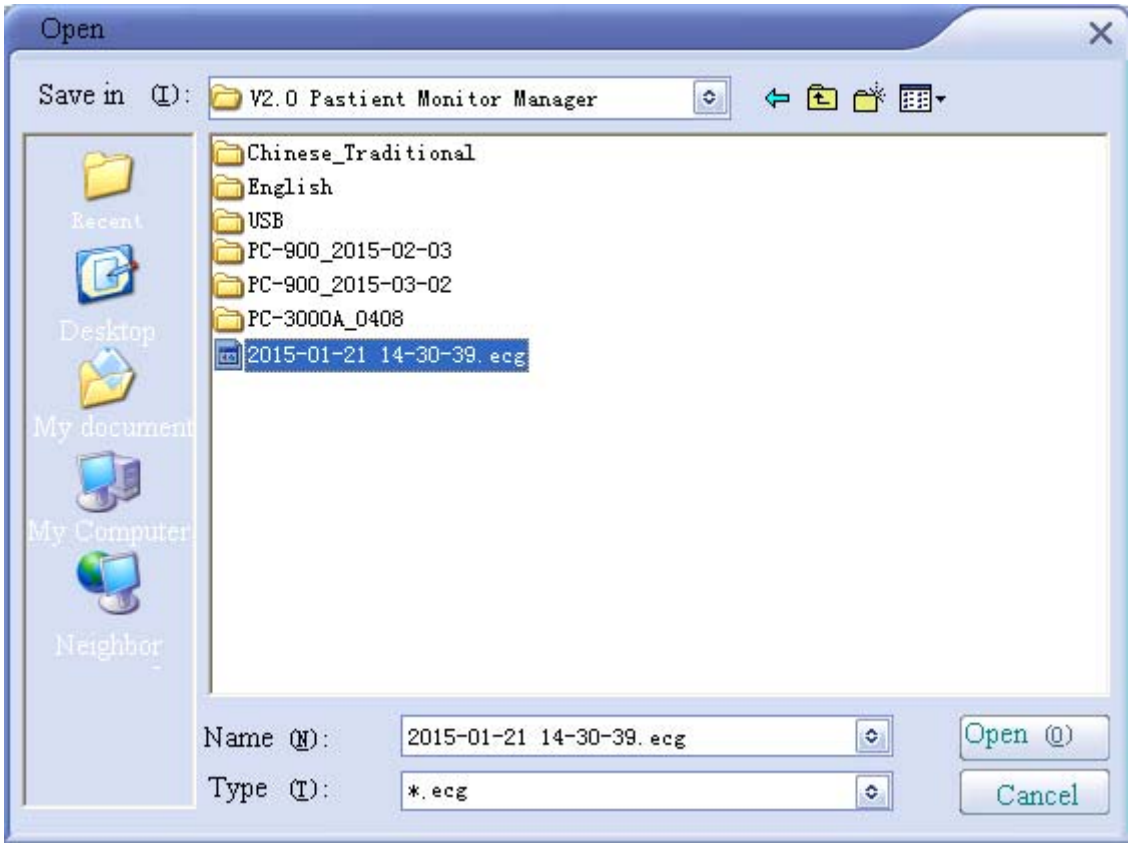


Figure 3.11 Restore ECG

Explanation of the phrases in the display screen (Figure 3.8):

- ✧ Download No.: the sequence number of data record uploading to PC.
- ✧ Record count: the total amount of the data records for the current patient account.
- ✧ Download time: the time stamp while starting to upload the data record.
- ✧ Name: the name of the current patient account.

3.4.1 Download List (summary of uploaded data records)

Click "Download list" to enter into the download list screen, as shown in figure 3.12A.

Download List | Trend Record | NIBP List | SE List | ARR List | ECG Record

No.	Download Time	Trend Record	NIBP List	SE List	SpO2 List	Event List	ARR List	ECG Record	CO List	CSM Record	Device Type	Device ID
1	04-22-2016 09:23:15		17		1160	1953					900Pro 1.x	
2	04-22-2016 09:27:41		627		2000	2000		52			900Pro 2.x	----
3	04-22-2016 09:31:57	57	790	105			29	3			PC-3000A	
4	04-22-2016 09:33:09	1346	800	400			29	60			PC-3000A	

Figure 3.12A Download list screen

Information contained in the "Download List" are summary of uploaded data records with: download time, trend record, NIBP list, SE list, SpO_2 list, event list, ARR list, ECG record, C.O. list, CSM record, device type and device ID. Select the corresponding item to perform data exporting or deleting. Please note that C.O. list and CSM record are reserved for future use.

Note: only the latest 100 records can be exported for each patient account.

Operating instruction:

- ➢ Select download No..
- ➢ Click "

" to export all uploaded records of the current patient account.
- ➢ Click "

" to delete the selected uploaded data records in the database.

3.4.2 Trend Record

On data review screen, click "Trend Record" to enter into trend record review screen, which can review the graph trend of HR, RESP, SpO_2 and TEMP, as shown in figure 3.12B.

Operation instruction:

- Click "6 Hours" to choose the trend time scale for displaying the graphic trends, four options: 6 hours, 24 hours, 120 hours and 480 hours.
- Click "" to zoom the graph trend, as shown in figure 3.13.
- On Graphic Trend of a piece of Record, click mouse on any point within the trend graph area, a blue cursor line on the right will appear in the trend graph area as well. Click mouse on any other point to move the cursor line to other position. The corresponding information appears on the upper screen, including the measuring time, HR, RESP, SpO_2, PR and TEMP data value.
- Click data management icon "" to export or delete the trend data (all or part of the trend list) for the current patient account, as shown in figure 3.14.
- Click "" to export all trend records of the current account (all groups of records in the current trend list).
- Click "Delete current" to delete the selected trend record.
- Click "Print" to print the graph trend report, as shown in figure 3.15.

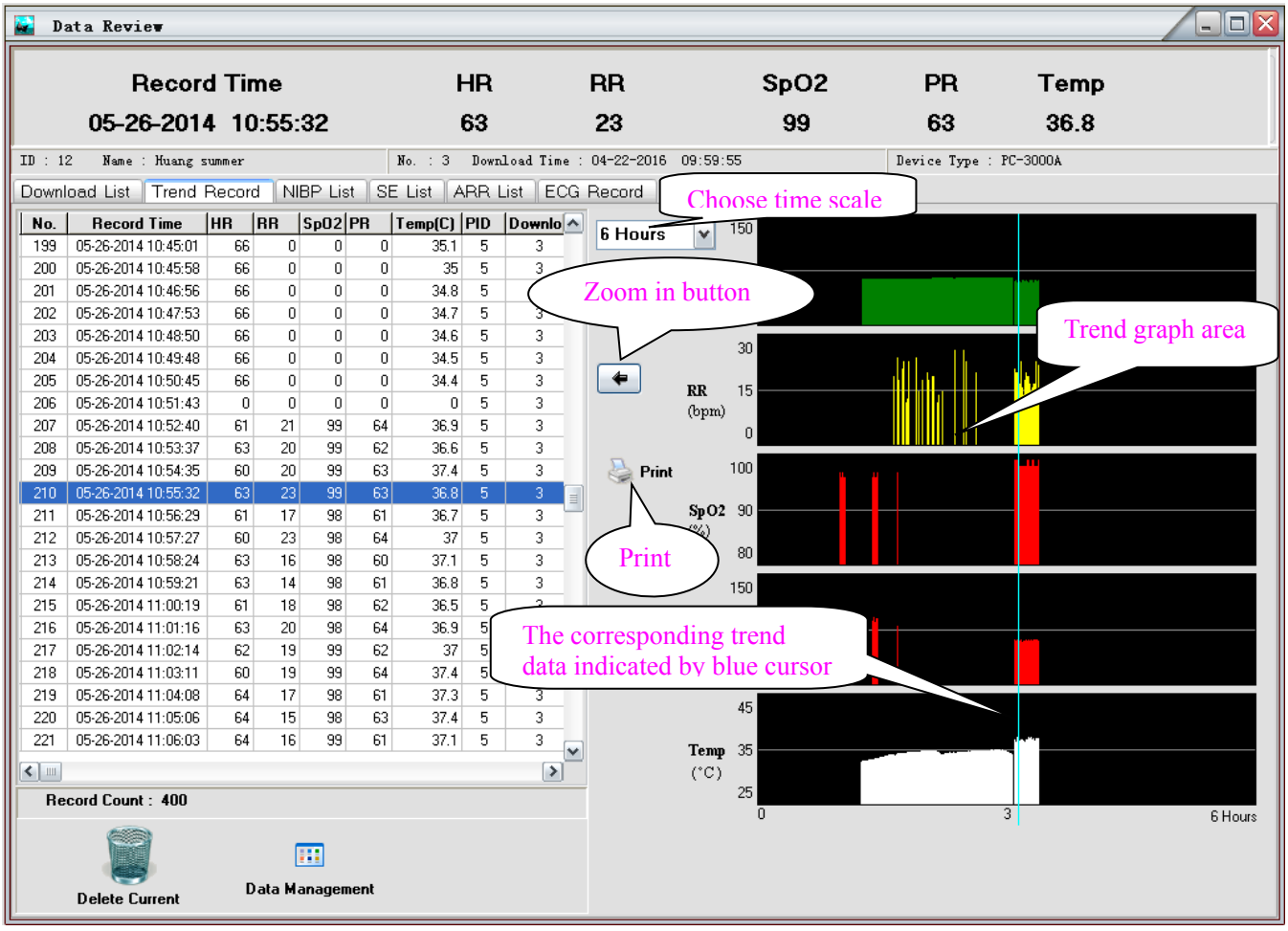


Figure 3.12B Trend review screen

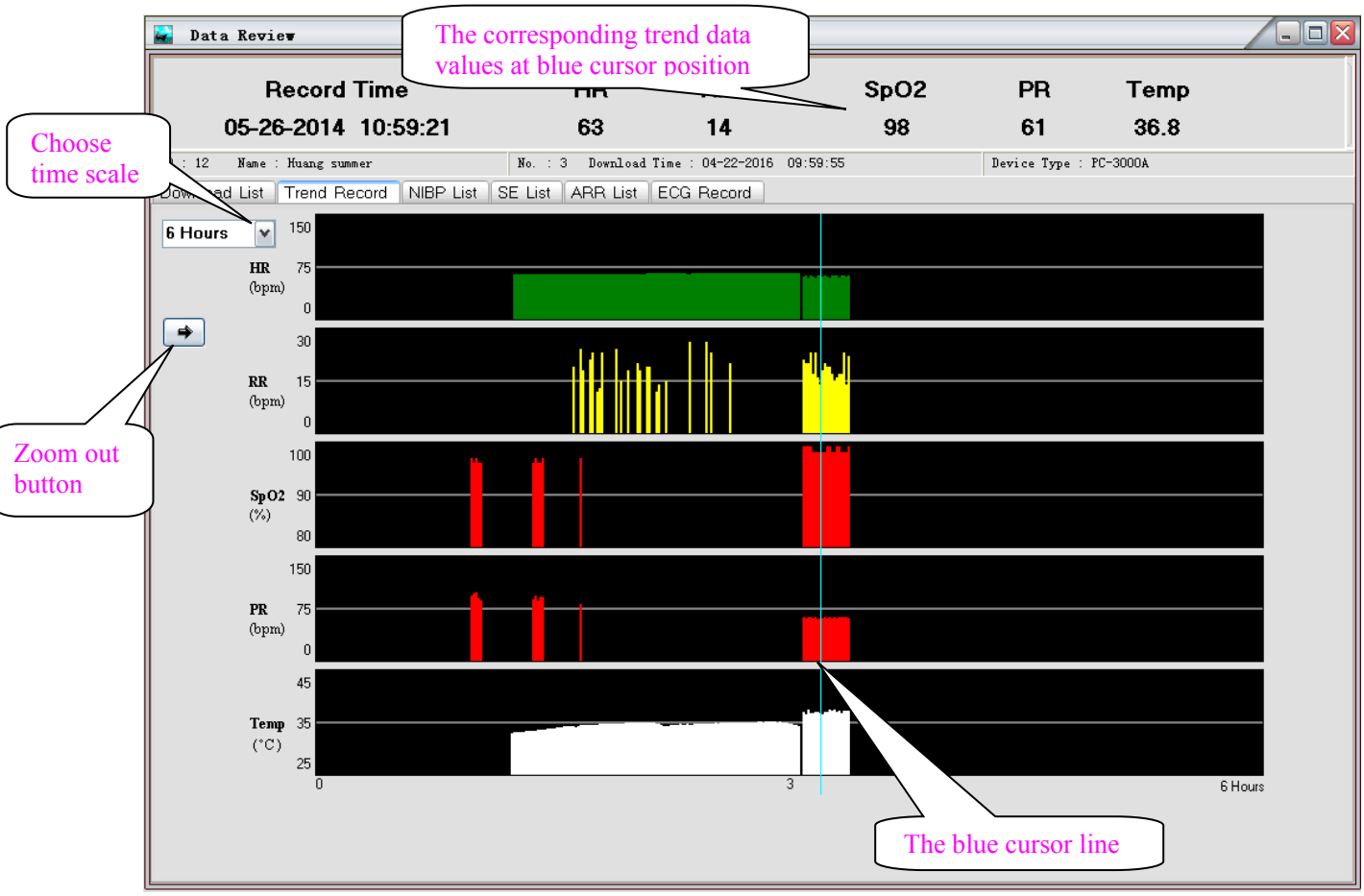


Figure 3.13 The enlarged trend graph

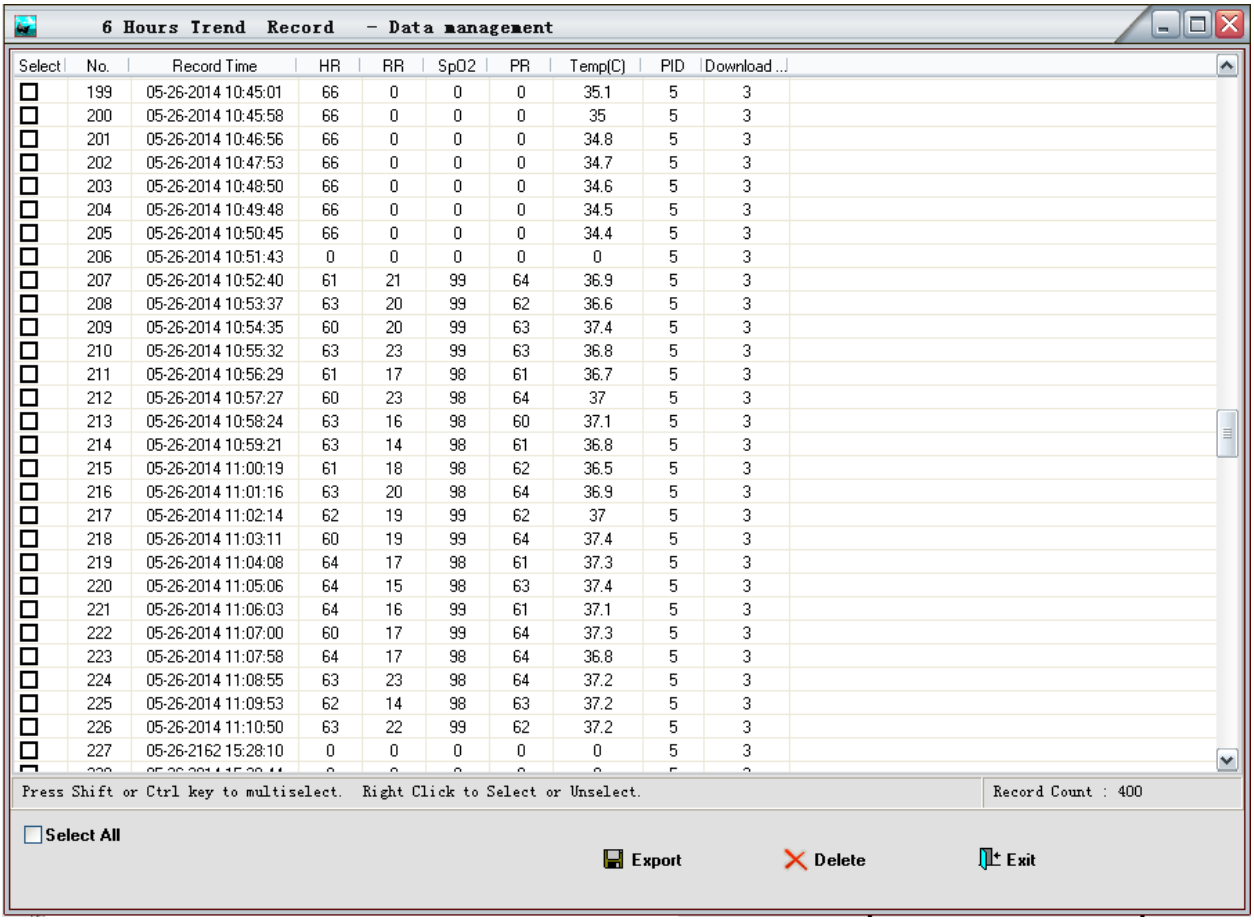


Figure 3.14 Data management window

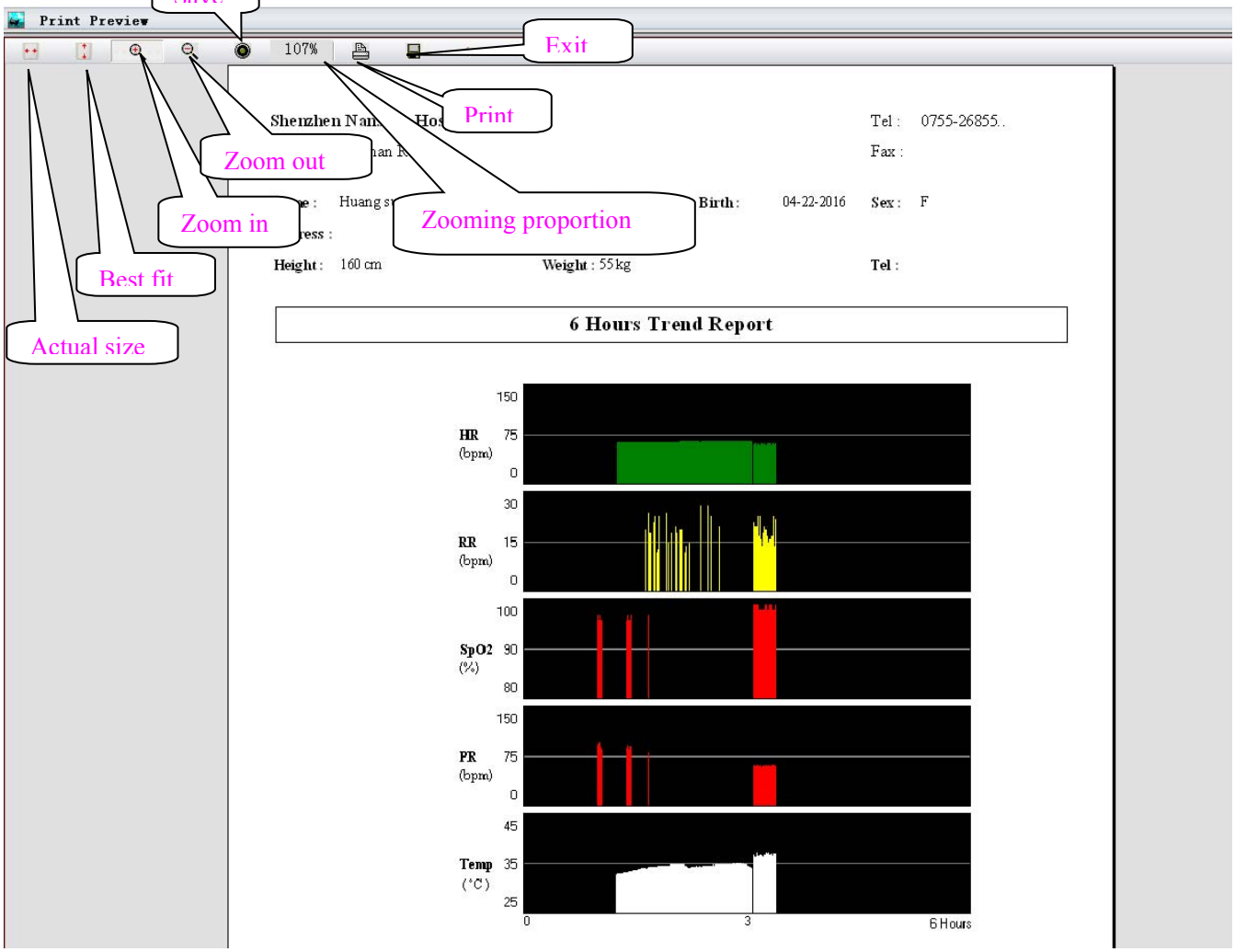


Figure 3.15 Print report

3.4.3 NIBP List

On Record Management screen, click "NIBP List" to enter into NIBP List screen, for different models of patient monitor, there will be different NIBP list review screen, as shown in figure 3.16A and 3.16B.

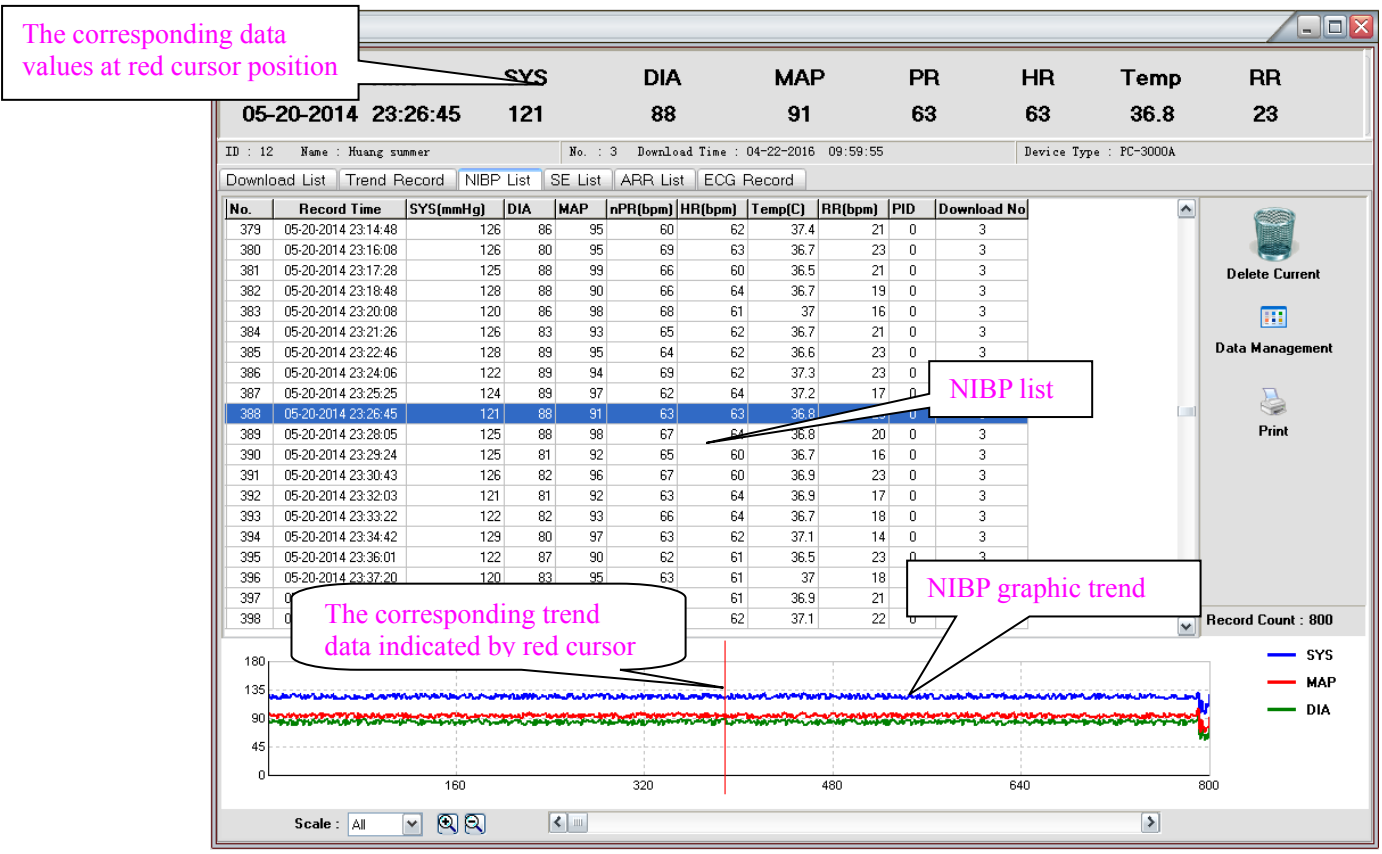


Figure 3.16A NIBP list review window

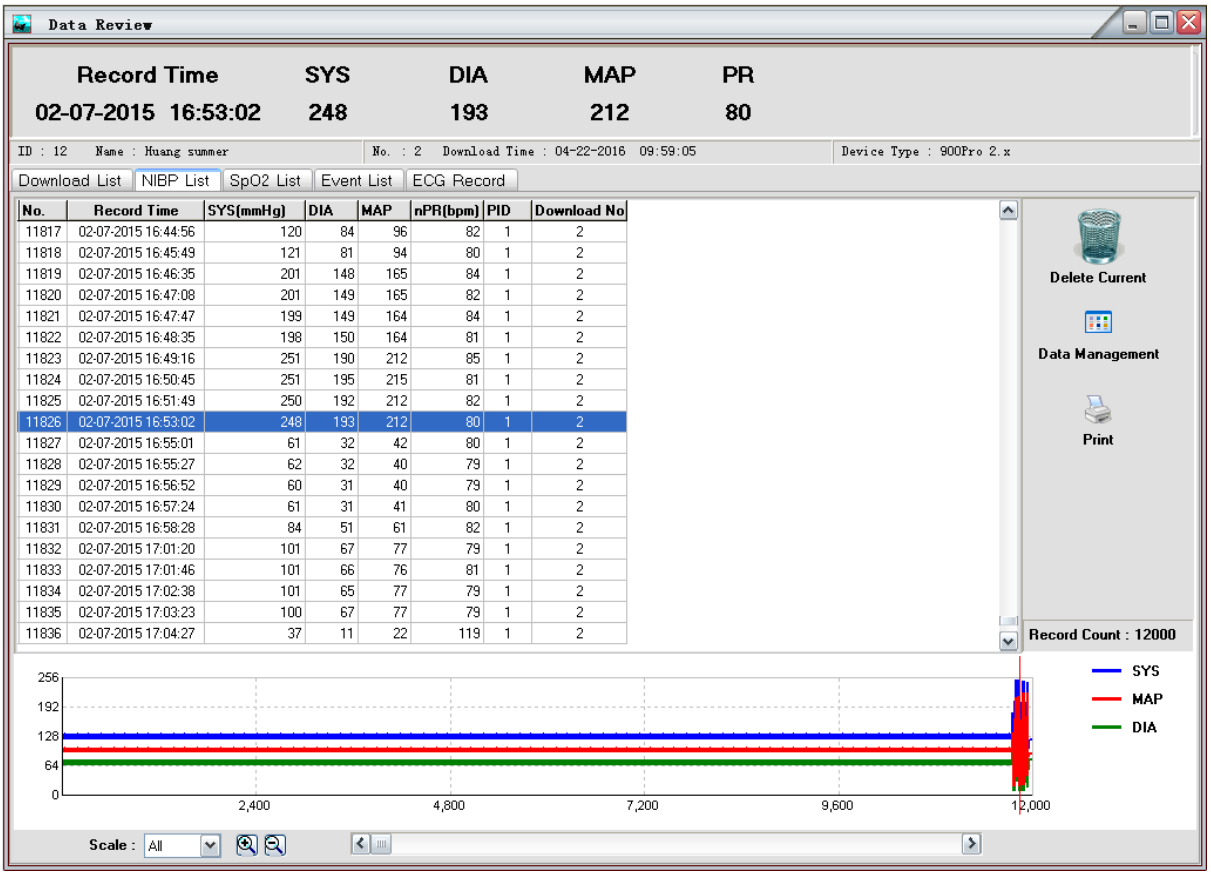


Figure 3.16B NIBP list review window

Description:

On Graphic Trend area, click the mouse on any point within this area, a red cursor line will appear where you click. The data record corresponding to the cursor line is displayed on the upper screen. Click the mouse on the record list area, the red cursor will move to corresponding record as well shown in figure 3.16A. The trend curve color for SYS, DIA and MAP is indicated on the lower right corner.

- Click data management icon "" to export or delete the NIBP record list (all or part) for the current patient account.



- Click delete icon "Delete Current" to delete the selected trend record.



- Click print icon "Print" to print NIBP trend report, as shown in figure 3.17.

Note: please refer to Section 3.4 for explanation of phrases on the display screen.

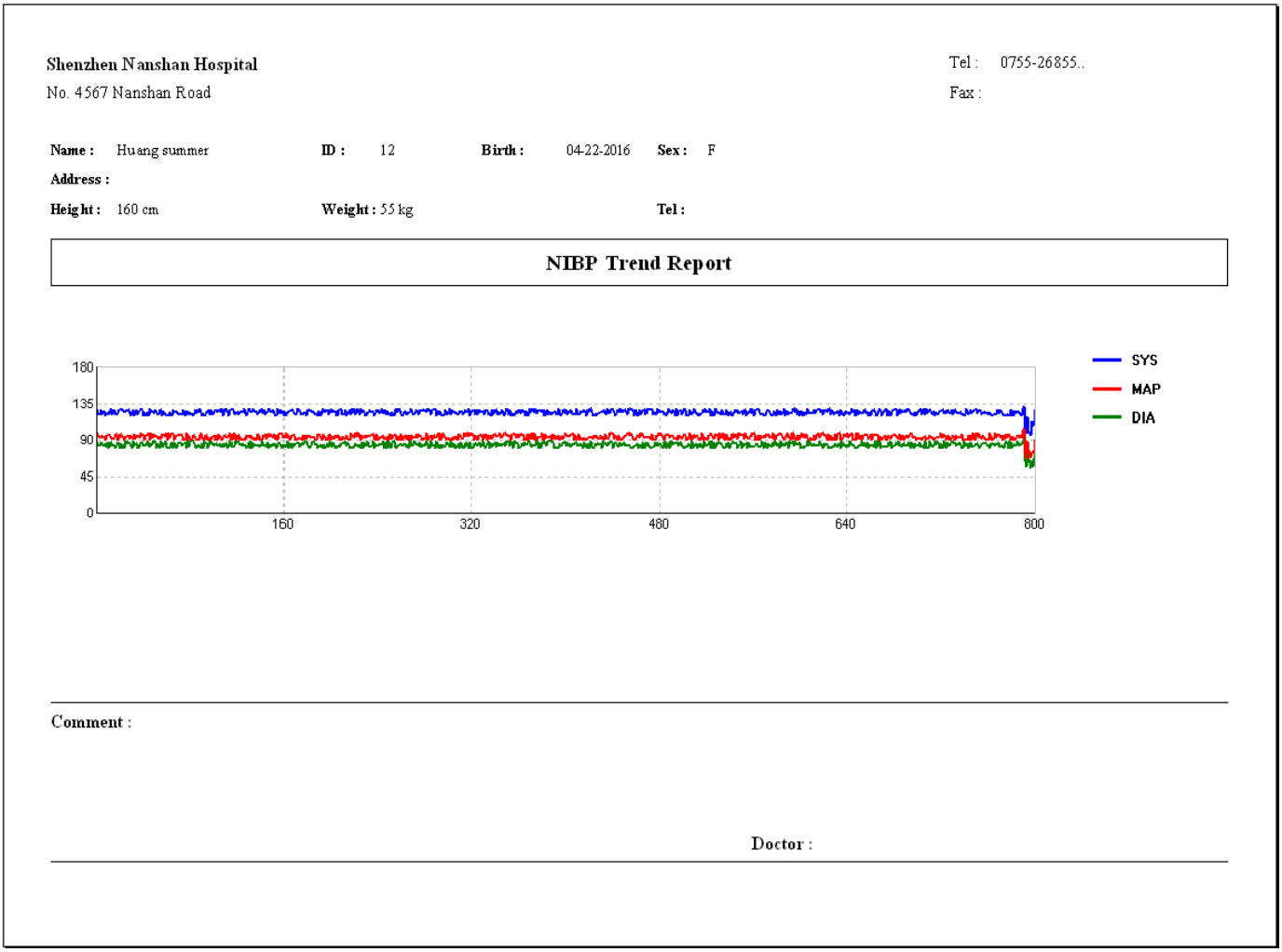


Figure 3.17 Print NIBP trend report

3.4.4 SE List

On Record Management screen, click " SE List" to enter into SE (SpO_2 Event) List screen, as shown in figure 3.18. It displays the SpO_2 dropping event and corresponding PR, HR, TEMP, RR etc. value.

Operation Instruction:

- Click the pull-down menu "[v]" to review the SE list which can be exported and deleted.
- Click data management icon "[icon]" to export or delete the SE record list (all or part) for the current patient account.
- Click "Delete current" to delete all records of the current selected SE list.

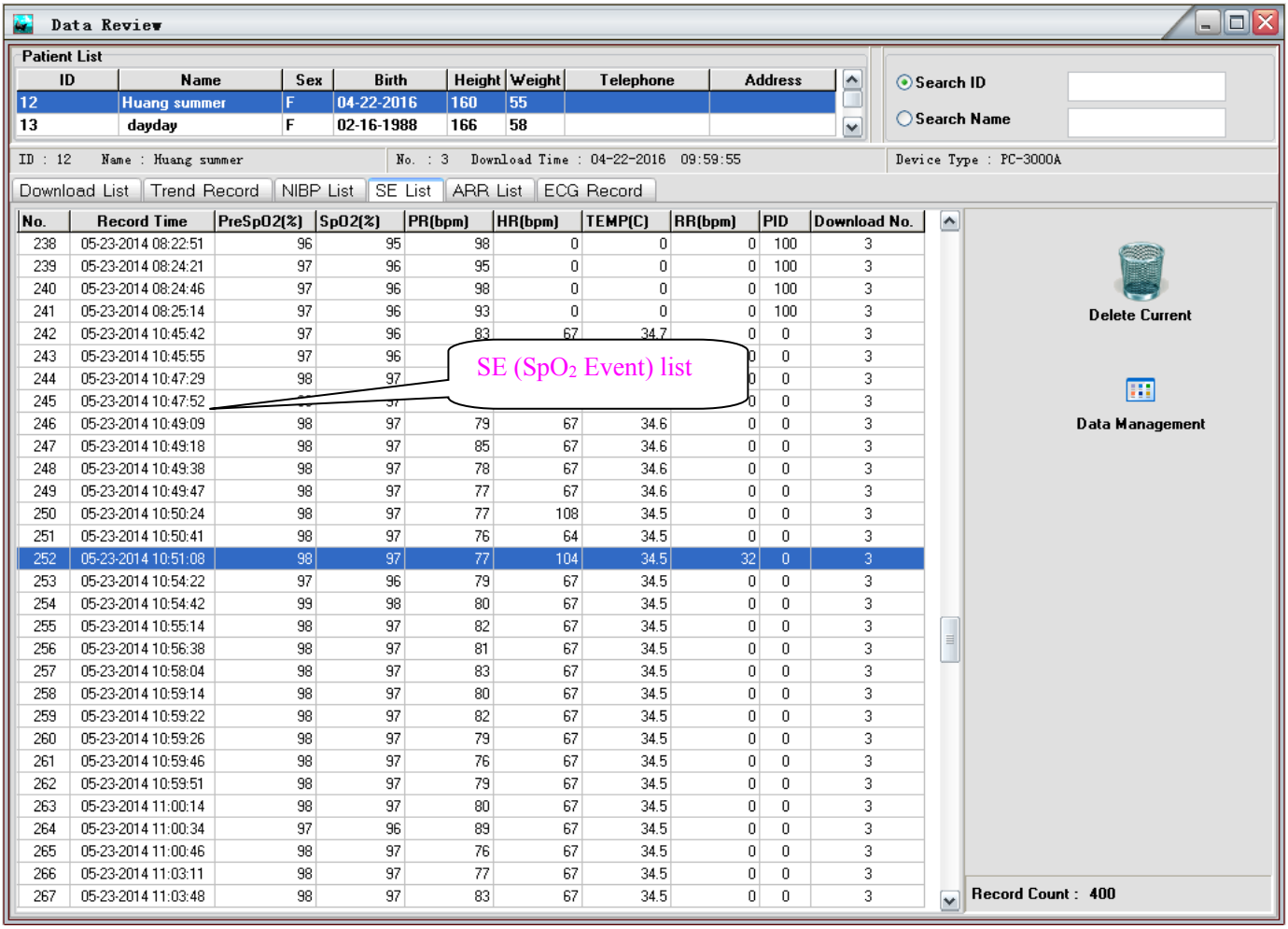


Figure 3.18 SE list screen

3.4.5 SpO_2 List

Click "SpO_2 List" to enter into SpO_2 List screen, which can display the SpO_2 value, PR and the corresponding trend graph, as shown in figure 3.19.

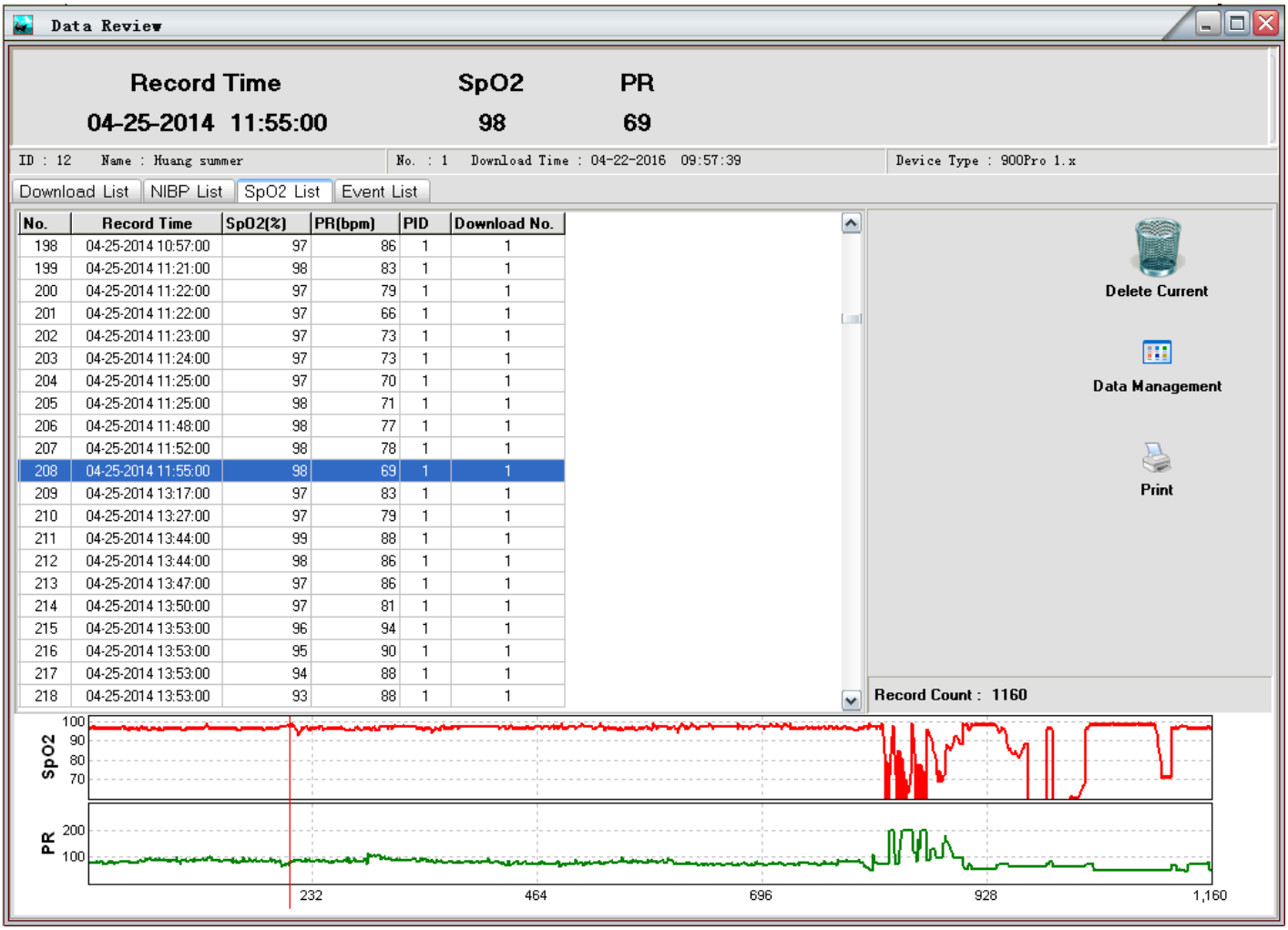


Figure 3.19 SpO_2 list screen

- Click "" to delete the current selected SpO_2 record.
- Click "" to export or delete the SpO_2 records (all or part) for the current patient account.
- Click "" to print the current SpO_2 trend report, as shown in figure 3.20.

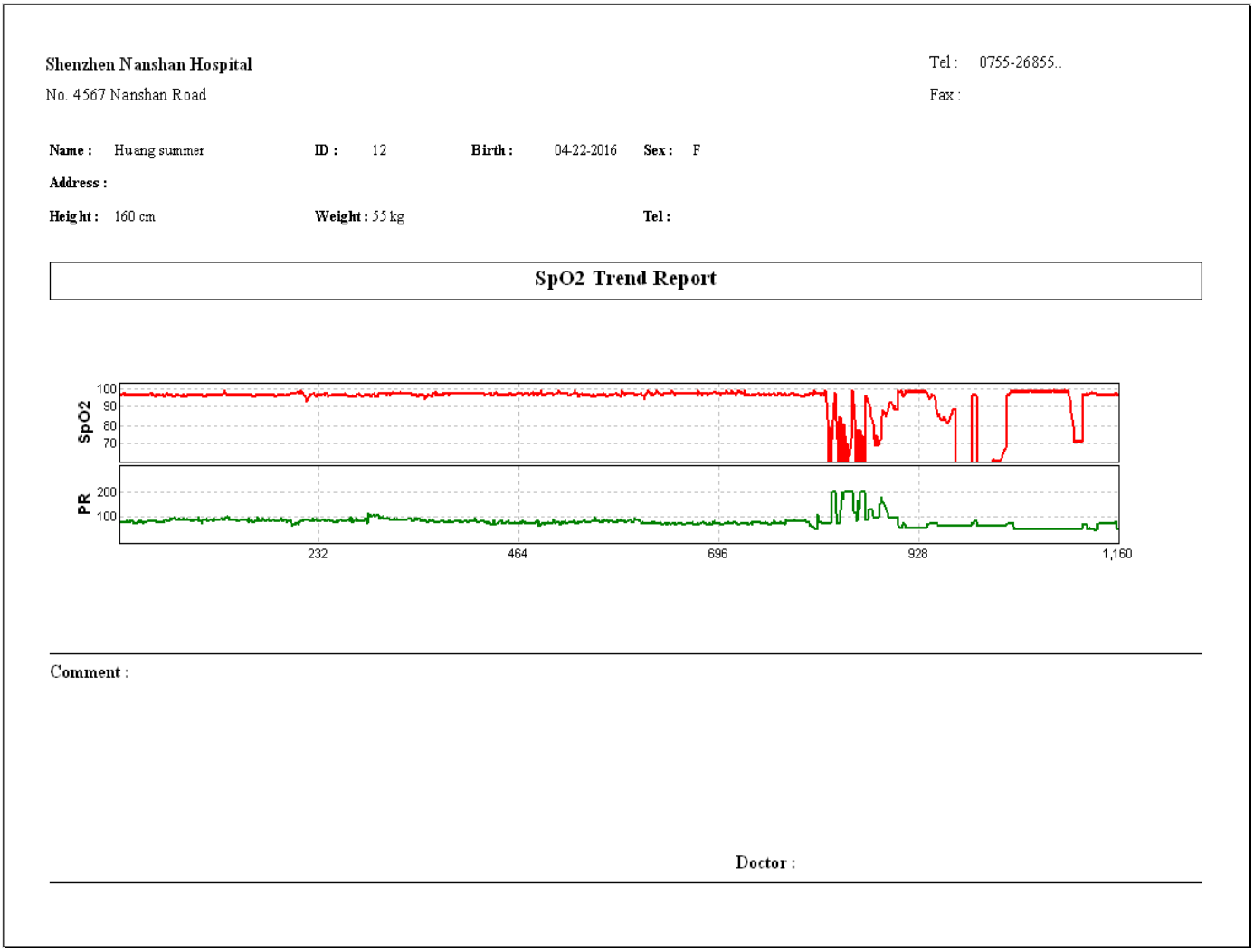


Figure 3.20 SpO_2 trend report

3.4.6 Event List

Click "Event List" to enter into Event List screen, which can display the recording time, event source, onset value of the parameter value, preset high/low limit, as shown in figure 3.21.

- Click "" to delete the current selected event record.
- Click "" to export or delete the event list (all or part) for the current patient account.

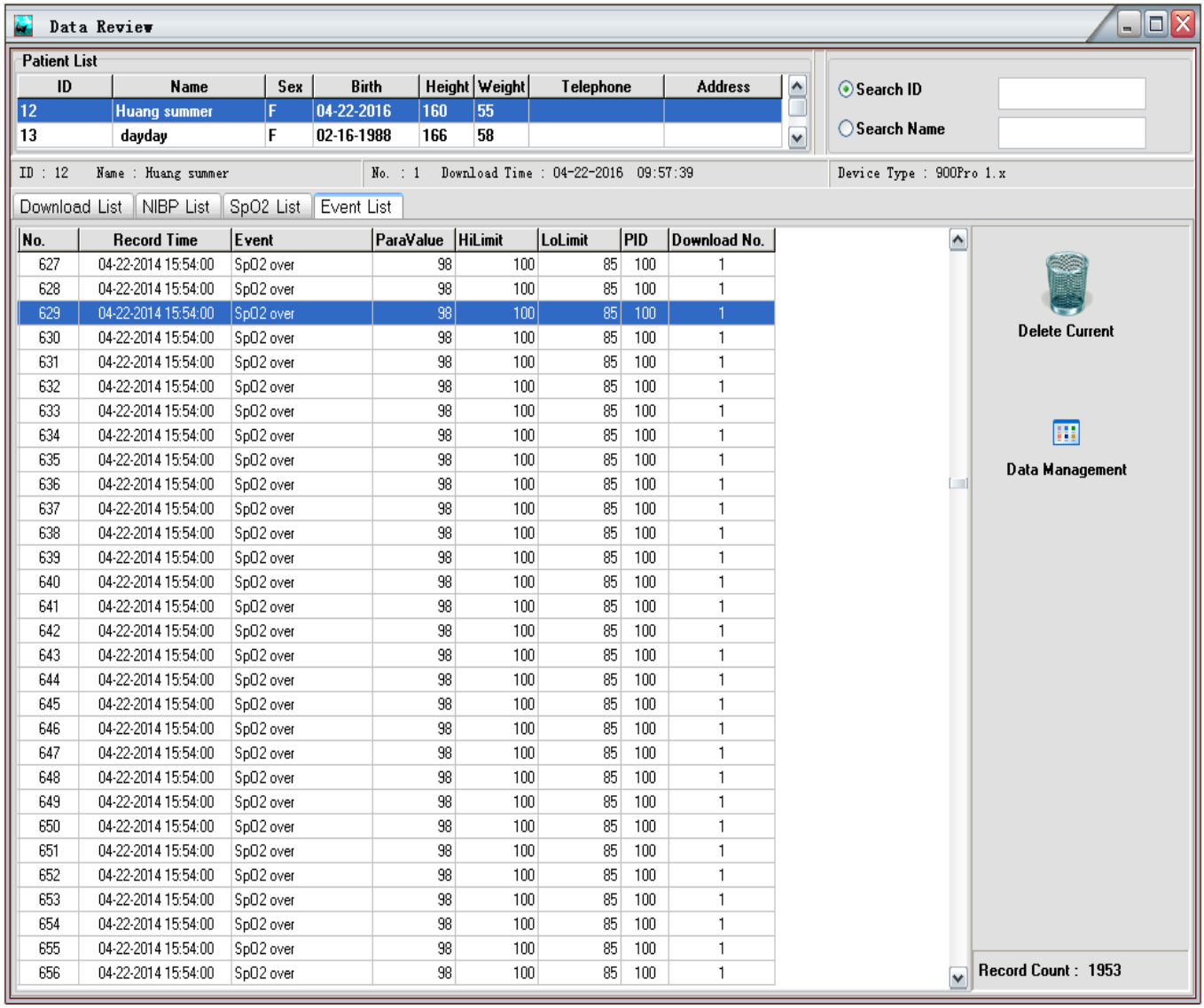


Figure 3.21 Event list

3.4.7 ARR List

On Record Management screen, click " ARR List" to enter into Arrhythmia Event list screen, as shown in figure 3.22. The screen will display the ECG waveform with arrhythmia, measurement result and other information, such as measuring time, lead, gain and filter setting.

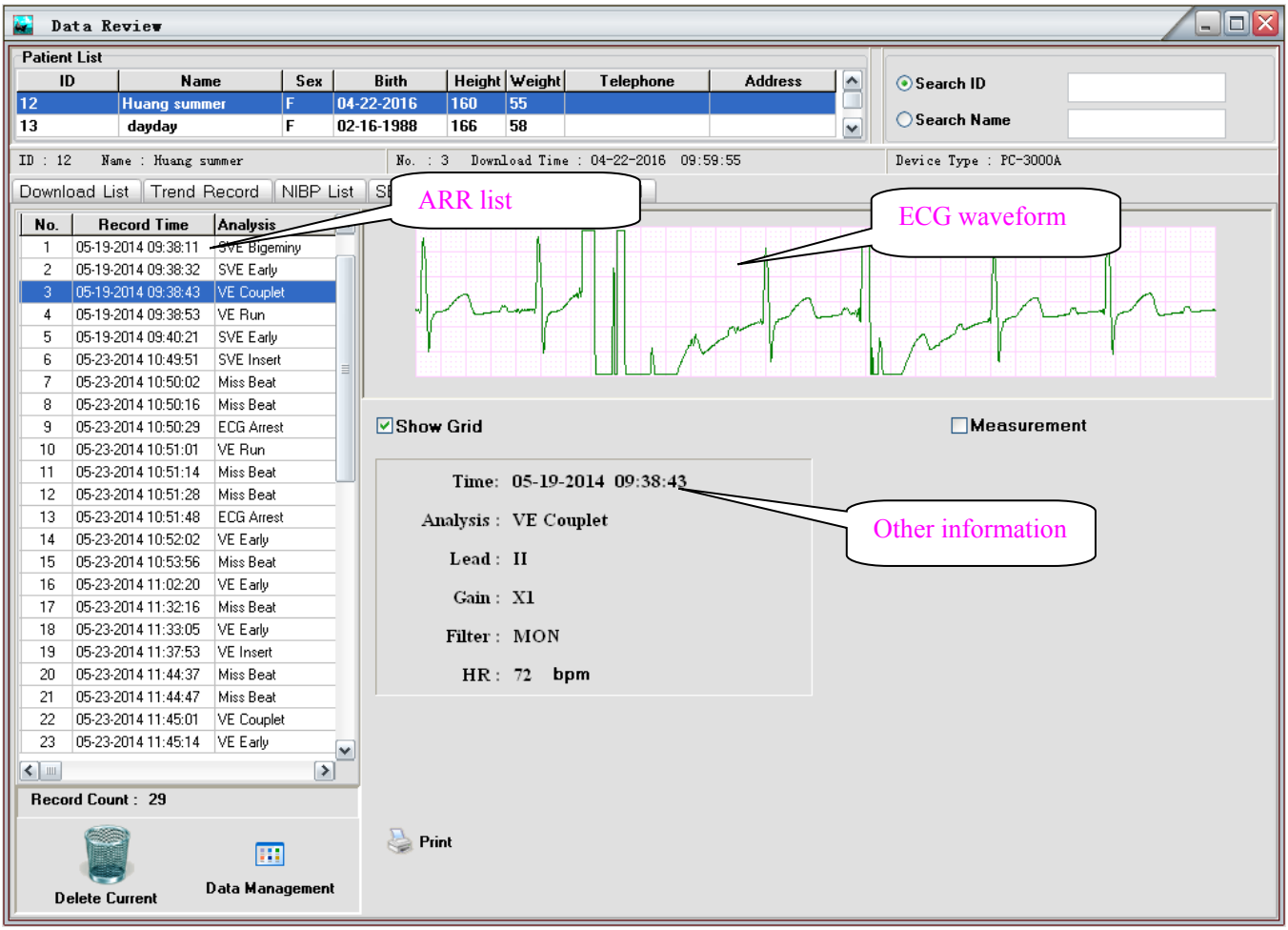
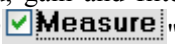
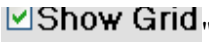
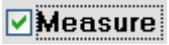


Figure 3.22 ARR list screen

Operation Instruction:

Click the ARR record you want to review, then the screen will display the ECG waveform, measurement result and other information, such as measuring time, lead, gain and filter setting, as shown in figure 3.23A. Select "Measure" on check box (i.e. measure icon becomes ""), then a red cursor and a blue cursor appear on the waveform area. Click the mouse on the waveform area can change the position of cursors. Each click can make the nearest cursor to the position where you click.

- Click "" to show or hide the grid.
- Click "" to display or hide the measuring value. Display the voltage and time difference between left stuff and right stuff.
- Click "" to delete the current piece of ARR record.
- Click data management icon "" to export or delete the ARR record list (all or part) for the current patient account.
- Click "" to print the current ARR report, as shown in figure 3.23B.

Note: 1. Vertical means the height value difference between two cursor lines, that is, the height value difference

between cross point A (intersection between right cursor and waveform) and cross point B (intersection between left cursor and waveform); Horizontal means the distance between two cursor lines.

2. The waveform segment for each ARR lasts for 6.4 seconds.



Figure 3.23A ARR information screen

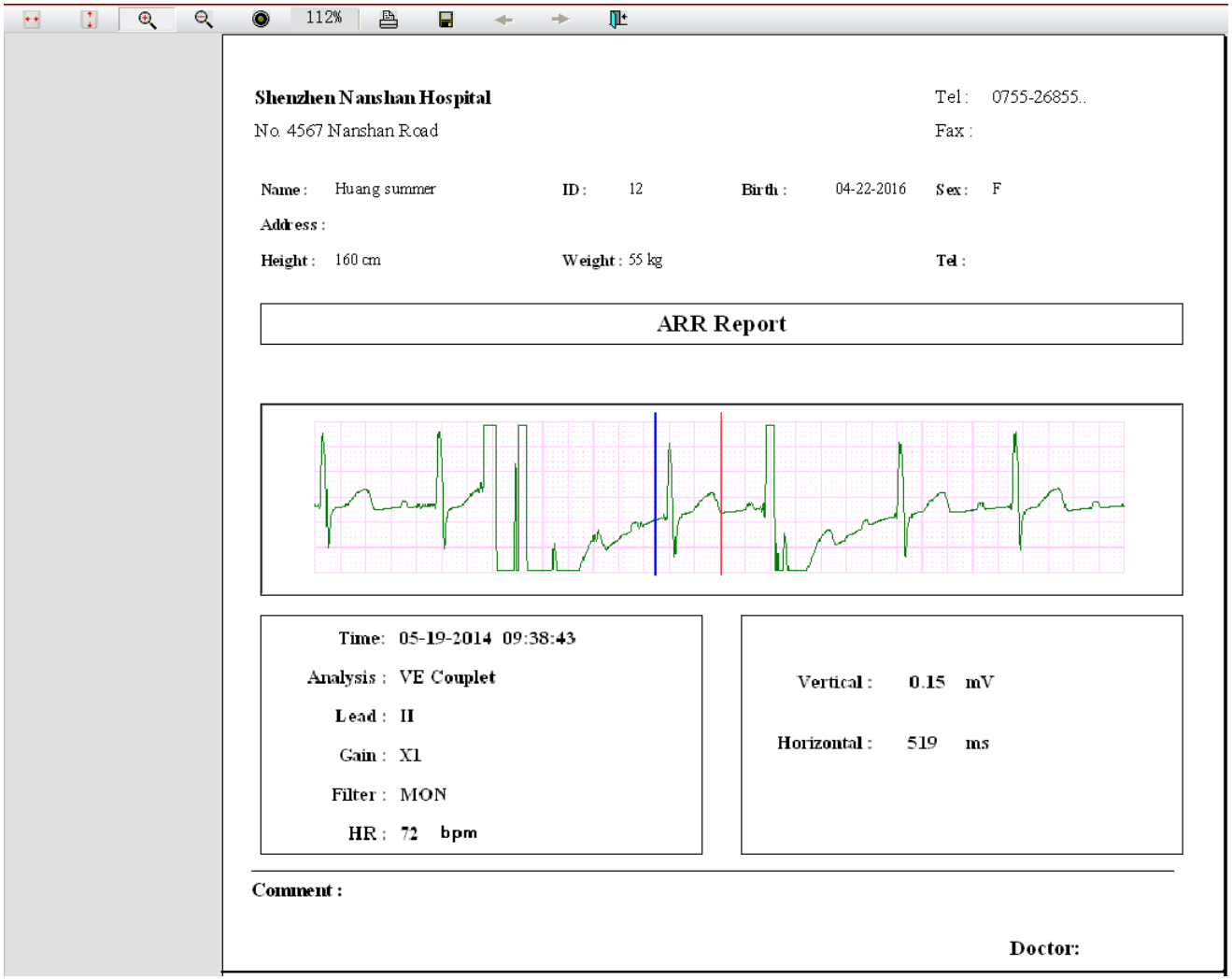
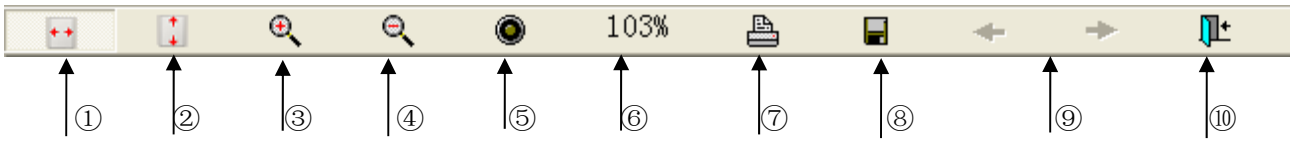


Figure 3.23B Print ARR report

Tool bar:



① "" Fit to width: Preview the report in proper width.

② "" Fit to page: Full screen preview the report in proper proportion.

③ "" Zoom in: Click it to zoom in the report.

④ "" Zoom out: Click it to zoom out the report.

⑤ "" Actual size: Preview the report in actual size.

⑥ "103%" Zooming proportion: Displays the zooming proportion for the current report preview.

⑦ "": Print the current report displayed.

⑧ "": Save. Click this button can save the records in picture format on.

⑨ "': If the content of records is more than one page, click this button to turn the page up and down so as to preview all records.

⑩ "": Exit. Exit from the current preview.

3.4.8 ECG Record

Click "ECG Record" to enter into ECG record screen, which can display the ECG lead, gain and HR value. For different models of patient monitor, there will be different ECG record review screen, as shown in figure 3.24A and 3.24B.



Figure 3.24A ECG Record screen

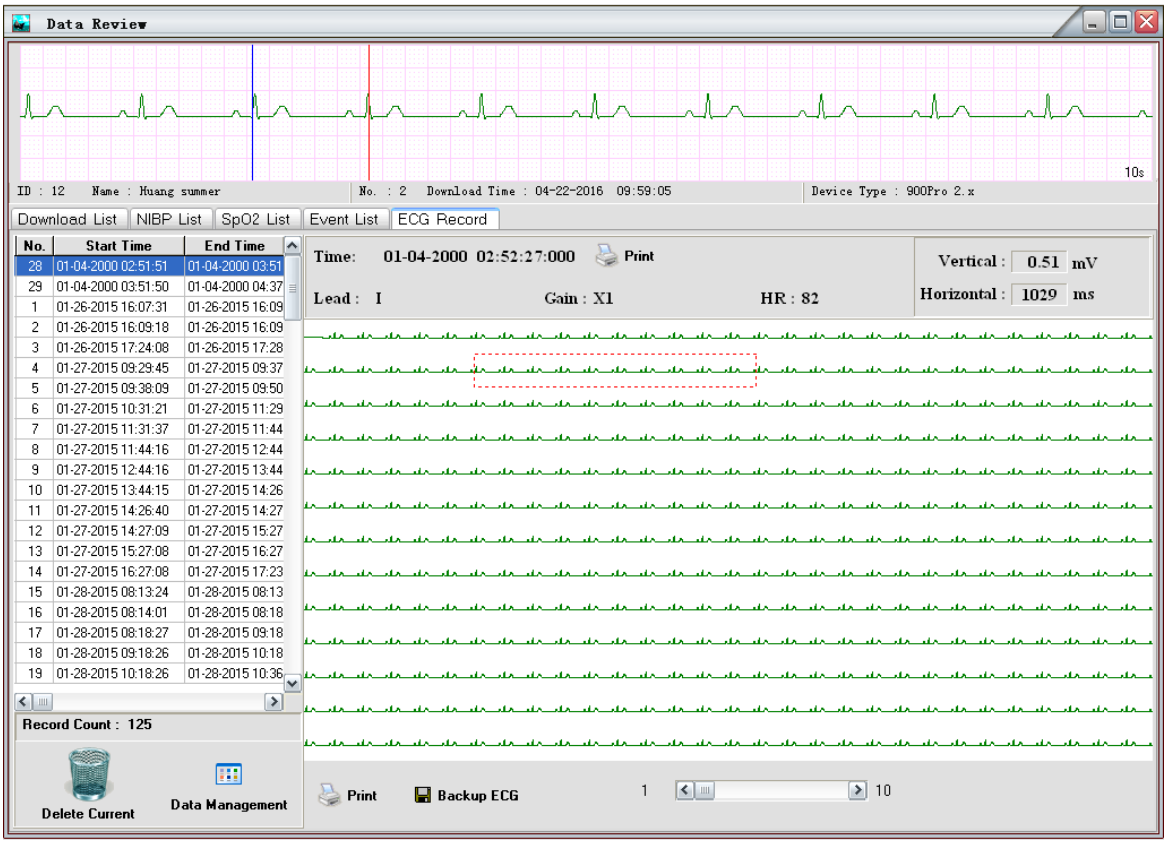


Figure 3.24B ECG Record screen

Operation Instruction

- Click on waveform 1 area, the two cursors appear and the voltage difference (vertical) and time difference (horizontal) value are displayed on the right screen, which is similar to ARR screen.
- Click on any point within waveform 2 area, a dashed frame "" appears on where you click, at the same time, the waveform 1 area displays the corresponding zoomed waveform in that dashed frame, and the measuring time of the waveform segment will be displayed on the middle of the screen. (Note: time format can be "MM-DD-YYYY HH:MM:SS:XXX" or others) .
- Click "" to delete the current ECG record.
- Click "" to export or delete the ECG data record (all or part) for the current patient account .
- Click "" to backup the selected ECG records to the local disk or removable disk, as shown in figure 3.25.

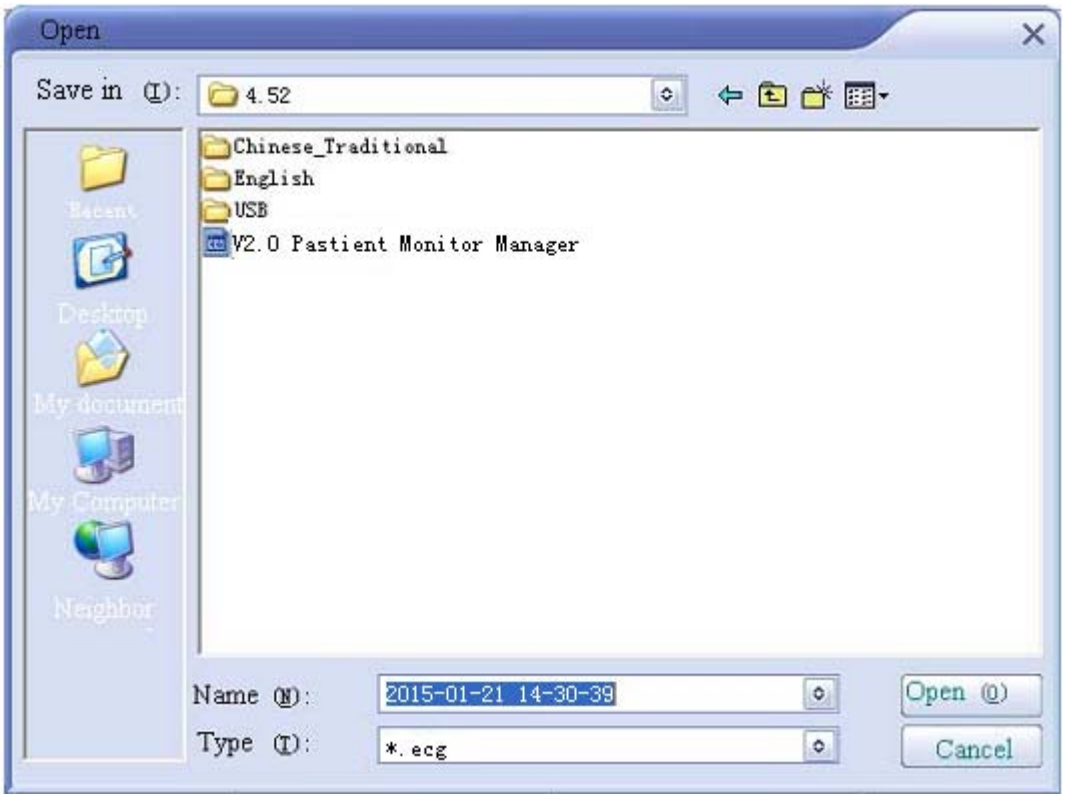


Figure 3.25 Backup ECG record

- Click "" to print the current ECG waveform report, as shown in figure 3.26A and 3.26B.
- "" shows that the ECG waveform has 12 pages, pull slider "" or click arrows "" to view the waveform in other pages.

Note: The dashed frame "" shows the 4-second segment of the recorded ECG waveform which can be up to 1 hour long.



Figure 3.26A ECG report (waveform 1)

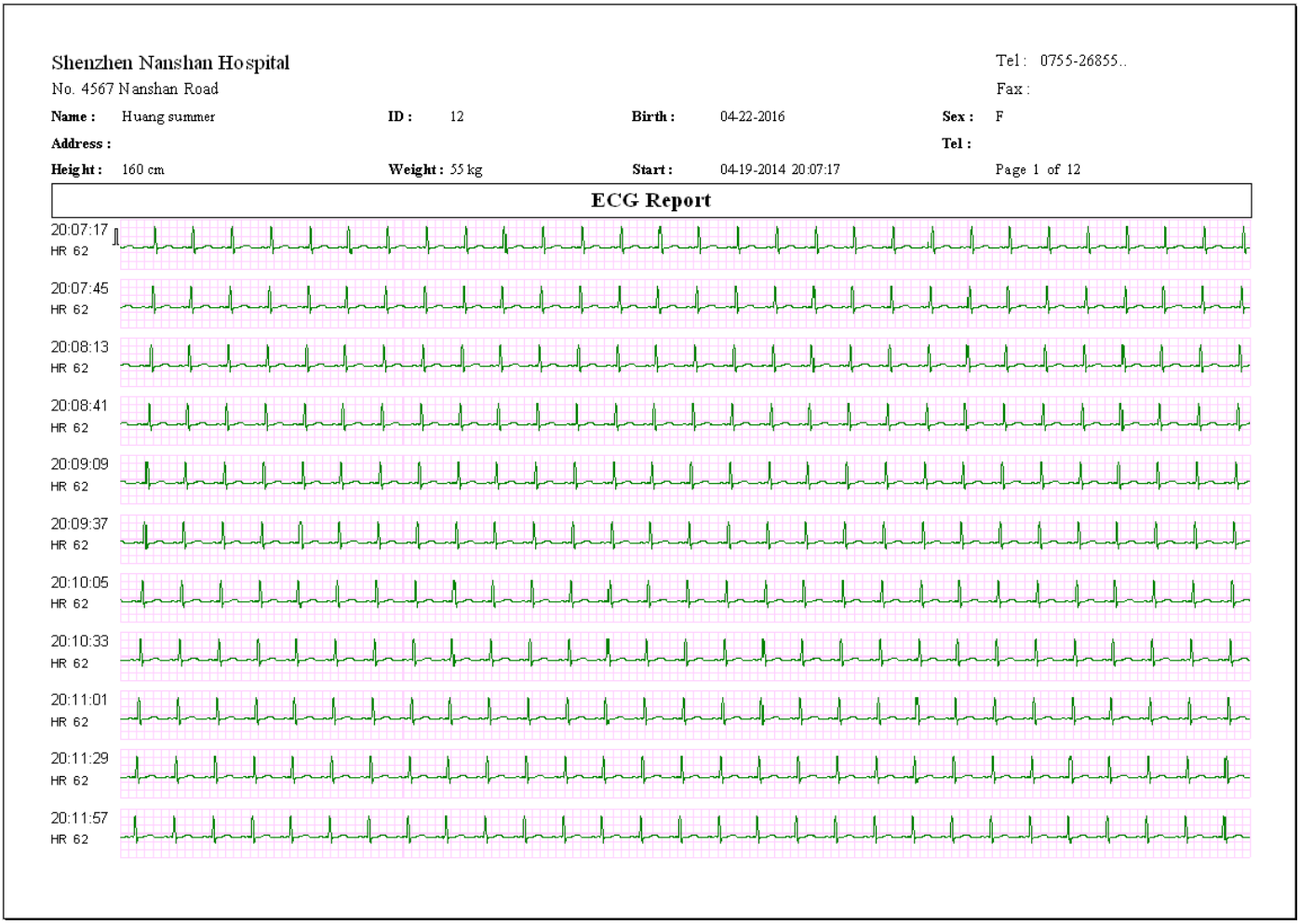


Figure 3.26B ECG report (waveform 2)

3.5 Help

On main menu window, click "Help" button to bring up the pull-down sub-menu, as shown in figure 3.27. selecting the sub-menu will pop up the corresponding window.

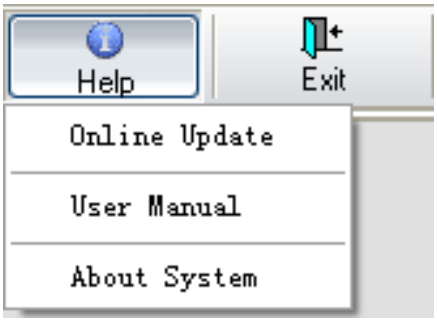


Figure 3.27

◆ Online Update

If the internet is accessible, then click "Online Update" to check if the current version is the latest software version. If it's checked as the latest version, then figure 3.28A pops up. If not, then figure 3.28B will pop up.

Notes:

1. Do not operate the Patient Monitor Data Manager when updating the software, please wait for about 2 minutes.
2. When downloading the updated file (PMDM_files.exe), if the antivirus program (e.g. 360 antivirus program) shows it as the computer virus, then choose "Trust in" and re-click "Online Update".



Figure 3.28A

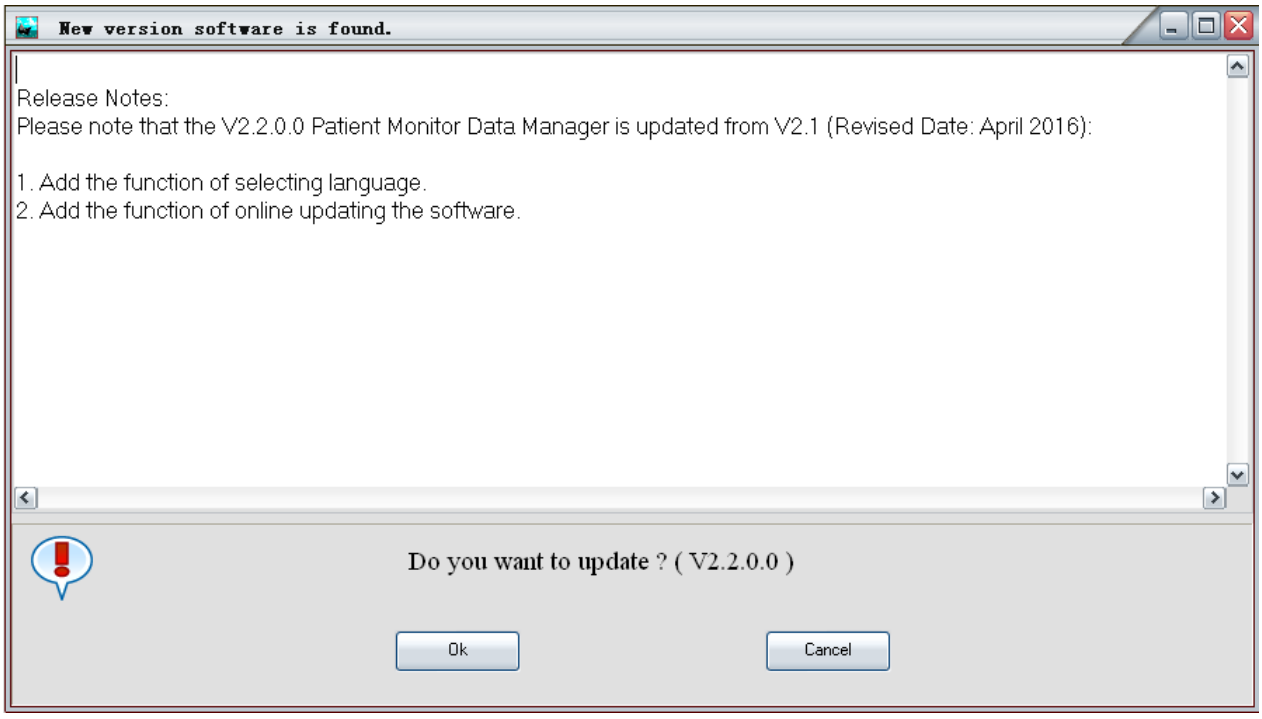


Figure 3.28B

If the internet is not accessible, then click "Online Update" will show connection failure, as shown in figure 3.28C.

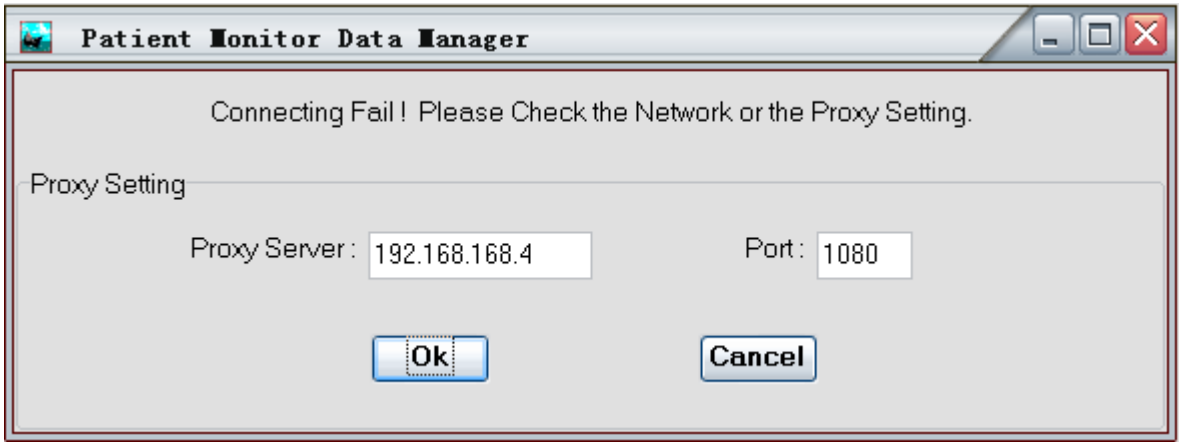


Figure 3.28C

◆ User Manual

On sub-menu, click on "User Manual", then the User Manual for Patient Monitor Data Manager pops up, which is a document with ".pdf" format.

Note: your computer should install PDF reader, or the User Manual can not be opened.

◆ About System

Click it to view software information (including software version, disk space and so on.)

3.6 Exit

On main menu window, click "Exit", then a dialog box pops up on the screen, as shown in figure 3.29. Click "OK" to exit from the system and click "Cancel" to quit this operation.

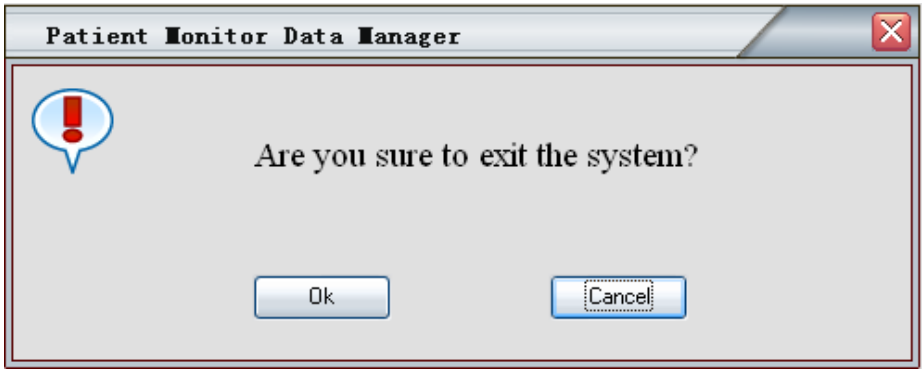


Figure 3.29 Exit from the system