Vitals Mobile User Manual

Revision 1.0

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Contents

1. Using the manual

This User Manual shall be used in combination with the Product User Manual and other module-specific manuals listed in Section 1

1.1 Aims

The effort which has gone into creating this manual aims to offer all the necessary information to guarantee a safe and correct use of the Product. Furthermore, this document aims to describe every part of the Product, it also intends to offer a reference guide to the user who wants to know how to perform a specific operation and a guide for the correct use of the Product so that improper and potentially hazardous uses can be avoided.

1.2 Characters used and terminology

The use of Product requires a basic knowledge of the most common IT terms and concepts. In the same way, understanding of this manual is subject to such knowledge.

Remember that the use of Product must only be granted to professionally qualified and properly trained personnel.

When consulting the online version as opposed to the paper version, cross-references in the document work like hypertext links. This means that every time you come across the reference to a picture (e.g. “Fig 1.1”) or to a paragraph / section (e.g. “paragraph 5.22”), you can click the reference to directly go to that particular figure or that particular paragraph / section.

Every time a reference is made to a button, this is written “**Bold**” and if possible a small picture of the button is reported. For example, in expressions like:

- Click the “**Update**” button,

“**Update**” is a button featured on the screen being described. Where possible, it is clearly indicated in a figure (with cross references as “See Fig 13 **A**”).

The character ➢ is used to indicate an action which the user must perform to be able to carry out a specific operation.

The character ● is used to indicate the different items of a list.

1.3 Symbols

The following symbols are used in this manual.

Useful information

This symbol appears alongside additional information concerning the characteristics and use of Product. This may be explanatory examples, alternative procedures or any “extra” information considered useful to a better understanding of the product.

Caution!

The symbol is used to highlight information aimed at preventing improper use of the software or to draw attention to critical procedures which might cause risks. Consequently, it is necessary to pay extreme attention every time the symbol appears.

The following symbols are used in the Product information box:

The manufacturer’s name and address

Attention, consult accompanying documents

2. Vitals Mobile

2.1 Introduction

The Vitals Mobile App is intended to permit data entry and display for a variety of clinical workflows, procedures and protocols within the healthcare services domain.
Examples:

- Patient vital signs data collection for normal wards.
- Patient data collection for clinical protocols associated to specific diseases, treatments or prevention of diseases.
- Generation of reminders for periodic data collection or patient examination and documentation of the activity performed and provided services.
- Documentation of patient conditions also by means of pictures and audio recordings.

2.2 Application start-up

To start the Vitals Mobile application

➢ Touch the corresponding row on the handheld device screen (Fig 1).

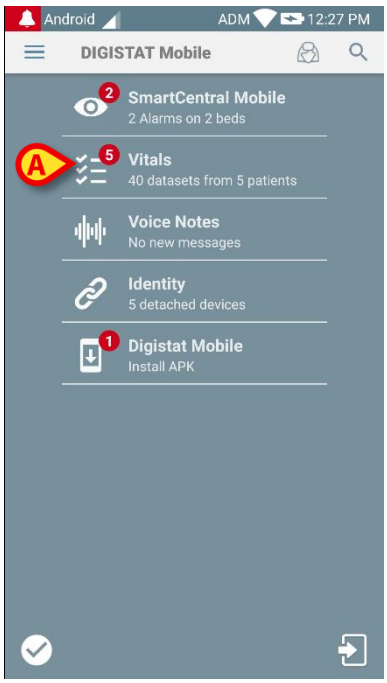


Fig 1

The Vitals Mobile screen, shown in Fig 2, will open.

Fig 2

2.3 Patients list

The Vitals Mobile patient list screen (Fig 3) displays the list of beds configured on the handheld device (namely, the device “domain”).
The domain of a specific handheld device is defined by configuration. In case there is no patient on one of the configured beds, then the bed is not displayed.

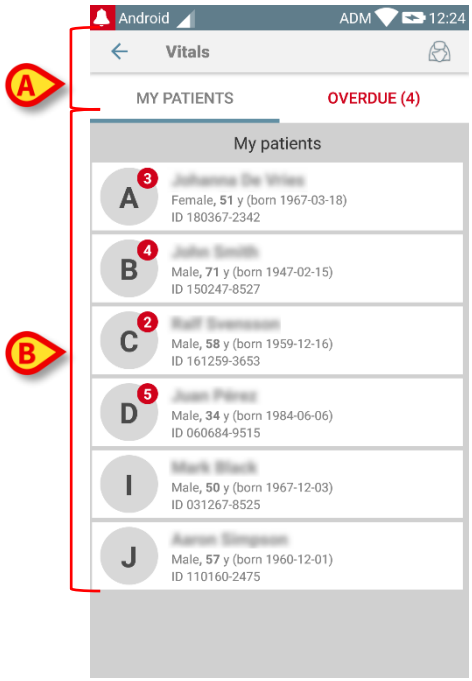


Fig 3

The patient list screen is formed of a heading (Fig 3 **A**) and the patients list (Fig 3 **B**).

2.3.1 Patient list heading

Fig 4 shows the heading of the patient list screen.

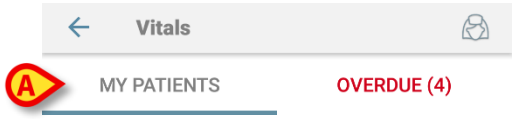


Fig 4

The filter indicated in Fig 4 **A** makes it possible to display either all the patients configured on the handheld device domain (**All Patients**) or only the patients for which there are notifications overdue (**Overdue**).

2.3.2 List of beds

Each bed is represented by a tile (Fig 5).

Fig 5

In the tile, the following information is displayed:

- bed number (Fig 5 **A**);
- number of notifications overdue (if any - Fig 5 **B**);
- name of patient on that bed (Fig 5 **C**);
- patient data (if available: sex, age, date of birth, patient ID - Fig 5 **D**).

➢ Touch one tile to access the list of datasets enabled for the corresponding patient (Fig 6).

The term “Dataset” refers to a structured set of data, considered as a whole. It can be, for instance, a score calculation, a set of vital parameters etc.

2.4 Datasets list

The datasets list screen is formed of two areas: a heading area (Fig 6 **A**) and the list of datasets (Fig 6 **B**).

Fig 6

The heading area displays the following information:

- bed number;
- name of patient on that bed;
- patient data (if available: sex, age, date of birth, patient ID).

The datasets are displayed in tiles below the heading area. Each tile represents a dataset.

The information displayed inside the tiles depends on the kind of dataset and the way the dataset is configured. See paragraph 2.4.5 for the dataset configuration functionalities.

Fig 7 shows an example.

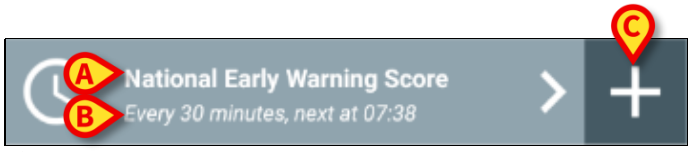


Fig 7

The dataset name is displayed inside the tile (“National Early Warning Score” - Fig 7 **A**). Below the dataset name, information is displayed relating the data acquisition modalities (i.e. when the dataset shall be acquired, when is the next acquisition due etc. - all these data depend on how the dataset is configured - Fig 7 **B**).

The **+** button (Fig 7 **C**) makes it possible to insert new data (see paragraph 2.4.1).

If the + button is not present on the tile it means that the dataset is not enabled (see paragraph 2.4.5 for more information). The tile is still displayed because past data exists for that dataset, which can be still viewed. See for instance Fig 8.

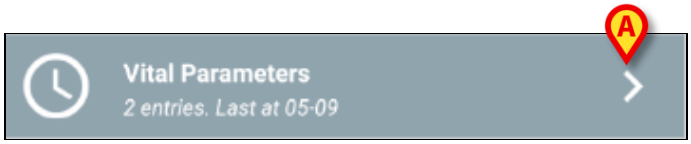


Fig 8

The arrow (Fig 8 **A**) makes it possible to display the past data. See for example Fig 9.

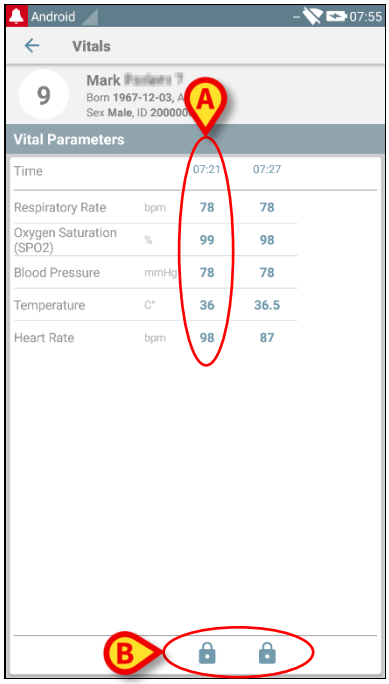


Fig 9

For each entry (i.e. a set of values), date and time are displayed on top. The recorded values are displayed below. See for instance the column indicated in Fig 9 **A**.

The “lock” icon indicated in Fig 9 **B** means that the corresponding score cannot be edited. Otherwise a “pen” icon is displayed (see for instance Fig 33).

The datasets can be configured to provide a notification at scheduled times, as a reminder, when they should be acquired. Since this notification occurs, the device led will result colored as purple.

See for instance Fig 10. The Aldrete score is here configured to be acquired every 10 minutes.

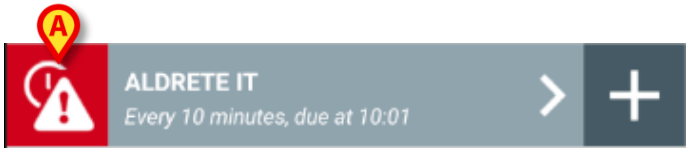


Fig 10

If the dataset is not acquired on time, the Product displays a notification, meaning that an action was due at a certain time but the action was not performed. The icon indicated in Fig 10 **A** is then displayed.
The handheld device in this case provides a specific sound/vibration. The notification is provided on the handheld device even if Vitals is not active. Also, a visual note is displayed on screen.

2.4.1 How to record a new set of data

To record a new set of data

- Touch the + icon on the tile corresponding to the wanted dataset (Fig 11).

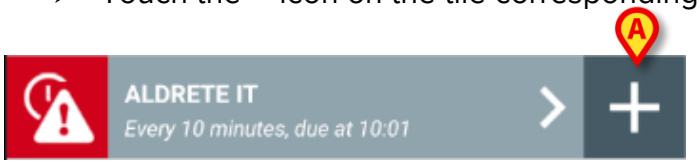


Fig 11

The data entry screen will be displayed.

NOTE: the data entry screen features depend on the kind of dataset selected. See Fig 12 for an example.

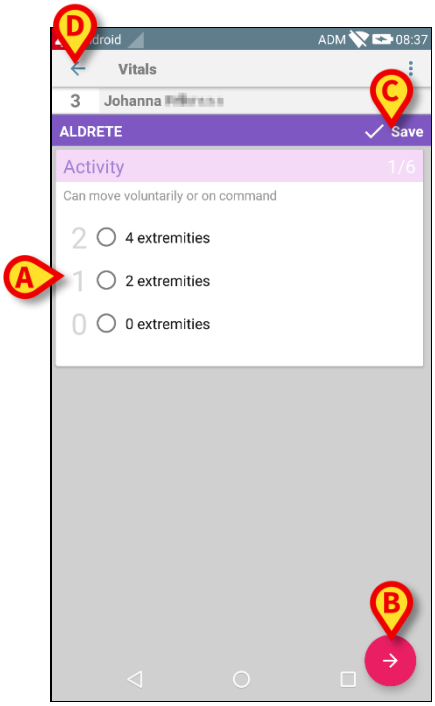


Fig 12

A score can be configured to indicate with a color code the degree of urgency/severity of the available values. The same color code will be then applied to the final result. Also, if so configured, a text indication about the therapy/treatment can be associated to a certain results range.

See Fig 13 for another example.

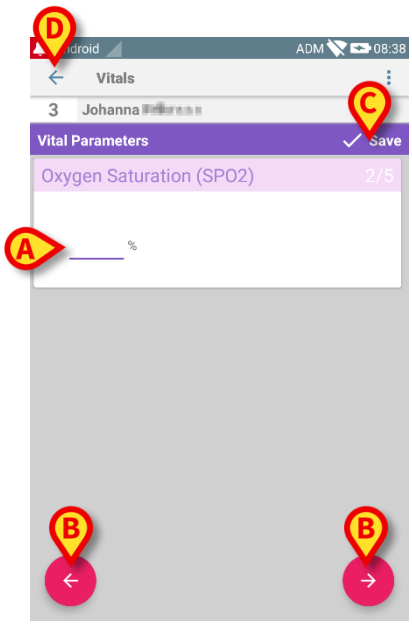


Fig 13

In general, data specification is divided in a number of different screens (one for each kind of data/question/parameter).

- Insert the required value/s on each screen (Fig 12 **A** and Fig 13 **A**).
- Move to next/previous screen using the arrows indicated in Fig 12 **B** and Fig 13 **B**.

When all the (relevant/known) values have been specified,

- Touch **Save** to save the dataset (Fig 12 **C** and Fig 13 **C**). The **Cancel** option (Fig 12 **D** and Fig 13 **D**) closes the data entry screen.

In addition to the insertion scheme above explained, it is moreover possible to configure the dataset in order to show all the requested parameter in a single page. Odd and even rows are colored differently (i.e. white or grey) to make easier read the data to insert.

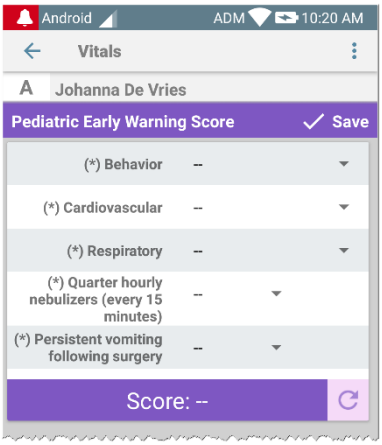
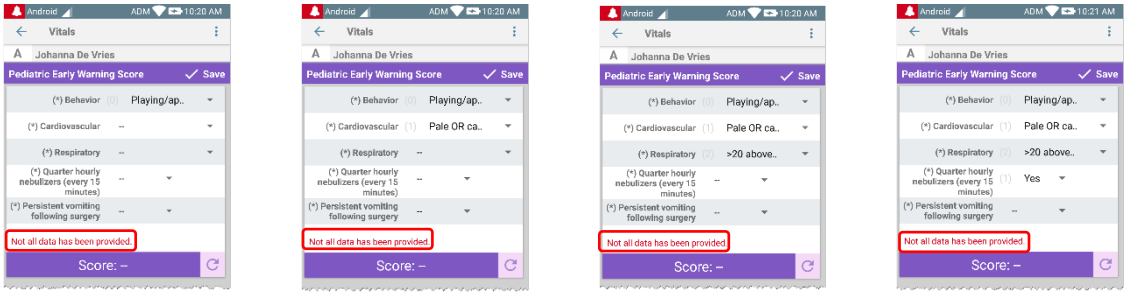


Fig 14

A score displayed in single page mode is calculated in real time i.e. at every data insertion the application tries to calculate it: if data are not enough a message is showed to the user:



The score can be however updated at any moment touching the button in Fig 15 **A**:

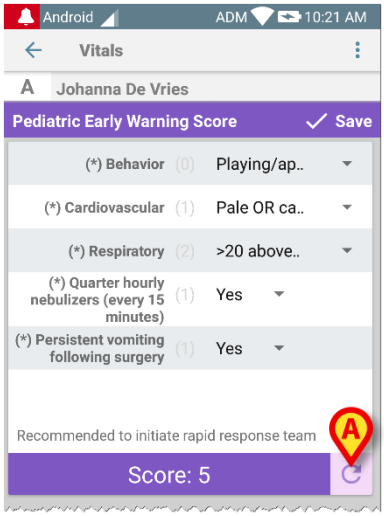


Fig 15

The application can be configured to consider as “Valid” only the values included in a determined range and to therefore not accept values outside the configured range.

If values outside the range are inserted, the application rejects them with a message informing the user about the range of acceptable values. See for instance Fig 16 **A**.

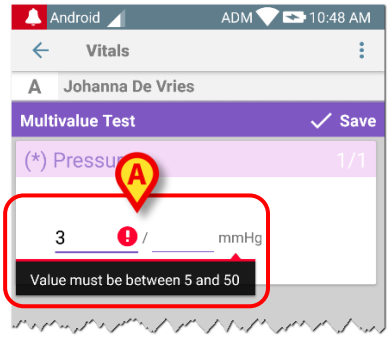


Fig 16

Please note that certain parameters (just like Respiratory Rate or Oxygen Saturation) for some patients are currently measure from devices connected to patients itself. In

these cases, the currently measured value is automatically inserted: the user can anyway change it:

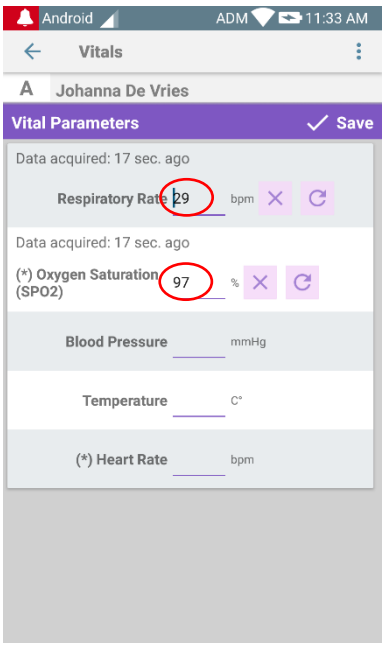


Fig 17

Dataset can also take into account the date or date-and-time inserted by the user by means of specific entry type.
Please consider as example the following pictures, representing the same entry type “Date” respectively in non-paged (Fig 18) and in paged (Fig 19) datasets:

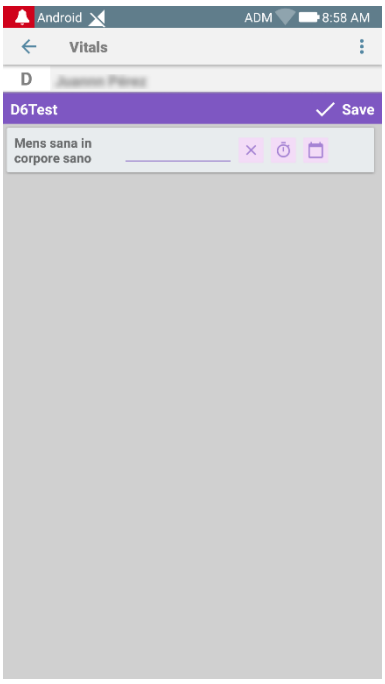


Fig 18

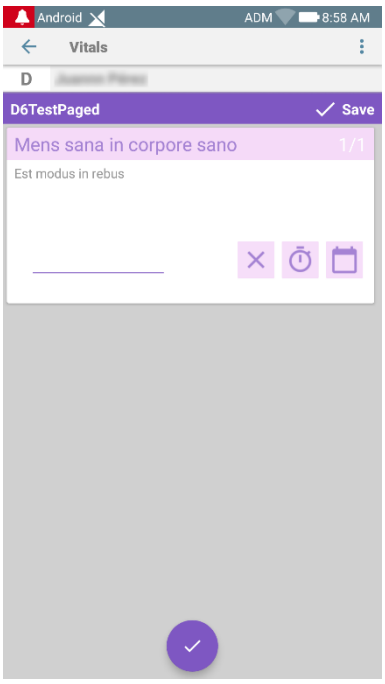


Fig 19

By means of “Date” entry type, the user can select and insert into the properly configured dataset the current date value.

- Touch the  icon to insert the current date;
- Touch the  icon to insert a specific date;
- Touch the  icon to cancel the inserted value.

By means of “Date-and-Time” data entry, the user can select and insert into the properly configured dataset a specific date and time value.

Fig 20

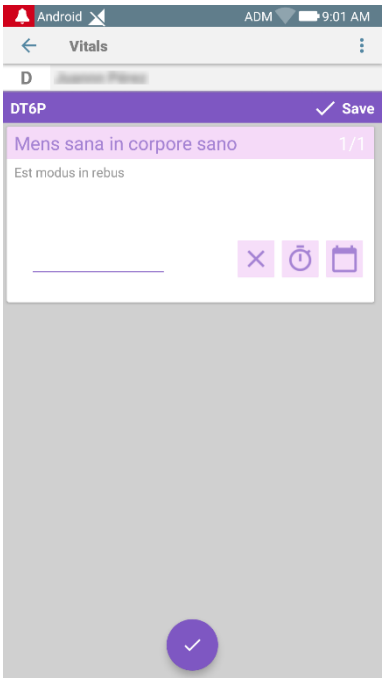


Fig 21

- Touch the  icon to insert the current date and time;
- Touch the  icon to insert a specific date and time, just as follows: the user firstly select the date (Fig 22) and after confirmation selects the time (Fig 23);

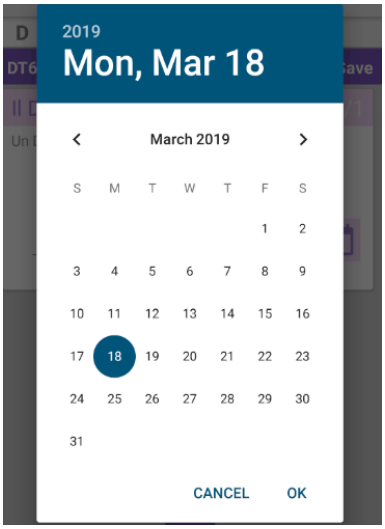


Fig 22

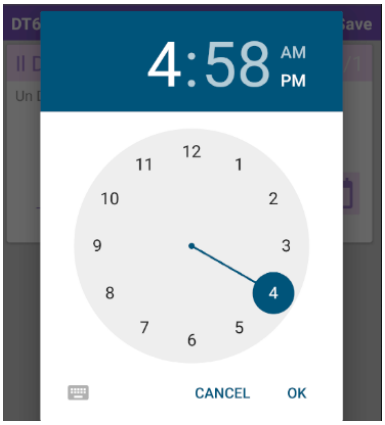


Fig 23

➢ Touch the  icon to cancel the inserted value.

Please note if the user inserts a date and time belonging to the current day, then only the time will be displayed.

The “OpenList” entry type collects elements usually not taken into account for scores. Some items of the list can be configured to be suggested: the user can however set a specific value different than the ones suggested.
The “OpenList” can be equally used in non-paged (Fig 24) or paged (Fig 25) datasets:

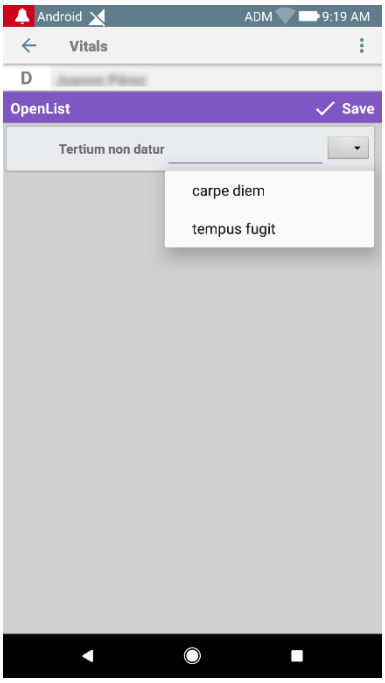


Fig 24

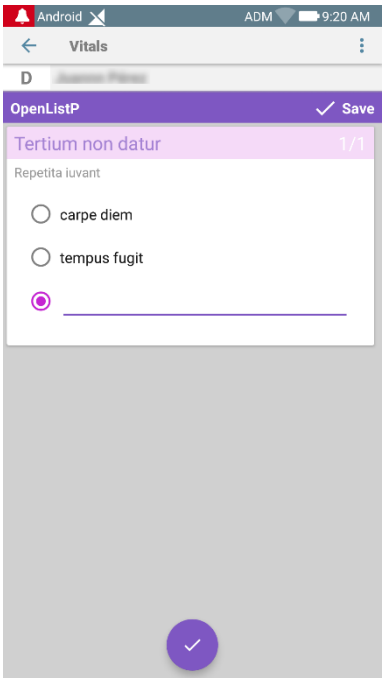


Fig 25

The “NumericList” entry type is related to score datasets. The user inserts a numeric value: such a value is mapped on an item label concurring to the calculation of the score itself. Let us consider the example below:

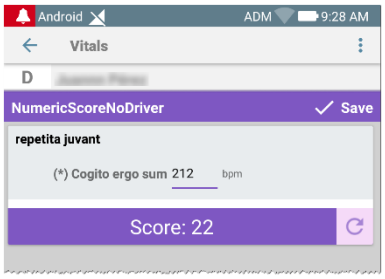


Fig 26

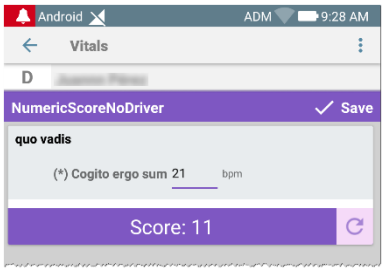


Fig 27

The same example with the same entry type can be also presented in paged datasets. One can pass from the first screen (Fig 28) to the second one (Fig 29) by touching the  button:

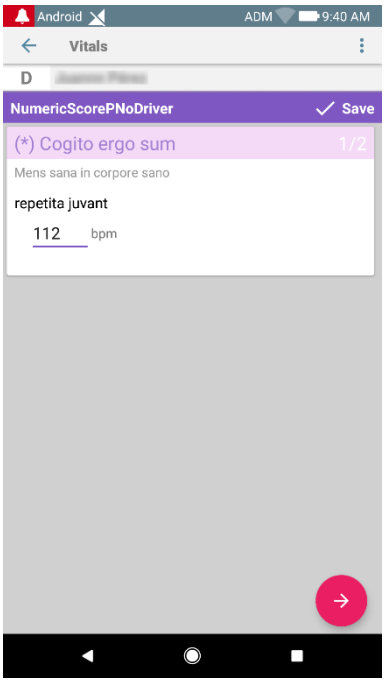


Fig 28

Fig 29

The “NumericList” entry type can be configured to read data from connected devices by means of installed drivers. Let us consider the example below (Fig 30):

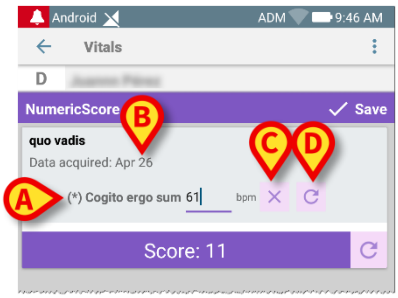


Fig 30

- The numeric value (Fig 30 **A**) is automatically read from the driver;
- A time counter (Fig 30 **B**) informs the user about the time elapsed since the last data reading;
- Touch the  button (Fig 30 **C**) to delete the inserted value;
- Touch the  button (Fig 30 **D**) to update the read value.

The same example with the same entry type can be also presented in paged datasets. Buttons to cancel or update data values from driver still have same meaning of above. One can pass from the first screen (Fig 31) to the second one (Fig 32) by touching the  button:

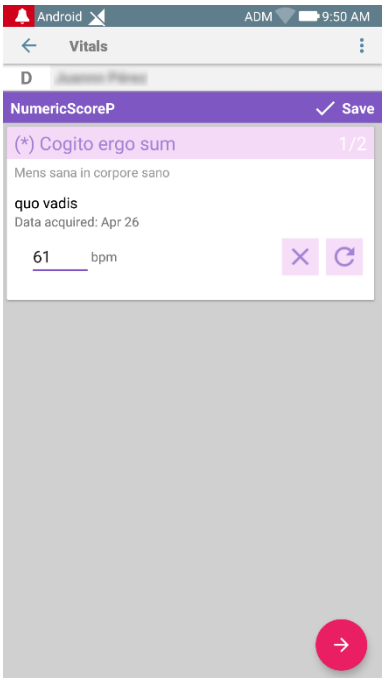

Android
ADM
9:50 AM
Vitals
D
NumericScoreP
Save
(*) Cogito ergo sum
1/2
Mens sana in corpore sano
quo vadis
Data acquired: Apr 26
61
bpm

Fig 31


Android
ADM
9:51 AM
Vitals
D
NumericScoreP
Save
Score
2/2
post fata resurgo
11

Fig 32

2.4.2 Inserted values summary

The recorded sets of values are displayed in a specific summary screen. Again, the screen features depend on the kind of dataset acquired. See Fig 33 for an example.

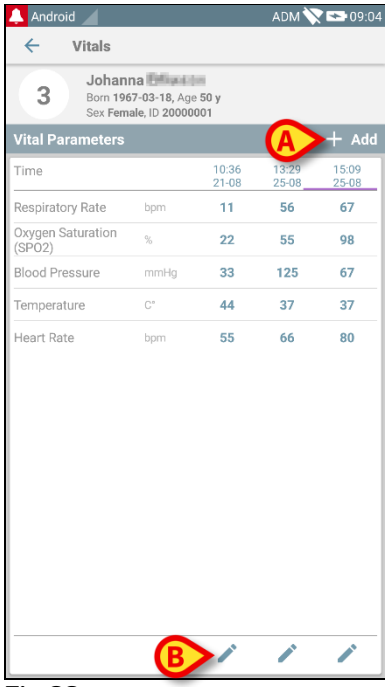


Fig 33

- On this screen, touch **Add** to add another set of data (Fig 33 **A**).
- Use the “Pen” icon to edit the data of an existing set (Fig 33 **B**).

In case of “NumericList” entry type, a specific button is displayed in the summary screen allowing the user to view the original numeric data or the associated label:

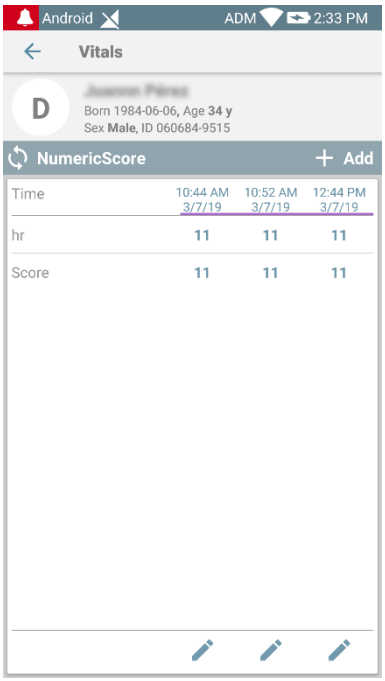


Fig 34

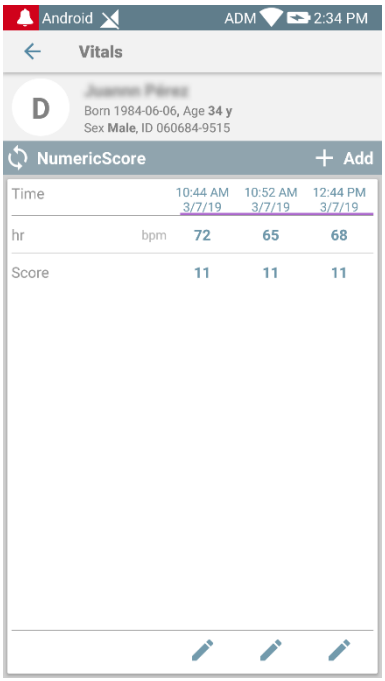


Fig 35

2.4.3 How to edit an existing set of data

To edit an existing set of data, on the datasets list screen (Fig 36),

Fig 36

- Select the relevant dataset (Fig 36 **A**, for instance). The acquired datasets summary will open (Fig 37).

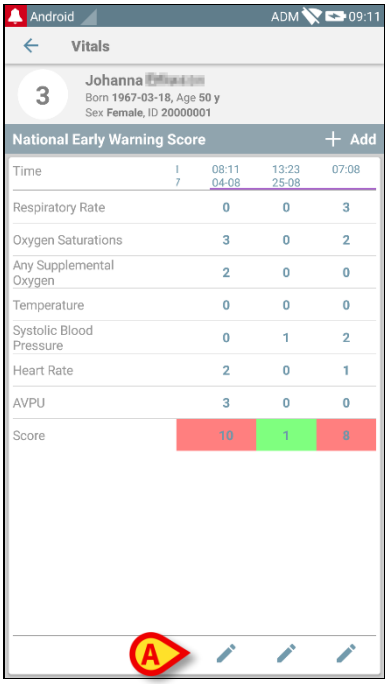


Fig 37

- Touch the “pen” icon corresponding to the set to be edited (Fig 37 **A**)

The data entry screen will open (Fig 38).

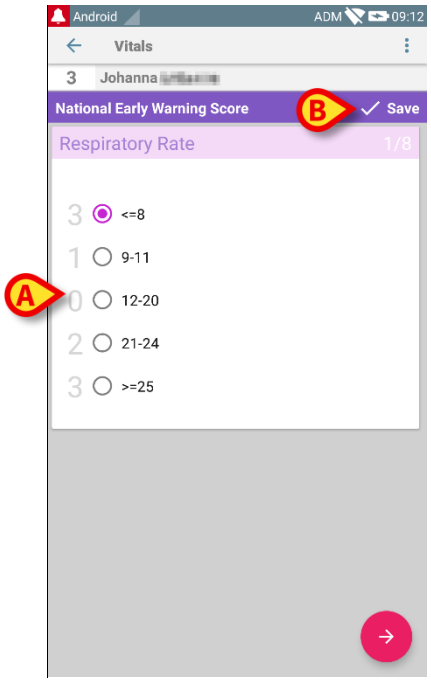


Fig 38

- Edit data (Fig 38 **A**).
- Touch **Save** (Fig 38 **B**).

The set is this way edited.

2.4.4 Pictures and audio acquisition

The Vitals Mobile module makes it possible to acquire audio recordings and pictures. This functionality can be configured both as a specific, independent dataset, and as a part of an existing "textual" dataset. In the latter case the functionality makes it possible to add an audio/visual commentary to the recorded values.

To start the audio/image acquisition, on the datasets list

- Touch the "**+**" button placed on the right of the dedicated dataset (Fig 39 **A**).

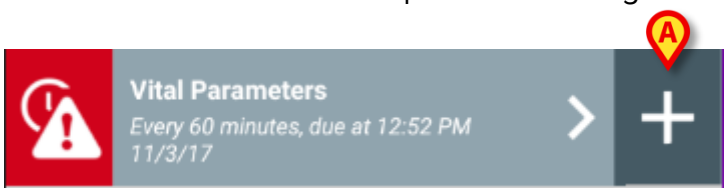


Fig 39

The following screen will open, making it possible to record an audio file (Fig 40).

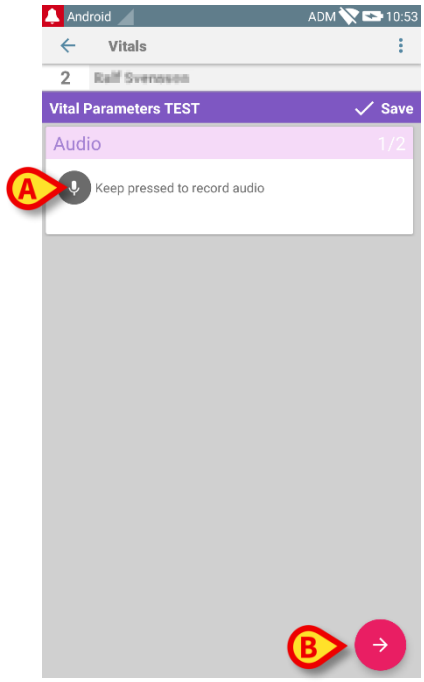


Fig 40

To record,

- Keep pressed the button indicated in Fig 40 **A**.

The button will turn red while recording. Recording ends when the button is released. After recording the audio acquisition page is displayed (Fig 41). The icon indicated in Fig 41 **A** represents the recorded file.

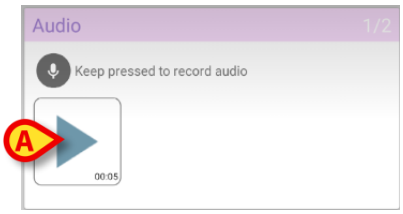


Fig 41

Multiple recordings are possible for a single dataset acquisition (Fig 42 **A**).

Fig 42

- Touch the icon to listen to the audio file.

For pictures acquisition, go to the following screen, i.e.

➢ Touch the icon on the lower-right corner of the screen (Fig 40 **B**).

The following screen will open (Fig 43)

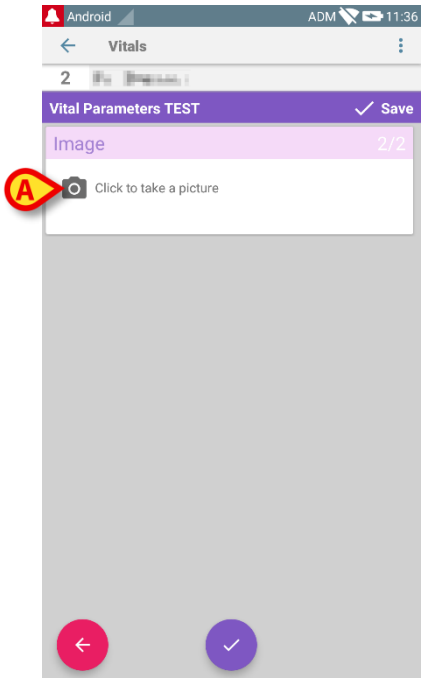


Fig 43

➢ Touch the icon indicated in Fig 43 **A** to activate the camera (Fig 44).

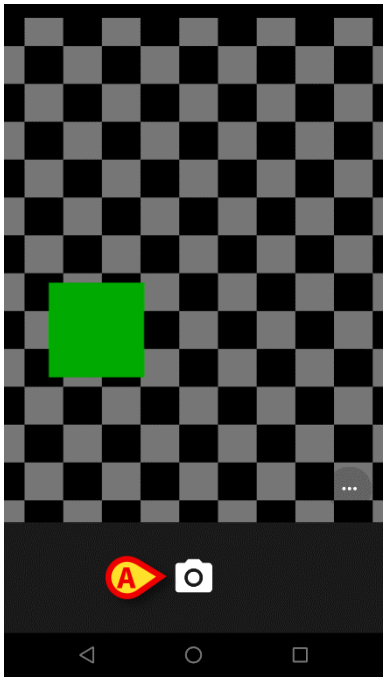


Fig 44

➢ Touch the icon to take the picture (Fig 44 **A**). A preview is displayed on screen (Fig 45).

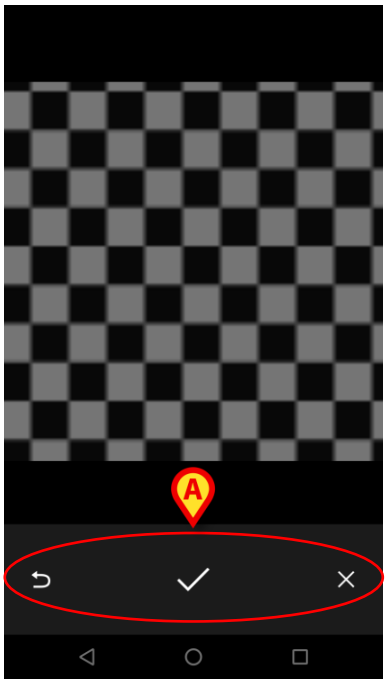


Fig 45

- Use the buttons indicated in Fig 45 **A** to:
  1. go back to the picture acquisition mode (Fig 44);
  2. keep the picture and go back to the photo acquisition page (Fig 43);
  3. discard the picture and go back to the photo acquisition page (Fig 43).

Once a picture is saved, a thumbnail is displayed on the photo acquisition page (Fig 46).

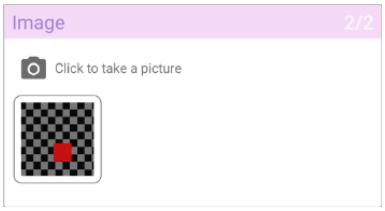


Fig 46

- Touch the thumbnail to display the picture again.

Multiple pictures can be acquired for the same dataset.

After audio and/or picture acquisition, to save the acquired data, on the photo acquisition page (Fig 47),

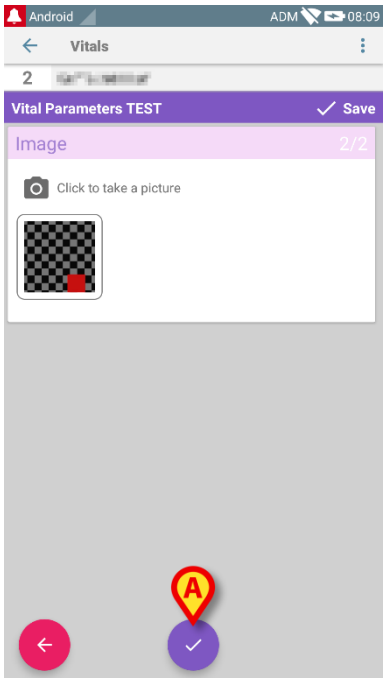


Fig 47

➢ Click the icon (Fig 47 **A**).

A summary screen is then displayed, listing all the acquired datasets (Fig 48).

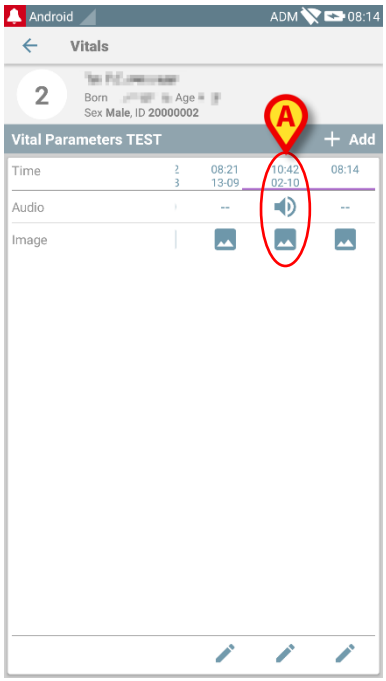


Fig 48

On this page, each column corresponds to a dataset (Fig 48 **A**). For each dataset the following information is provided:

- Date/time of acquisition.
- There is at least an audio recorded - icon.
- There is at least a picture saved - icon.

2.4.5 How to use OCR functionality

The OCR functionality is not supported on Myco1 devices and in general on devices with Android version 4.4.2 and lower; it is supported on the Myco2 devices and in general on Myco devices with firmware version 10.1 and higher, or in general on Android devices with version 5.1 and higher.

The OCR (Optical Character Recognition) functionality is useful since there is the necessity to read and record data from the General Electric V100 monitor.

Fig 49 - General Electric V100 monitor

At the present stage of development only the General Electric V100 model of monitor is supported for the OCR functionality.

Just as explained in the Paragraph 2.4.1, to record a new set of data based on the OCR functionality

- Touch the **+** icon on the tile corresponding to the wanted dataset (Fig 50 **A**)

Fig 50

The data entry screen will be displayed (Fig 51).

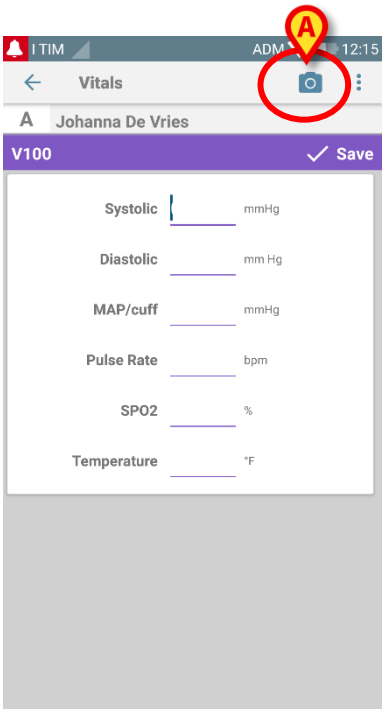


Fig 51

➢ Touch the icon on the top of the screen (Fig 51 **A**).
The screen for the image acquisition will appear. Since the device is not almost perfectly in vertical position and in front of the monitor, a message suggest the user to correct its grip (Fig 52 **A**).

Fig 52

➢ Touch the icon to acquire the photo in the current position (Fig 53 **A**) or the icon to abort the picture (Fig 53 **B**).

Fig 53

➢ Touch the button to read a help for the user showing some essential information about the OCR functionality (Fig 53 **C**).
The following window is displayed (Fig 54):

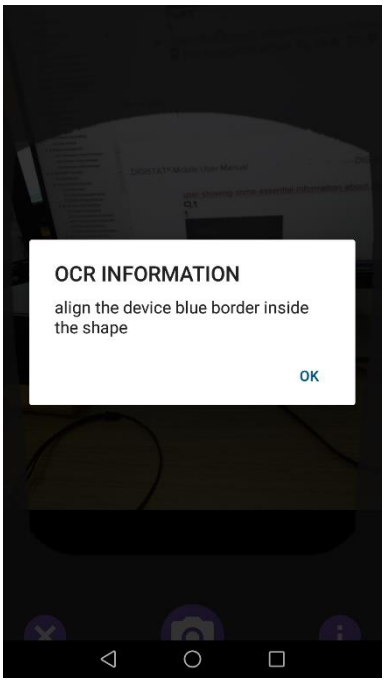


Fig 54

Once the photo is taken, it is processed by the OCR and the result is used to fulfill the fields of the screen Fig 51 with the data read from the device shown in Fig 49. The following window appears (Fig 55):

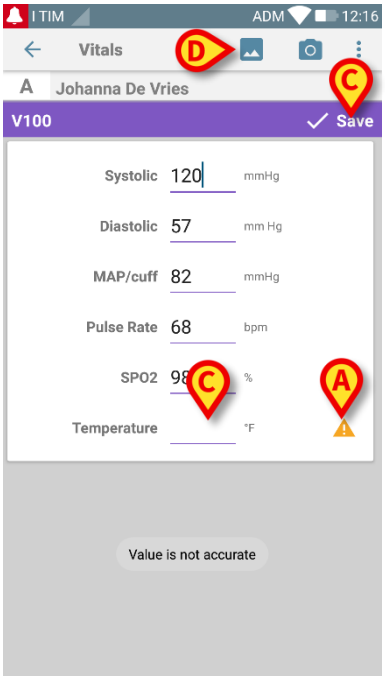


Fig 55

If one of the values output from the OCR is outside the valid range, the ⚠ icon is shown close to the parameter itself (Fig 55 **A)**. This happens because the OCR was not able to recognize the values displayed by the V100 monitor or because the monitor itself did not display any value.
The button in Fig 55 **D** shows the acquired photo.

➢ Touch the **Save** button in the top right corner (Fig 55 **B**). If not all the values are considered in the acceptance range (i.e. there is the ⚠ icon) then the Vitals module asks for confirmation from the user (Fig 56):

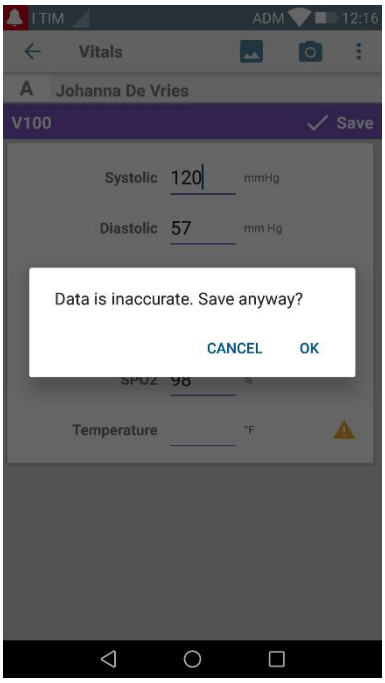


Fig 56

- Press **OK** to save anyway, or **CANCEL** to insert manually the missing value.
- Touch the space where it is expected to insert the missing value (Fig 55 **C**). Because a numeric value is expected, it is shown a numeric keyboard to provide the desired value (Fig 57):

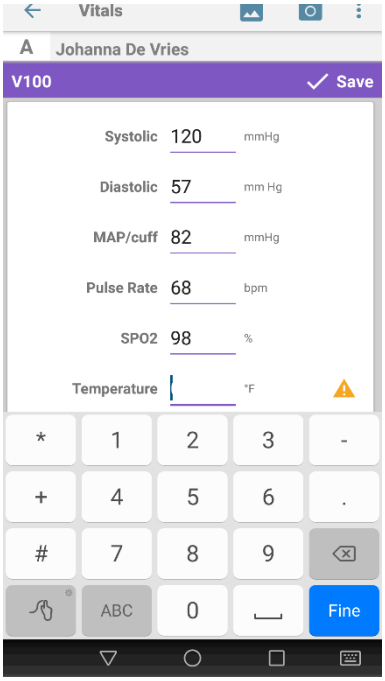


Fig 57

Once the desired value is inserted, the following screen will appear (Fig 58):

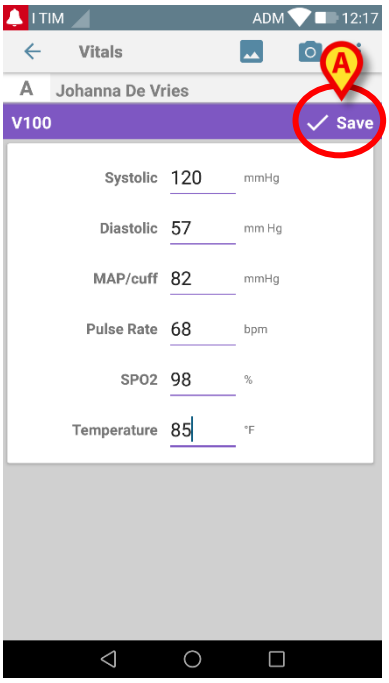


Fig 58

➢ Touch the **Save** button in the top right corner (Fig 58 **A**).
The following window will appear, resuming the last acquisitions of the considered item (Fig 59):

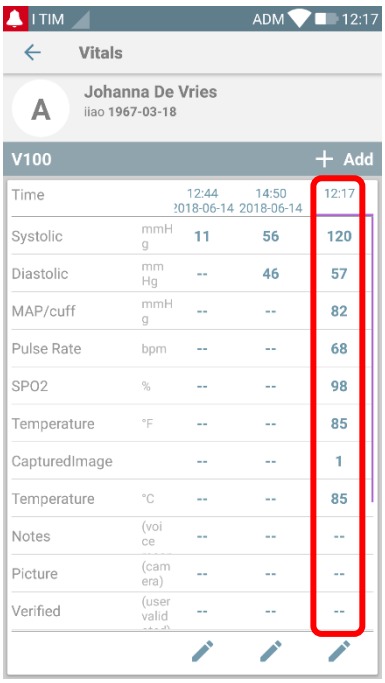


Fig 59

2.5 Enabling and configuring the existing datasets

NOTE: the functionalities described in this paragraph are reserved to “super users” or system administrators and require therefore a specific permission level.
To access the dataset configuration options, after patient selection, on the datasets list screen (Fig 60),

- Touch the icon (Fig 60 **A**).

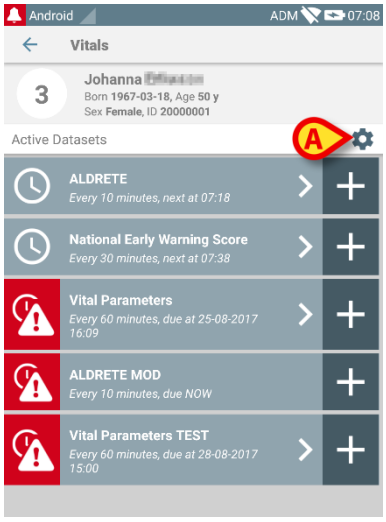


Fig 60

The list of all the existing datasets (defined by configuration) will open (Fig 61). The list of all existing dataset is configured.

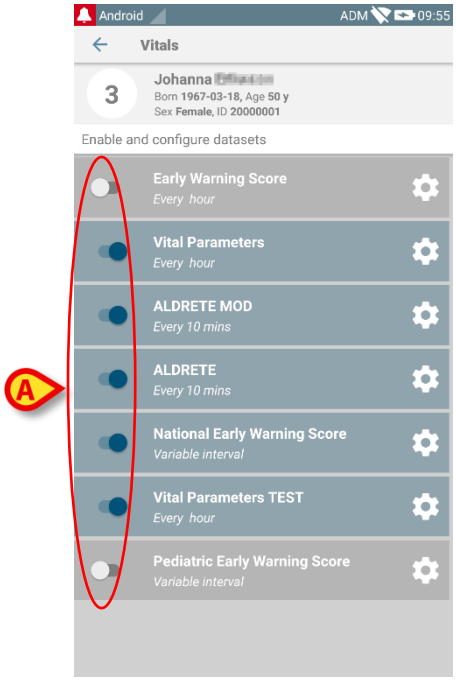


Fig 61

Use the switch on the left to enable/disable a dataset for the selected patient (Fig 61 **A**).

The switch is dark blue and positioned on the right when the dataset is enabled (Fig 62 **A**).

Fig 62

For each dataset the name and the current configuration settings are displayed.

- Touch the icon to configure the dataset (Fig 62 **B**).

The following screen will open (Fig 63).

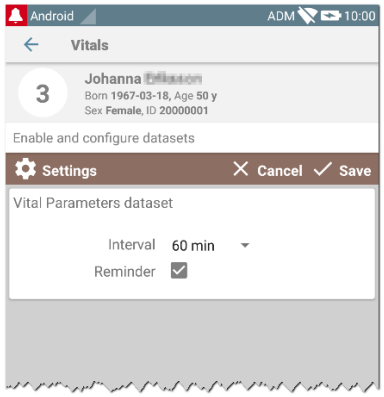


Fig 63

- Touch the “Interval” menu to decide the dataset timing (Fig 64).

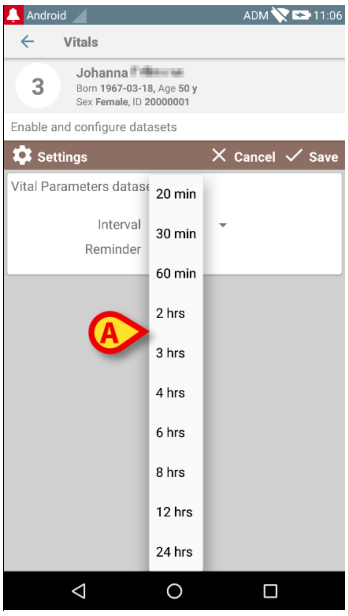


Fig 64

- Select the “Reminder” checkbox to get automatic reminders on when the datasets acquisitions are due (Fig 65 **A**).

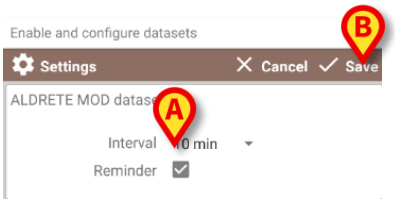


Fig 65

After configuring the dataset,

- Touch the **Save** option to save the changes made (Fig 65 **B**).
- Touch **Cancel** to go back to the datasets list.

Some datasets are pre-configured on a single timing option (i.e. “Once” or “Variable Interval” - see Fig 66 **A**).

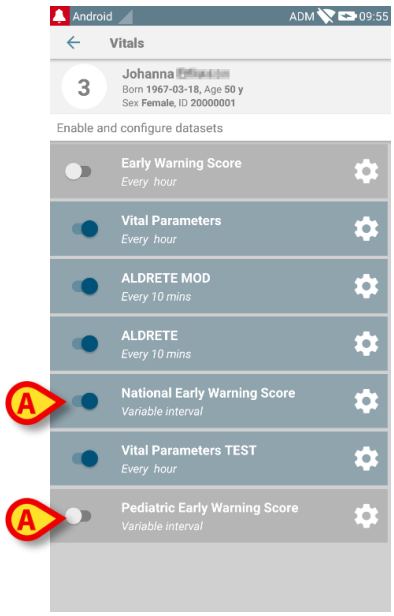


Fig 66

2.6 Widgets

The Product implements a set of widgets i.e. graphic controls intended to facilitate some specific actions from the user.

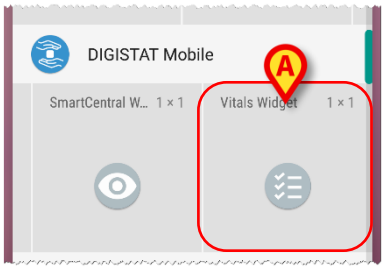


Fig 67

In the present paragraph will be showed the widget related to the Vitals Mobile application.

2.6.1 Vitals Widget

The Vitals Widget allows the user to access the Vitals Mobile application. To use such a feature the user has to do the following actions:

- Push the icon shown in Fig 67 **A** and release it on the device screen.

The Vitals Widget as default will be placed on the device screen with fixed size 1 x 1 (Fig 68)

Fig 68

Please remember the Vitals Mobile application requires to be used an authenticated user. The number of elapsed datasets displayed in the Vitals Widget is represented as red number in widget itself.

- Touch the Vitals Widget to access the screen of all elapsed datasets, if no patient is selected (Fig 69), or the elapsed datasets of a patient, if such a patient is selected (Fig 70):

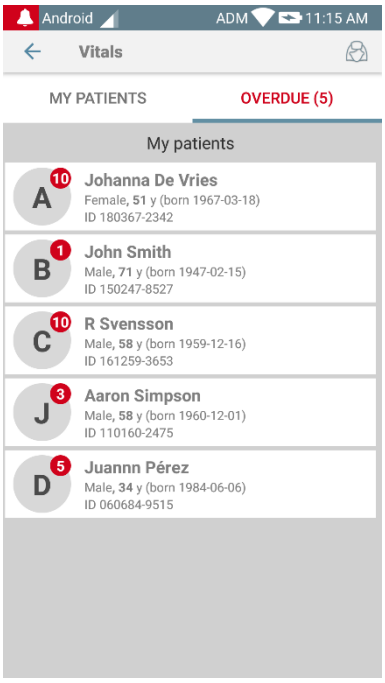


Fig 69

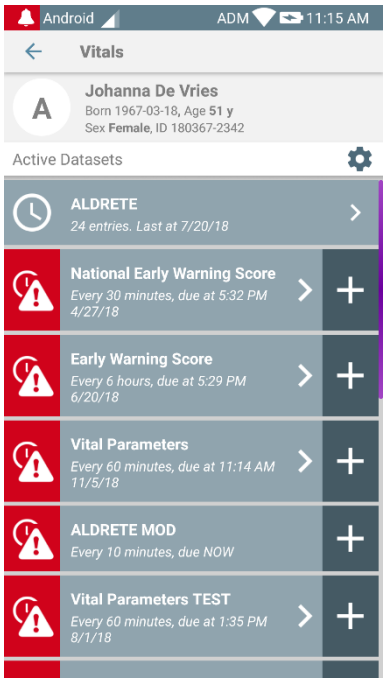


Fig 70