On Line Web User Manual

Version 4.0

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Contents

On Line Web

For general and detailed information about the Digistat Web environment and the instructions for use of the Control Bar Web application, see the specific documents of the Product. The knowledge and understanding of these documents is mandatory for an appropriate and safe use of On Line Web, described in this document.

1. Introduction

On Line web is a web application that displays the incoming data from the medical devices connected to the patient (for example: monitor, ventilator, laboratory etc.).
The raw collected data can be integrated and validated by the user to create an accurate and readable user documentation.
The application can also be configured to connect to other Digistat® modules and display their data (for example Digistat® Diary, Digistat® Connect).

1.1. Data display

Data can be viewed in tables and charts. The way data is displayed is widely customizable. Refer to the system administrators for customization options. The figures included in this manual show a configuration example.

1.2. Data acquisition

Data can be either automatically acquired or manually entered by users.

Automatic acquisition is for parameters transmitted by interfaceable medical equipment (for example: ventilators, patient monitors), or by a laboratory (for example: exams results).
Manual editing enables users to check and validate data, to eliminate artifacts and redundant data, to insert values whenever, for any reason, automatic acquisition is unavailable.

Data validation is performed on a separate screen, described in section 3.

Some configurations envisage On Line Web without the Validation screen. For these configurations the validation procedures and functionalities do not apply.

1.3. Launching On Line Web

To launch On Line Web:

- Click the 

icon on the lateral bar.

A screen is displayed, showing the data of the patient currently selected.
On Line web requires patient selection. If no patient is currently selected, an empty screen is displayed, reminding that “This module requires a patient”. See section 1.4.

1.4. Patient selection

To select a patient,

- Click the **Patient** button indicated in Fig 1 **A**.

Fig 1

The Patient Explorer Web module opens. See the Digistat® Patient Explorer Web user manual (*USR ENG Patient Explorer Web*) for further instructions on patient management functionalities.

Other modules can be configured for the patient selection in place of Patient Explorer Web, depending on the configuration. If this is the case, see the specific documentation for instructions.

When a patient is selected the module displays the data of the selected patient.

1.5. Display mode

Two display modes are available, according to the chosen configuration. One “Dark” mode and one “Grey” mode.

2. On Line

2.1. Screen structure

The On Line Web screen (Fig 2) displays in chart and tables the data available for the selected patient. The screen is composed of the following items:

1) the lateral bar (Fig 2 **A** – see section 2.2);
2) the parameters table (Fig 2 **B** – see section 2.3);
3) the parameters charts (Fig 2 **C** – see section 2.4);
4) the command bar (Fig 2 **D** – see section 2.5);
5) the configured widgets (if available - Fig 2 **E**. I.e. areas displaying data acquired from other Digistat® modules – see section 2.6).

These tools are available in all On Line web configurations.

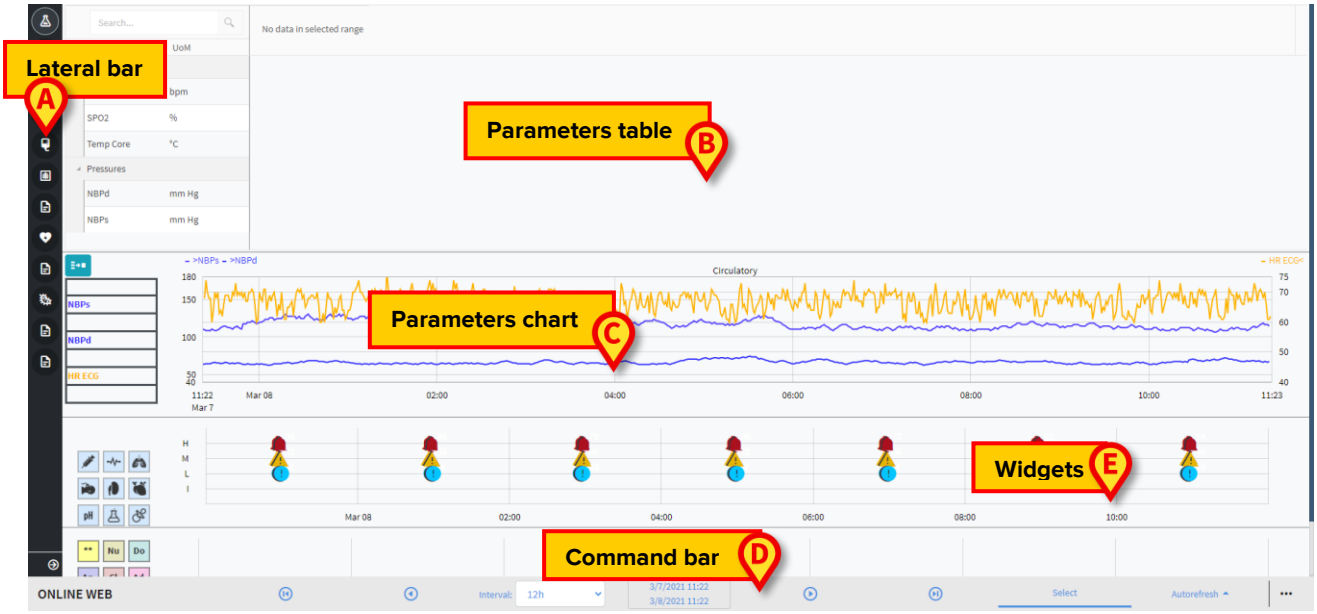


Fig 2

2.2. Lateral selection bar

Different On Line pages can be configured for the same patient, each one focusing on a subset of parameters. The different pages can be selected on the lateral selection bar (Fig 2 **A**). Different icons can be associated during configuration to symbolize the kind of data contained in the page.

➢ Click the icon to display the corresponding page.

Refer to the system administrators for the existing configuration options.

2.3. Parameters table

The tables display the acquired data (either numeric or strings depending on the data type). Two display modes are possible, according to the chosen configuration:

1) only validated data is displayed;
2) all raw data is displayed.

In case 1) only the values that the user explicitely validated are displayed. The validation procedure is described in section 3.3.
In case 2) all the data acquired are displayed. Acquisition rate is usually 1 minute.

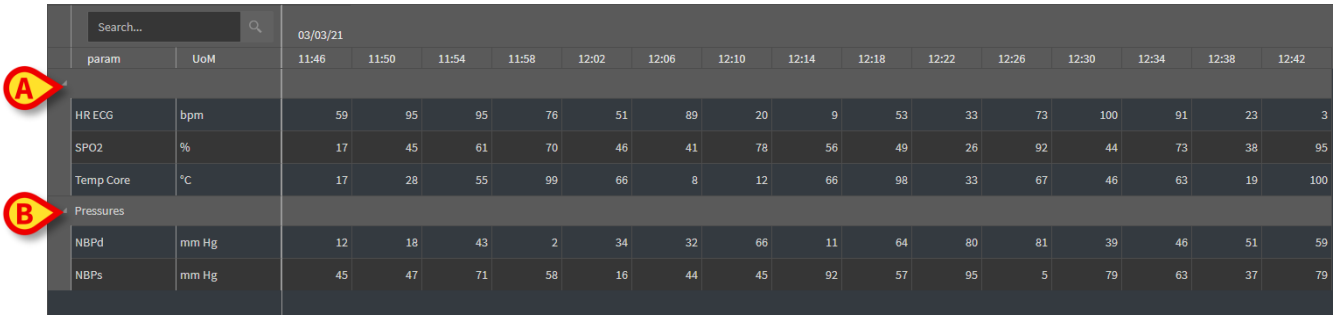


Fig 3

2.3.1. Tables general features

The parameters are divided in groups. The name of the group is displayed on the top-left corner of each group (Fig 3 **A** and **B**).

The first column displays the parameters names (Fig 4 **A**), the second coloumn displays the unit of measure (Fig 4 **B**).

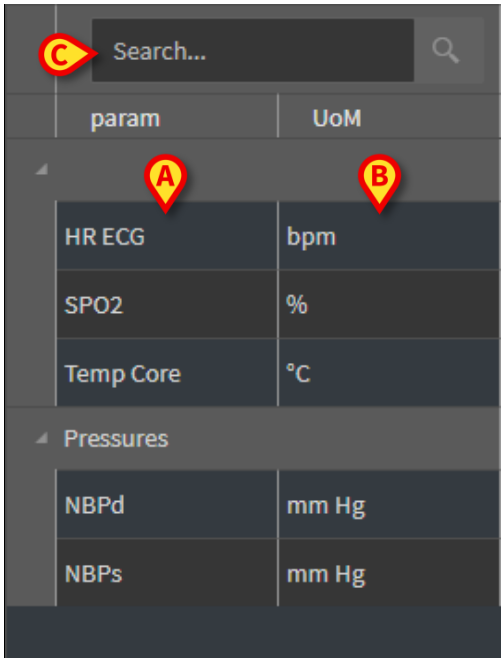


Fig 4

Use the search field indicated in Fig 4 **C** to search for a specific parameter.

The values of a parameter can be read on the corresponding row. Therefore, each row shows the parameter changes in time. In Fig 5 **A**, for example, the SPO2 values are circled.

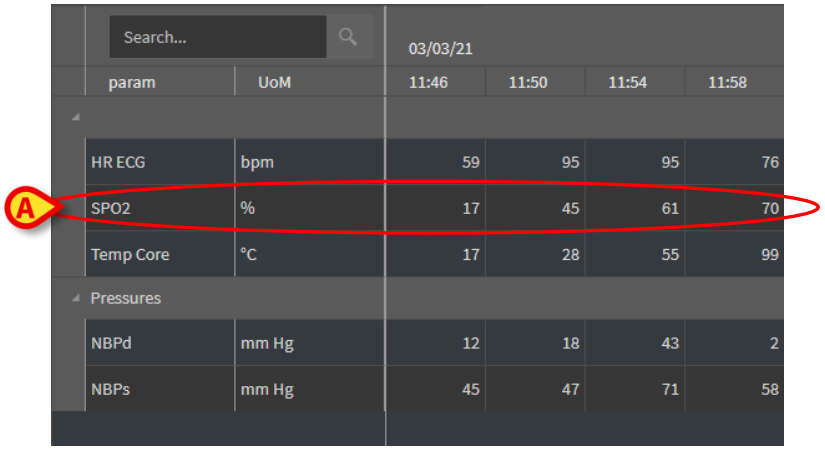


Fig 5

Each column corresponds to the acquisition of a set of parameters. The date and time at which the set of data was acquired are displayed on top. Therefore, the values of all the parameters acquired at a certain time can be read on each column (Fig 6 **A**).

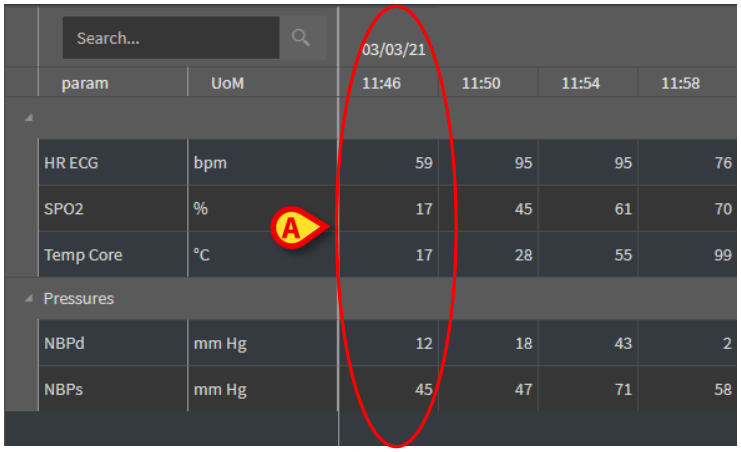


Fig 6

The number of decimals that can be displayed for a value is defined during the configuration of the corresponding parameter.

Use the button indicated in Fig 7 to minimize/maximize a single group.

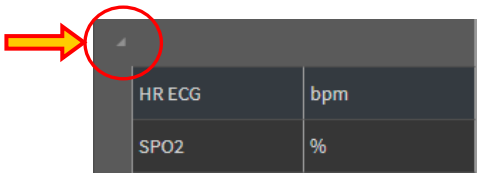


Fig 7

When a small red triangle is displayed on the top-left corner of a cell, it means that the value is outside a given range of normality (Fig 8, the range of normality is set in the configuration of the specific parameter). These values are notified only for validated data.

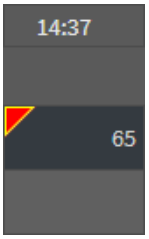


Fig 8

A yellow triangle on the top-right corner of a cell (Fig 9) indicates that there is a textual note associated to the data specified in the cell.

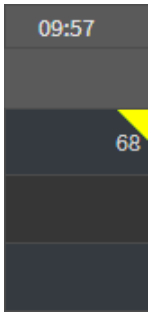


Fig 9 - Note

- Click the triangle to display the note (Fig 10).

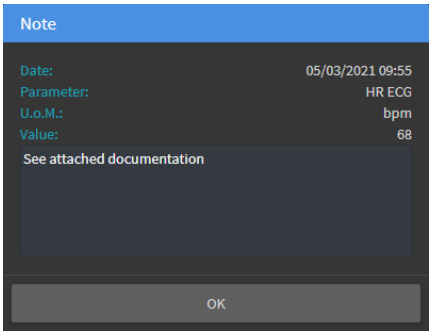


Fig 10

2.4. Charts

The trends of the configured parameters can be displayed in charts.

2.4.1. Charts general structure

The horizontal axis represents time. The vertical axis indicates the value of the represented parameters. Two scales of values can be used: one on the left (in the example shown in Fig 11 **A**, referring to NBPs and NBPd); one on the right (in the example shown in Fig 11 **B**, referring to HR ECG). The names of the represented parameters are displayed above the chart. The colour of the font corresponds to the color used in the chart to draw the trend of the parameter.

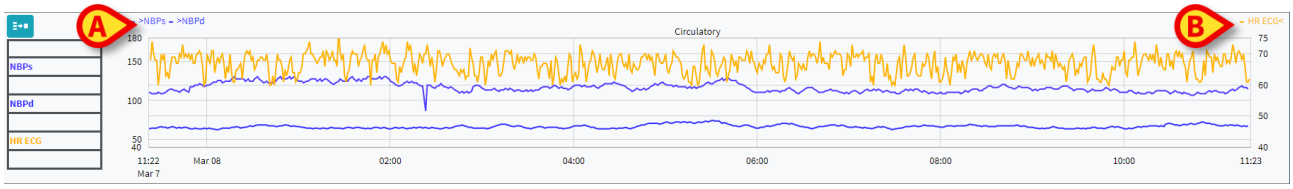


Fig 11

Drag the chart left or right to display the trends referring to times preceding or following those currently displayed.
Drag the chart up or down to display values above or below those currently displayed.
A legenda for the configured parameters is displayed on the left (Fig 12).

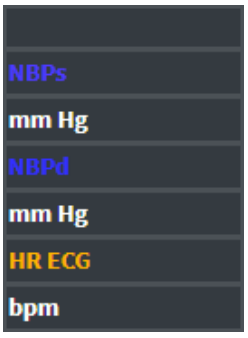


Fig 12

The unit of measure of each parameter is displayed below the parameter name (NBPs -> mm Hg ; HR ECG -> bpm).

The  icon (Fig 13 **A**) is a noise filter. Click it to draw a chart drawn on the middle value of each five-values pack.

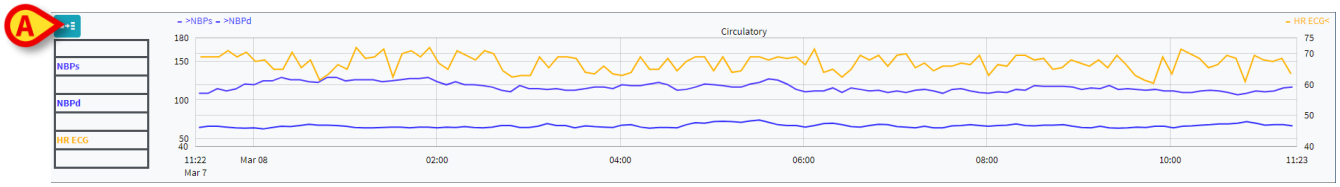


Fig 13

Point the cursor on the chart to dynamically display the values corresponding to the indicated position (Fig 14 **A**).

Click the chart to draw a vertical cursor-bar (Fig 14 **B**). The values acquired at the same time are highlighted in the other areas of the screen if the **Select** synchronization functionality is active (see section 2.5.5). The legend on the left dislays the values corresponding to the clicked time

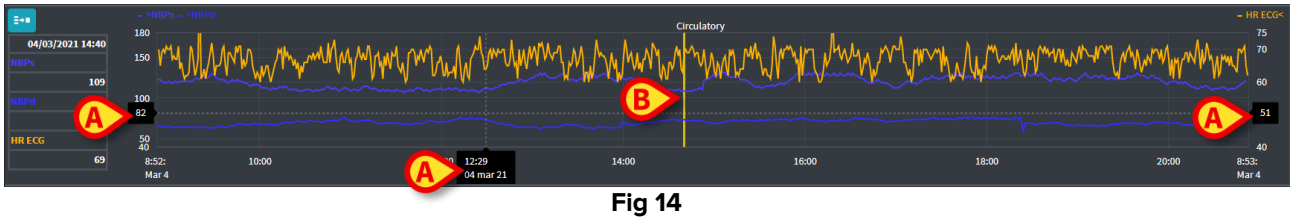


Fig 14

2.5. The command bar

The command bar is shown in Fig 15. The buttons on the command bar trigger different functionalities, described later.

Fig 15

2.5.1. Application name and info

The application name and info are available only for system administrators.

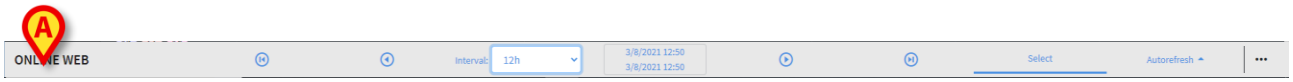


Fig 16

The name of the application currently selected is displayed on the left (Fig 16 **A**).

- Click the name of the application to display general information (Fig 17).

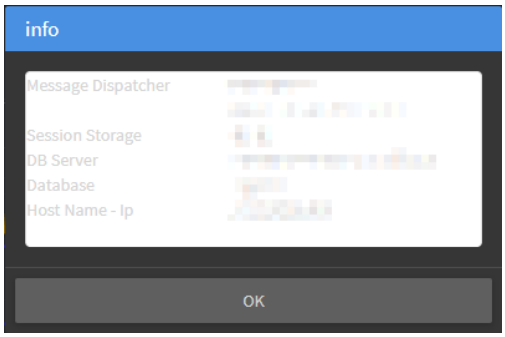


Fig 17

2.5.2. Scroll buttons

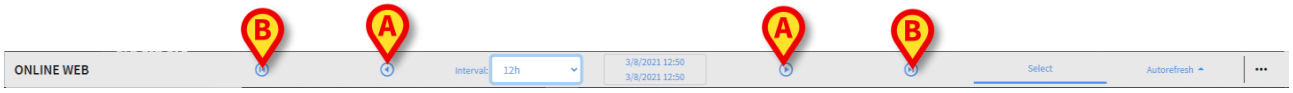


Fig 18

Use the arrow buttons to scroll the screen contents left and right.
The single arrows (Fig 18 **A**) display a time span preceding (left) or following (right) the one currently displayed. The length of the time span is set on the “Interval” menu. See section 2.5.3.
The double arrows (Fig 18 **B**) display the beginning (left) or the end (right) of the acquisition.

2.5.3. Interval selection

Fig 19

The “Interval” menu allows to select the time span displayed (Fig 19 **A**).

- Click the arrow placed alongside the “Interval” field to open the following menu (Fig 20).

Fig 20

- Click the required option.

The screen changes accordingly.

2.5.4. Custom Interval selection

The area indicated in Fig 19 **B** shows the time span currently displayed.

- Click this area to open a Date/time selector that allows to indicate the start and end dates of a custom time span to be displayed.

The new time span displayed is shown in the area in the form “start date/time – end date/time”. The “Interval” field is automatically set to “Custom”.

2.5.5. Select button

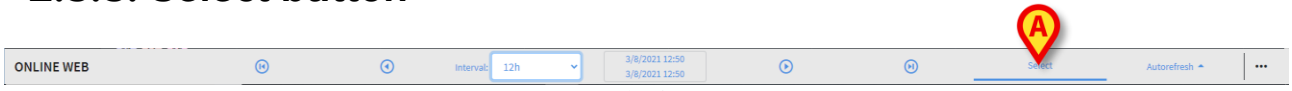


Fig 21

The **Select** button (Fig 21 **A**) allows to activate the tables and charts synchronization functionalities. The **Select** button is active by default.
When the functionality is active the different screen areas are synchronized (charts, tables, widgets). That means that if a portion is selected in one area, the corresponding portions in the other areas are highlighted.
In Fig 22 **A**, for example, the column containing the data acquired at 9:27 is selected on the table. The corresponding moment in the chart is automatically indicated by the yellow cursor bar (Fig 22 **B**). The corresponding areas in the configured widgets are also highlighted (Fig 22 **C** and **D**). The same synchronization functionality also activates if the chart is clicked.

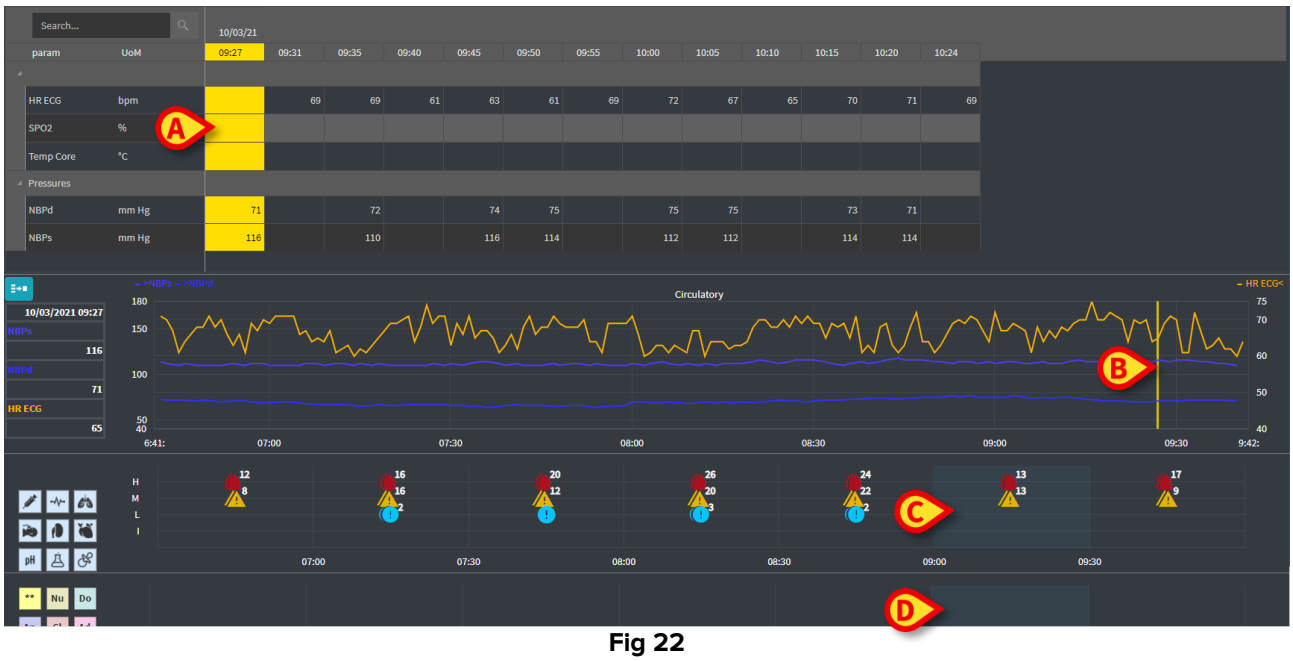


Fig 22

2.5.6. Refresh time selection

Fig 23

The “Refresh” menu allows to select the autorefresh interval for the data displayed.

- Click the **Autorefresh** button (Fig 23) to open the following menu (Fig 24). The options available for the current user depend on the user permissions.

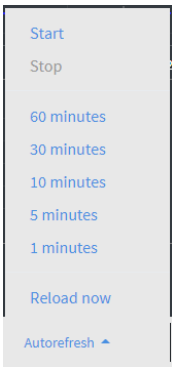


Fig 24

- Click the required option.

The autorefresh time changes accordingly.

The **Reload now** option reloads the screen contents.

Click **Stop** to stop the autorefresh. If autorefresh is stopped, the page contents are static. They are updated again only if a reload is explicitely triggered by the user (i.e. using the **Reload Now** option on this menu or restarting the autorefresh).

The **Start** option starts the autorefresh (if stopped).

2.5.7. Additional options

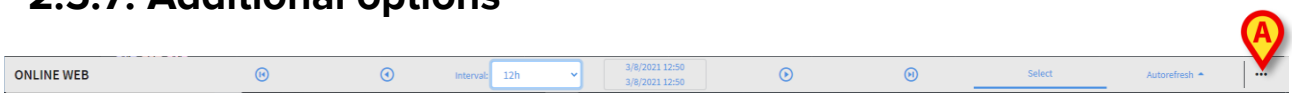


Fig 25

- Click the button indicated in Fig 25 **A** to open the following menu.

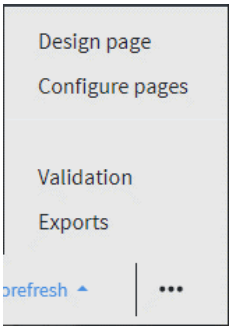


Fig 26

- Click the **Validation** option to access the validation functionalities, described in section 3.

- Click the **Exports** option to export the page contents to a configured print report.

A window showing the list of available reports, defined during configuration, opens.

- Click an item on the list to generate and download the report.

The “Design page” and “Configure pages” options are reserved to the system administrators.

2.6. Widgets

On Line Web can be configured to connect to other Digistat® modules and display their data (for example Digistat® Diary, Digistat Connect). The data is displayed in widgets. This section offers a description of the widgets available. The actual widgets available depend on the configuration in use.

Refer to the system administrators for the existing configuration options.

2.6.1. Notification history display

On Line web can be connected with the Digistat® Connect to display the history of the notifications coming from the medical devices connected to the patient.

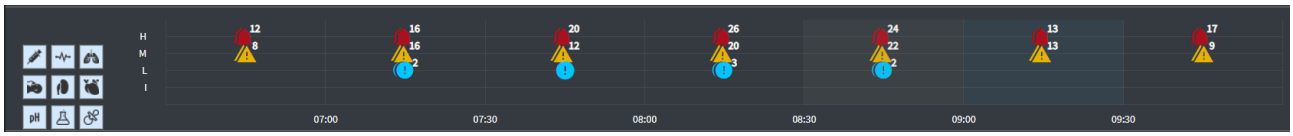


Fig 27

The notifications are displayed in a grid. The vertical axis refers to the notification priority:
"I" = "Info"
"L" = "Low" =
"M" = "Medium" =
"H" = "High" =

The horizontal axis indicates the time of occurrence.

The number placed alongside each icon indicates the number of notifications of the same kind that were collected together.

- Click any icon to display a window showing additional details for each notificaton (Fig 28).

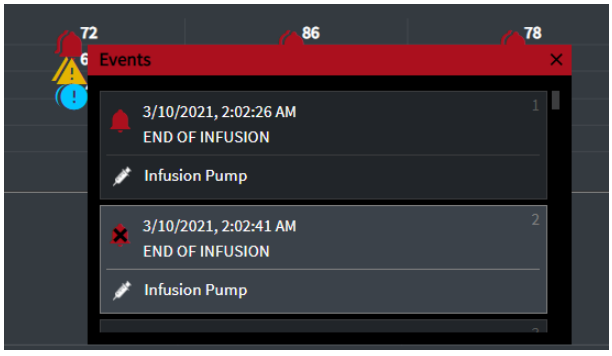


Fig 28

The buttons on the left are filters (Fig 29 **A**). The icons are the same defined on Digistat® Connect.

Fig 29

- Select one of the buttons to exclude the notification coming from the corresponding device.

As default, all filters are disabled.

- Place the mouse pointer on a button to display a tooltip indicating the corresponding device.

See the Digistat® Connect user manual for additional information (document: USR ENG Connect).

2.6.2. Clinical Diary

On Line web can be connected with the Digistat® Diary module and display the clinical diary notes.

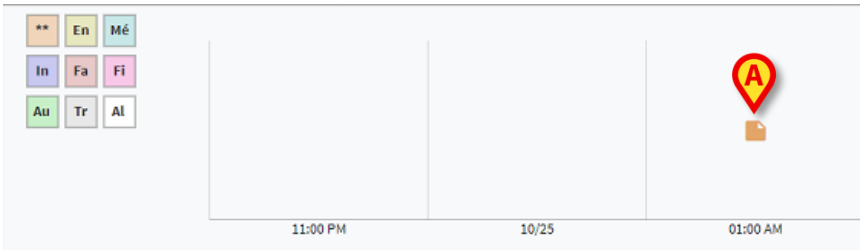


Fig 30

An icon indicates the presence of notes at a certain time (Fig 30 **A**). The horizontal axis indicates the time at which the note was added. A number placed alongside each icon indicates the number of notes of the same kind that are grouped together to enhance readability.

- Click any icon to display a window showing the actual notes.

The buttons on the left are filters.

- Select one of the buttons to exclude the corresponding note type. The types are the same defined on the Digistat® Clinical Diary module.

As default, all filters are disabled.

- Place the mouse pointer on a button to display a tooltip indicating the corresponding type.

See the Digistat® Diary user manual for additional information (document: USR ENG Diary).

2.6.3. Infusions

On Line web can be connected with the Digistat® Connect to display data coming from the infusion pumps.

Fig 31

The vertical axis displays the names of the infusion therapies (either pump name or drug name, depending on the available data). The horizontal axis refers to time.
Each infusion therapy is displayed as a line (Fig 32).

Fig 32

The name of the infusion therapy is displayed on the left (Fig 32 **A**).
The beginning of the infusion therapy is indicated in Fig 32 **B**.
The end of the infusion therapy is indicated in Fig 32 **C**.
Possible changes to the infusion values are displayed on the line (Fig 32 **C**).

The button indicated in Fig 31 **A** activates tooltips displaying the infusion rates at a given time, as shown in Fig 33 **A**.

Fig 33

2.7. Switching Standard Time – Daylight Saving Time

This section explains the way the information is displayed on On Line Web when the time switches from standard time to daylight saving time and vice versa.

In both cases a specific icon is displayed to mark the time switch, while the pink color highlights the switching hours (Fig 34 **A**).

Fig 34

When switching from Daylight Saving Time to Standard Time (the clock “jumps” one hour back) the time corresponding to 02:00 a.m. is repeated twice.
When switching from Standard Time to Daylight Saving Time (the clock “jumps” one hour forward) the time corresponding to 03:00 a.m. is not displayed. I.e.: 02:00 a.m. is displayed and the next hour is 04:00 a.m.

3. Validation

The raw data automatically acquired from the medical devices can be evaluated, edited and validated by the clinical staff members having specific permissions.

The data displayed on the parameters table on On Line Web, according to configuration, can display either the raw data or the validated data. To validate data use the procedures described in this section.

There are two ways to access the validation functionalities:

1) Click the corresponding icon - 

- on the lateral bar.
2) Click the **Validation** option on the "Additional options" menu on the command bar. See section 2.5.7.

The following screen opens (Fig 35):

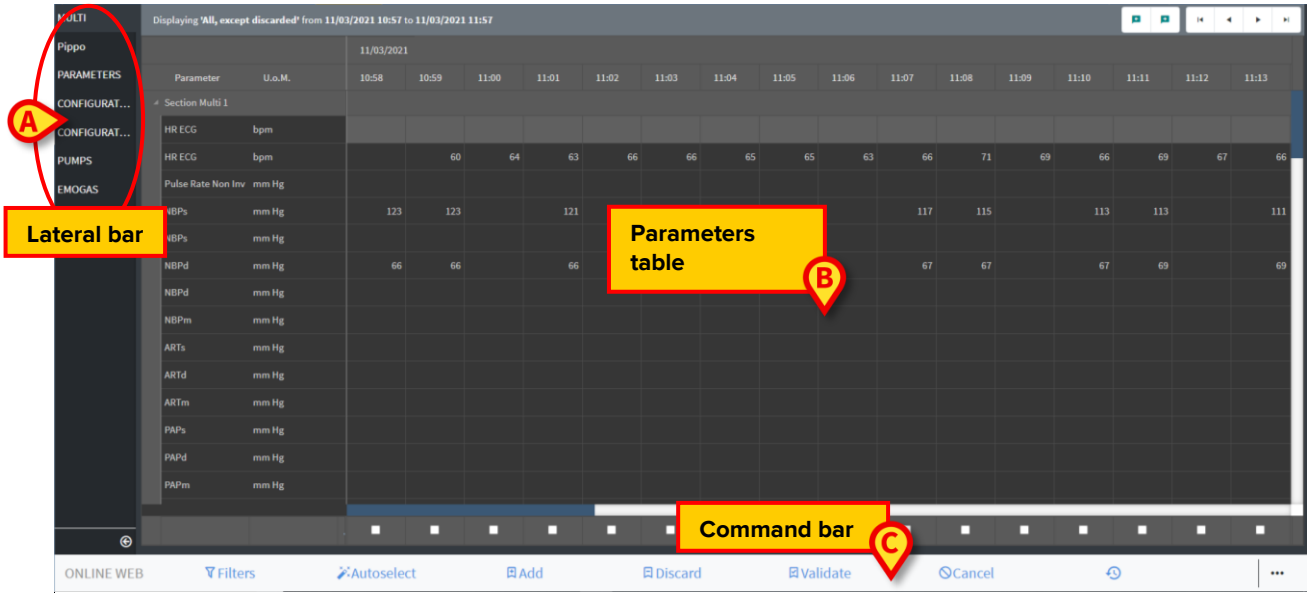


Fig 35

The **Validation** screen displays in a table all the raw data acquired by the configured medical devices. Sample rate is usually 1 minute.

Different pages can be configured for the same patient, each one focusing on a subset of parameters. The different pages are available on the lateral selection bar (Fig 35 **A**). Click the name of the page to display the corresponding data.

The acquired parameters are displayed in a table (Fig 35 **B**).

The buttons on the command bar (Fig 35 **C**) trigger different procedures, described later in this document (see section 3.4).

3.1. Parameters table (Validation)

The parameters table, indicated in Fig 35 **B** and enlarged in Fig 36, displays all the raw data acquired for the configured parameters.

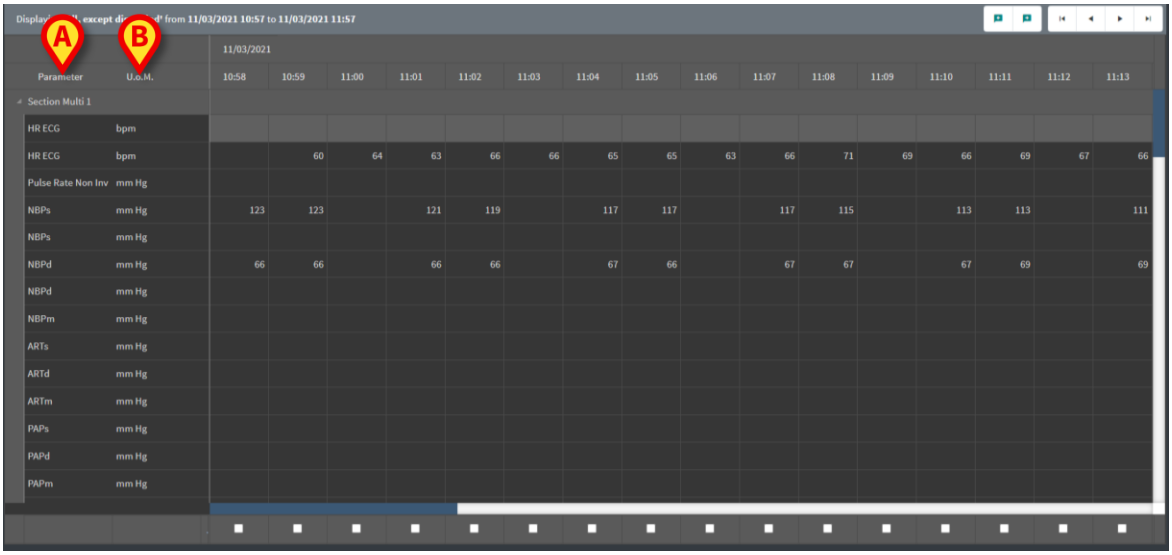


Fig 36

The tables display the acquired data either in numeric form or as strings.
The first column displays the parameters names (Fig 36 **A**), the second column displays the unit of measure (Fig 36 **B**).
The parameters can be grouped. The name of the group is displayed on the top-left corner of the corresponding portion of table (Fig 37 **A**).

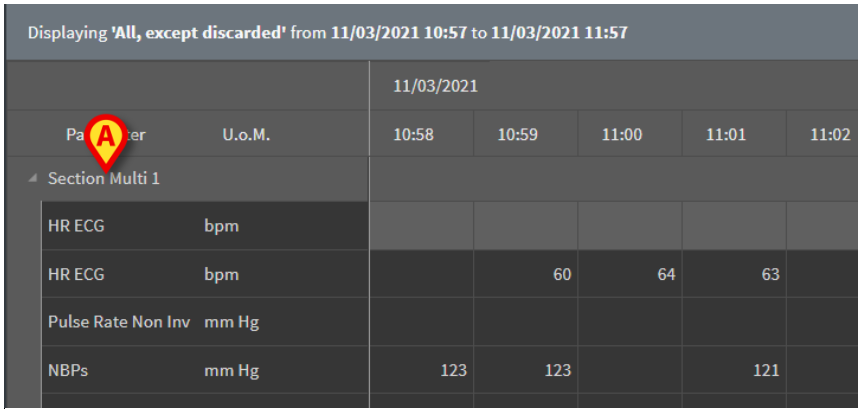


Fig 37

Use the button indicated in Fig 38 to minimize/maximize the group.

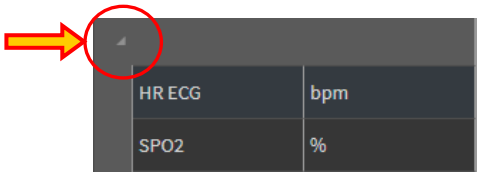


Fig 38

The values of a specific parameter can be read on the corresponding row. Therefore, each row shows the parameter changes in time. In Fig 39 **A**, for example, the HR ECG values are circled.

Fig 39

Each column corresponds to the acquisition of a set of parameters. Raw data is acquired at 1-minute rate, as standard. The acquisition date and time are displayed on top. Therefore, the values of all the parameters acquired at a certain time can be read on each column (Fig 40). The single cell displays the value of a specific parameter at a specific time.

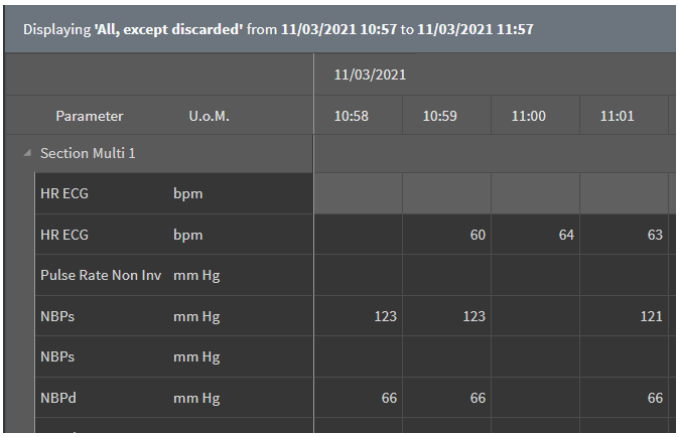


Fig 40

The type of data displayed and the acquisition interval are indicated on the top-left corner of the table (Fig 41 **A**).

Fig 41

Use the **Filters** functionality to set the type of data and the acquisition interval displayed (see section 3.4.1).
A small red triangle displayed on the top-left corner of a cell means that the value is alarmed, i.e. it is outside a given range of normality (Fig 42, the range of normality is set during the configuration of the parameter).

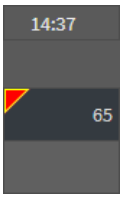


Fig 42

A yellow triangle on the top-right corner of a cell (Fig 43) indicates that there is a textual note associated to the data specified in the cell.

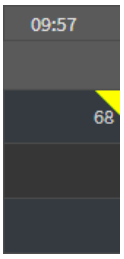


Fig 43

- Click the triangle to display the note (Fig 44).

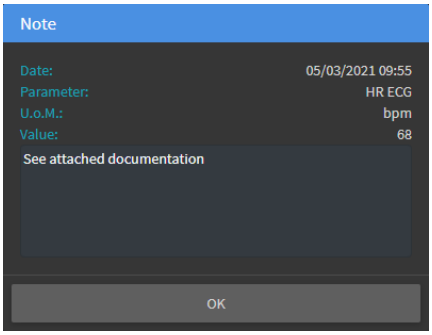


Fig 44

A value is displayed inside a square if edited by the user. See section 3.2 for data entry procedures (Fig 45).

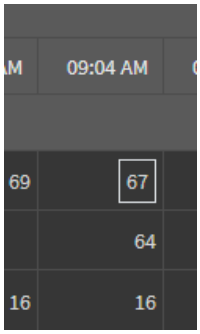


Fig 45

The checkbox placed at the botton of each column (Fig 46 **A**) enables to select/deselect the column. The selected columns are highlighted (three columns are selected in Fig 46).

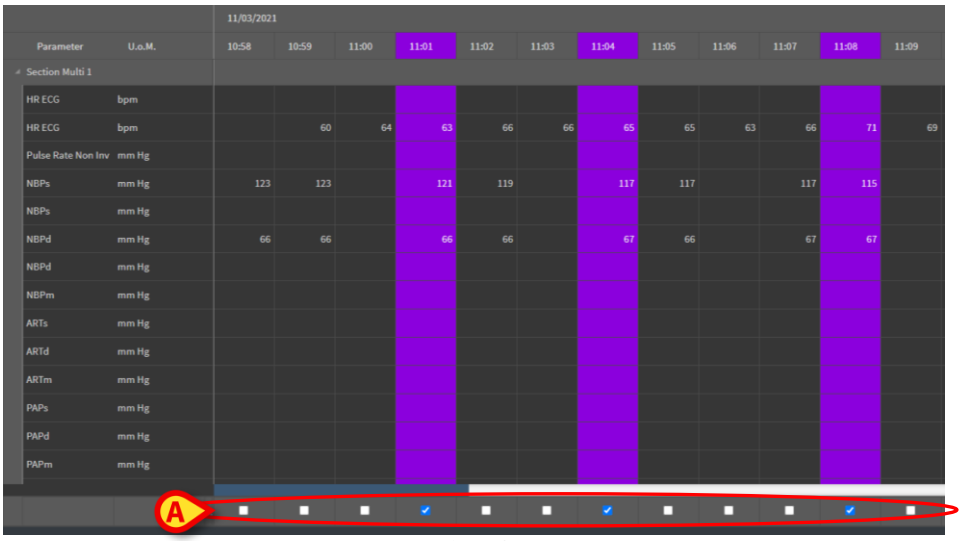


Fig 46

The buttons placed on the top-right corner of the table (Fig 47 **A**) allow to move back and forth in the available data. Moving to the left means displaying columns previously acquired; moving to the right means displaying columns successively acquired.

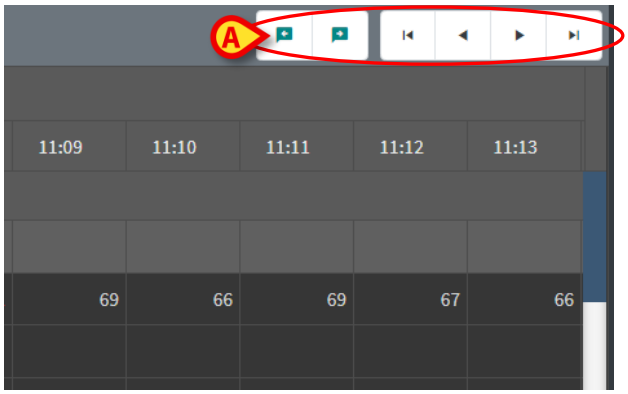


Fig 47

 - Go to the previous (left) or next (right) validated column.

 - Go to:

- first column;
- previous column;
- next column;
- last column.

➢ Click the name of one of the parameters on the left of the table (Fig 48 **A**) to display two additional buttons (Fig 48 **B**).

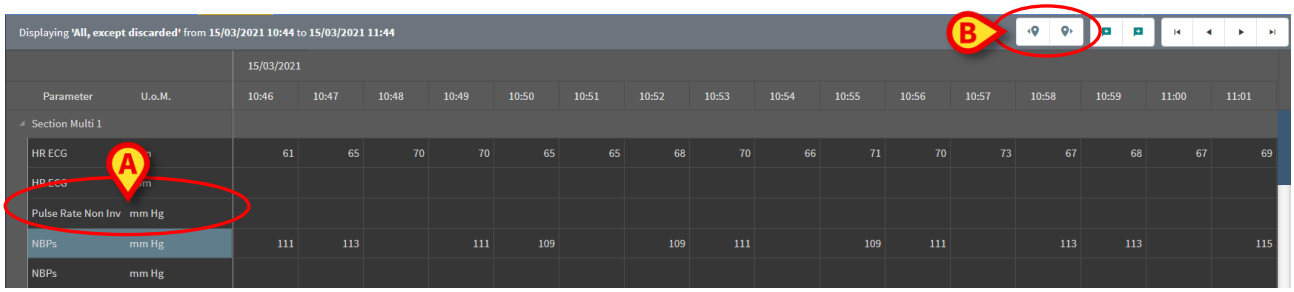
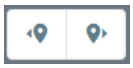


Fig 48

 - Use these buttons to select the previous/next value acquired for the selected parameter.

3.2. Data entry

It is possible to manually enter data, depending on user permissions.

User permissions define the actions that a user is or is not enabled to perform. Examples are: data entry; add/remove alarms; validate/remove validation etc... Refer to the system administrators for the user permissions configuration.

If a column is locked for editing to the currently logged user, the  *icon is displayed below the column.*

To enter data:

- Double click the cell in which the data must be entered.

The data entry window opens (Fig 49).

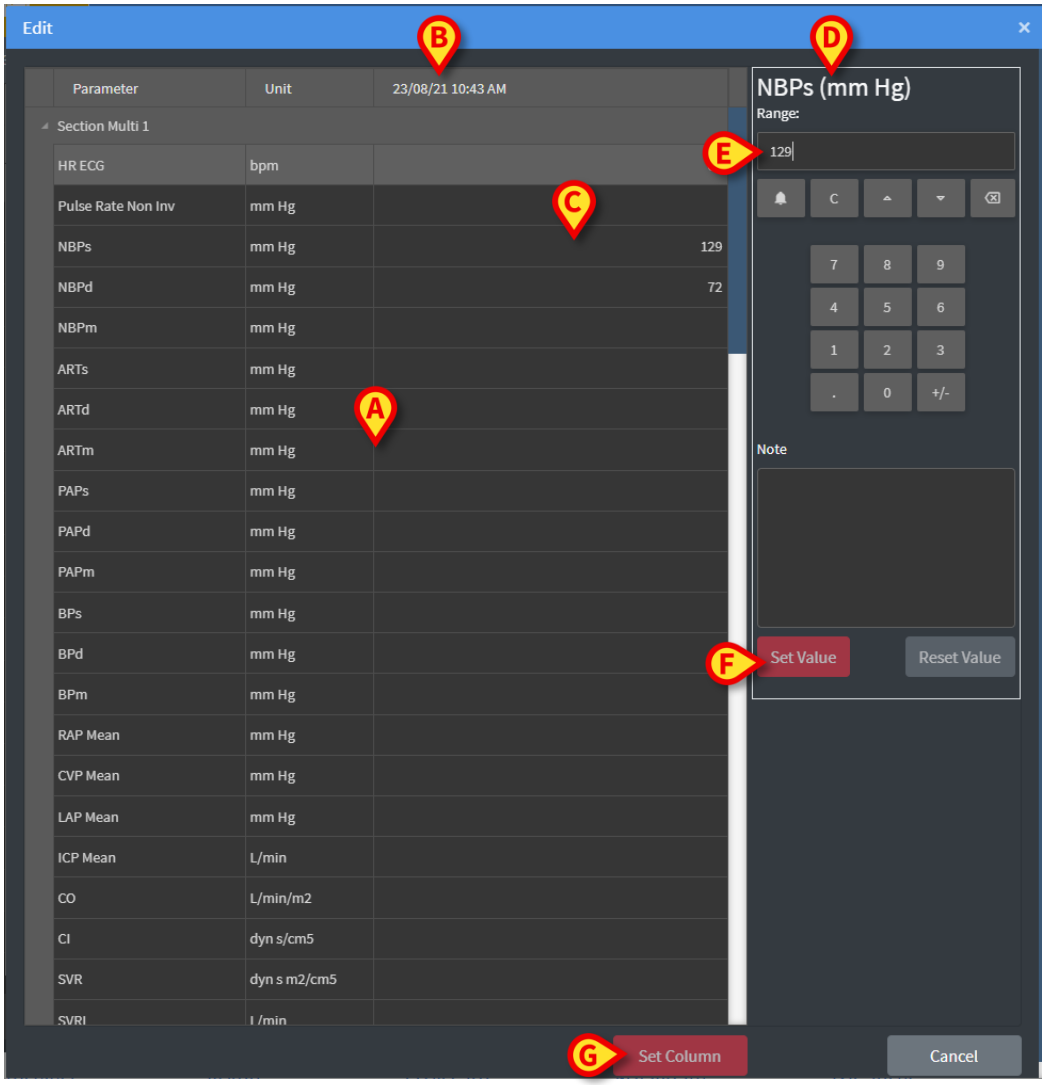


Fig 49

On the left, a table displays the parameters and values of the considered column (Fig 49 **A**). The acquisition date/time is displayed on top (Fig 49 **B**). The blue highlight in the table (Fig 49 **C**) indicates the parameter currently selected. The name of the currently selected parameter is also indicated above the data entry field (Fig 49 **D**). If a value is present for the selected parameter, it is displayed in the data entry field (Fig 49 **E**). Here the value can be edited if configured to be editable (values can be configured as read-only).

- Insert data in the data entry field (Fig 49 **E**).

Use, for data entry, either the virtual numeric keyboard or the physical workstation keyboard.

- Click the **Set Value** button (Fig 49 **F**).

The new value is displayed in the corresponding row. Data inserted by users are circled (Fig 50 **A**).

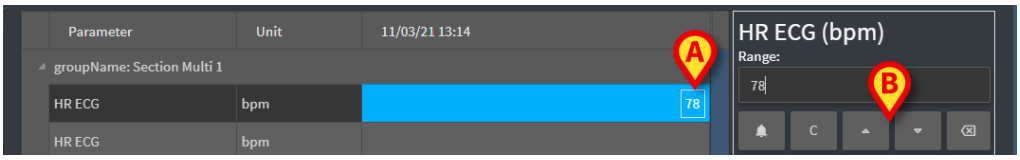


Fig 50

If required,

- Select another row to edit another parameter on the same column.

For rows selection either use the arrow buttons indicated in Fig 50 **B** or click the relevant row on the table (Fig 49 **A**).

Select the "Bell" button (Fig 51 **A**) to either indicate the value as "out-of-range" or to remove the notification from an "out-of-range" value. The "out-of-range" values are displayed on the table with a small red triangle in the corner of the cell (as shown in Fig 42).
The range indication (Fig 51 **B**) shows the range of normality for the selected parameter. The range of normality is defined during configuration. A value that is outside the range of normality is automatically notified on the table.
Also, a range of plausibility can be defined for a parameter during configuration. Values that are outside the range of plausibility cannot be entered.

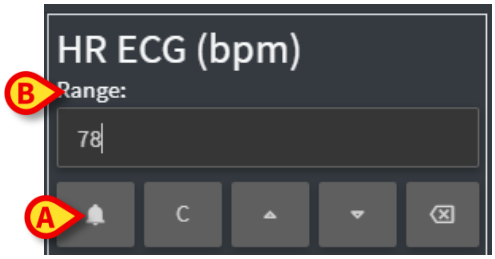


Fig 51

After editing all the required values on the same selected column,

- Click the **Set Column** button (Fig 49 **G**).

The new values are displayed on the main validation table (Fig 35 **B**). Data inserted by users are circled.

The inserted data is actually applied only after validation of the corresponding column. See section 3.3 for the validation procedure.

3.3. Validation procedure

To validate one or more set of data (i.e. columns):

- Check the checkboxes corresponding to the relevant column(s).

The columns are highlighted on the table (Fig 52 **A**).

Fig 52

- Click **Validate** on the command bar (Fig 52 **B**).

A **Validation Completed** notification is provided. The validated columns are highlighted blue, as in Fig 53.

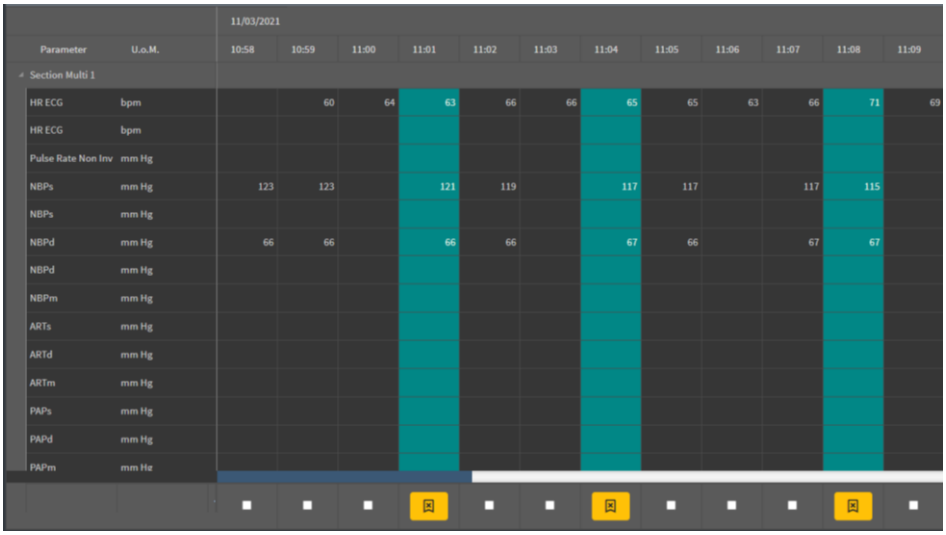


Fig 53

If the On Line Web application is configured to only display the validated data, then the validated columns are the only ones displayed on the On Line Web application (Fig 54).

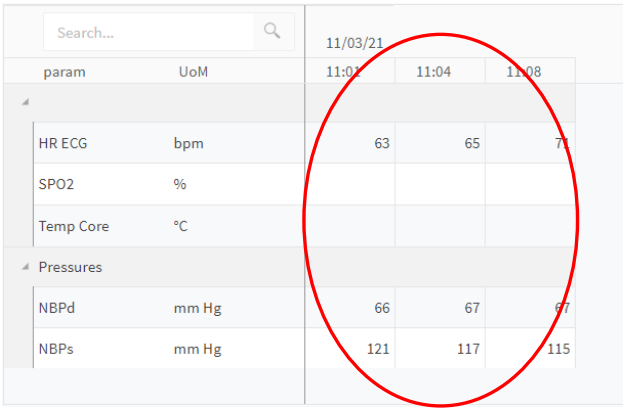


Fig 54

- Click the  icon placed below the validated columns (Fig 55) to "Undo" the validation.

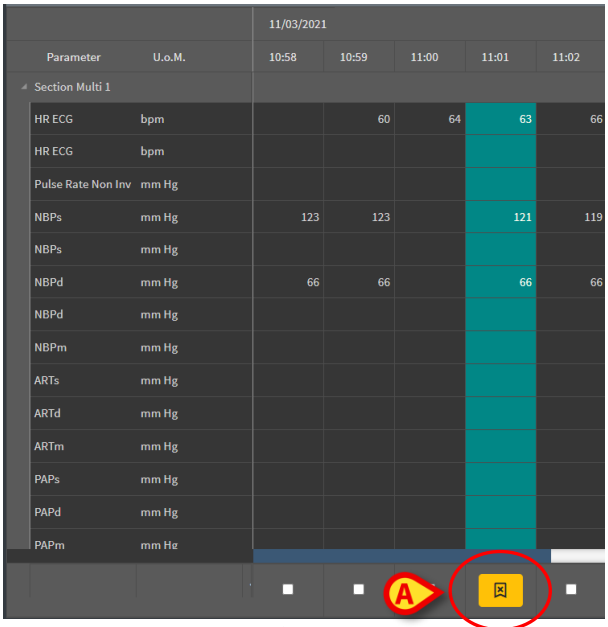


Fig 55

A validation timeout can be set during configuration, i.e. a time span after which a validated column cannot be edited or removed anymore.

In these cases the  *icon is displayed below the column.*

3.3.1. Validation history

To display the history of validations for a specific parameter:

- Right-click, on a validated column, the cell corresponding to the required parameter.

A **History** option is displayed (Fig 56 **A**).

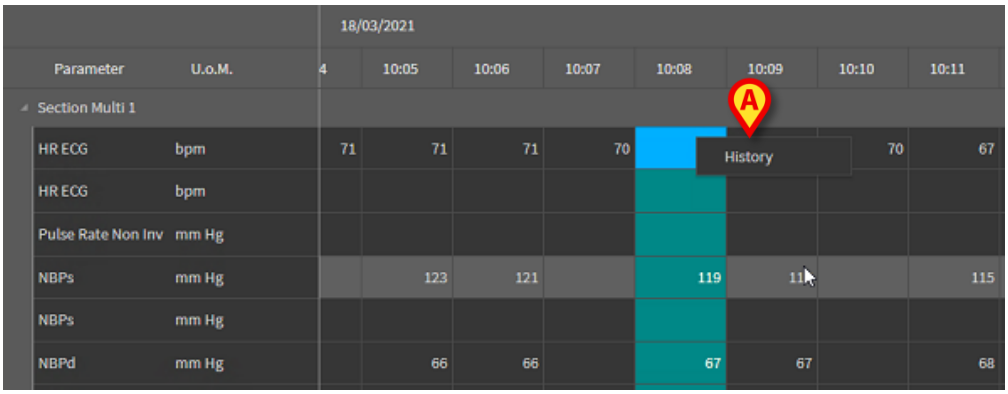


Fig 56

- Click **History**.

A window opens, showing the validation history for the selected parameter (Fig 57).

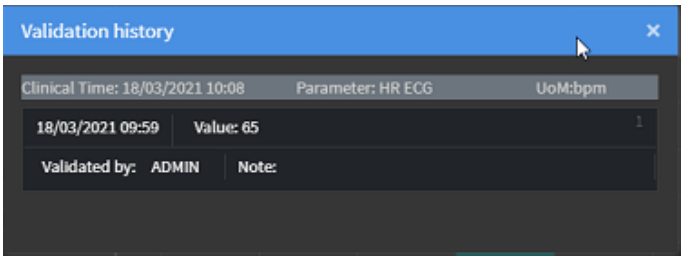


Fig 57

3.4. The command bar

Use the buttons on the command bar (Fig 58) to trigger different procedures.

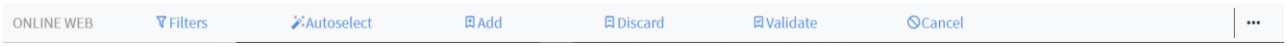


Fig 58

3.4.1. Filters

The **Filters** button allows to decide the type and acquisition time of the data displayed in the validation table.

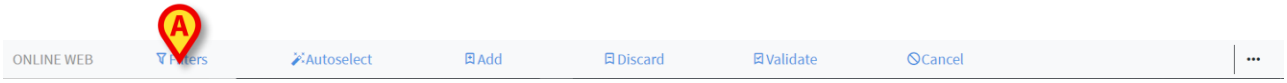


Fig 59

- Click **Filters** (Fig 59 **A**).

The following window opens (Fig 60).

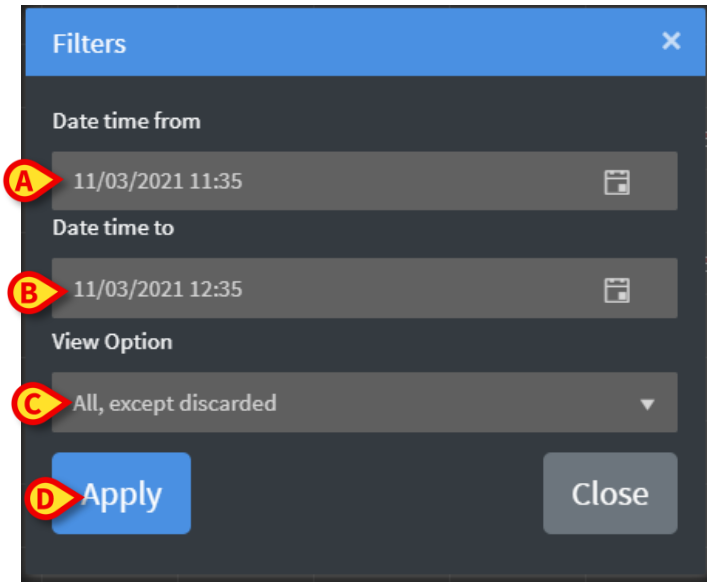


Fig 60

- Select the start and end date/time of the data to be displayed (Fig 60 **A** - **B**).
- Select the type of data to be displayed (Fig 60 **C**).

The available options are displayed in Fig 61.

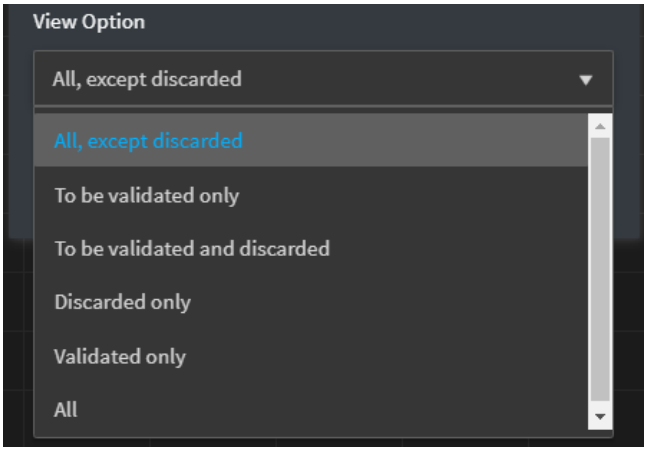


Fig 61

- Click **Apply** (Fig 60 **D**).

The selected options (time span and data type) are indicated on the top-left corner of the validation table (Fig 62 **A**).

Fig 62

3.4.2. Autoselect

The **Autoselect** button allows to automatically select a defined sub-set of columns.

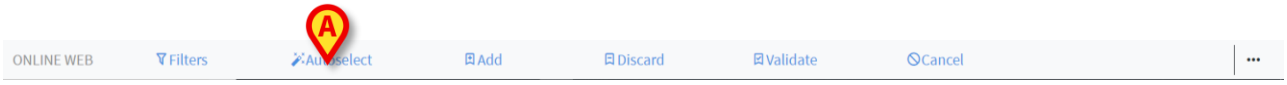


Fig 63

- Click the check box placed below the starting column to select it.

The selected column is highlighted.

- Click **Autoselect** (Fig 63 **A**).

The following window opens (Fig 64).

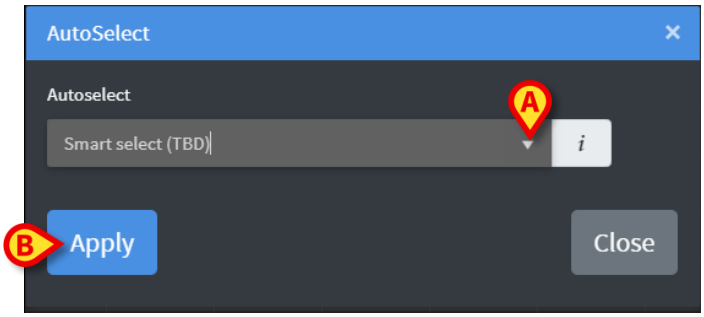


Fig 64

- Open the drop-down menu (Fig 64 **A**) to display the available options (Fig 65).

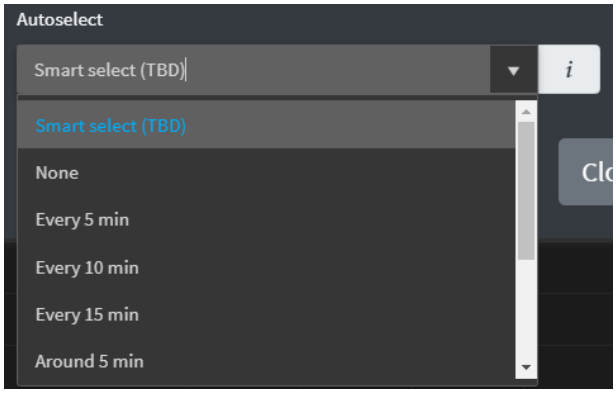


Fig 65

- Select the required option.
- Click **Apply** (Fig 64 **B**).

The corresponding columns are selected on the table.

Example: if the selected starting column is the one created at 10:00 and the selected option is “Every 5 minutes”, then the columns at 10:00, 10:05, 10:10, 10:15 etc… are selected.

3.4.3. Add

The **Add** button allows to add a set of data (i.e. a new column).

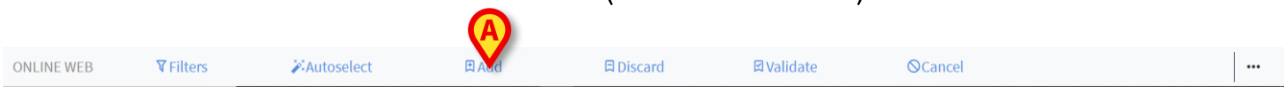


Fig 66

- Click **Add** (Fig 66 **A**).

The following window opens (Fig 67).

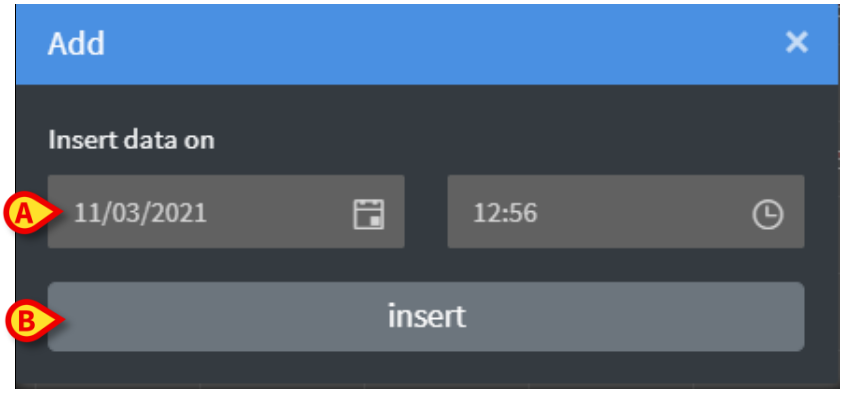


Fig 67

- Use the date and time fields indicated in Fig 67 **A** to set the date/time of the data to be added.
- Click **Insert** (Fig 67 **B**).

A new, empty column is added to the table, at the date/time indicated (Fig 68 **A**).

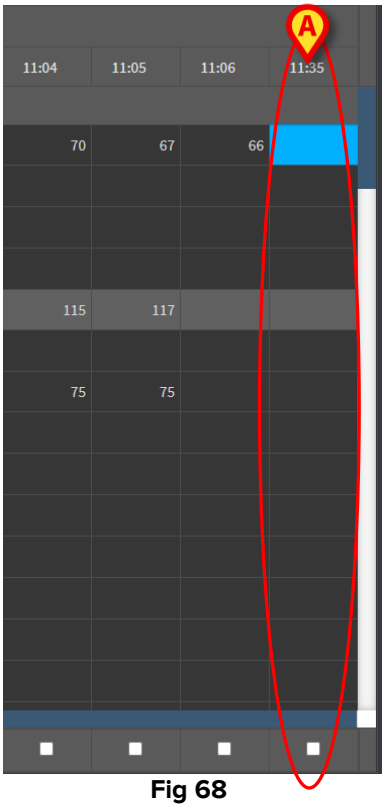


Fig 68

- Use the data entry functionalities described in section 3.2 to specify the data in the column.

3.4.4. Discard

The **Discard** button allows to discard one or more sets of data.

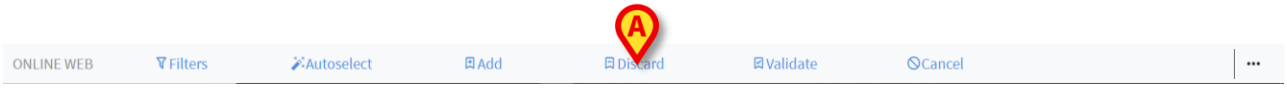


Fig 69

- Select the column/s containing the data to be discarded.

The selected columns are highlighted.

- Click **Discard** (Fig 69 **A**).

User confirmation is required. After confirmation the data displayed in the selected columns disappear. The empty columns remain. If necessary, use the data entry functionalities described in section 3.2 to insert new data in the empty column.

3.4.5. Validate

The **Validate** button (Fig 70 **A**) allows to validate one or more sets of data.

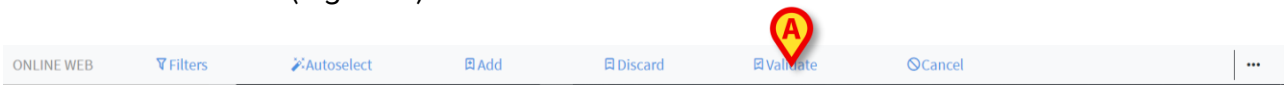


Fig 70

- See section 3.3 for the validation procedure.

3.4.6. Cancel

Use the **Cancel** button (Fig 71 **A**) to go back to the original data after data editing.

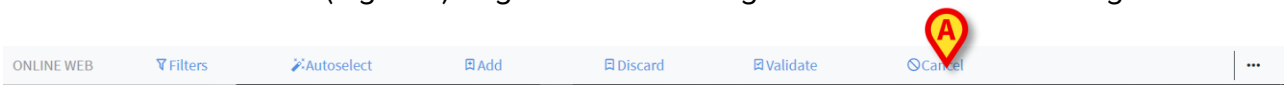


Fig 71

NOTE: The **Cancel** button applies to procedures that are not yet completed to bring the screen back to the original state. After validation, for example, the **Cancel** button does not apply. To remove the validation it is instead necessary to perform a specific procedure.

3.4.7. Other options

Use the button indicated in Fig 72 **A** to display a menu providing additional options (Fig 73).

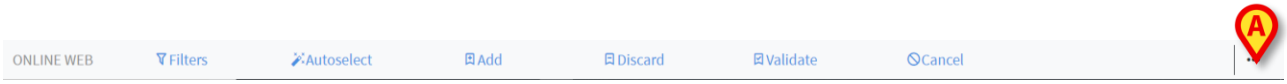


Fig 72

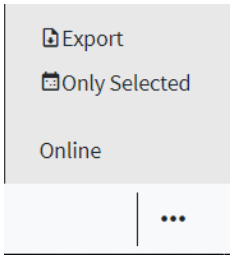


Fig 73

Use the **Export** option to export the available data to an Excel file.
Use the **Only selected** option to export a sub-set of (previously) selected data to an Excel file.

Use the **Online** option to open the On Line Web module, described in section 2.