CDSS Configurator Mobile User Manual

Version 4.0

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Contents

1 CDSS Configurator Mobile

For information about the Product environment, precautions, warnings and intended use see USR ENG Digistat Care (for the Digistat Suite EU) or USR ENG Digistat Suite NA (for Digistat Suite NA). The knowledge and understanding of the appropriate document are mandatory for a correct and safe use of CDSS Configurator Mobile, described in this document.

The features and functionalities of the CDSS Configurator Mobile module are fully available after user log in. A popup message informs the user accessing the application if log in is required.

1.1 Introduction and application start-up

The CDSS Configurator Mobile module can be used to activate/deactivate rules configured in the Digistat Clinical Decision Support System and to modify the rule settings according to the patient requirements.

To start the CDSS Configurator Mobile module:

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

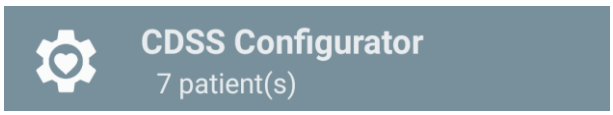

Fig 1

After touching the module row, the CDSS Configurator Mobile Patient List page opens (Fig 2):

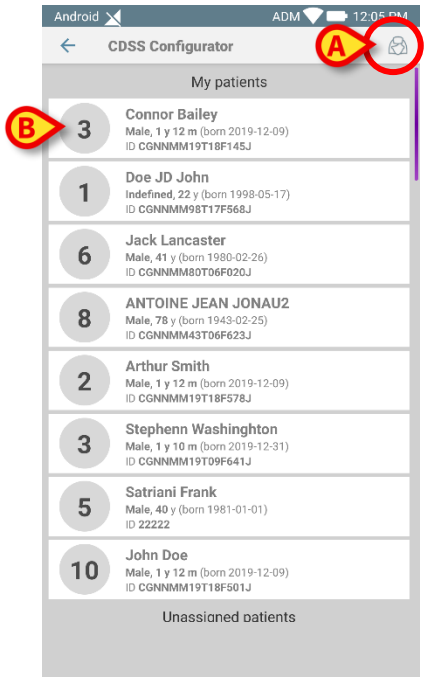

Fig 2

If the current user has not the adequate permissions, then the Patient List page is displayed in read-only mode. Users with specific permissions are enabled to access the CDSS Configurator Mobile and configure rules.

1.2 Patient List page

The CDSS Configurator Mobile Patient List page (Fig 2) displays the list of patients included in the "MyPatients" list. Read the document *USR ENG Mobile Launcher* for more information about the "MyPatients" list.

- Touch the "MyPatients" button (Fig 2 **A**) to change the "MyPatients" list by adding or removing it.

Each patient is represented by a tile (Fig 3).

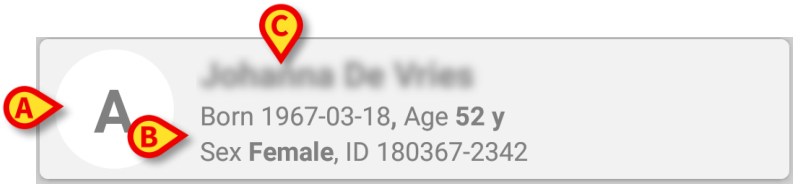

Fig 3

In the tile, the following customizable information is displayed:

- Bed number (if available - Fig 3 **A**);
- Patient data (sex, age, date of birth, patient ID - Fig 3 **B**);
- Name of patient on that bed (Fig 3 **C**).

1.3 Rules List Page

- Touch the patient tile (e.g. Fig 2 **B**) to access the Rules List Page and manage the related CDSS Rules.

The Rules List Page is formed of two areas: a heading area displaying the patient main data (Fig 4 **A**) and the list of CDSS Rules configured for the patients (Fig 4 **B**).

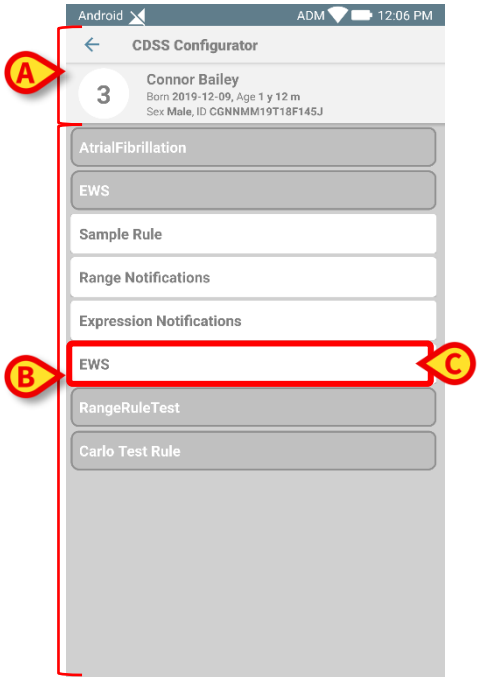

Fig 4

The heading area (Fig 4 **A**) displays the same information displayed in the patient tile on the Patient List screen (described in section 1.2).

The rules displayed in the list (Fig 4 **B**) can be:

- enabled (colored in white);
- non enabled (colored in grey).

The CDSS Rules are configured for all patients. It is possible moreover to customize for each patient the CDSS Rule settings. Read the paragraph 1.6 for more information.

1.4 Rule Configurations Page

➢ Touch the CDSS Rule of interest (e.g. Fig 4 **C**) to access the related Rule Configurations Page (Fig 5)

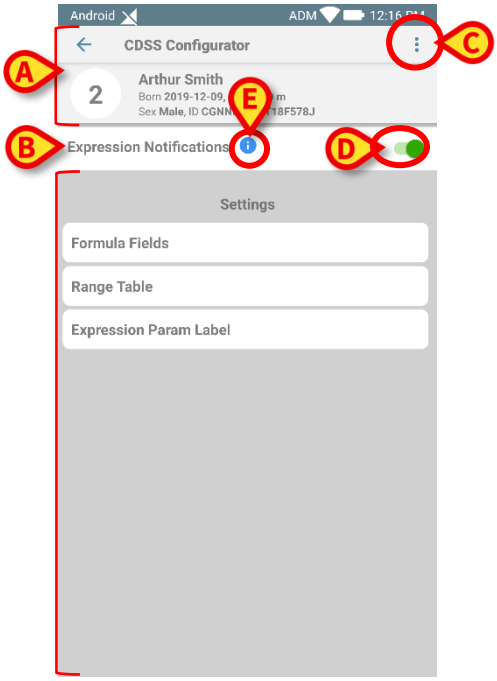

Fig 5

The Rule Configurations Page is formed of three areas:

- a Heading Area (Fig 5 **A**) displaying the patient main data;
- the Rule Panel (Fig 5 **B**) allowing the activation / deactivation of the rule and specifying its basic information;
- Rule Settings (Fig 5 **F**) allowing the customization of the Configuration of the rule.

➢ Touch the **Info** button (Fig 5 **E**) to open an external link reporting detailed information about the Rule.

➢ Pay attention to the Rule Label (if present) summarizing some essential information about the Rule or simple instructions for the user.

1.5 Enable/disable a CDSS Rule

Only authorized user can enable/disable a CDSS Rule.

To enable or disable a CDSS Rule for the selected patient:

- Access the Rule Configurations Page (Fig 5);
- Touch the **Enable/Disable** switch (Fig 5 **D**). This control is green if the Rule is enabled, grey if the Rule is disabled.

From the Rule Configurations Page it is possible to enable the considered CDSS Rule for multiple patients. To do this:

- Touch the menu icon (Fig 5 **C**) and then the **Enable on Other Beds** menu item.

The following pop-up window opens (Fig 6).

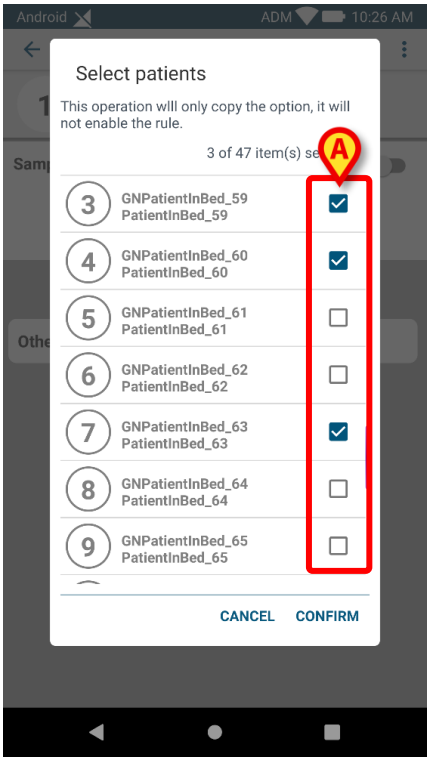

Fig 6

- Select the patients (Fig 6 **A**) for which the rule must be enabled. If there is a patient admitted to a bed, the patient name is displayed alongside the bed name.

- Click **CONFIRM** to save changes or **CANCEL** to discard them.

A confirmation message is displayed. Once it is provided, the user is redirected to the Rules List Page (paragraph 1.3).

1.6 Modify the CDSS Rule settings

Only authorized user can modify the settings of a CDSS Rule.

CDSS Rules have a set of configuration parameters that are used by the CDSS engine to modify the behavior of the rule. For example: a rule can generate a notification if the “Temperature” parameter is higher than a threshold value. The “threshold” is a default value embedded in the rule that can be customized according to the specific patient needs.

To modify the CDSS Rule settings:

- Select the rule in the Rules List Page (Fig 4).

The corresponding Rule Configurations Page opens. Rule Settings are displayed in the lower area (Fig 5 **H**).

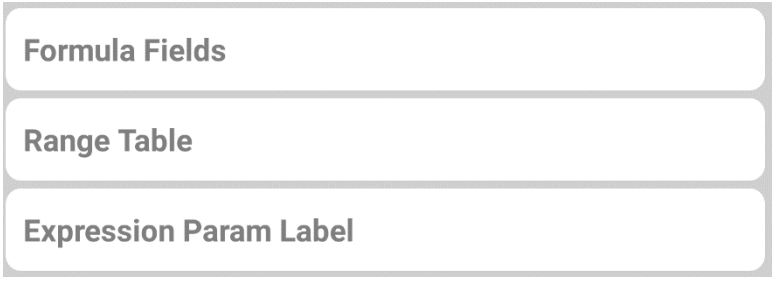

Fig 7

The following Rule Setting Types are available:

- Range;
- Formula;
- Table;
- “Key & Value”.

- Touch the specific Setting to be changed.

The corresponding Rule Settings Page opens. Just as example:

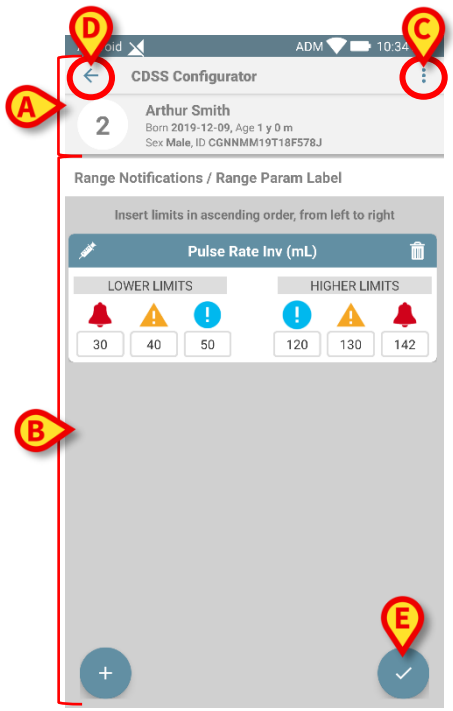

Fig 8

As the Rule Configurations Page, the Rule Settings Page is formed of three areas:

- a Heading Area (Fig 8 **A**) displaying the patient main data;
- the Rule Settings Area (Fig 8 **B**) allowing the customization of the Settings itself;

➢ Touch the "Add" button to add a new Setting, according to the selected Setting Type. In other words:

- if the "Range" setting is selected, then a new Range will be added;
- if the "Formula" setting is selected then a new Formula will be added;

and so on.

➢ Edit the available settings according to the requirements of the currently selected patient (Read the paragraph 1.8 for a detailed description of Rule Setting pages).

➢ Touch the "Save" button (Fig 8 **E**) to confirm changes. Otherwise click the "Back" button (Fig 8 **D**) to discard the changes made and restore the initial settings.
A message alerts the user in case of unsaved changes.

➢ Touch the menu icon (Fig 5 **C** - Fig 8 **C**) and then the **Reset to Default Values** menu item to restore the default settings.

1.7 Copy the Rule settings on other beds

From the Rule Configurations Page (Fig 5) it is possible to enable the considered CDSS Rule for multiple patients (without regard to the existing Rule configuration). To do this:

- Touch the menu icon (Fig 5 **C** – Fig 8 **C**) and then the **Copy on Other Beds** menu item.

The following pop-up window opens (Fig 6).

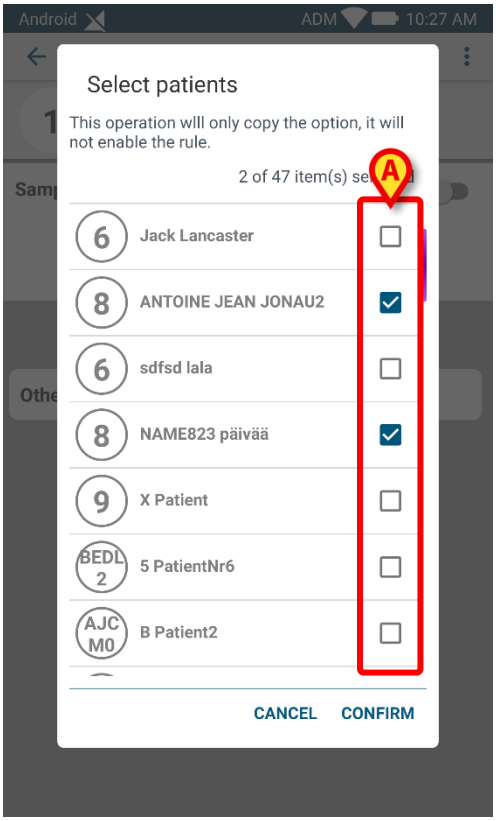

Fig 9

- Select the beds (Fig 6 **A**) on which the rule must be copied. If there is a patient admitted to a bed, the patient name is displayed alongside the bed name.

- Click **CONFIRM** to save changes or **CANCEL** to discard them.

A confirmation message is required. Once it is provided, the user is redirected to the Rules List Page (paragraph 1.3).

If the rule is disabled for a bed, copying the rule settings to the bed does not automatically enable the rule. The rule must be explicitly enabled.

A message alerts the user if it is not possible to copy the rule on other beds (e.g. because it is already enabled).

1.8 Rule Setting Types

The Rule Settings are displayed according to their type (i.e. a “Boolean type” is displayed as true/false checkbox, a “text type” as text box field, etc.).

1.8.1 Range

This setting defines, for each parameter, the thresholds after which the different notifications are triggered. The notifications are generated according to the intervals here defined.

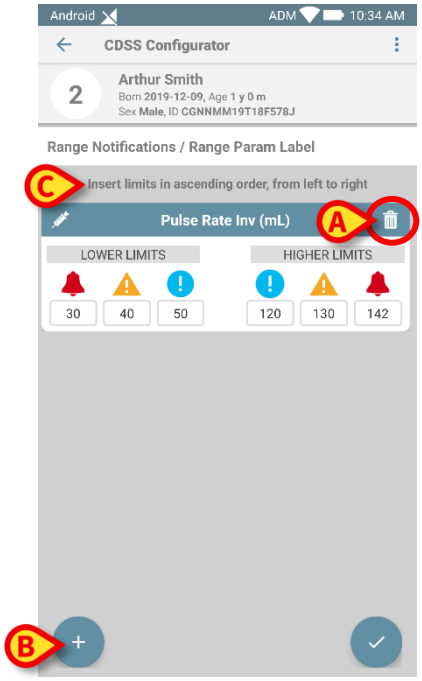

Fig 10

In the example shown in Fig 10, for the parameter “Pulse rate Inv (mL)”:

- a low priority notification (blue) is triggered if the value for the considered parameter is between 50 and 40 or between 120 and 130;
- a medium priority notification (yellow) is triggered between 40 and 30 or between 130 and 140;
- a high priority notification (red) is triggered below 30 and above 140;

If a value is empty, then the corresponding notification is not triggered.

To remove a Range:

➢ Touch the “Trash Can” button (Fig 10 **A**).

The Range is removed from the list of configured Ranges.

To add a new Range:

➢ Touch the “Add” button (Fig 10 **B**).

The following pop-window opens (Fig 11), showing the Connected Parameters i.e. the list of parameters that are currently dispatched by the medical devices already connected to the current patient. Parameters are grouped by medical device.

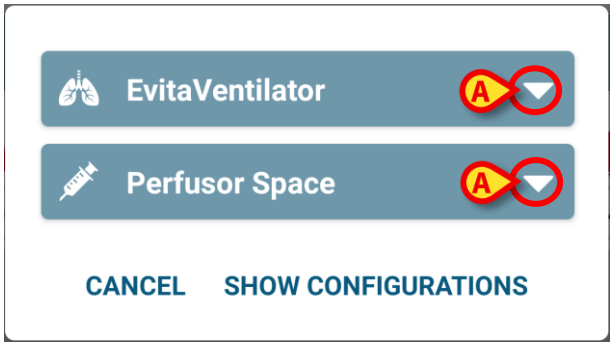

Fig 11

- Expand the list of parameters produced by the desired medical device by touching the down-arrow button (Fig 11 **A**). The pop-up window changes as shown below. Name, unit of measure and value (updated in near real time) are displayed for each parameter.

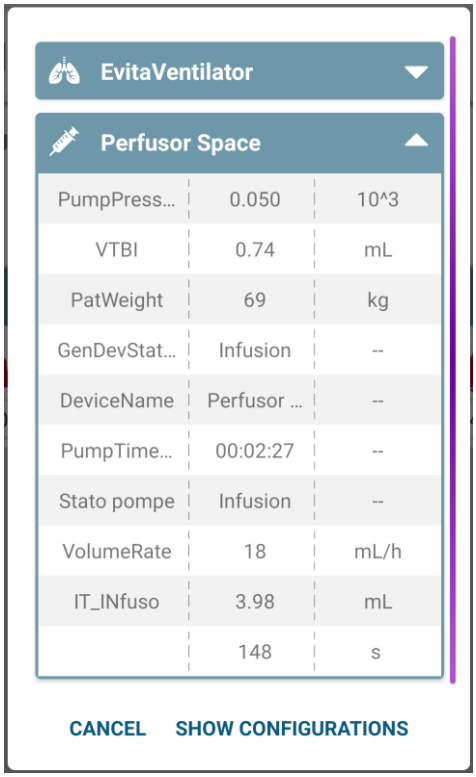

Fig 12

- Touch a parameter in the pop-up window (Fig 12). The user is requested to confirm the parameter chosen.

- Alternatively, touch the **SHOW CONFIGURATIONS** button to view the Configurations i.e. the list of available parameters according to the overall system configuration. It contains all possible parameters according to the configured drivers.

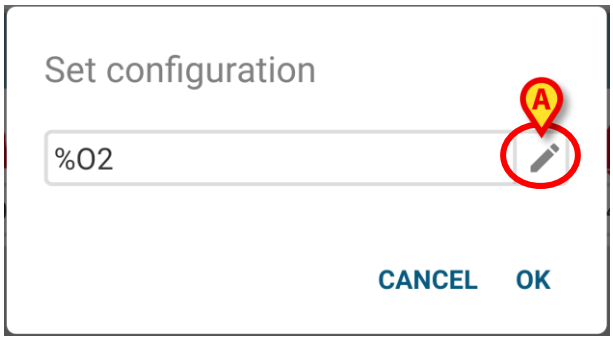

Fig 13

- Touch the pencil button (Fig 13 **A**) to change the selected parameter.
- Once the parameter is selected and the desired value is set, touch the **OK** button to confirm or **CANCEL** to discard.

If the single parameter is selected, then it is added to the list of configured parameters. If the whole configuration is selected, then it is applied to the whole configuration.

A label provides information on the appropriate range values (Fig 10 **C**).

1.8.2 Formula

This Setting Type defines formulas involving multiple vital parameters. The following page displays a sample formula (two screens are shown because the details exceed the page size).

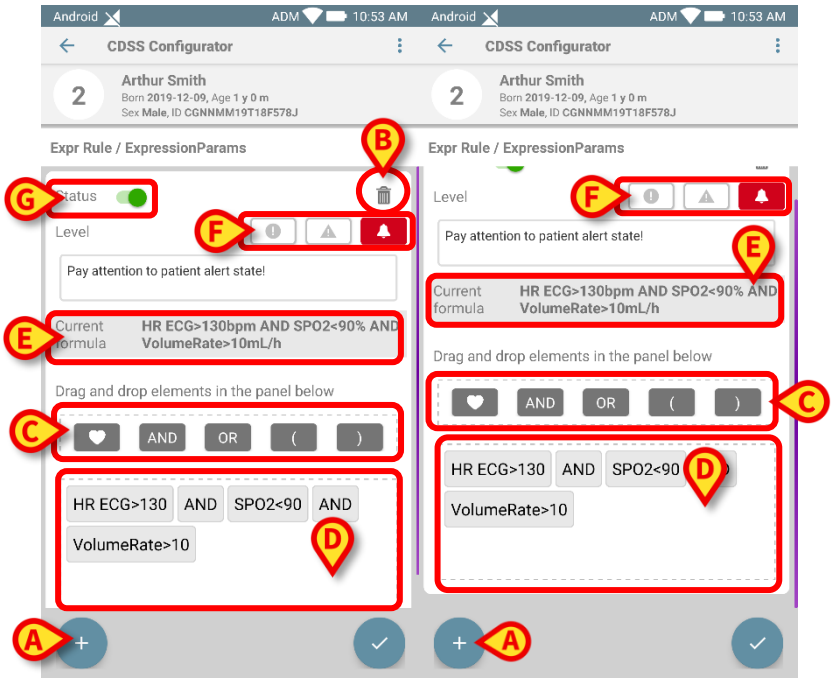

Fig 14

The formula above set is expressed as follows:

HR > 130 AND SpO2 < 90 AND VolumeRate > 10 ml/h.

To add a new formula:

- Touch the "Add" button (Fig 14 **A**).

To delete an existing formula:

- Touch the "Trash Can" button (Fig 14 **B**).

To build a new formula or edit an existing one:

- Drag and drop the "logical" items from the Operators panel (Fig 14 **C**) to the Formula panel (Fig 14 **D**).

To enable "drag and drop" of an item keep pressing the item for a little while

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- Double tap on a "logical" item already present in the Formula panel to edit it.

CONDITIONAL items allow to express a condition on the Vital Parameters acquired for the considered patient. In the formula reported above, CONDITIONAL items are underlined.

To valorize a CONDITIONAL item (Fig 14).

- Long Touch the “Heart” button  (Fig 14 **C**) to select it and drag it to the Formula Panel (Fig 14 **D**). The following window opens, allowing to select the Vital Parameter associated to the CONDITIONAL item. The procedure is the same described above for the “Range” type.

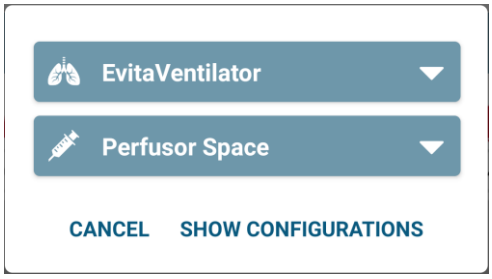


Fig 15

- Expand the list of parameters produced by the desired medical device by touching the down-arrow button  .

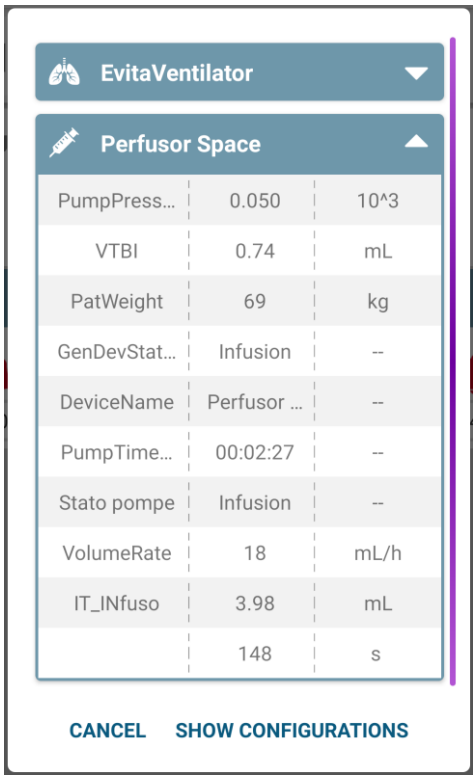


Fig 16

- Select a parameter as described above for the “Range” type.
  Once the parameter is selected, the following window opens allowing to set the condition:

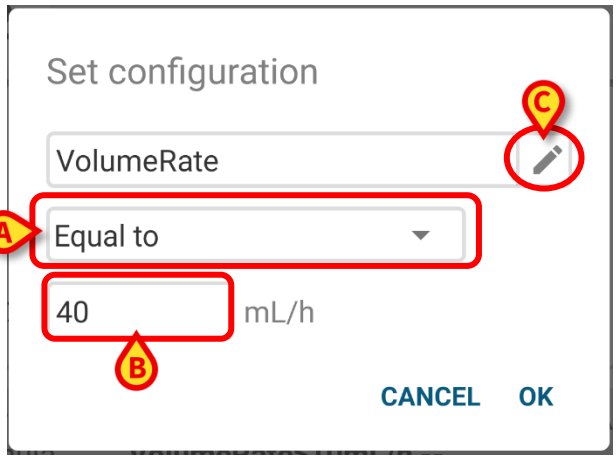


Fig 17

- Select the desired comparison operator (Fig 17 **A**) and the corresponding value (Fig 17 **B**). According to the parameter type, value can be numeric or textual. Read the paragraph 1.8.4 for the complete list of supported parameter types.

- Touch the pencil button (Fig 17 **C**) to change the selected parameter.

- Once the parameter is selected and the desired value is set, touch the **OK** button to confirm or **CANCEL** to discard.

The CONDITIONAL item is now valorized accordingly and properly shown in a dedicated preview area (Fig 14 **E**).

If the formula is not logically valid then the “wrong” items are bordered in red:

In this case the formula itself cannot be saved.

The formula is executed continuously (or according to the configuration) at CDSS level. If the formula is “true”, then a notification is generated.

A formula can generate notifications for the user. Notifications are defined in the Alarm Level area (Fig 14 **F**). These are:

- **Notification Status**: if “ACTIVE”, the formula is enabled and triggers notifications. If “PAUSED”, the formula is paused; notifications are not triggered.
- **Notification Level**: specifies the level of the triggered notification. The possible values are: low (cyan), medium (yellow), high (red).
- **Notification Text**: text of the notification that will be displayed to the user.

- Touch the **Enable/Disable** switch (Fig 14 **G**). This control is green if the Rule is enabled, grey if the Rule is disabled.

1.8.3 Table

A table allows to configure rules using a tabular view. For example: scores typically have multiple parameters contributing to the final score, and for every parameter it is possible to define thresholds. Instead of having many different rule settings, it is possible to have all thresholds aggregated in a table view.

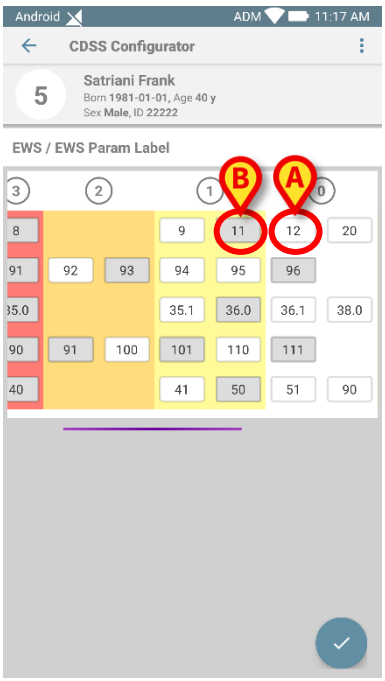


Fig 18

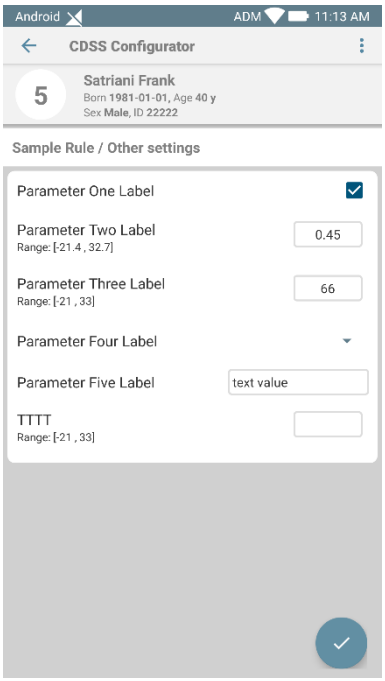
The colors define the notification level (white to red).

It is possible to configure only the thresholds that are not disabled (i.e. grey not editable). Values in disabled fields are automatically calculated from the other values. Consider Fig 18 as example: in the first row, changing the value 12 (Fig 18 **A**) to 10, automatically changes the value 11 (Fig 18 **B**) to 9.

Depending on the kind of rule, it is possible to either trigger a single notification considering the overall score value or multiple notifications considering the single parameters values.

1.8.4 “Key & Value”

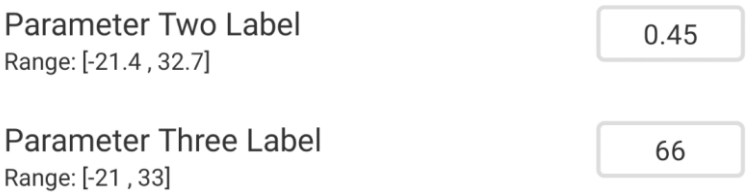
The “Key & Value” Setting Type collects several different input data (Keys) that should be valorized by the user. Let us consider as example the following screen:



In the example are defined the following Primitive data:

Boolean
Value: true/false. Click the circle to enable/disable.

Numeric
Value: numeric (decimal or integer respectively). Type the value. If decimal values are not allowed, then they are disabled. If present, numbers in brackets are the higher and lower limits.



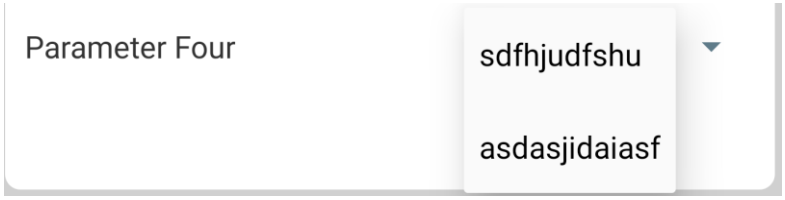
The following characters are not allowed:

- $ (dollar);
- ' (apex).

A message warns the user if these characters are inserted.

List

Value: multiple choice list. Click the arrow to display the available choices in a drop-down menu. Click the required choice. The selected choice is displayed in the field.



Text
Value: free text. Enter a free text (empty is allowed).

The following characters are not allowed:

- $ (dollar);
- ' (apex).

A message warns the user if these characters are inserted.