



## 6.6.2 Building Rules in Rule Designer

The Rule Designer interface is divided into three main panes:

- The left hand pane, which is further divided into three subtabs: View by CRF, View by CRF Version, and View by Event. Every time each of these subtabs is selected, a list of CRFs/ Events will be listed. Each of these CRFs/ Events has an adjacent node which can be clicked to expand into a hierarchy/ minimize to display or hide any associated Item OID. You will then be able to locate, select, and finally drag and drop any of the desired OIDs to the applicable entries on the main (center) tab.
- The center pane, which is divided into three main tabs: Designer, XML and Test tab. The Designer tab contains entries that you can use to drag and drop OIDs to the desired fields (i.e. Target, Rule OID, Rule Expression). Note that if you hover to any of the entry fields on the Designer tab, there will be an associated pop-up help menu that will get displayed. For example, if your cursor is placed on the Target field, there will be a back pop-up message displayed to provide an explanation of a Target field. The XML tab displays the associated XML lines generated as you are updating the fields on the Designer tab. The Test tab can be accessed once all of the information entered on the Designer tab is valid.
- The right hand pane, which is further divided into two subtabs: The Help subtab and the Item Metadata subtab. The help tab contains direction how you can build your rule on the Designer tab. The Item Metadata subtab contains the metadata associated to selected OID/ record. The Item Metadata gets updated everytime a new OID/ record is selected.

On the top right of the page, there are 3 additional links that you may access at any point: New Rule, Open Rule and Exit Rule Designer.

### Building a New Rule in Rule Designer

1. In order to create a new rule, you will initially need to access the Designer tab in Rule Designer.
2. Specify the target field. The Target field is the variable which you want the error message to appear on. It is also associated with any discrepancy note/ email action.
3. If you want the Rule to run at a specified time each day, turn on the option to Run On Schedule. These were specifically designed for Participate Notification Action Rules so that Participants can be notified of upcoming forms that should be completed. Though any Rule can be set to run on a schedule, it is not recommended to set a large number of Rules to run on schedule since this could slow server processing. Rules are run automatically whenever data is saved, and can also be run in batch via Manage Rules or Manage CRFs.
4. Specify the Rule\_OID field. This is a unique identifier of any new rule that you are creating and this is how your rule will be referred in the database. It must be 32 characters or shorter, be in uppercase, cannot include any spaces/special characters (underscore permitted)
5. Specify the Rule Expression. This is the condition that will trigger certain actions. You may use the Arithmetic, Logical or Relational Operator in order to build the rule expression. For more information regarding using these operators, refer to section 6.3: [Creating Rules](#). You can also use the drag and drop CRF Item form the left hand pane in order to build your rule.
6. Specify what actions will be triggered as a result of implementing the rule. The available actions

are in the "Actions" drop down menu:

- Discrepancy Note. This will trigger a discrepancy note on a certain CRF Item. Refer to Notes and Discrepancies section for more information.
- Email action. This will prompt the system to generate an automated email to individual(s). Both the email action and discrepancy notes form edit checks.
- Notification Action. This sends an SMS and/or email notification to Patient Participants, or an email to any specified email address. Variables can be used in the SMS/email Subject and/or in the body of the notification. Click on the button for the variable you want to include. For more information on the variables that can be included, see [Notification Action](#).
- Show action. This will trigger a certain CRF Item be displayed as a result of meeting a certain criteria.
- Hide action. A CRF Item will be hidden if the rule condition is met. Note that both Show and Hide Action are used to implement dynamic logics.
- Insert action. This will prompt the system to insert data from one CRF item into another based on previously established rules.
- Event action. This allows you to pre-schedule an Event or Events based on the Startdate or Status of a specified Event.

7. Note that each rule may trigger one or more actions. To add more actions, simply access the drop down menu for the second time and select applicable actions. The second action will be lined below the first action. If you want to remove action, simply click on the remove  icon next to each action.

8. Specify the data entry stages where the rule can be run. In OpenClinica, there are 4 possible values: Admin Data Entry, Initial Data Entry, Double Data Entry, Batch. Select all of the checkboxes if you want them to run at all stages.

9. Click Validate. This will verify if the form contains valid rule. If the rule is valid, you will get a successful confirmation message "Form has no errors. This is a Valid Rule"

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information regarding using these operators, refer to section 6.3: [Creating Rules](#). You can also use the drag and drop CRF Item from the left hand pane in order to build your rule.

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- Email action. This will prompt the system to generate an automated email to individual(s). Both the email action and discrepancy notes form edit checks.
- Notification Action. This sends an SMS and/or email notification to study Participants who are users of [Participate](#), or an email to any specified email address.
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9. Click Validate. This verifies that the form contains valid rule. If the rule is valid, the following confirmation message displays: "Form has no errors. This is a Valid Rule."

Rule Designer

Designer XML Test Validate Save

✓ Alert - Form has no errors.  
This is a valid Rule

Target: I\_PHYSI\_APPEARANCE\_COMMENTS

Run on a Schedule: OFF

Rule OID: PHYSI\_APPEARANCE\_R1

Rule Expression: I\_PHYSI\_APPEARANCE eq 2 and I\_PHYSI\_APPEARANCE\_COMMENTS eq ""

Actions: Select One

Discrepancy Note Action true

Message: If Physical Exam Appearance is abnormal, a comment must be specified or a discrepancy note logged.

Specify the mode where this action should run

Admin data entry  Initial data entry  Double data entry  Batch

Validate Save

If some of the rule components are invalid, an error message displays on the top of the page detailing the sources of the errors. Refer to the sample of screenshot below.

Rule Designer

Designer XML Test Validate Save

**Alert** - Form has errors.  
 OCRERR\_0005 : Syntax Error in Expression.  
 OCRERR\_0025: The Rule you are trying to reference does not exist or is invalid.  
 OCRERR\_0027: The contextual expression in one of the Rules does not validate against the target expression in the current Rule assignment.

Target: I\_PHYSI\_APPEARANCE\_COMMENTS

Run on a Schedule: OFF

Rule OID: PHYSI\_APPEARANCE\_R1

Rule Expression: I\_PHYSI\_APPEARANCE eq 2 and I\_PHYSI\_APPEARANCE\_COMMENTS eq

Actions: Select One

Discrepancy Note Action true

Message: If Physical Exam Appearance is abnormal, a comment must be specified or a discrepancy note logged.

Specify the mode where this action should run

Admin data entry  Initial data entry  Double data entry  Batch

Validate Save

10. You also have the option of saving the rule to OpenClinica. To achieve this purpose, you select "Save". You will get a confirmation message "Submitted successfully to your instance".

Approved for publication by Cal Collins. Signed on 2015-07-27 3:01PM

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