



**Clinical Decision Rules (CDRs) Guide**

**For use with version: 4.1.1**

**<http://www.oemr.org/>**

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## Section One: Clinical Decision Rules (CDRs) Overview

### **What is a Clinical Support Rule?**

A Clinical Decision Rule is another term for Clinical Decision Support. By true definition, this means *“Clinical decision support (CDS) provides clinicians, staff, patients or other individuals with knowledge and person-specific information, intelligently filtered or presented at appropriate times, to enhance health and health care. CDS encompasses a variety of tools to enhance decision-making in the clinical workflow. These tools include computerized alerts and reminders to care providers and patients; clinical guidelines; condition-specific order sets; focused patient data reports and summaries; documentation templates; diagnostic support, and contextually relevant reference information, among other tools.”*

-The Office of the National Coordinator for Health Information Technology

[http://healthit.hhs.gov/portal/server.pt/community/healthit\\_hhs\\_gov\\_cds/1218](http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_cds/1218)

Taking a step back from the Clinical Decision Rules true definition, let's cover how OpenEMR views them as part of the system. Broken down, it's essentially an “If (criteria) is (this), then output (result)” statement, meaning defined criteria will trigger a notification or action. There are many outcomes you can accomplish with creating these rules, whether it's a simple metric-tracking reportable (ex. Tobacco Assessment), or an actionable item to cover with a patient based on given criteria (ex. Tobacco Cessation Intervention if the patient's Tobacco Assessment was given an active smoker status).

To comply with Meaningful Use, OpenEMR is a free, open source Electronic Medical Record software that will allow you to achieve your Meaningful Use objectives.

To begin creating your own rules or modifying the current ones that come with the software, you will need to have a general understanding of your OpenEMR database, as well as how and where your information is stored. These rules pull information that is housed in the database, and you must know which table(s) and field(s) will be used, as well as the formatting of the field that the data is stored in. A good example of this is a date field. While most people read dates as 01/01/2013 (MM/DD/YYYY), the way OpenEMR stores this data is 2013-01-01 (YYYY-MM-DD), in some cases YYYY-MM-DD HH:MM:SS. So if you are looking to incorporate dates in to your CDRs, you will need to know exactly how the data is formatted to achieve an accurate outcome.

If time restrictions prevent this or technical assistance is required, please contact one of OpenEMR's official Professional Support Vendors. A list of Professional Support Vendors can be found at:

[http://www.open-emr.org/wiki/index.php/OpenEMR\\_Professional\\_Support](http://www.open-emr.org/wiki/index.php/OpenEMR_Professional_Support)

## Section Two: Clinical Decision Rules (CDRs) Configuration

To enable or disable CDR collection, reporting, and display, navigate to the Administration menu, and then select Globals. This section will walk you through the various items related to the CDRs in the Globals menu, and explain how they affect the software. This guide will only be covering items related to the CDRs.

Select the “CDR” tab in Globals:

Appearance	Locale	Features	Documents	Calendar	Security	Notifications	CDR	Logging	Miscellaneous	Portal	Connectors	Rx
Enable Clinical Decisions Rules (CDR)		<input checked="" type="checkbox"/>										
Enable Clinical Reminder Widget		<input checked="" type="checkbox"/>										
Enable Clinical Reminder Popup		<input checked="" type="checkbox"/>										
Enable Patient Reminder Widget		<input checked="" type="checkbox"/>										
Enable CQM Reporting		<input checked="" type="checkbox"/>										
PQRI Registry Name		<input type="text" value="Model Registry"/>										
PQRI Registry ID		<input type="text" value="125789123"/>										
Enable AMC Reporting		<input checked="" type="checkbox"/>										
Enable AMC Prompting		<input checked="" type="checkbox"/>										
Enable AMC Tracking		<input checked="" type="checkbox"/>										
CDR Reports Processing Priority		<input type="text" value="Default Priority"/>										
Patient Reminder Creation Processing Priority		<input type="text" value="Default Priority"/>										

**Enable Clinical Decision Rules (CDR)** – Enables/disables all CDR-related options in OpenEMR

**Enable Clinical Reminder Widget** – Enables/disables the widget in the patient’s demographics

**Enable Clinical Reminder Popup** – Enables/disables alerts to pop-up in the patient’s demographics when active

**CDR Reports Processing Priority** – This option allows you to set the priority in which the CDR Reports run. This is useful if the server you are hosting OpenEMR on is multi-purpose and runs other programs concurrently, and will lessen the load while increasing the duration in which the report runs

### Section Three: Clinical Decision Rules (CDRs) Example

We will begin with reviewing the Tobacco Use Assessment by navigating to Administration > Rules > Tobacco Use Assessment.

The “Summary” section is where you can edit the name of the rule, as well as set it as an Active Alert, Passive Alert, and/or Patient Reminder:

Summary (edit)  
Tobacco Use Assessment (Passive Alert, Patient Reminder)

**Active Alert** – Will show a pop up for the rule that is triggered when opening a patient’s demographics

**Passive Alert** –Alert will show in widget only when the rule is triggered

**Patient Reminder** – Based on patient’s HIPAA preferences under the Contact tab of demographics, this will queue a reminder for the patient if rule is triggered

The “Demographics Filter Criteria” section is where you can set filters based on Age, Gender, and many other Demographics and History-related information entered in to the database:

Demographics filter criteria (add)  
None defined

In this example there are no filters. You will see a good example and explanation in the next rule “Tobacco Cessation Intervention” that is triggered when a patient’s History data reflects current tobacco use.

The “Target/Action Groups” section is where the Clinical Targets and Actions are set:

Target/Action Groups

Clinical targets (add)			
	Criteria	Characteristics	Requirements
(edit) (delete)	Lifestyle - Tobacco	Optional Inclusion	Value: "   Interval: 1 x Months

Actions (add)

	Category/Title
(edit) (delete)	Assessment - Tobacco

**Clinical Targets** – Defines what the value/definition to trigger the rule is. In this example, it references the Tobacco field in the History section of the patient’s demographics. The requirements behind this rule state that “If there is no value input, this is an alert every month for the patient”

**Actions** – This is the end-result/desired outcome of what the Clinical Targets will activate. This list is pre-configured in OpenEMR for the current rule set that comes with the software. If you will be creating your own rules, you will need to add more Actions to Administration > Lists > Clinical Rule Action Item. The result of this Action is what will be the reportable metric in the Standard Measures report.

...On the next page we will see this rule in use at the new patient level...

### Section Three: Clinical Decision Rules (CDRs) Example

For the purpose of this rule, I've created a new patient and pulled up their Demographics. On the right-side of the page, you'll see the Clinical Reminders widget:

**Edit** Clinical Reminders (collapse)

Measurement: Weight (Past Due)  
Assessment: Tobacco (Past Due)

You'll notice this patient is due for the "Assessment: Tobacco" since no tobacco data has been input. Let's remedy that.

From the Demographics screen, let's navigate to History > Lifestyle:

General Family History Relatives Lifestyle Other

Tobacco:    
 Current every day smoker  Status:  Current  Quit  Never  N/A

In this example, I've input that the patient is a 1 pack per day, current every day smoker. Click "Save" and navigate back to the Demographics screen. The Denominator for the report is now positively updated by +1

You'll notice the patient is now in need of an intervention for their tobacco use:

**Edit** Clinical Reminders (collapse)

Measurement: Weight (Past Due)  
Intervention: Tobacco (Due)

Let's navigate back to Administration > Rules > Tobacco Cessation Intervention and see how the Intervention rule is structured:

Demographics filter criteria (add)

Criteria	Characteristics	Requirements
(edit) (delete) Lifestyle - Tobacco	Optional Inclusion	Value: 'current'

Target/Action Groups

Clinical targets (add)

Criteria	Characteristics	Requirements
(edit) (delete) Intervention - Tobacco	Optional Inclusion	Completed: Yes   Frequency: >= 1   Interval: 1 x Years

Actions (add)

Category/Title
(edit) (delete) Intervention - Tobacco

The "Demographics Filter Criteria" is set to filter out any non-tobacco patients

The "Clinical Target and Action" are set to trigger an Intervention for the remaining patient population who are current tobacco users.

You can now navigate back to the patient's Demographics and click the action item to record the discussion and outcome of the Intervention. Once "Save" is clicked, it will positively update the Numerator of the report.

## Section Four: Clinical Decision Rules (CDRs) Creating a Test Rule

The rule I will be creating is a Pulmonary Function Test, evaluating 1x/year for active Asthma patients.

<http://www.nlm.nih.gov/medlineplus/ency/article/003853.htm>

To begin, we will navigate to Administration > Lists > Clinical Rule Action Item:

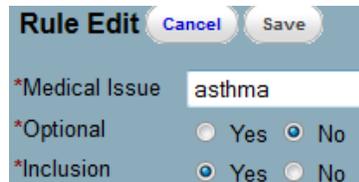
act\_pulmonary | Pulmonary Function Test | 180

I added the Pulmonary Function Test and clicked "Save"

Next, we will navigate to Administration > Rules > Add New:

I've set the title as "Pulmonary Function Test" and the type as a "Passive Alert" and a "Patient Reminder", click Save.

This will take you to the blank Rule. Click "Add" next to Demographics Filter Criteria, select "Medical Issue":



Rule Edit Cancel Save

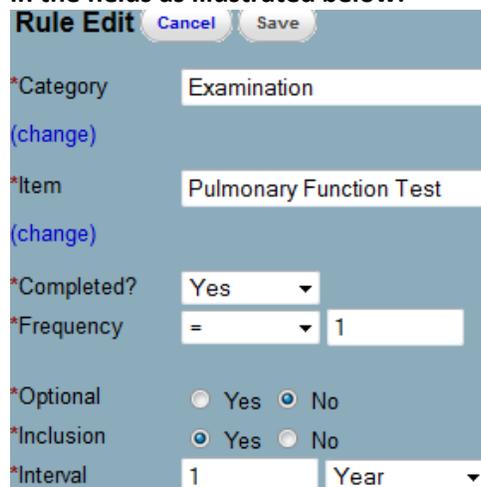
\*Medical Issue

\*Optional  Yes  No

\*Inclusion  Yes  No

What this will do is filter anyone that has "asthma" listed as a Medical Issue, as those will be the only people affected by this rule.

Now we will want to set the Clinical Target, click the Add button in the "Clinical Target" section and fill in the fields as illustrated below:



Rule Edit Cancel Save

\*Category   
(change)

\*Item   
(change)

\*Completed?

\*Frequency

\*Optional  Yes  No

\*Inclusion  Yes  No

\*Interval

Category – What type of target is it? In this case, it's an Examination.

Item – What is the name of the target? For this, we will select the Pulmonary Function Test we created above.

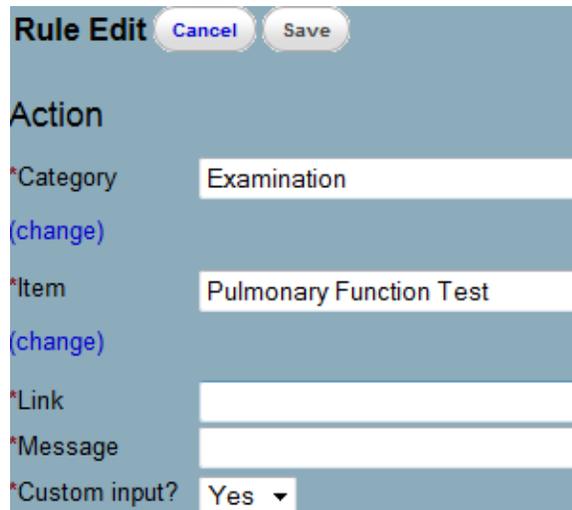
Completed – Does this require completion to be marked?

Frequency – How many times will this appear? Since this is an issue, it will only appear once.

Interval – This test will need completed 1x/year.

#### Section Four: Clinical Decision Rules (CDRs) Creating a Test Rule

Next, click the Add button in the “Actions” section; click both “Change” links. Fill in the fields as illustrated below:



The screenshot shows a 'Rule Edit' form with the following fields:

- Action** (Section Header)
- \*Category**: Examination (with a '(change)' link below it)
- \*Item**: Pulmonary Function Test (with a '(change)' link below it)
- \*Link**: (empty text field)
- \*Message**: (empty text field)
- \*Custom input?**: Yes (dropdown menu)

*Category – What type of action is it? In this case, it’s an Examination*

*Item – What is the name of the Action that will be triggered? For this, we will select the Pulmonary Function Test we created above*

*Link – Some actions offer a link (this then shows a screen where results can be stored). These are to store action results that are not found elsewhere in the OpenEMR database*

*Message – This field is used for Patient Reminders. This is the message that will be sent to the patient regarding this Reminder*

*Custom Input? – If “yes” is selected, it will allow text entry and documentation of the test. Click “Save”*

### Section Four: Clinical Decision Rules (CDRs) Creating a Test Rule

Now that the rule is created, we can navigate to the patient's Demographics and add in the Asthma Medical Problem.

From the Demographics screen, select Edit then Add on Medical Problems. Fill out the information as follows, click Save:

The form contains the following fields and options:

- Type:** Problem (dropdown menu with options: HTN, asthma, diabetes, hyperlipidemia) (Select one of these)
- Title:** asthma
- Diagnosis Code:** |
- Begin Date:** 2010-01-12 (calendar icon)
- End Date:** (calendar icon) (leave blank if s...)
- Occurrence:** Unknown or N/A (dropdown menu)
- Referred by:** |
- Outcome:** Unassigned (dropdown menu)
- Destination:** |

Buttons: Save, Cancel

We now have an action item for the “Examination: Pulmonary Function Test” that can be completed. Once completed, it will disappear and update the Numerator on the Standard Measures report at +1:

The screenshot shows the following elements:

- Edit** button
- Clinical Reminders (collapse)** link
- Examination: Pulmonary Function Test (Past Due)
- Measurement: Weight (Past Due)

## Section Five: Clinical Decision Rules (CDRs) Reporting

Now that we have completed the creation and completion of the rule, we can view the Standard Measures report by navigating to Reports > Clinic > Standard Measures

### Standard Measure Report:

#### Report - Standard Measures

Target Date:	2013-01-03 11:55:18	
Rule Set:	Passive Alert Rules	▼
Plan Set:	-- Ignore --	▼
Provider:	-- All (Cumulative) --	▼
Provider Relationship:	Primary	▼

[Submit](#)

*Target Date – Sets the end of the reporting period*

*Rule Set – This will pull results based off the Active, Passive, and Patient Reminder types*

*Plan Set – There are certain rules that are available under “Active” that provide more breakdowns, but for the sake of this report, we will select “Ignore”*

*Provider – If you are pulling reporting on a by-provider basis, you can select it from here*

*Provider Relationship – Ties in with the above Provider option, pulls reporting based off the Provider either at the Encounter > Fee Sheet level (Encounter), or the Demographic > Choices level (Primary). Click Submit.*

### Results:

Title	Total Patients	Applicable Patients (Denominator)	Excluded Patients	Passed Patients (Numerator)	Performance Percentage
Pulmonary Function Test	17	4	0	1	25%

*We have successfully created, completed, and reported on this new rule. In a database of 17 patients, 4 patients had asthma listed as a Medical Problem, 0 patients were excluded, and 1 patient had the test completed*

## Section Six: Clinical Decision Rules (CDRs) Resources

### **OpenEMR SourceForge Forums**

<http://sourceforge.net/projects/openemr/forums>

The OpenEMR Forums on SourceForge are made up of highly skilled software developers and users at nearly every level in a clinical setting. Release and patch announcements are made on the forums to alert users with any improvements and changes to the software. In addition to that, Professional Support Vendors interact with users, responding to posts for assistance and general inquiries.

### **Professional Support Vendors**

[http://www.open-emr.org/wiki/index.php/OpenEMR\\_Professional\\_Support](http://www.open-emr.org/wiki/index.php/OpenEMR_Professional_Support)

There are currently over two dozen Professional Support Vendors that develop and support OpenEMR.