

EzVac Module Documentation

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Module version 2.9

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Overview of Ezvac module

The immunization module is an OpenMRS module which does immunization decision-support.

The introduction of this module is to help doctors or nurses in immunization decision-support. So use of the immunization module will help to

- Decrease rate of inappropriate vaccinations (given at the wrong time, given when already given before, or given when not supposed to be given)
- Decrease proportion of missed vaccinations (according to vaccination schedule)
- Decrease incidence of vaccine-preventable diseases like polio, tetanus in population

Based on patients information like (age, gender, vaccine taken before or not, number of vaccine taken)

The module recommends future requirements like

- which vaccine to get
- when to get that vaccine
- when to get the next vaccine

So given a person's date of birth all the recommended dates are calculated and a grid of these dates is created. These dates include start date, recommended date, and late date for all the shot's.

The immunization module use a csv rules file that contains all immunization rules to perform all necessary immunization calculations and output recommended vaccine information that patient must take care.

Installation & Configuration

The ezvac module is compatible with all versions of OpenMRS from version 1.4 up to the current version of OpenMRS

The *omod* file (**ezvacimmunization.omod**) is used to install the immunization module in OpenMRS,

In order to install the module the logged in user must have the privilege to install modules and access the administration page of OpenMRS.

The installation and configuration of this module require (the omod file, the utdrules.csv file and the vaccinemap.csv file)

Installation of the omod file (ezvacimmunization.omod)

From the Administration page of OpenMRS browser to manager modules link

The screenshot shows the OpenMRS Administration page. At the top, there is a navigation bar with links: Home, Find/Create Patient, Dictionary, Cohort Builder, and Administration. The user is logged in as Doctor Super User. The main content area is titled 'Administration' and is divided into three columns. The first column contains links for Users, Patients, Person, Encounters, Locations, and Observations. The second column contains links for Concepts, Forms, HL7 Messages, and Maintenance. The third column contains links for Modules, Logic Module, Immunization, Metadata Sharing, and HTML Form Entry. The 'Immunization' link is highlighted, and it points to a page with three links: Upload Utdrules file and vaccinemap file, View patient immunization history, and Configure vaccines to be used in Immunization module.

OpenMRS

Currently logged in as Doctor Super User | [Log out](#) | [My Profile](#) | [Help](#)

Home | Find/Create Patient | Dictionary | Cohort Builder | Administration

Administration

Users <ul style="list-style-type: none">Manage UsersManage RolesManage PrivilegesManage Alerts	Concepts <ul style="list-style-type: none">View Concept DictionaryManage Concept DrugsManage Proposed ConceptsUpdate Concept WordsDerive Concept SetsManage Concept ClassesManage Concept DatatypesManage Concept Sources	Modules <ul style="list-style-type: none">Manage ModulesModule Properties
Patients <ul style="list-style-type: none">Manage PatientsFind Patients to MergeManage Identifier Types	Forms <ul style="list-style-type: none">Manage FormsManage FieldsManage Field Types	Logic Module <ul style="list-style-type: none">Token RegistrationRule DefinitionsTest Logic ExpressionsInitial Set-Up
Person <ul style="list-style-type: none">Manage Relationship TypesManage Person Attribute Types	HL7 Messages <ul style="list-style-type: none">Manage Queued MessagesManage Deleted MessagesManage HL7 Errors	Immunization <ul style="list-style-type: none">Upload Utdrules file and vaccinemap fileView patient immunization historyConfigure vaccines to be used in Immunization module
Encounters <ul style="list-style-type: none">Manage EncountersManage Encounter Types	Maintenance <ul style="list-style-type: none">Set Implementation IdSystem InformationAudit Patient Identifiers	Metadata Sharing <ul style="list-style-type: none">Export MetadataImport MetadataConfigure *required*
Locations <ul style="list-style-type: none">Manage Locations		HTML Form Entry <ul style="list-style-type: none">Manage HTML FormsPreview HTML Form from FileMigrate Names and Descriptions
Observations <ul style="list-style-type: none">Manage Observations		

Then browse and add your module, wait for the confirmation message (module uploaded successfully) then go back to the administration page you will find a new section added “Immunization” with 3 links as shown below.

Immunization

[Upload Utdrules file and vaccinemap file](#)
[View patient immunization history](#)
[Configure vaccines to be used in Immunization module](#)

Installation of the Utdrules and vaccinemap file

From the administration page of OpenMRS go to the link *Upload Utdrules file and vaccinemap file*, then browse the utdrules.csv file and upload it you will get a confirmation message (*You have successfully uploaded the file* and do the same process for the vaccinemap.csv file.

NB: The **utdrules** file contains all vaccines rules that the ezvac module use to Perform all vaccine's calculation

How to configure vaccine to be used in ezvac module?

In the vaccinemap.csv file uploaded there is a list of all vaccines with their cvx code that will be used in the ezvac module, this file can be edited by adding vaccine and its cvxcode. The vaccine name and the cvxcode are separated by a comma (,) eg. VARICELLA,94,21.

To configure vaccine to be used in the ezvac module, go to the **administration page** of openmrs go to ***Configure vaccines to be used in Immunization module link***.

The page will display list of all vaccines with their cvxcode that are in the vaccinemap.csv file

Configuration page of Vaccines used in Immunization module

Vaccines and cvx code values retrieved from vaccinemap.csv file uploaded

Vaccines	Cvx Code
HEPA	52 , 83 , 84 , 31 , 85
HEPB	45
VITA	999
ROTARIX	119
TETANUS	112
IPV	10 , 2 , 89
YELLOW FEVER	37
HIB	17
DTAP	20
PNEUMOVAX	109
HPV	137 , 118 , 62
MENACTRA	136 , 32 , 103 , 114 , 108
ROTAVIRUS	122 , 116 , 74
INFLUENZA	111 , 15 , 16 , 88 , 123 , 141 , 140
PCV	100 , 133
BCG	19
DTAP-HEPB-HIB	102

by default all vaccines contained in the vaccinemap.csv file will be used in the ezvac module but this can be limited by adding only some vaccines this is done at the bottom of the page you will find a text box where you can add vaccines that you want to use in the ezvac module, vaccines are separated by a comma (,) eg. VARICELLA,MMR,HEPA.

*From the list of vaccines above, please specify below in capital letter the vaccines to be used, vaccines to be used are separated by a comma
Additional vaccine to be used can be added in vaccinemap.csv file and then uploaded.*

Name	Value
ezvacimmunization.vaccinelist	HEPB,TDAP,TD,DTAP,IPV,ROTAVIRUS,HIB,VARICELLA,MMR,HEPA,HPV,MENACTRA,INFLUENZA,ROTAF

How to use the ezvac module

The purpose of the ezvac module is to help doctors, nurses or any other medical staff in an immunization decision support by providing some information like which vaccine to get? When to get that vaccine? When to get the next vaccine for a particular patient?

Step 1 search for a particular patient

Patient Search


Find Patient(s)

Patient Identifier or Patient Name:

Include Verbose ☐

Once the patient is found and selected you will be redirected to the patient dashboard page which gives access to some tabs (pages) that contains some patient information, and then go to the immunization tab.

Step 2: View patient's recommended vaccines through the immunization tab of the patient dashboard

Test Case246			
 3 yrs (Mar 10, 2008)			
BMI: ? (Weight: , Height:) CD4: Regimen:			
Last encounter: Peds @ Mayange Health Centre, Oct 20, 2011			
Overview	Regimens	Encounters	Demographics
Graphs	Form Entry	Immunization	
Immunization Status			
Series	Status	Sequence	Next Due Date
HEPA	Not applicable		
RECOMBIVAX	Not applicable		
HEPB	Not Up to Date	1	01/11/2012
VITA	Not applicable		
ROTARIX	Not applicable		
TD	Not applicable		
IPV	Not Up to Date	1	01/11/2012
TDAP	Not applicable		
DTAP	Not Up to Date	1	01/11/2012
HIB	Complete	-	
HPV	Not applicable		

On the immunization tab you will find two grids the immunization status and the Immunization history

Immunization Status			
Series	Status	Sequence	Next Due Date
HEPA	Not applicable		
RECOMBIVAX	Not applicable		
HEPB	Not Up to Date	1	01/11/2012

Immunization History			
Immunization	Admin Date	Sequence No.	Valid?
DTAP	10/10/2011	2	YES
HEPB	10/10/2011	1	YES
HIB	10/10/2011	1	YES
DTAP	05/11/2008	1	YES

The immunization status grid contains 4 columns (**Series, status, sequence and next due date**)

the column series lists all vaccines used in the ezvac module, the status column informs the status of vaccine according to the patient's information (**Not applicable** means this vaccine is not applicable to the patient based on the patient's information, **Not up to date** means Patient has received vaccine and time to receive the next vaccine has passed, **Due** means that Patient is in the time period for receiving the next vaccine, **complete** means that Patient received all vaccines.) The **sequence** column displays the sequence number of vaccine and **next due date** is the next date when the Patient will come back for another shot.

The immunization history grid gives information on immunization given, the first column lists vaccine name provided, the next column admin date gives information on when vaccine was provided, the next column is the sequence of vaccine and the last column confirm if vaccine is valid or not according to how and when vaccine was provided

Data Entry

This is an example on how data entry can be done through an html form entry but this can be done as well through xform or through an infopath form

Designing an html form entry for the immunization module

1. - be sure that you have installed htmformentry module
2. You can even create an encounter type for this form --> Go to the administration page ----> Manager Encounter types
----> Add Encounter Type (for eg. enter Immunization as name for this encounter type) then save this encounter type.

3. From the administration page

----> Go to Manager HTML Forms

-----> New HTML Form, and then provides the required information

eg. **Name:** Immunization Data Entry Form

Description:

Version: 1.0

Encounter Type: select Immunization

HTML: Please copy the code below

```
<htmlform>

<macros>
    paperFormId = (Fill this in)

    headerColor = #009d8e

    fontOnHeaderColor = white

</macros>

<style>

    .section {
        border: 1px solid $headerColor;
        padding: 2px;
        text-align: left;
        margin-bottom: 1em;
    }

    .sectionHeader {

        background-color: $headerColor;
        color: $fontOnHeaderColor;

        display: block;

        padding: 2px;
        font-weight: bold;
    }

    table.baseline-aligned td {
        vertical-align: baseline;
```

```

    }
</style>

<span style="float:right">Paper Form ID: $paperFormId</span>
<h2>Immunization Data Entry Form</h2>

<section headerLabel="1. Encounter Details">
    <table class="baseline-aligned">
        <tr>
            <td>Provider </td>
            <td><encounterProvider role="Provider"/> </td>
        </tr>

        <tr>
            <td>Date:</td>
            <td><encounterDate default="today"/></td>
        </tr>
        <tr>
            <td>Location:</td>
            <td><encounterLocation/></td>
        </tr>
        <tr>
            <td>Provider:</td>
            <td><encounterProvider/></td>
        </tr>
    </table>
</section>

<section headerLabel="2. Immunization
details"> <table class="baseline-aligned">
    <tr><td>Vaccine </td><td><obs conceptId="984"/></td></tr>
    <tr><td>Vaccination Date </td><td><obs
conceptId="1410"/></td></tr> </obsgroup>

    </table>
</section>
<submit/></htmlform>

```


How to use this htmlformentry?

- Search for a particular patient
- Select that patient
- On the patient dashboard, Go to Form entry tab
- Select the form that you created and use it for data entry and you can view data entered in immunization tab and all immunization recommendation.