

# Deploying OpenMRS in Rwanda

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# Scaling up a healthcare system

- Began in 2005 as first Partners in Health project in Africa. Partners: Clinton and Gates Foundations and TED.
- Scale up PIH model of health nationwide with services including HIV/TB, family planning, malnutrition, community health workers, housing, employment, schooling.
- Started in Rwinkwavu and in two years has grown into two hospitals and four health clinics. Training center and third hospital are being built.
- Technology is playing an important role in the scale up and OpenMRS is the vehicle.



# What is OpenMRS?

- OpenMRS is an application which enables design of a scalable and customized medical records system with no programming skills.
- Framework on which medical informatics effort in developing countries can be built.



<http://openmrs.org>



# Who are the key players?

- Developers: PIH, Regenstrief, and others
- Funders: WHO, CDC, Rockefeller, PEPFAR, IRDC, NIH, Google, SA-MRC, MVP
- Deployments: Kenya, Rwanda, Lesotho, South Africa, Zimbabwe, Mozambique, Uganda, Malawi, Tanzania, Haiti, Peru



# How is it put together?

- OpenMRS is built in Java. The core application works through a web browser.
- Tomcat is used as the application server. The database is currently in MySQL. Hibernate is used as an interface layer to the database. Also use Spring, Dojo, DWR, BIRT, etc.
- The system creates XML schemas for form design. Form design data entry is currently done in Microsoft Infopath.

# Concept Dictionary

## Viewing Concept HUMAN IMMUNODEFICIENCY VIRUS

[Previous](#) | [Edit](#) | [Stats](#) | [Next](#) | [New](#)

Search

<b>Id</b>	884
<b>Locale</b>	<a href="#">English</a>   <a href="#">French</a>   <a href="#">Spanish</a>   <a href="#">Portuguese</a>   <a href="#">Italian</a>
<b>Name</b>	HUMAN IMMUNODEFICIENCY VIRUS
<b>Short Name</b>	
<b>Description</b>	The virus that causes the acquired immune deficiency syndrome (AIDS).
<b>Synonyms</b>	HIV P23
<b>Class</b>	Diagnosis
<b>Datatype</b>	N/A
<b>Version</b>	
<b>Retired</b>	false
<b>Created By</b>	Super User - May 27, 2004 12:00:00 AM PDT
<b>Changed By</b>	Super User - February 16, 2005 5:32:05 PM PST

<b>Resources</b>	<a href="#">Similar Concepts</a> <a href="#">Merriam Webster®</a> <a href="#">Google™</a> <a href="#">UpToDate®</a> <a href="#">Dictionary.com®</a> <a href="#">Lab Tests Online</a>
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# Form Driven



**INSHUTI MU BUZIMA**  
**Clinique des Maladies Chroniques**

No. DEM:  -

## RENDEZ-VOUS

### Information démographique

1. Date (jour/mois/année): \_\_\_\_/\_\_\_\_/\_\_\_\_
2. Nom: \_\_\_\_\_ Prénom: \_\_\_\_\_
3. (a) Nom de l'Accompagnateur: \_\_\_\_\_ Prénom: \_\_\_\_\_  
(b) Changement de l'accompagnateur?    non    oui (spécifier raison) \_\_\_\_\_
4. Catégorie du patient:              Maladie du cœur              Maladie des reins              Diabète  
    Désordre de saisisse              Asthme              Autres: \_\_\_\_\_
5. Groupe du patient: \_\_\_\_\_
6. Clinique :        Rwinkwavu              Mulindi              Rukira              Nyarubuye              Kirehe  
                            Rusumo              Autre (à spécifier): \_\_\_\_\_

### Anamnèse

7. Hospitalisé(e) depuis la dernière visite?    non    oui  
Si oui, quel était le diagnostic? \_\_\_\_\_

### Examen clinique

8. (a) Signes vitaux:    TA \_\_\_\_/\_\_\_\_    Pouls \_\_\_\_/min.    Temp. \_\_\_\_ °C    FR \_\_\_\_/min.    Glycémie \_\_\_\_  
(b) Paramètres:    Poids \_\_\_\_ (kg)    Taille \_\_\_\_ (cm)    BMI \_\_\_\_

# Cohort Builder

Search [Saved \[+\]](#) [All Patients](#) [Male](#) [Female](#) [Child](#) [Adult](#) [HC](#)  Go

[Concept/Observation](#) [Patient Attributes](#) [Encounter](#) [Program Enrollment](#) [Drug Order](#) [Composition](#)

Search by Concepts and Observations:   Include Verbose

**Search History**

<a href="#">1.</a> Patients with any encounters at Rukira	1073 results (cached) <a href="#"></a> <a href="#"></a>
<a href="#">2.</a> Patients currently taking ANY of [LPV/r (Kaletra) , 3TC Susp , 3TC 150 , ABC 300 , NVP Susp , NVP , EFV 600 , EFV 100 , EFV 50 , EFV 200 , AZT+3TC (Duovir) , d4T 30 , d4T 40 , d4T 20 , d4T 15 , TFV 300 , DDI 125 , DDI 200 , Triomune-30 , Triomune-40 , AZT Sirop , AZT 100 , AZT 300]	2790 results (cached) <a href="#"></a> <a href="#"></a>
<a href="#">3.</a> Patients in program HIV PROGRAM	5138 results (cached) <a href="#"></a> <a href="#"></a>
<a href="#">4.</a> 1 AND 2 AND 3	481 results (cached) <a href="#"></a> <a href="#"></a>

Display which cohort:

View method: **List** Other methods are not yet implemented  
|< < **Displaying 16 to 30 of 9344** > >|

- ...  
16. [Geoffry Lokai \(4 year old Male\)](#)  
17. [Vicky Siror \(33 year old Female\)](#)  
18. [Aloice Kener \(46 year old Male\)](#)  
19. [Anjela Lugado \(47 year old Female\)](#)  
20. [Romana Sirtui \(46 year old Female\)](#)  
21. [Colland Kenebei \(13 year old Male\)](#)  
22. [Metrin Singarei \(9 year old Female\)](#)  
23. [Framsisca Tingei \(32 year old Female\)](#)  
24. [Mitchell Cherwon \(29 year old Female\)](#)

# Modular Design

Manage Modules				
Action	Name	Version	Author	Description
	Double Entry Reconciliation	1.5	Darius Jazayeri	This module allows you to specify a form, and pulls all of those forms ever entered from the database. Any time a patient has two or more of that form with the same encounter date, those are take...
	Child VCT Report Module	1.1	Chase Yarbrough	Child VCT Report Module. Creates a report of children who have not been tested for HIV, but whose parents are HIV+...
	PatientSummaryModule	1.0	Yaw Anokwa	Generates a printable one page clinical summary for a patient. ...
	Form Import Export [Not Started]	1.4.3	Darius Jazayeri	Allows you to import/export forms between installations with identical concept dictionaries. Optionally keeps dictionary in sync with a parent dictionary. See module documentation ...
	FormEntry	3.1	Ben Wolfe	OpenMRS FormEntry Module ...
	Patient Lookup Module	1.0	Christian Allen	Easy patient lookup for clinical use ...
	BIRT Report Module	1.2	Justin Miranda	BIRT Reporting Module ...
	Food Program Module	0.1	Justin Miranda	OpenMRS Food Program Module ...
	Form Data Export Module	0.7	Justin Miranda	OpenMRS Form Data Export Module ...
	PIH Hacks Module	1.0	Darius Jazayeri	Various quick hacks can be put here so that we don't have to create a new module every time ...
<a href="#">Check for Updates</a>				

# Patient Registration

Back

Restart

## Enter patient information

Name (Example: Mukamana)

Sample

Other names (Example: Alice)

Patient

Gender

Male

Female

Birthdate

Month

October

Day

2

Year

Double-check birthdate: in the future

2009

Year unknown

Address

Province

EASTERN

District

KAYONZA

Sector

RWINKWAVU

Cell

GIHINGA

Umudugudu

N/A

Submit

# Patient Summary



## Paul Persil Patient

IMB 12345678-A

Gender Male

Age 44 years (~ Jun 01, 1934)

TRACnet ID: 12345

Carte d'Identité: 12345678

Last Visit 6 months ago (Oct 26, 2007)

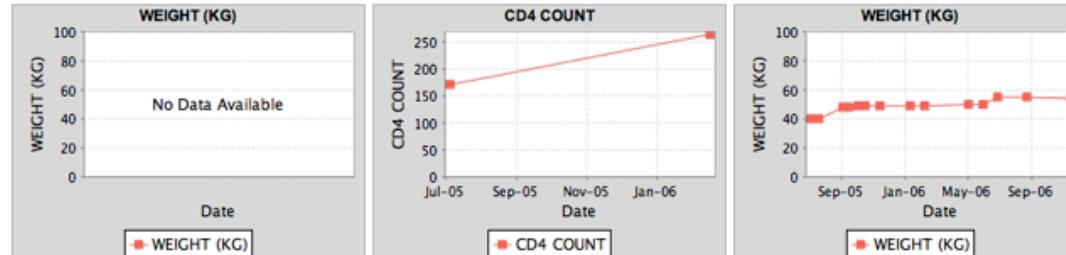
Doug Doctor, Ruhengeri Hospital

Alerts	Notes
<b>NO CD4 RESULT IN THE LAST 6 MONTHS!</b>	No known allergies
<b>NO CXR RESULT!</b>	No known height

Recent Symptoms	Date
<b>Hypersensitivity/allergic reactions, purple toes syndrome</b>	Jan 01, 1999
Anemia, pallor, fever, rash, dermatitis, including bullous eruptions	Jan 01, 1999
Dizziness, loss of consciousness, syncope, coma, taste perversion, pruritus, alopecia, cold intolerance, and paresthesia including feeling cold and chills.	Jan 01, 1999

Drug Order	Dose	Frequency	Start Date	Stop Date	Notes
<b>Triomune-40</b>	1.0 tab(s)	2/d x 7 d/w	Sep 13, 2007		
<b>EFV 600</b>	1.0 mg	1/d x 7 d/w	Aug 02, 2007		
Triomune-40 (stopped)	1.0 tab(s)	2/d x 7 d/w	Sep 13, 2007	Sep 13, 2007	Horrible rash spread all over patient's face
EFV 600 (stopped)	1.0 mg	1/d x 7 d/w	Aug 02, 2007		

Lab Test	Result	Date	Notes
<b>CD 4 count</b>	<b>200 units</b>	Jan 01, 1999	Test issued due to lateness
<b>Viral load</b>	<b>A billion</b>	Jan 01, 1999	Second test for verification of status
Viral load	3.1415	Jan 01, 1988	Ordered by Dr. Green



# How can I help?

- Improve user interface and interactivity
- Improve report/form design and generation
- Improve decision support tools
- Improve data synchronization tools
- Improve programmability and documentation
- Help train local developers in Africa
- Build modules for community healthcare workers, food supplementation, pharmacy, and clinicians

# Relevant Links

- Change – <http://change.cs.washington.edu>
- OpenMRS – <http://openmrs.org>
- Partners in Health – <http://pih.org>
- OpenROSA – <http://openrosa.org>
- GATHER – <http://gatherdata.org>