Deploying OpenMRS in Rwanda
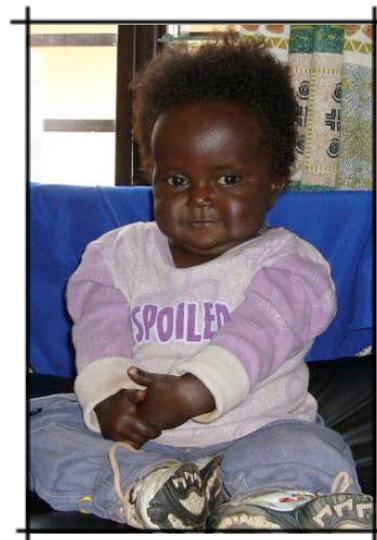
Yaw Anokwa

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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.

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

[Search field]   Search

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

Resources	Similar Concepts Merriam Webster® Google™ UpToDate® Dictionary.com® Lab Tests Online

Form Driven

No. DEM: ☐☐ ☐☐☐☐☐☐ -☐

INSHUTI MU BUZIMA
Clinique des Maladies Chroniques

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 coeur   Maladie des reins   Diabètes

   Désordre de saisie   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 ▫ ▫ ✕

1.	Patients with any encounters at Rukira	1073 results (cached) ▫ ✕
2.	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) ▫ ✕
3.	Patients in program HIV PROGRAM	5138 results (cached) ▫ ✕
4.	1 AND 2 AND 3	481 results (cached) ▫ ✕

Display which cohort: [Result of last search ▼]

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

Patient Registration

Patient Summary

Paul Persil Patient

IMB **12345678-A**

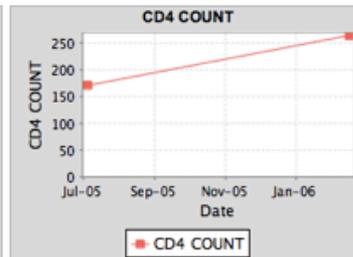|	
Gender	**Male**
Age	**44 years** (~ Jun 01, 1934)
Last Visit	**6 months ago** (Oct 26, 2007)
	Doug Doctor, Ruhengeri Hospital

TRACnet ID: 12345
Carte d'Identité: 1234567

Alerts	Notes
NO CD4 RESULT IN THE LAST 6 MONTHS! **NO CXR RESULT!**	No known allergies No known height

Recent Symptoms	Date
Hypersensitivity/allergic reactions, purple toes syndrome	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
Triomune-40	1.0 tab(s)	2/d x 7 d/w	Sep 13, 2007		
EFV 600	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
CD 4 count	**200 units**	Jan 01, 1999	Test issued due to lateness
Viral load	**A billion**	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