GLOBAL COMMUNITIES BUILDING FREE HEALTH IT PLATFORMS

OpenMRS

MEDICAL RECORD SYSTEM

MICHAEL DOWNEY – HAMISH FRASER

LIBREPLANET 2013

“*We are now faced with the fact, my friends, that* ***TOMORROW IS TODAY.***

We are confronted with the ***FIERCE URGENCY OF NOW.***

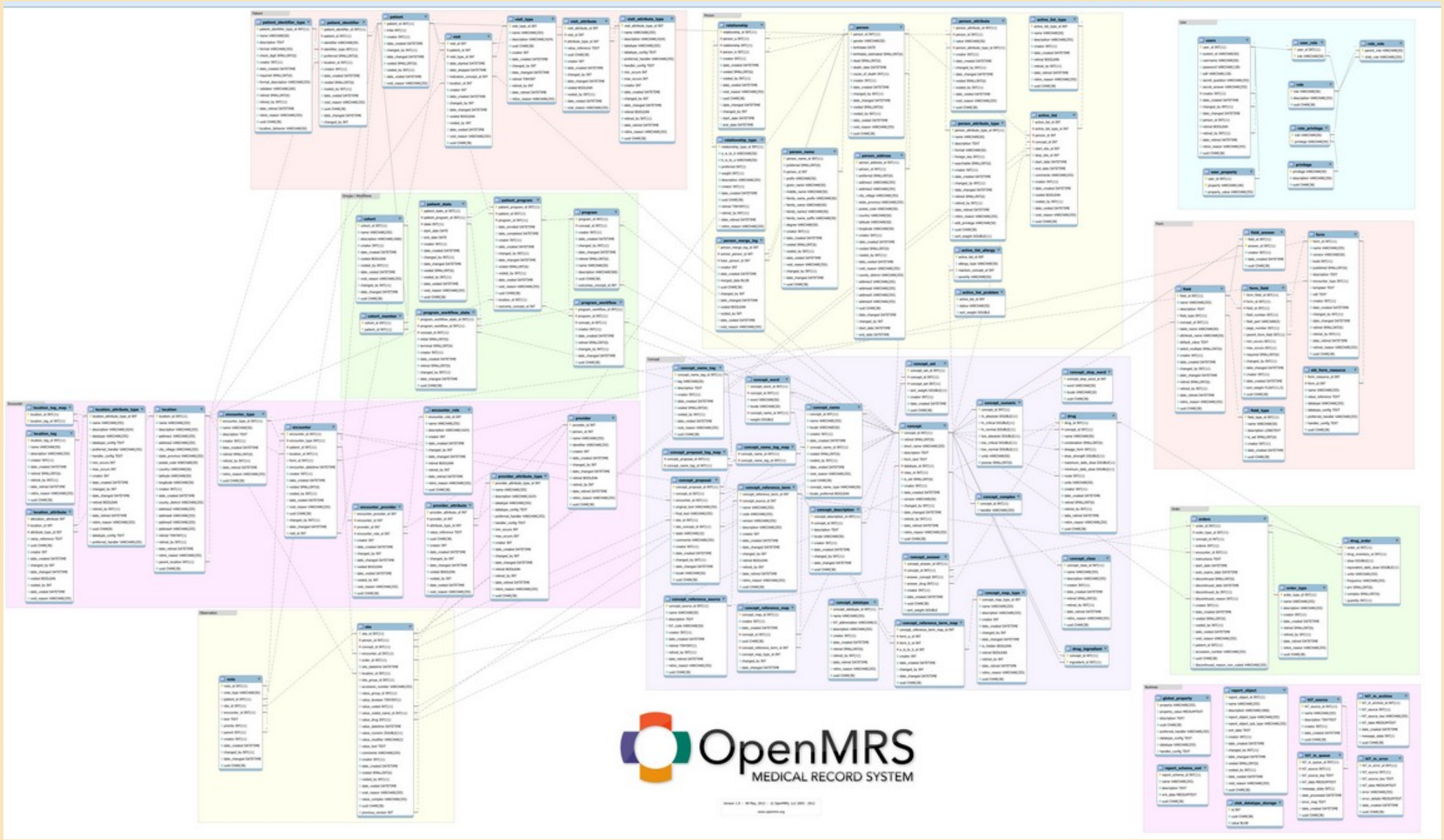
In this unfolding conundrum of life and history,
there is such a thing as ***BEING TOO LATE.***

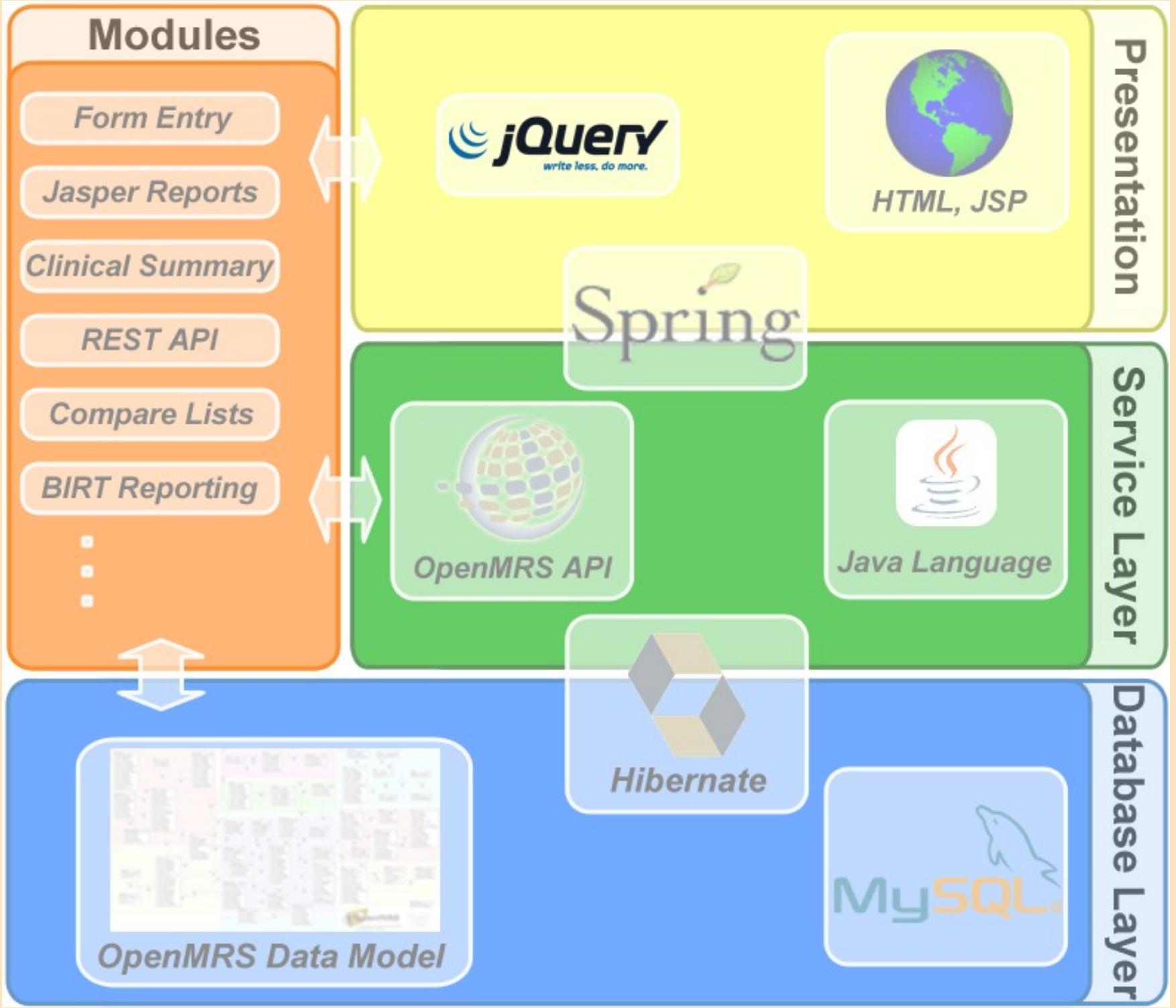
PROCRASTINATION *is still the thief of time.”*

MARTIN LUTHER KING, JR.

VIRAL ENTREPRENEURSHIP:

HEALTH IT PLATFORMS CREATE GLOBAL SYNERGY.


OpenMRS
MEDICAL RECORD SYSTEM


Modules
Form Entry
Jasper Reports
Clinical Summary
REST API
Compare Lists
BIRT Reporting
jQuery
write less, do more.
HTML, JSP
Presentation
Spring
OpenMRS API
Java Language
Service Layer
Hibernate
OpenMRS Data Model
MySQL
Database Layer

BUILDING WITH OTHERS

Source: Lee LeFever, http://bit.ly/x8CxcX

INTERNATIONAL COLLABORATION

MAJOR PARTNERSHIPS…

ROCKEFELLER FOUNDATION
INTERNATIONAL DEVELOPMENT RESEARCH CENTRE (CANADA)
WORLD HEALTH ORGANIZATION
US AGENCY FOR INTERNATIONAL DEVELOPMENT
US CENTERS FOR DISEASE CONTROL (CDC)
NATIONAL INSTITUTES OF HEALTH
DOCTORS WITHOUT BORDERS
THOUGHTWORKS
GOOGLE
MERCK

…INDIVIDUAL RELATIONSHIPS.

INFORMATION IS CARE

WHY USE AN EMR?

- Clinical care and quality improvement
- Reporting to clinicians, managers, funders
- Logistics and supply chain management
- Clinical research

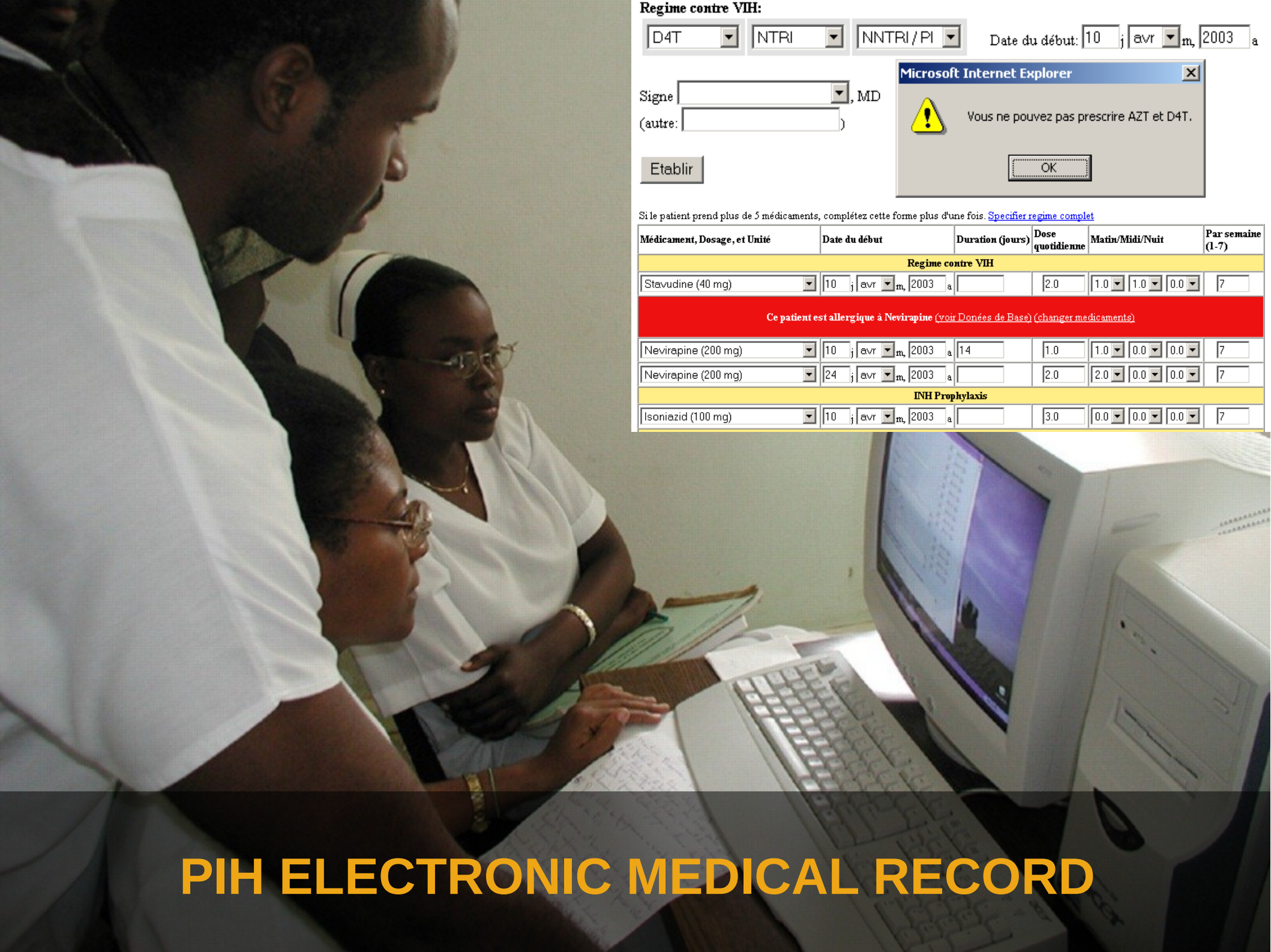
A NATIONAL & GLOBAL CRISIS

Partners In Health

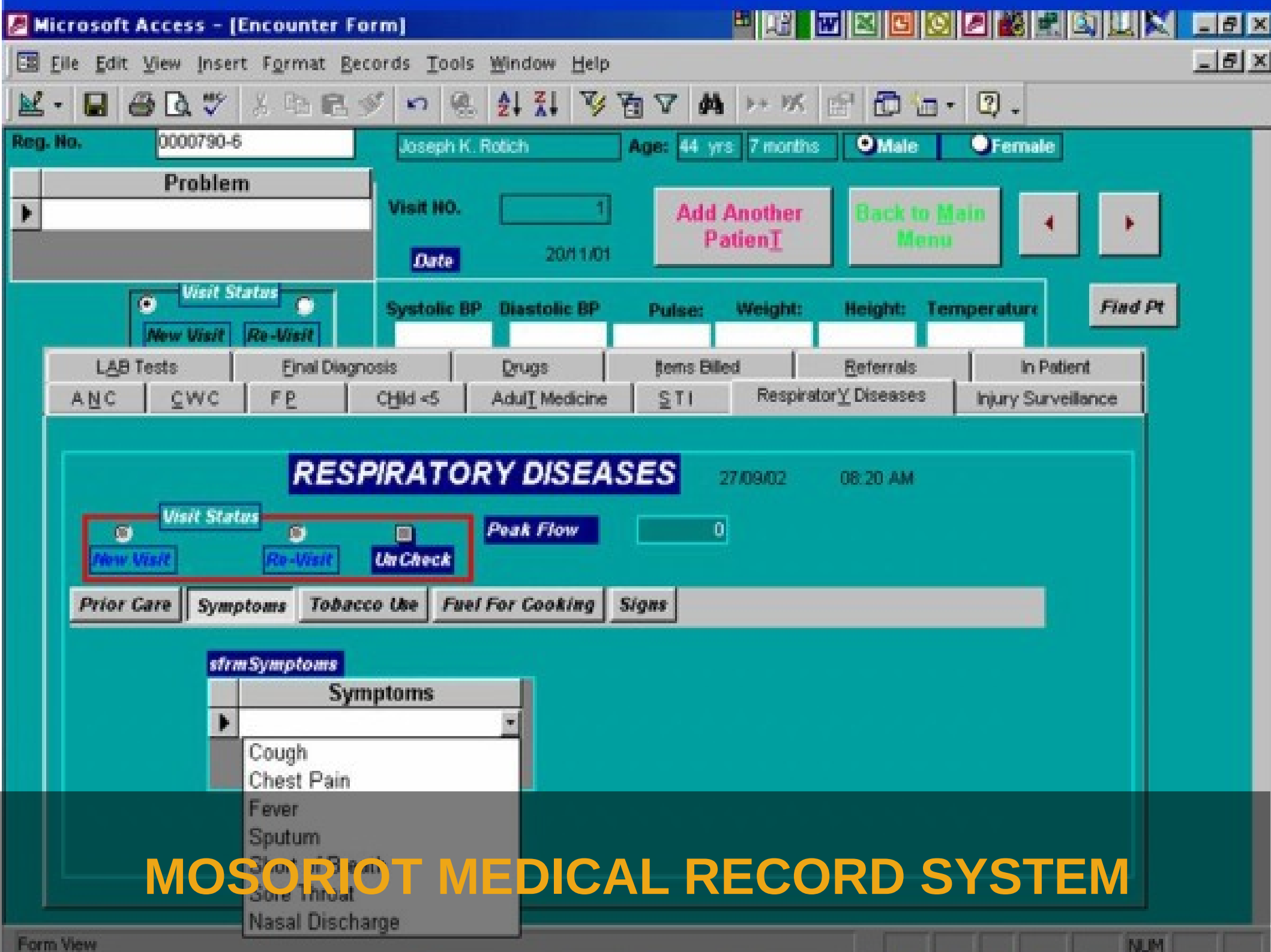
INDIANA UNIVERSITY

FROM TWO PARTNERS TO ONE COMMUNITY.

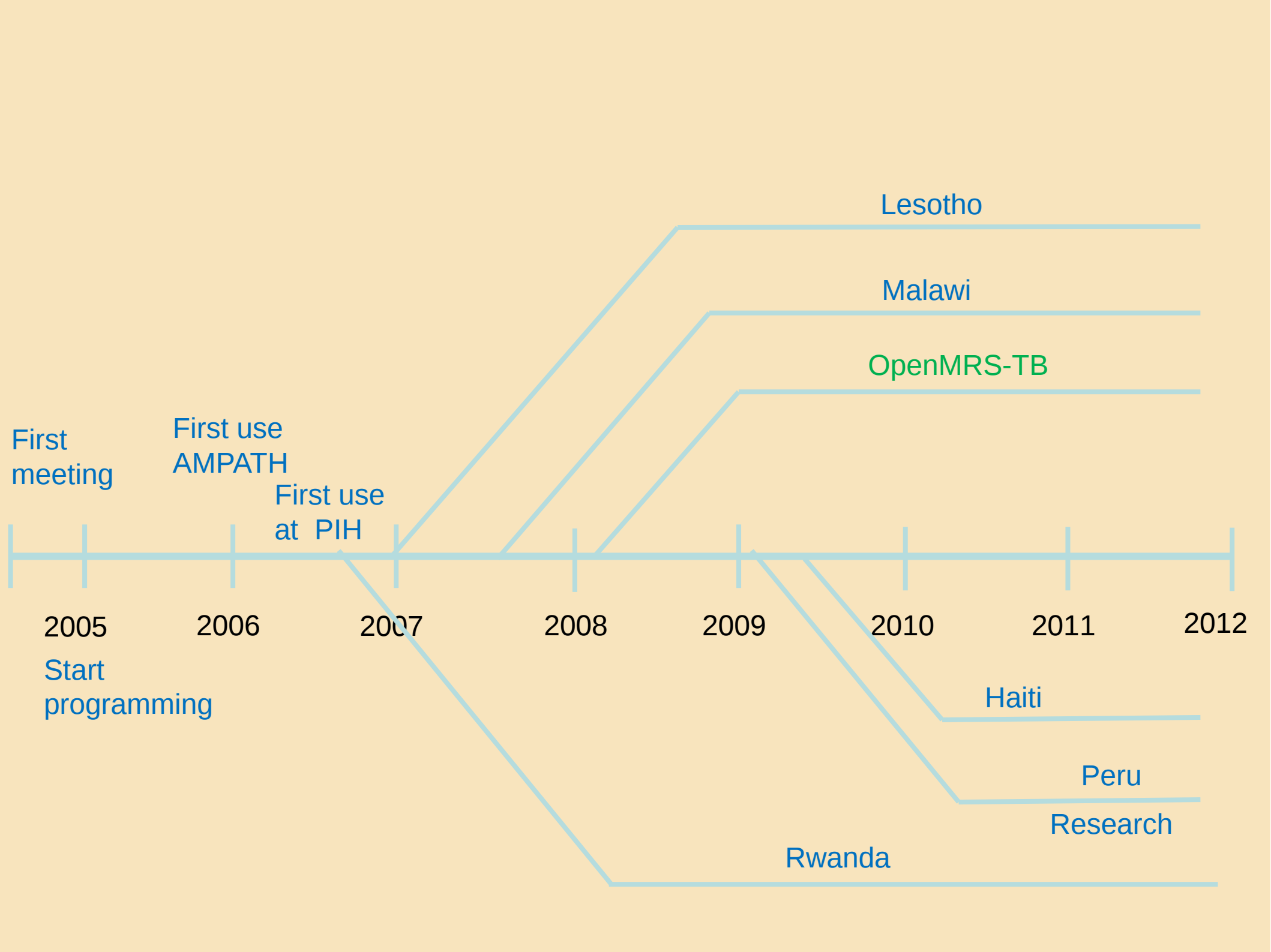
2004: INDIANA UNIVERSITY & PARTNERS IN HEALTH



PIH ELECTRONIC MEDICAL RECORD



MOSORIOT MEDICAL RECORD SYSTEM


Lesotho
Malawi
OpenMRS-TB
First meeting
First use AMPATH
First use at PIH
2005
2006
2007
2008
2009
2010
2011
2012
Start programming
Haiti
Peru
Research
Rwanda

OpenMRS “Starter Edition”

- Patient registration
- Form entry
- Data quality reports
- Clinical and programmatic reports
- Patient lookup/summary
- Decision support
- *Vocabularly “concept” management*

The MOI TEACHING &
REFERRAL HOSPITAL

THE AMPATH CENTRE
MTRH
MOI UNIVERSITY
PHOTO: SHAWN WOODEN

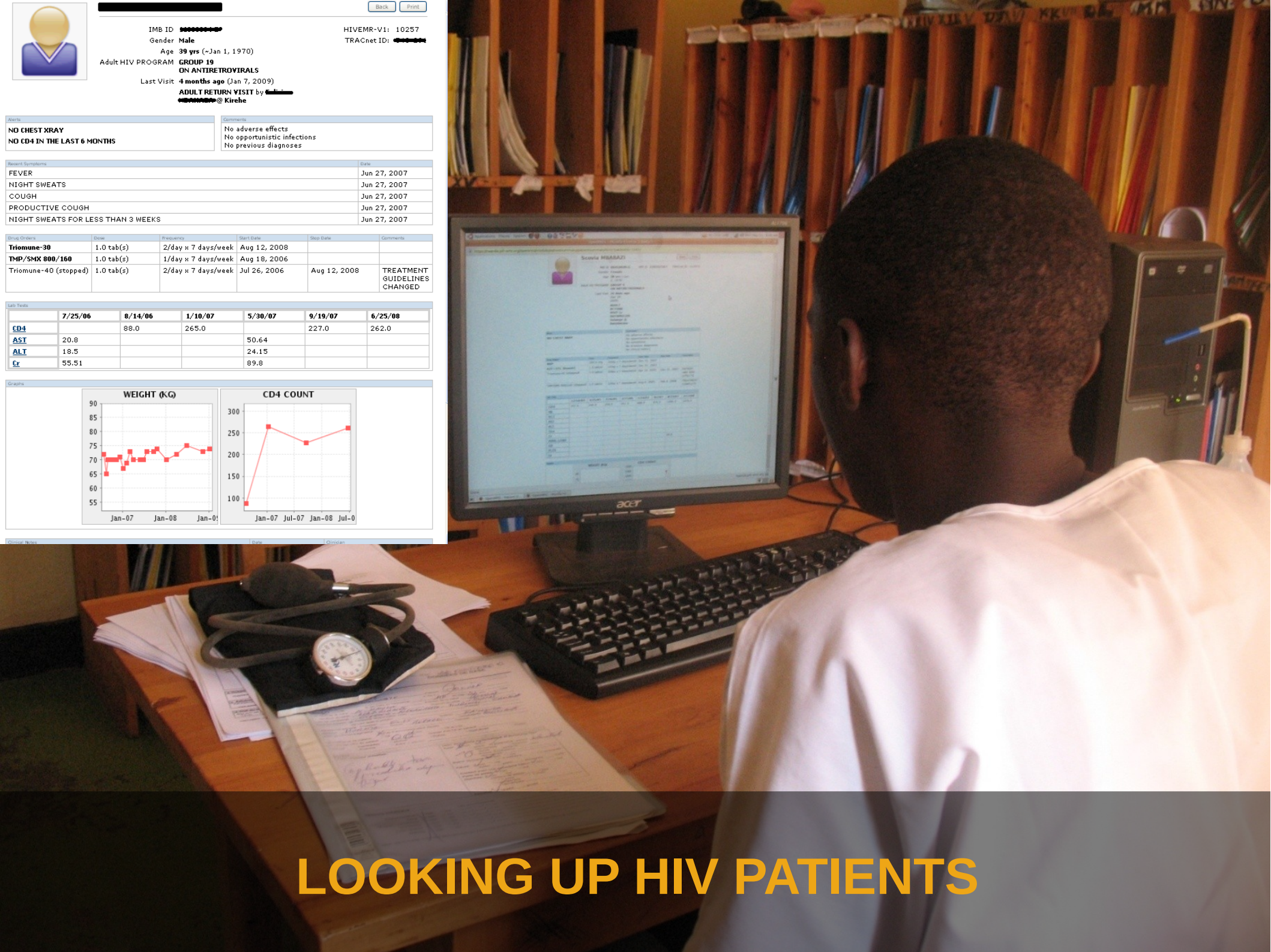
KENYA PATIENT SUMMARIES

- The OpenMRS EMR system at AMPATH in Western Kenya was used to generate printed patient summaries including reminders for ordering repeat CD4 counts

- In the intervention clinic with computer-generated reminders, **CD4 order rates were significantly higher, compared to the control clinic: 53% vs 38%, OR =1.80, CI 1.34 to 2.42, p<0.0001**

Were MC, et al. J Am Med Inform Assoc (2011).doi:10.1136/ jamia.2010.005520

RWINKWAVU INFECTIOUS DISEASE CLINIC



LOOKING UP HIV PATIENTS

RESULTS: CD4 COUNTS

- The proportion of CD4 counts conducted within the past 60 days but unknown to the clinician at the time of consultation was:
- **24.7%** in the pre-intervention period
- **16.7%** in the post intervention period
- **32.4%** reduction in CD4 loss ($p=.002$)
- We are now extending direct clinician access to the EMR

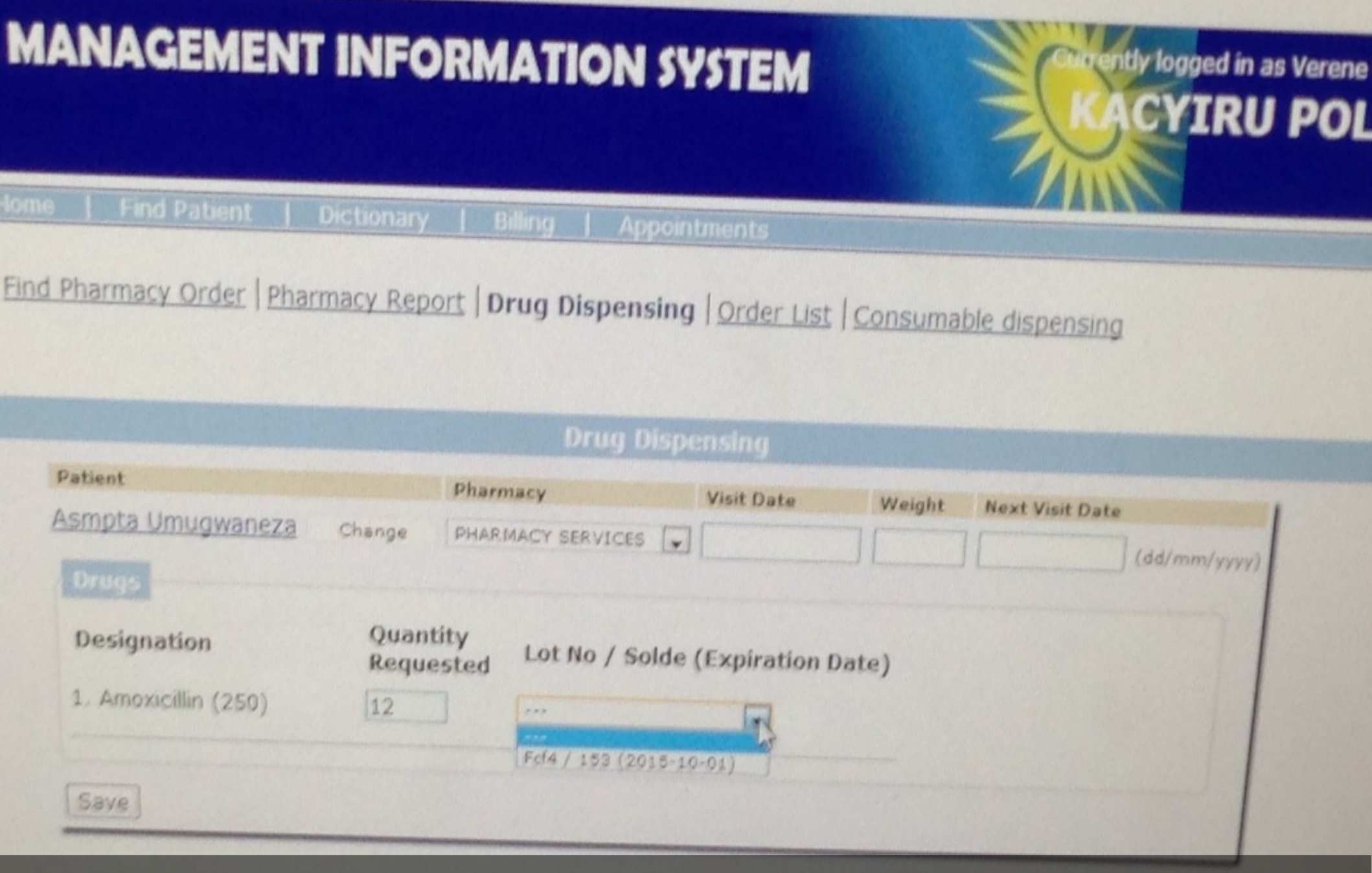
Amoroso et al, Stud Health Technol Inform. 2010;160:337-41

TOUCH SCREEN PATIENT REGISTRATION

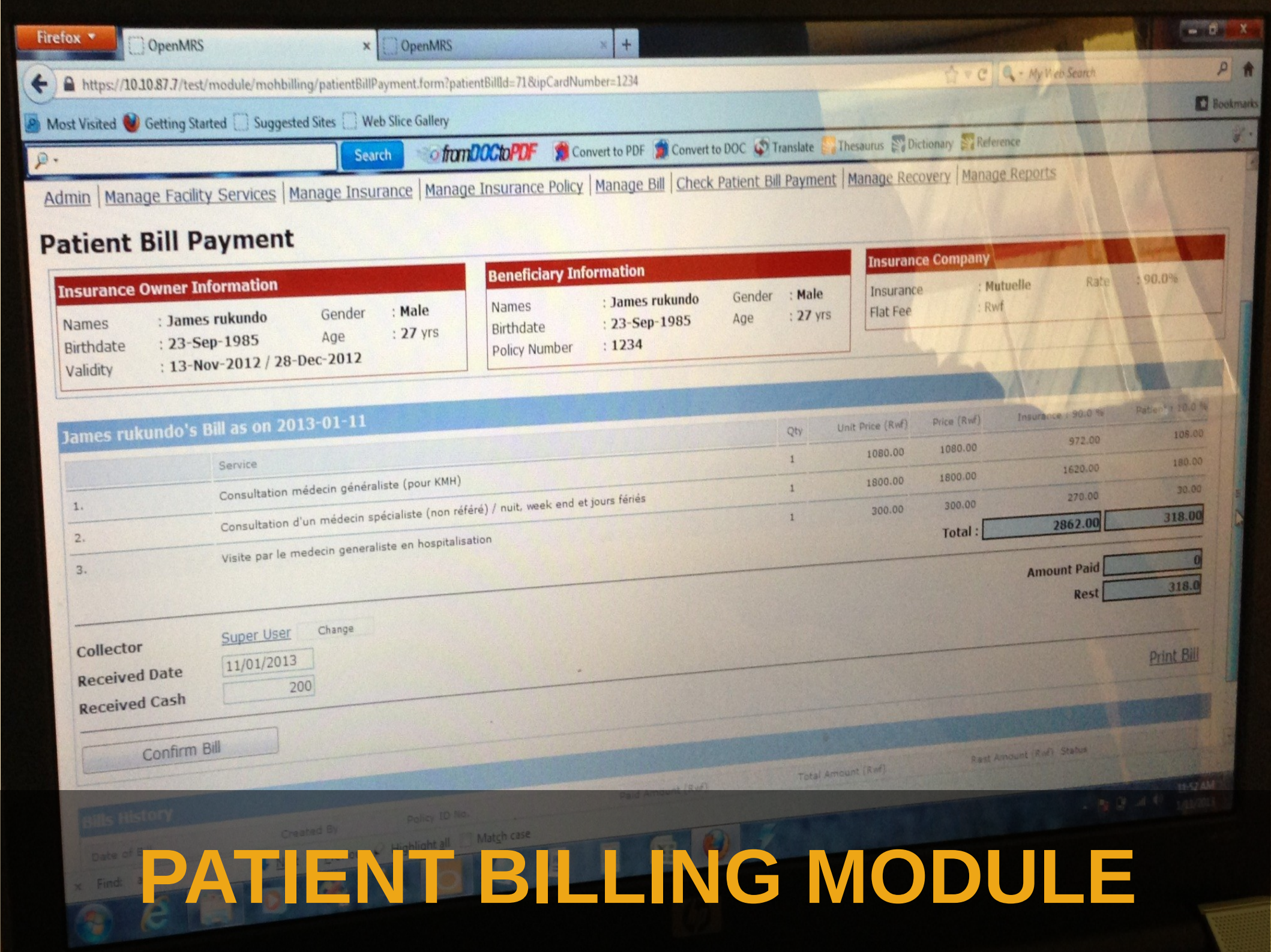
DEVELOPER TRAINING, RWANDA

RWANDA DEV TRAINING

- We ran a three year training program in Kigali for computer science graduates
- One year, mentored training course
  - Web development
  - Java programming
  - OpenMRS programming
  - Medical informatics
- 34 graduates over 3 years, 2009-11
- They support OpenMRS rollout
  as well as building software development capacity in Rwanda



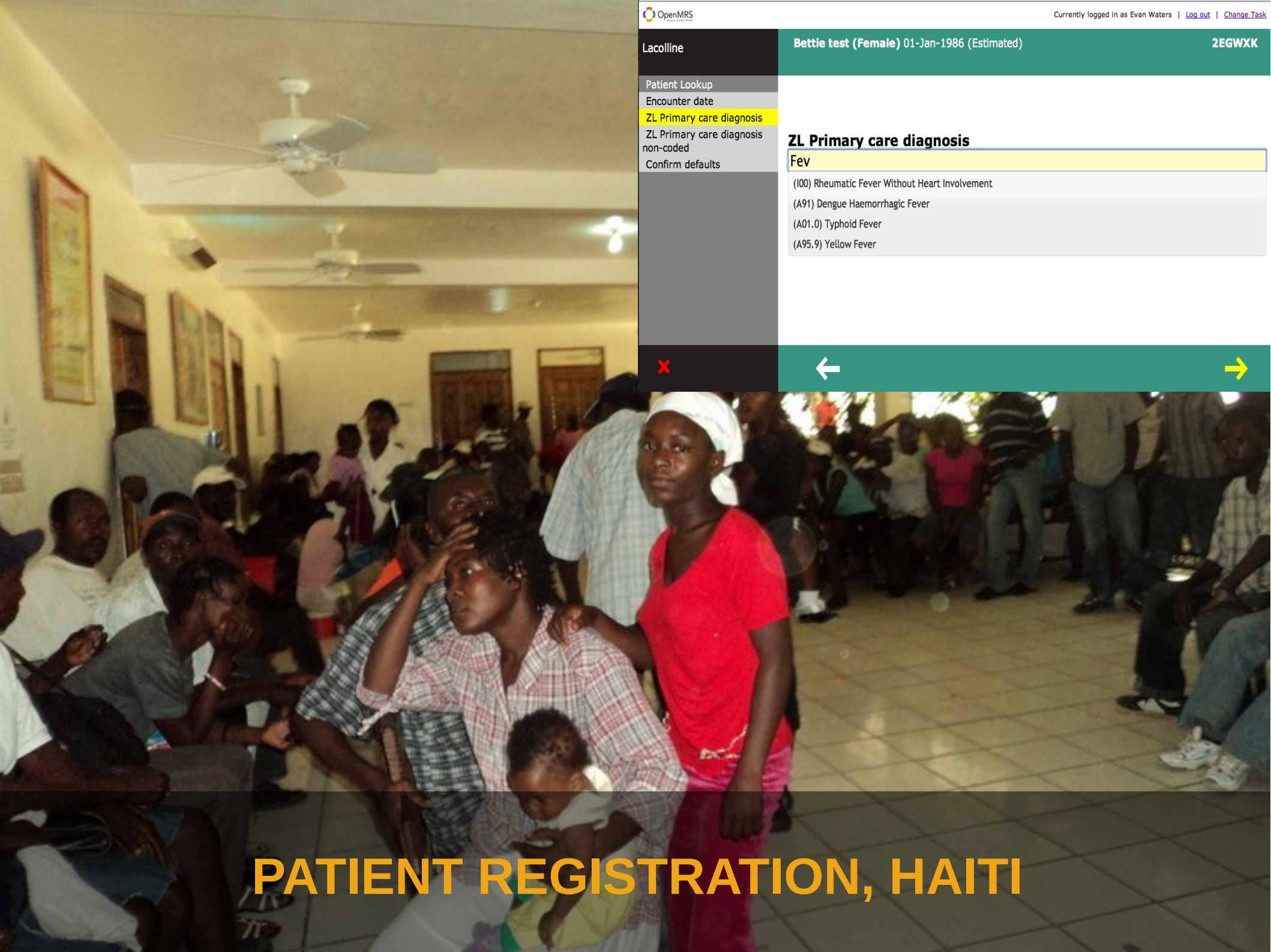
KACYIRU POLICE HOSPITAL, RWANDA



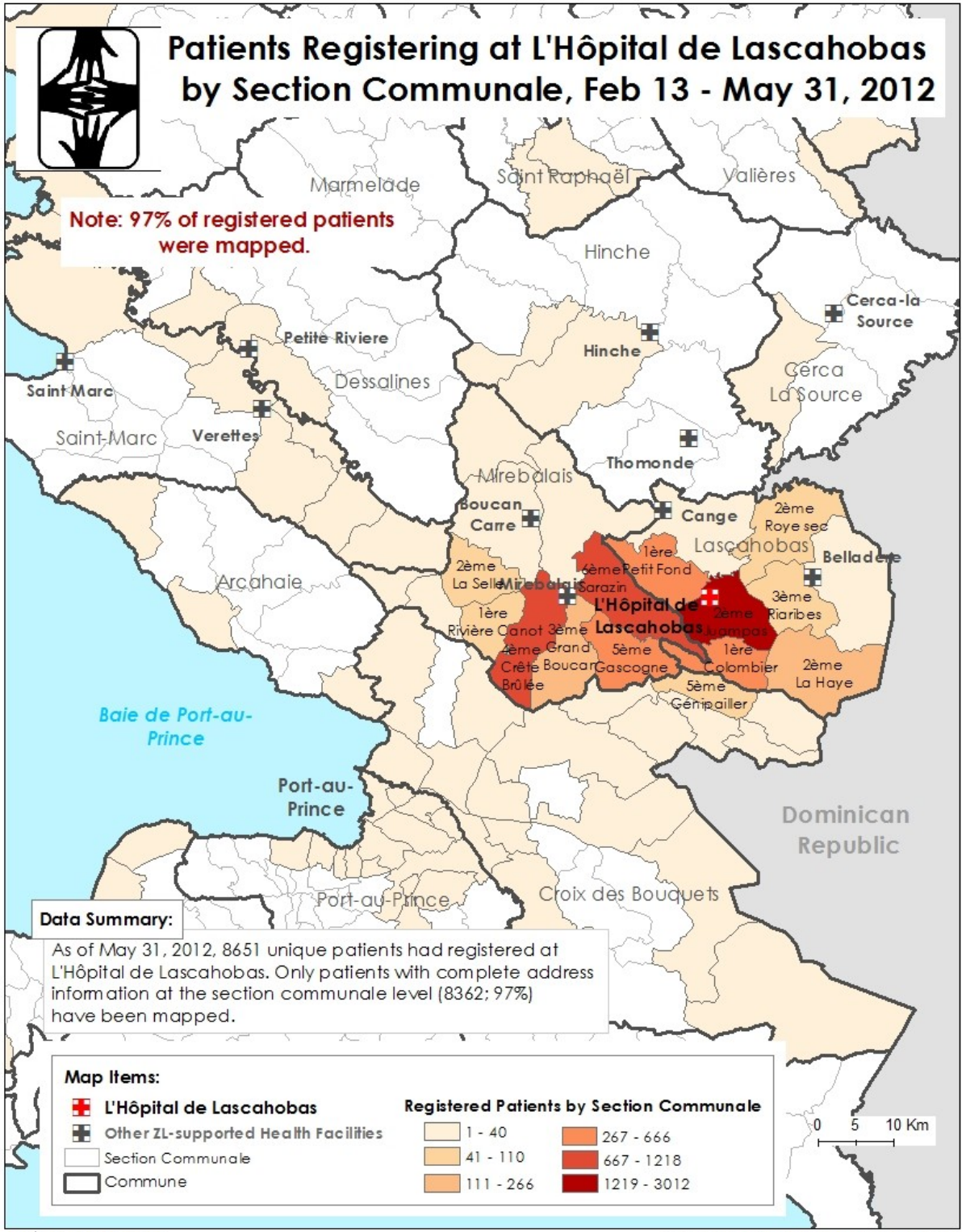
PATIENT BILLING MODULE

LACOLLINE, HAITI

OBSERVED THERAPY, HAITI

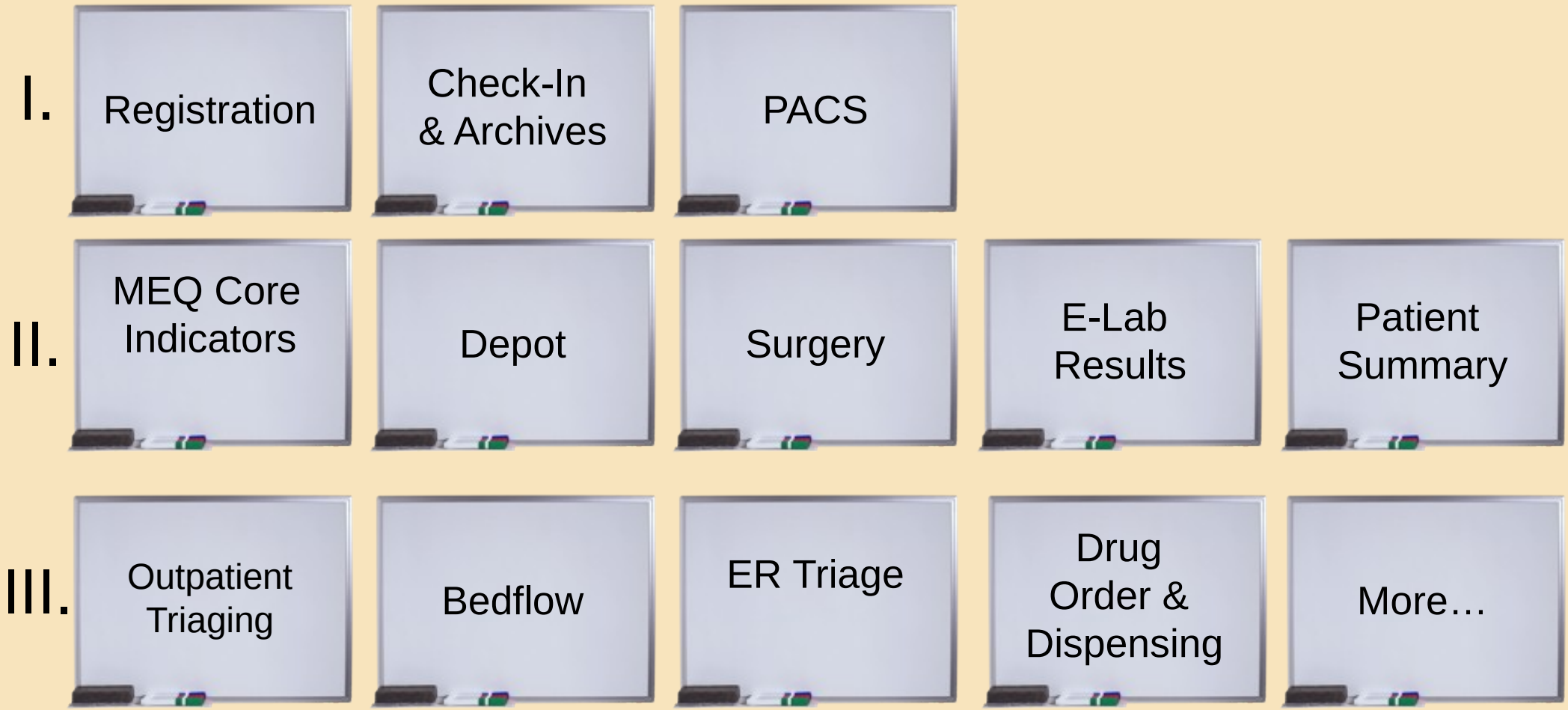

OpenMRS
Currently logged in as Evan Waters | Log out | Change Task
Lacolline
Bettie test (Female) 01-Jan-1986 (Estimated)
2EGWXK
Patient Lookup
Encounter date
ZL Primary care diagnosis
ZL Primary care diagnosis non-coded
Confirm defaults
ZL Primary care diagnosis
Fev
(I00) Rheumatic Fever Without Heart Involvement
(A91) Dengue Haemorrhagic Fever
(A01.0) Typhoid Fever
(A95.9) Yellow Fever
PATIENT REGISTRATION, HAITI

USING PATIENT REGISTRATION DATA

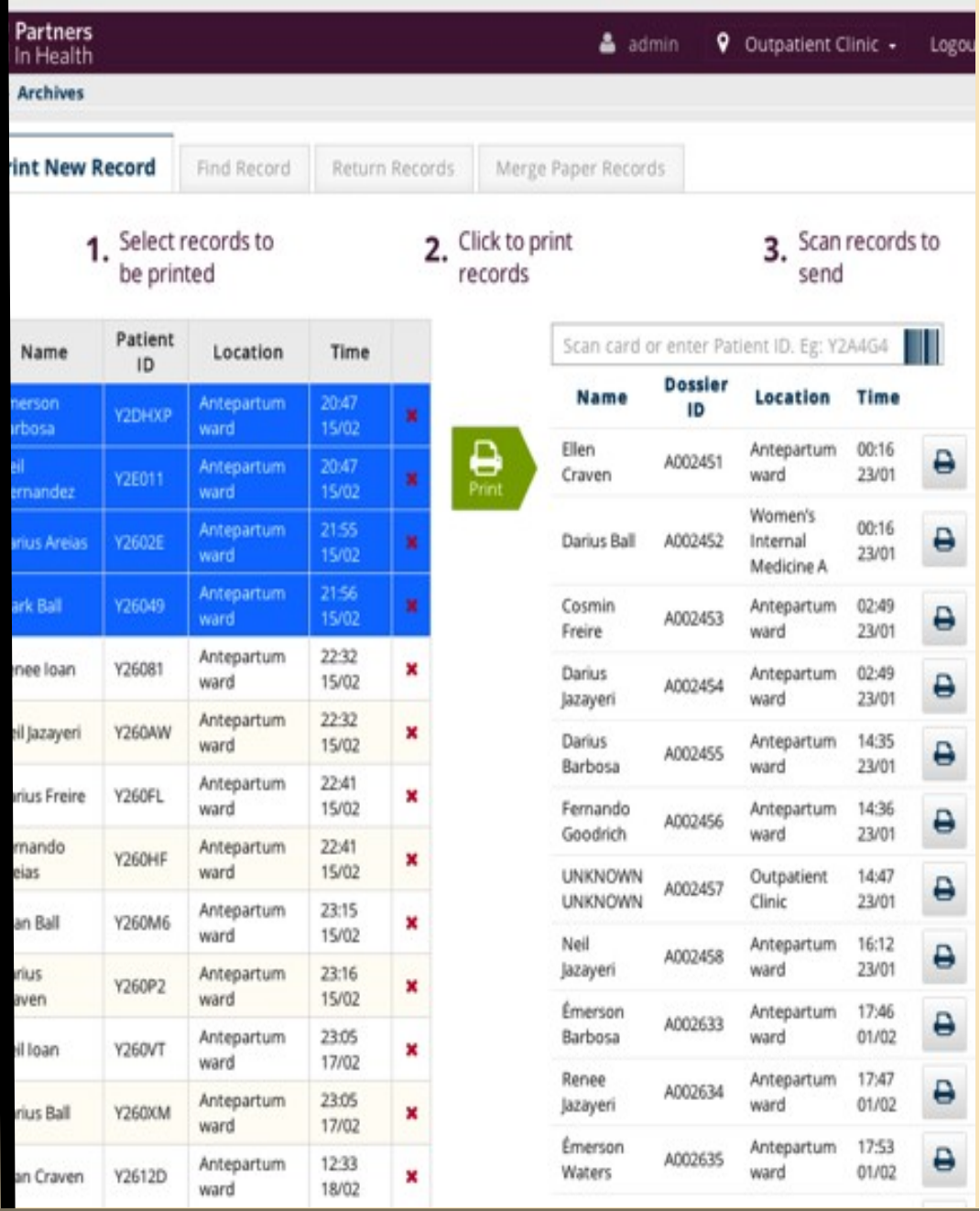


MIREBALAIS, HAITI

MINIMUM VIABLE PRODUCT:



Credit: Evan Waters



UI EVOLUTION – VERSION 2.0

MDR TB

Find Patient(s)

Find Patient(s) mukherjee ☐ Include Retired

1 to 1 of 1

	Identifier	First	Middle	Last	Age	Gender		Birthdate	Health Center
1	44006563-G	Joia	Test	Mukherjee	28	F	~	01/01/1981	Mulindi

Create Patient

To create a new person, enter the person's name and other information below. It is good practice to first verify that this person is not already in the database using the search box above.

Name

Birthdate *(Format: mm/dd/yyyy)* or Age

Gender ○ Male ○ Female

Create Person

View All MDR-TB Reports

WHO Form 05 Quarterly (2008 version)

WHO Form 06 6-month (2008 version)

WHO Form 07 Annual (2008 version)

WHO Form 07 Quarterly Report (2006 version)

WHO Form 08 6-month report (2006 version)

WHO Form 09 Annual Report (2006 version)

View Drug Requirements

drug requirements for next month

number of patients taking each drug

DISEASE-SPECIFIC EMR (MDR-TB)

Charles Virunga

MDR-TB Program Identifier: **44**

35 yrs (~01-Jan-1975) Health Center: **Cange**

BMI: 24.7 (Weight: 67.5 kg , Height: 165.0 cm)

Regimen: **Ethionamide (Eto) , Ciprofloxacin (Cfx) , Pyrazinamide (Z) , Cycloserine (Cs) , P-aminosalyicylic acid (PAS) , Capre (Cm) , Moxifloxacin (Mfx)**

Last encounter: **Specimen Collection @ Cange | 19-Aug-2010 | Louise Allen**

MDR-TB program start date: **05-Apr-2007** Treatment start date: **05-Apr-2007**

Culture Status: **Unconverted**

Patient Overview

Patient Enrollment Date: 05/04/2007

View Main Patient Dashboard | Edit Patient Information (Short Form) | Edit Patient Information (Long Form)

Month	Date Collected	Smears	Cultures	Bacteria	INH	E	S	KM	CM	Ethio	CPX	R	Z	LFX	AMK	CFZ	CS	CLR	RFB	PAS
PRIOR																				
BASELINE																				
0	05/04/2007	Treatment Start Date																		
1	01/06/2007	POSITIVE/++ N/A	++ N/A	M. TUBERCULOSIS COMPLEX	R	R	S	S	S	S	S	R	S				S			
2	04/06/2007	POSITIVE/POSITIVE N/A																		
	03/07/2007	- N/A																		
3	04/07/2007	-/- N/A																		
4	16/08/2007	-/- N/A																		
	17/08/2007	- N/A																		
5																				
6																				
7	10/11/2007	- N/A																		
	12/11/2007	-/- N/A																		
	20/11/2007	- N/A																		
	21/11/2007	-/- N/A																		

MDR-TB TREATMENT HISTORY FLOWSHEET

Discard changes | Print

Wilms Test | Oncology-Demographics (Non Clinical Oncology) | (Unsaved Form)

IMB ID:

Date: 18/03/2013 (dd/mm/yyyy)

Nom / Last name: **Test**

Prénom/ First name: **Wilms**

Inshuti Mu Buzima
PIH Rwanda

Oncology Program / Programme d'oncologie
Registration & Demographic
DemographicsIntake_ONCOLOGY_V1.2NT2012June20 copy.doc

Clinic: Butaro Hospital

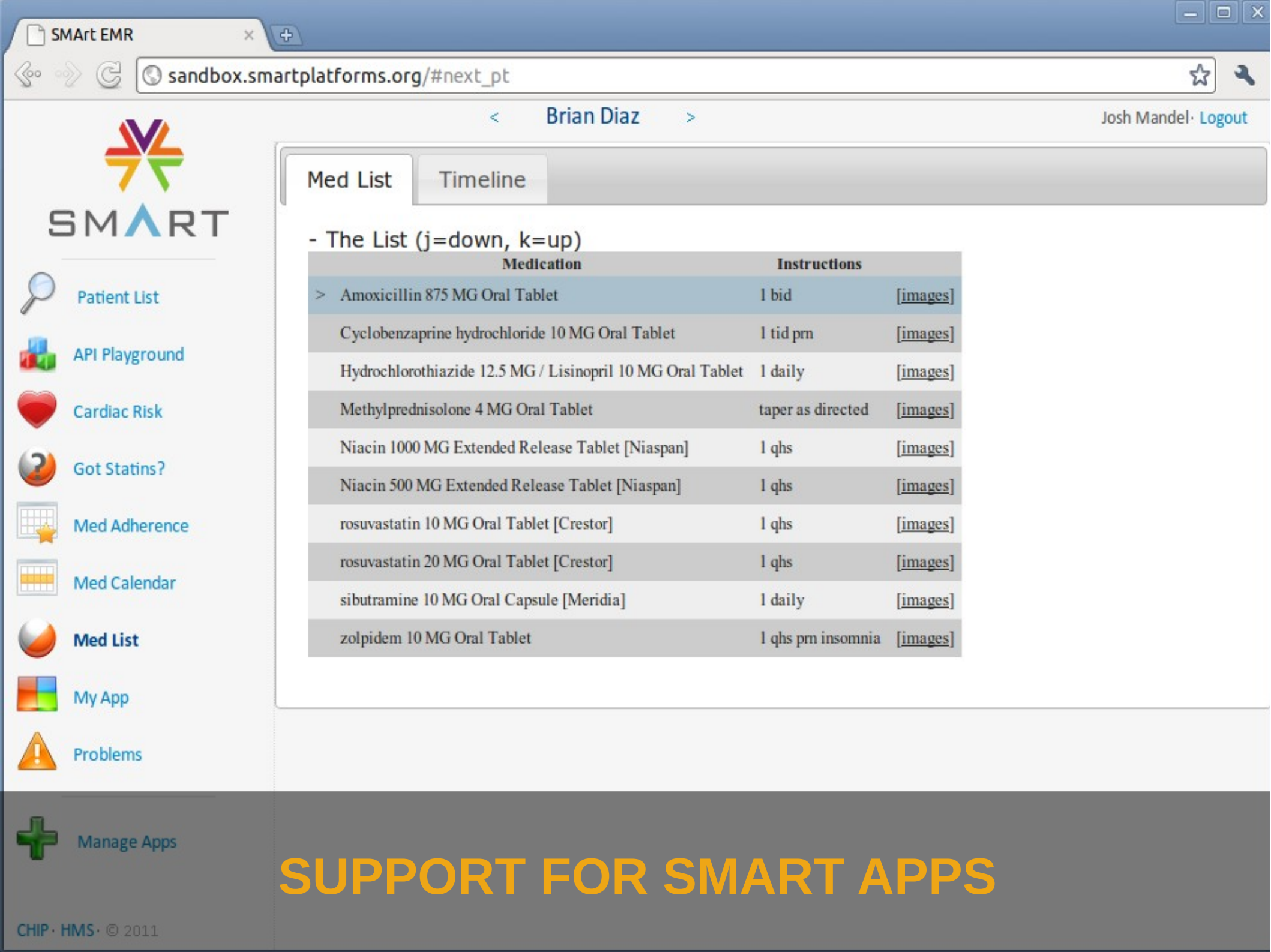
Clinicien/Provider: Choose a Provider

DEMOGRAPHICS AT INTAKE

Date of Birth	01/Jan/2006
Sex	M
Residence	Country [ ] -- State/Province [ ] District [ ] City/Village [ ] Cell [ ] Umudugudu [ ] Structured: --
Patient Telephone #	Primary [ ] Secondary [ ]
Family care-giver	Name: [ ] Relationship: [ ] Telephone: [ ]
On Mutuelle ?	☐ Mutuelle ☐ None ☐ Other: [ ] If Yes, Mutuelle level: ☐ I ☐ II ☐ III
Socioeconomic assistance	Already receiving: Food Supplementation School Financial assistance Transport Home construction Other: _____ Recommended: ☐ Food Supplementation ☐ School Financial assistance ☐ Transport ☐ Home construction ☐ Other: [ ] NOT Indicated
Accompagnateur	☐ NOT Recommended **Existing Relationships for Patient:** Accompagnateur: **Create new Relationship for Patient:** Search for Person [ ]
Type of referring facility	☐ Health Center ☐ Referral Hospital ☐ District Hospital ☐ Other ☐ N/A (not referred)

Enter Form

SOURCE: LARA KELLET


SMArt EMR
sandbox.smartplatforms.org/#next_pt
< Brian Diaz >
Josh Mandel · Logout
SMART
Patient List
API Playground
Cardiac Risk
Got Statins?
Med Adherence
Med Calendar
Med List
My App
Problems
Manage Apps
Med List
Timeline
- The List (j=down, k=up)
Medication
Instructions
> Amoxicillin 875 MG Oral Tablet 1 bid [images]
Cyclobenzaprine hydrochloride 10 MG Oral Tablet 1 tid prn [images]
Hydrochlorothiazide 12.5 MG / Lisinopril 10 MG Oral Tablet 1 daily [images]
Methylprednisolone 4 MG Oral Tablet taper as directed [images]
Niacin 1000 MG Extended Release Tablet [Niaspan] 1 qhs [images]
Niacin 500 MG Extended Release Tablet [Niaspan] 1 qhs [images]
rosuvastatin 10 MG Oral Tablet [Crestor] 1 qhs [images]
rosuvastatin 20 MG Oral Tablet [Crestor] 1 qhs [images]
sibutramine 10 MG Oral Capsule [Meridia] 1 daily [images]
zolpidem 10 MG Oral Tablet 1 qhs prn insomnia [images]
CHIP · HMS · © 2011
SUPPORT FOR SMART APPS

EMPOWERING HEALTH WORKERS

Mobile Health Platforms Linked to OpenMRS

MiDoctor

Formularios & Reportes

Alertas de Email

Centro de Salu

Llamada del Centro

MiDoctor

Inicio | Buscar/Crear Paciente | Diccionario | Constructor Cohorte | Reporting | Admini

Prueba Ignorar RUT: 13457559-K

101 años (06-01-1910) Celular: 72122878 Numero Fijo: Centro médico: C.S. Bernardo Leighton

BMI: ? (Peso: , Height:) CD4: Regimen:

Ultimo encuentro: Automatizado1 @ C.S. San Geronimo, 03-06-2011

Descripción | Régimenes | Encuentros | Demografia | Graficos | Form Entry

Encuentros

Show 20 entries

Modificar	Ver	Fecha de Encuentro	Tipo de Encuentro	Proveedor	Formulario	Localidad	Digitador
		03-06-2011	Automatizado1	Super User	Automatizado Medicamentos 1	C.S. San Geronimo	Super User
		03-06-2011	Automatizado1	Super User	Automatizado Medicamentos 1	C.S. San Geronimo	Super User
		12-05-2011	Tratamiento	Administrador Cosmos	07. Formulario Post Alerta Medicamentos	C.S. Bernardo Leighton	Administrador Cosmos
		12-05-2011	Diagnostico	Joaquin Blaya	01. Formulario Datos Generales del Paciente	C.S. San Geronimo	Joaquin Blaya
		03-05-2011	Diagnostico	Administrador	04. Formulario Consejeria Pre-	C.S. San	Administrador

Mesa de ayuda a pacientes

SMS

Mensajes

Llamadas Automatizadas

Pacientes

BI-DIRECTIONAL APPROACH:

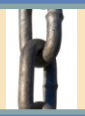
- Bottom up
  - Address clinical needs and problems
  - Ensure data quality
  - Local ownership and priorities
- Top down
  - Plan for wide use
  - Horizontal approach to disease healthcare
  - Core data set and use of open standards
  - Evaluation and evidence based decision making

RAPID GROWTH:

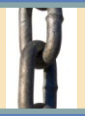
- Wide deployment to more than 50 LMICs
- National scale rollouts in Rwanda, Kenya, the Philippines
- Wider range of diseases: Oncology, Heart Disease, Diabetes, Primary Care, Surgery
- More direct point of care use
- Wider use as part of mobile health projects
- Linking to broader eHealth architecture projects

Infrastructure – power, hardware, networking, Internet

Software – OpenMRS, OpenBoxes, mobile tools, others



Staff – data entry, data manager, IT support



Leadership & management –clear focus on outputs and goals, knowledge of the capabilities of systems

Training – for all the above staff

5 CHAIN LINKS FOR EFFECTIVE INFO SYSTEMS

6 KEYS TO SUCCESS...

- Be collaborative from the start.
- Mix individual and organizational contributors.
- Keep an eye on goals of organizational partners.
- Focus on real problems and don't lose the big picture.
- Combine top down and bottom up strategies.
- Listen. React. Iterate.

** Your mileage may vary.*

THEMES ON THE HORIZON

- Making OpenMRS easier to set up and configure: *Proprietary solutions are the competition.*
- Reporting and data use – strengthening reporting tools and links to i2b2, Pentaho and other systems
- Improving UI, usability and hospital use
- Improved data synchronization
- Further engagement with universities and companies
- Use in more “developed” countries

FREE SOFTWARE SAVES LIVES.

dziękuję

shukriya

merci

mauliate

ar kun

amesege'nallo'

imena

ke itumela

zikomo

toda raba

THANK YOU

enkosi

OpenMRS

MEDICAL RECORD SYSTEM

spasibi

danke

ngiyabonga

go raibh maith agaibh

matur suksma

siyabonga

murakoze

asante sana

ngiyabonga

agyamanac

terima kasih

謝謝大家

ndatenda