



Using electronic medical record system (EMRS) for diabetes management in Cameroon

Wendy Awa MPH, PhD (cand.): Cameroon Diaspora Network.Germany

Dr. med. Simeon Choukem: Douala General Hospital

Dr. med. Marie-Patrice Halle: Douala General Hospital

Dr. Line Kleinebreil: World Francophone Numeric University

Dr. Ghislain Kouematchoua: Diaspora Network.Germany



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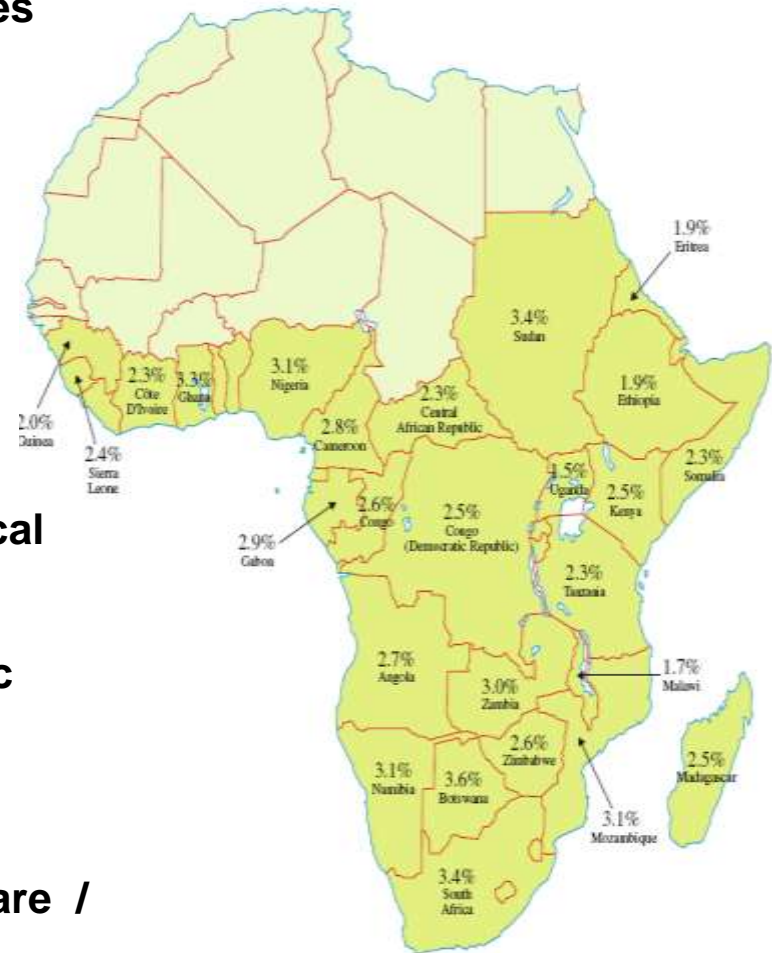


Background



Diabetologia (2009) 52:8–16

- **Worldwide increase in the prevalence of diabetes**
Estimates: By 2030 about > 450 Million.
- **Prevalence increase SSA higher than global average**
- **Diabetes in SSA is associated with high comorbidity / complication / mortality burden**
- **Economic costs: 46 Billion in 2000 in SSA**
- **Diabetes competes for limited recourses, political attention and financial investment**
- **Policy makers lack data on which to base public health decisions**
- **Practical, sustainable, setting oriented EMRS solutions can improve the quality of diabetes care / management and generate data for research**



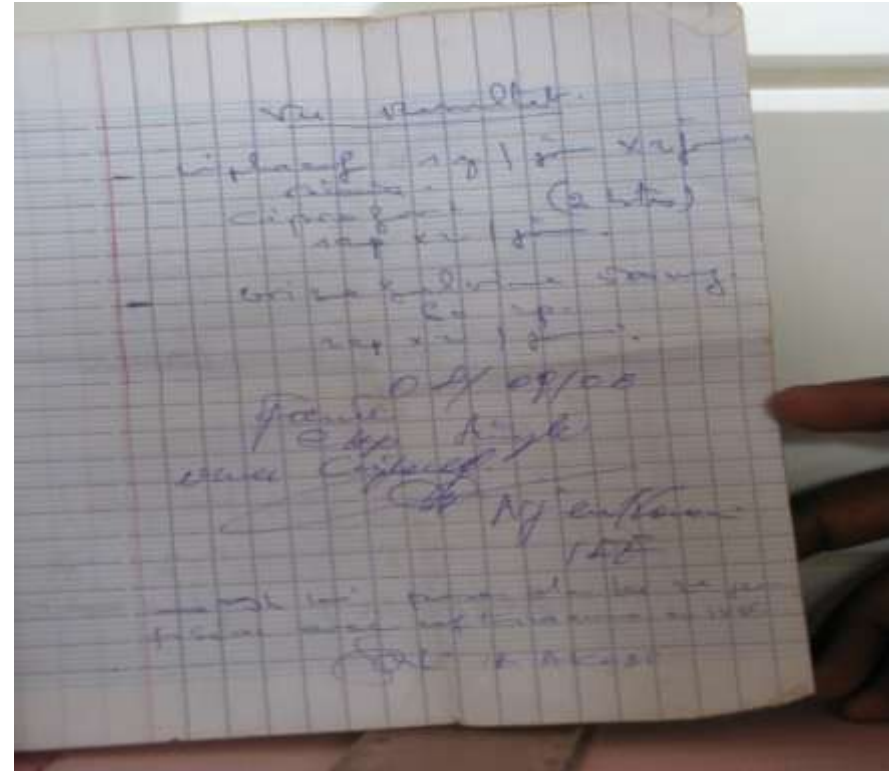


Conventional documentation



In-patient records

Out-patient records



- Paper based documentation
- Absence of health information systems



EMRS as electronic „Patient file“



- All diabetes relevant parameters in patient's file will be documented electronically
- Conventional paper based hospital files / book will serve as backup
- Document once, use for several purposes



Diaspra Collaboration



Partner hospitals:

- Douala General Hospital
- District Hospital Mfou
- Ad Lucem Hospital Banjoun

Procedure

1. Work process analysis on the spot
2. Online training of end users
3. IT infrastructure installation
4. On the spot training



=> North-South Collaboration / Knowledge Transfer

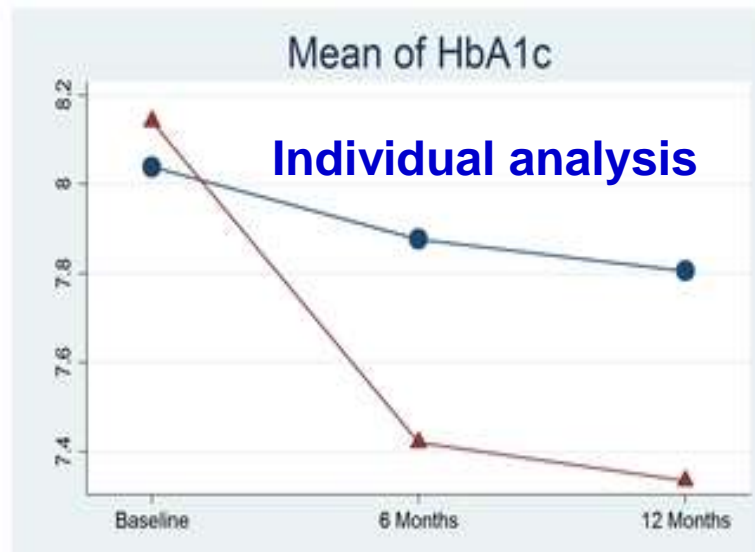
=>Diaspora contribution / MDG Achievement



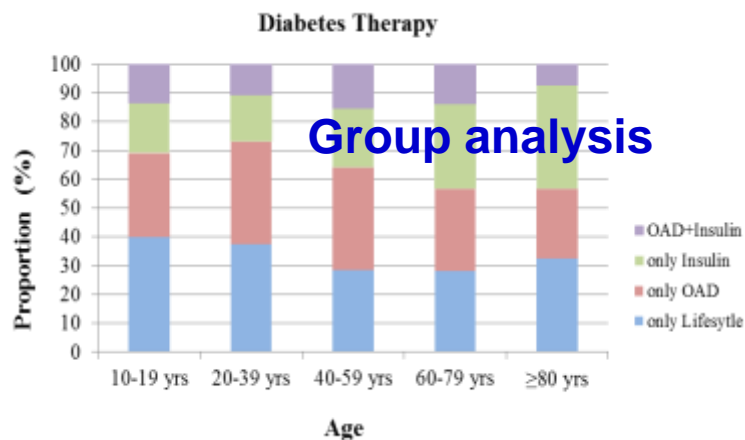
Document once, use for several purposes



Referral letters



Data Transfer





Diabetes Module: OpenMRS



Area	Example of documented parameter
Core data	Name; patient number, sex, date of birth,
Anthropometric data	Weight, height, BMI, WC, HR
Treatment modality	Outpatient, inpatient, reason for consultation, Urine-/blood sugar, insulin therapy scheme
Acute and chronic complications	Hypo-/hyperglycemia, eye damage, vascular diseases, neurological complications, kidney damage
Metabolic parameters	HbA_{1c}, blood sugar during consultation, OGTT
Long-term risk parameters	Blood pressure, LDL, HDL TG, cholesterol
Psychosocial parameters	Education level, education level of parents
Diabetes counseling	Contents of session, single/ group counseling
Quality of life	Wellbeing five according to WHO



Outpatient care support



Component	Area of Application
Automatic referral letter generation (direct output in MS-Word)	Quick communication between clinicians and colleagues
Tabular data summary	Quick overview of the patient's history
Graphical representation with highlighting of normal blood values)	Visual monitoring of linear growth & BMI development, long-time HbA1c monitoring
Extensive search in the database	Search for patients with risk factors (weight, blood pressure, HbA1c, etc.); overview of types of therapy (number of injections), monitor overdue check-ups (eye exam, HbA1c-determination), etc.
Standard letters	Letter or report on counseling measures, changes made in the care (personnel changes, etc.)
Prints of therapy scheme	Written outline of therapy as reminder for patient
Patient Diabetes ID	Printed sheets for patients own documentation e.g. self glucose measurements



Internal quality monitoring



Area	Examples
Risk factor	Proportion of patients with BMI > 90th Percentile height < 10.Percentile, Bloodpressure > 90th Percentile HbA1c > 5 Standarddeviation above average
Acute Complications	Hypoglycaemia per 100 Patient years Admissions due to diabetic ketoacidosis
Chronic complications	Eye damages, neuropathies, micro/macroalbuminuria
Completeness of control examinations	Eye examination control , measurement of blood pressure, HbA1c, weight, height, urine albumin
Training	Success of training (e.g. Wilcoxon test for significant improvement in BMI and HbA1c)
Metabolic control	Absolute and relative HbA1c (SDS and MOM)

OpenMRS - Patient Dashboard - Mozilla Firefox

http://localhost:8080/openmrs/patientDashboard.form?patientId=8&phrase=bel

Wikipedia (de)

Meistbesuchte Seiten Erste Schritte Aktuelle Nachrichten Links anpassen (Unbenannt)


OPENMRS

Currently logged in as yvan lulu | [Log out](#) | [My Profile](#) | [Help](#)

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

Andre Bella

Old Identification Number: **AB123**



 < 1 yr (11-Dec-2008)

BMI: 25.3 (Weight: 82.0 kg, Height: 180.0 cm) CD4: | Regimen: **Insulin analog, NovoRapid (Aspart, rapid-acting)**

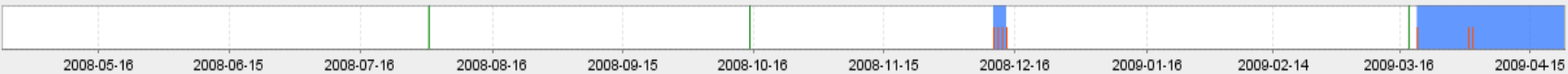
Last encounter: **ADULTINPATIENTCARE @ Hôpital Central de Yaounde, 02-Apr-2009**

Overview | **Regimens** | Encounters | Demographics | Graphs | HTML Forms | Problems | Inpatient Care | Forms

Current Problem List

View/Edit	Problem Name	Description	Added
	HYPERTENSION		01-Aug-2008
	DIABETES MELLITUS (TYPE 1)		08-Jan-2008

Encounter Timeline



Legend: ■ outpatient ■ inpatient interval ■ inpatient visitation

12 Month(s)

Patient Actions

Programs

Fertiq

Germaine Marcelle Old Identification Number: **DEMO20**

77 yrs (19-Jan-1932)

BMI: 26.4 (Weight: 66.0 kg , Height: 158.0 cm) CD4: | Regimen: **Insulin, Insuman Rapid (short-acting) , Insulin, Levemir (long-acting)**

Last encounter: **ADULTINITIAL @ Hôpital Central de Yaounde, 19-Feb-2009**

- [Overview](#)
- [Regimens](#)
- [Encounters](#)
- [Demographics](#)
- [HTML Forms](#)
- [Problems](#)
- [Inpatient Care](#)
- [Forms](#)

Enter a New Form

1. [Diabetes flow sheet \(initial/annual\) \[IDF Africa Region\]](#)
2. [Eye examination sheet](#)

View Existing Forms

Form	Encounter Date	Provider	Location	Enterer
Diabetes flow sheet (initial/annual) [IDF Africa Region]	19/02/2009	Andrey Kozhushkov	Hôpital Central de Yaounde	Andrey Kozhushkov
Eye examination sheet	18/02/2009	Caleb Arika	Hôpital Central de Yaounde	Andrey Kozhushkov
Diabetes flow sheet (initial/annual) [IDF Africa Region]	18/06/2008	Andrey Kozhushkov	Hôpital Central de Yaounde	Andrey Kozhushkov

OpenMRS - Patient Dashboard - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://localhost:8080/openmrs/patientDashboard.form?patientId=8

Meistbesuchte Seiten Erste Schritte Aktuelle Nachrichten Links anpassen (Unbenannt)


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Problems (Containers that store links to all encounters, observations and programs relevant to a specific medical problem of a patient.)

[Add Problem](#)

All Problems					
View/Edit	Problem Name	Description	Added	Resolved	Enterer
	MALNUTRITION		11/06/2007	10/01/2008	Andrey Kozhushkov
	DIABETES MELLITUS (TYPE 1)		08/01/2008		Super User
	HYPERTENSION		01/08/2008		Andrey Kozhushkov

English (United Kingdom) | [Deutsch](#) | [français](#) | [Deutsch \(Deutschland\)](#) Last Build: Mrz 26 2009 09:14 PM Version: 1.5.0 dev Build 7175

OpenMRS - Mozilla Firefox

http://localhost:8080/openmrs/module/medicalproblem/admin/problems/problem.form?problemId=1

Meistbesuchte Seiten Erste Schritte Aktuelle Nachrichten Links anpassen (Unbenannt)

Problem

Patient [Andre Bella](#)

Problem Name DIABETES MELLITUS (TYPE 1)

Description

Added (Format: dd/mm/yyyy) **Resolved** (Format: dd/mm/yyyy)

Created By [Super User](#) - 11-Dec-2008

Voided

Diabetes Management

[Graphs of relevant observations](#)
[Glucose-Insulin Simulation](#)

Related Problem

Drop	From Problem	Edit	Problem Name	Added	Resolved
<input type="checkbox"/>			HYPERTENSION	01-Aug-2008	

Add Related Problem You can add other problems related to this problem for quick access.

Programs

Drop	From Problem	Name	from	until
<input type="checkbox"/>		Diabetes Care	07-Mar-2008	

Fertig



EMRS in Diabetes Care



Advantages:

- Enhance the care process (time saving, accuracy, availability)
- Creating automatic doctor's reports/Electronic patient medical record
- Improve accuracy of interpreting blood values
- Cost saving; cut down on double tests / diagnosis
- Prevent complications (earlier diagnosis, intervention and prevention)
- Enhance patients knowledge
- Support diabetes surveillance
- Systematic data collection (Epidemiology, Prevalence, Pathogenesis, disease course, treatment / treatment options, mortality)
- Documentation / assured quality throughout the care process.

Thanks for your attention



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HELINA Conference, Yaoundé 28.11.2011



awawendy@gmail.com
sipic2@yahoo.com
gkouema@gmail.com

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2. Idemyor V. [Diabetes in sub-Saharan Africa: health care perspectives, challenges, and the economic burden of disease](#). J Natl Med Assoc. 2010 Jul;102(7):650-3.
3. Diabetes in sub-Saharan Africa. [Mbanya JC](#), [Motala AA](#), [Sobngwi E](#), [Assah FK](#), [Enoru ST](#). [Lancet](#). 2010 Jun 26;375(9733):2254-66.
4. Diabetes in sub-Saharan Africa. [Mbanya JC](#), [Motala AA](#), [Sobngwi E](#), [Assah FK](#), [Enoru ST](#). [Lancet](#). 2010 Jun 26;375(9733):2254-66.
5. DPV Handbuch 2008, Uni Ulm, Germany.r