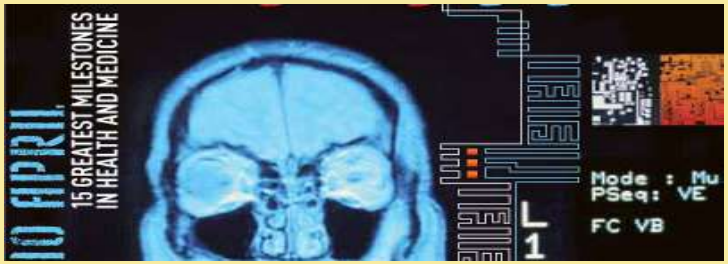
3ème Journées Camerounaise d'Informatique Médicale et
7ème Conférence Pan Africaine d'Informatique Médicale
27 au 30 Novembre 2011, Yaoundé-Cameroun



Health and Technology:
Just another option or an obligation for Sub Saharan Africa?

By

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Faculty of Medicine and Biomedical Sciences
University of Yaoundé I
President Cameroonian Association for Telemedicine

Plan

1. Introduction
2. Definitions and Concepts: Device/Technology
3. Technological Applications in Healthcare
   in Sub Saharan Africa: Problems and Opportunities
   in the past and present.
4. The Era of Computers and Connectivity
5. Unanswered Challenges
6. Concluding Remarks

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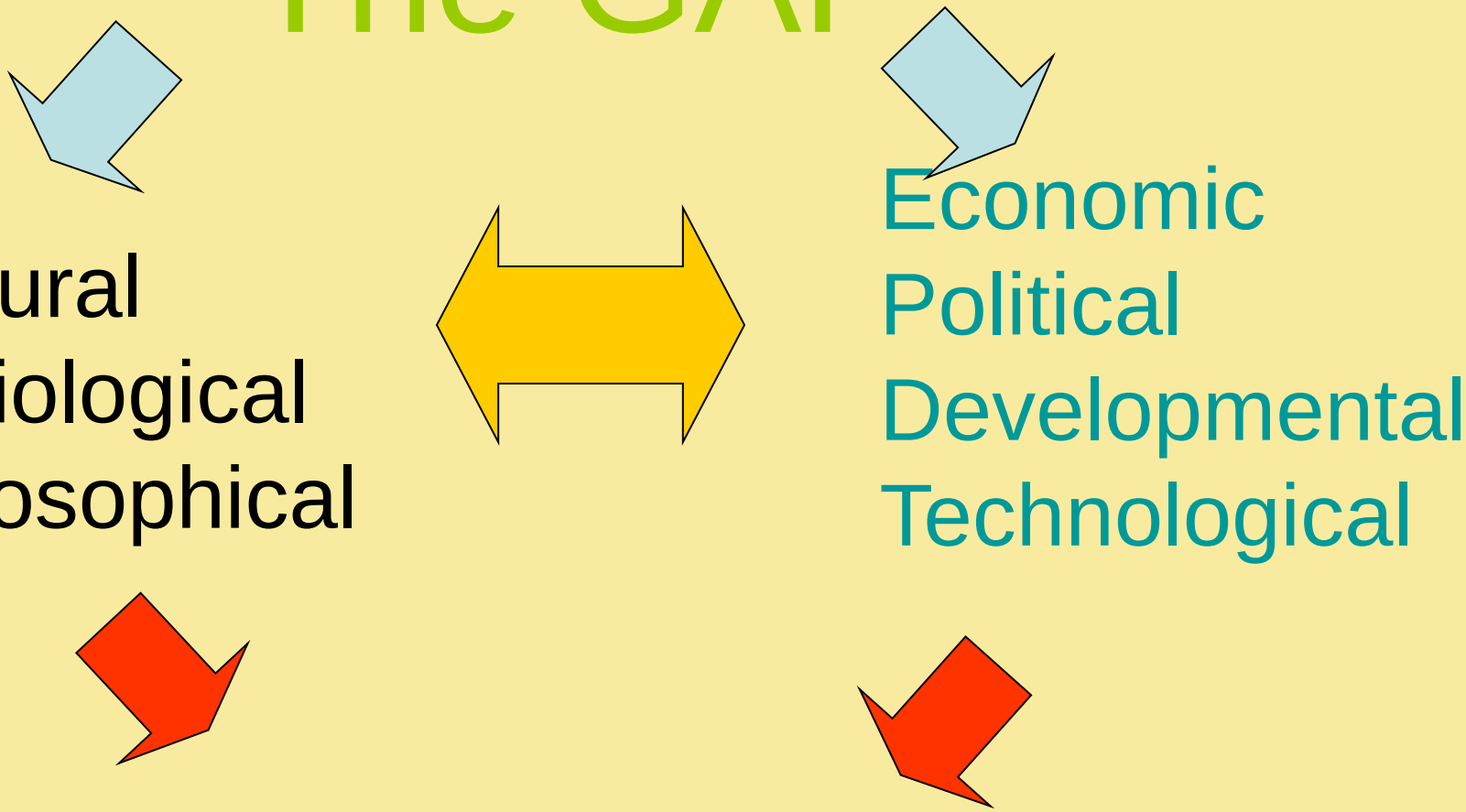
Sub Saharan Africa

Global Burden of Disease	24%
Health Care work Force	3%
Global Financial Resources	1%

(WHO: World Health Report 2006)

"Know-Do" gap

The GAP



More Complex
?Globalization?

Paradigm shift

When considering Health Issues in Sub Saharan Africa

Development is an asynchronous process …And will always be!

Approaches to promote it must respect this observation.

Paradigm shift

When considering Health Issues in Sub Saharan Africa

The rural-urban divide is more an issue of needs and opportunities in a context of extreme poverty and not necessarily one of level of development.

Paradigm shift

When considering Health Issues in Sub Saharan Africa

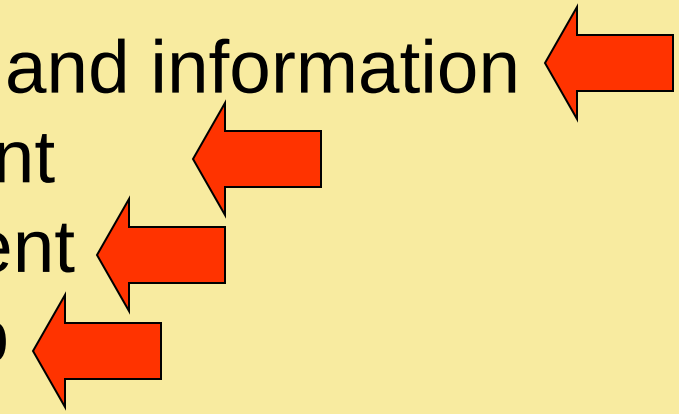
The private-public sector divide is just that…….
a divide …….
that may not necessarily measure neither
the impact nor the contributions of either sector!

Paradigm shift

When considering Health Issues in Sub Saharan Africa

Development occurs when there is:

Education and information
Involvement
Commitment
Ownership



Capacity–building must occur at all levels!

The Right to Health

The right to
"Essential Medication"
initiated almost 30 years ago

? The right to
"Appropriate Technology"
and access to
'Essential Devices/Technology'

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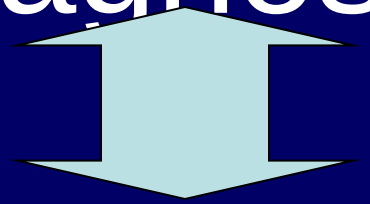
Health Technology and Medical Devices

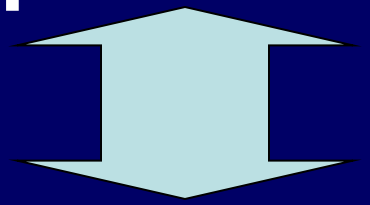
WHO definition: " Health Technologies that are not Medicines, vaccines, or Clinical procedures " but are used in the diagnosis, prevention, or treatment.

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/ gfmd_report_final.pdf.)

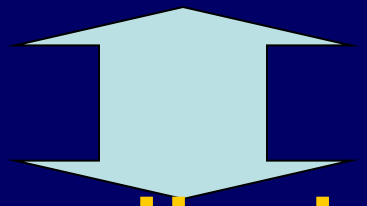
Diagnostic



Therapeutics/Curative

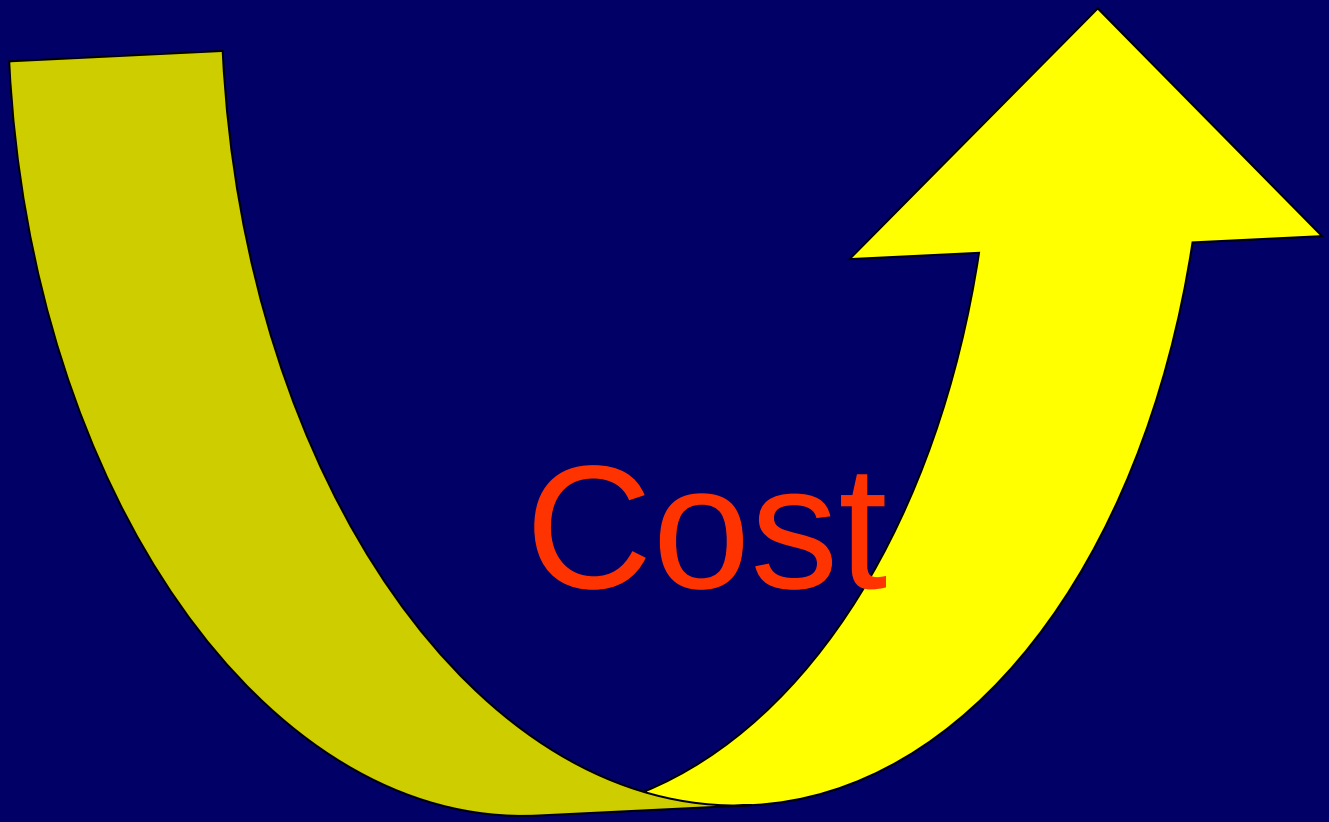


Prevention



Predictive?

Access → Quality



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Health Technology and Medical Devices

1. 70% of complex medical devices are not used optimally and frequently are not exploited at their destinations in developing countries.

2. The most basic and fundamental devices do not reach the needy and low-resource populations in numbers sufficient to impact the health system.

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)

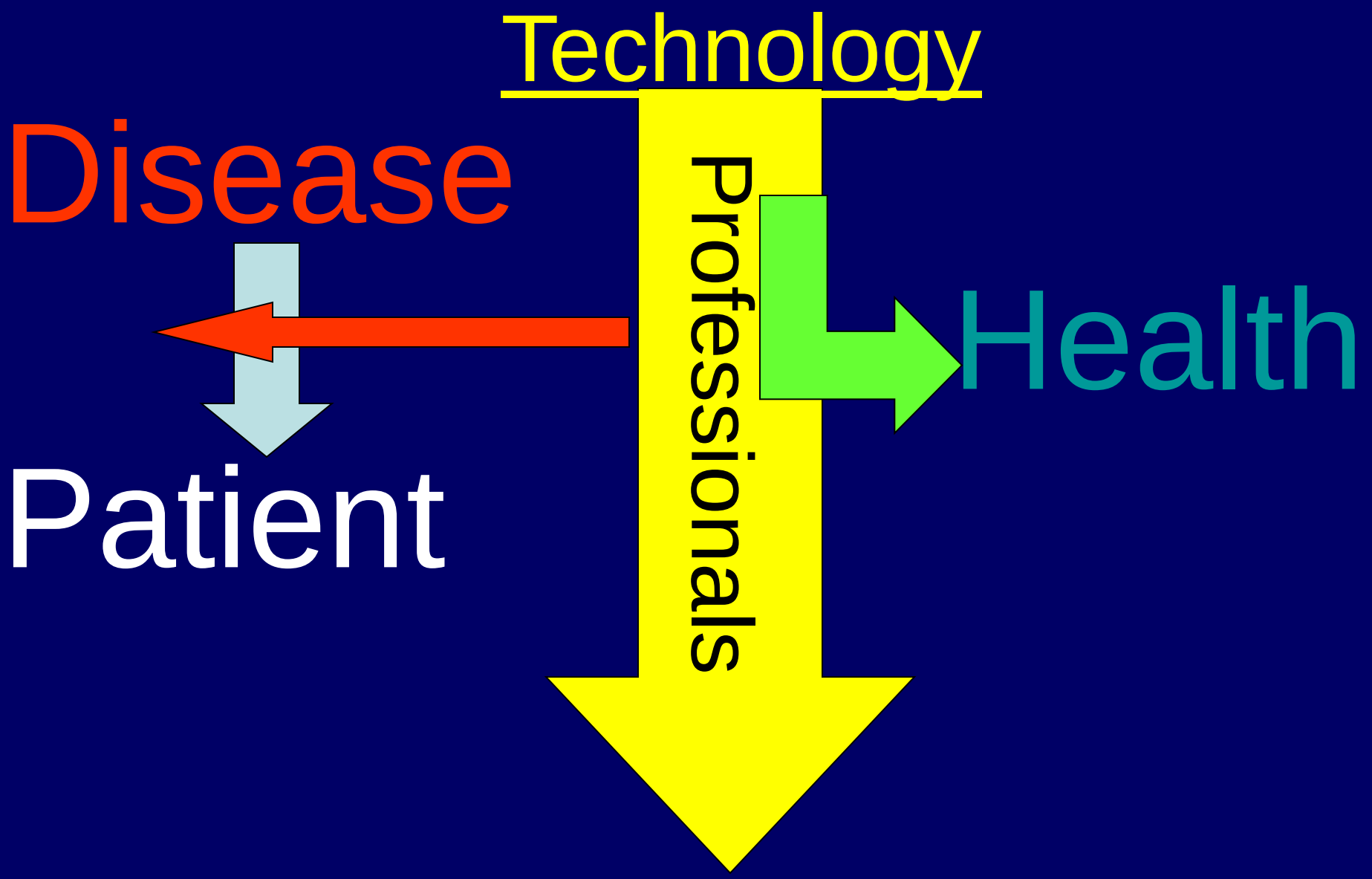
Reasons for failure of technological innovations in Healthcare

1. The tendency to adopt technologies without a good assessment and understanding of the burden of disease.

2. Lack of evidence-based prioritization of competing health issues.

3. Inherent defects in health system design and administration.

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)


Technology
Disease
Professionals
Health
Patient

Common Conception of Medical Devices and Technology

"Medical devices are usually
highly engineered and
generally very expensive and nonessential"

Constraints to deploying Health Technologies

1. Cost

2. Local capacity issues
   - Spare parts and associated consumables
   - Infrastructures associated with use
     Distribution networks
     Local engineered systems required for proper operations
   - Human resources and Personnel training issues

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)

The challenge

Many of the available or appropriate health technologies are generally inaccessible to the majority of populations that need them the most or where such technology could make the greatest Impact.

Global economic considerations and some paradoxes.

The majority of Medical Devices manufactured in India are exported while 75% of Medical Devices used in the country are imported. This observation evokes issues of distributive justice which must have been ignored or not taken into consideration in the process of entrepreneurship and innovation.

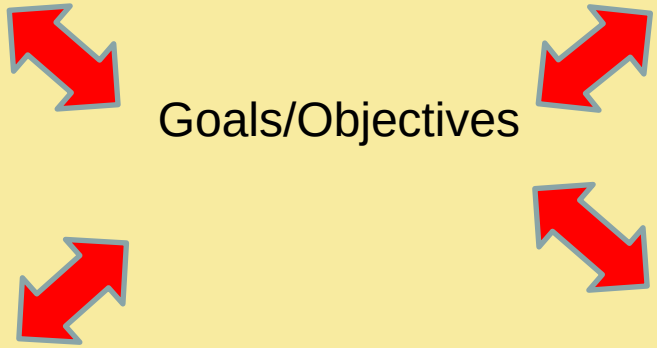
Global economic considerations and some paradoxes.

Country- or region-specific conditions may dictate technologic choices that target the changing of existing expensive conventional methods. On the contrary, promoting technologies that are "in-vogue or in-fashion" and that are expensive and require sophisticated and substantial academic and commercial infrastructure may be catastrophic if not destructive for most poor and low-resource healthcare systems.

Health care Innovation

Medical Devices and other non-pharmaceutical health related technologies

Professional Education and training



Health care systems design and Administration

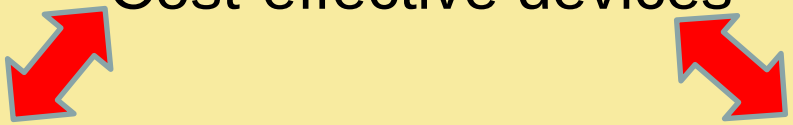
Community Education Training and participation

Local Capacity Building

Local Universities, Academic and Research Institutions/Centers

Engineers and Healthcare Professionals

Health care Innovation Partnerships for scalable Cost-effective devices



Business and Design strategists, Medical technology Companies, Social Scientists

Governments and NGO's

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)

Global Directive on Medical Devices (WHO – 2007)

‘ Many health technologies are increasingly indispensible to healthcare’

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)

Health Technology and Device Development

Public-Private Partnerships:
Industry Universities and academic Centers
NGO's

Government and Related Institutions
Global Institutions involved in Healthcare

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)

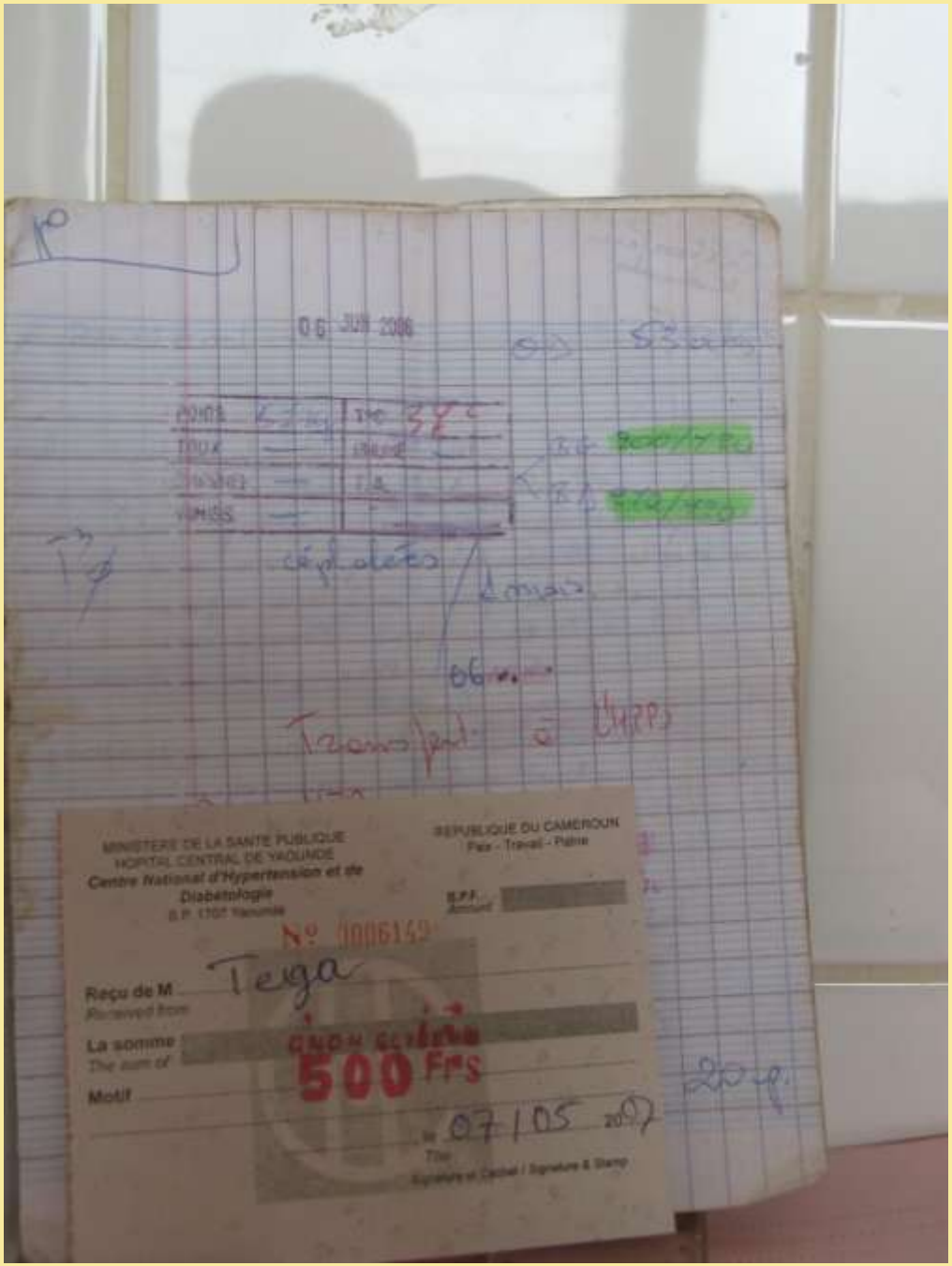
Missed Opportunities for Technological innovations in Healthcare in the past

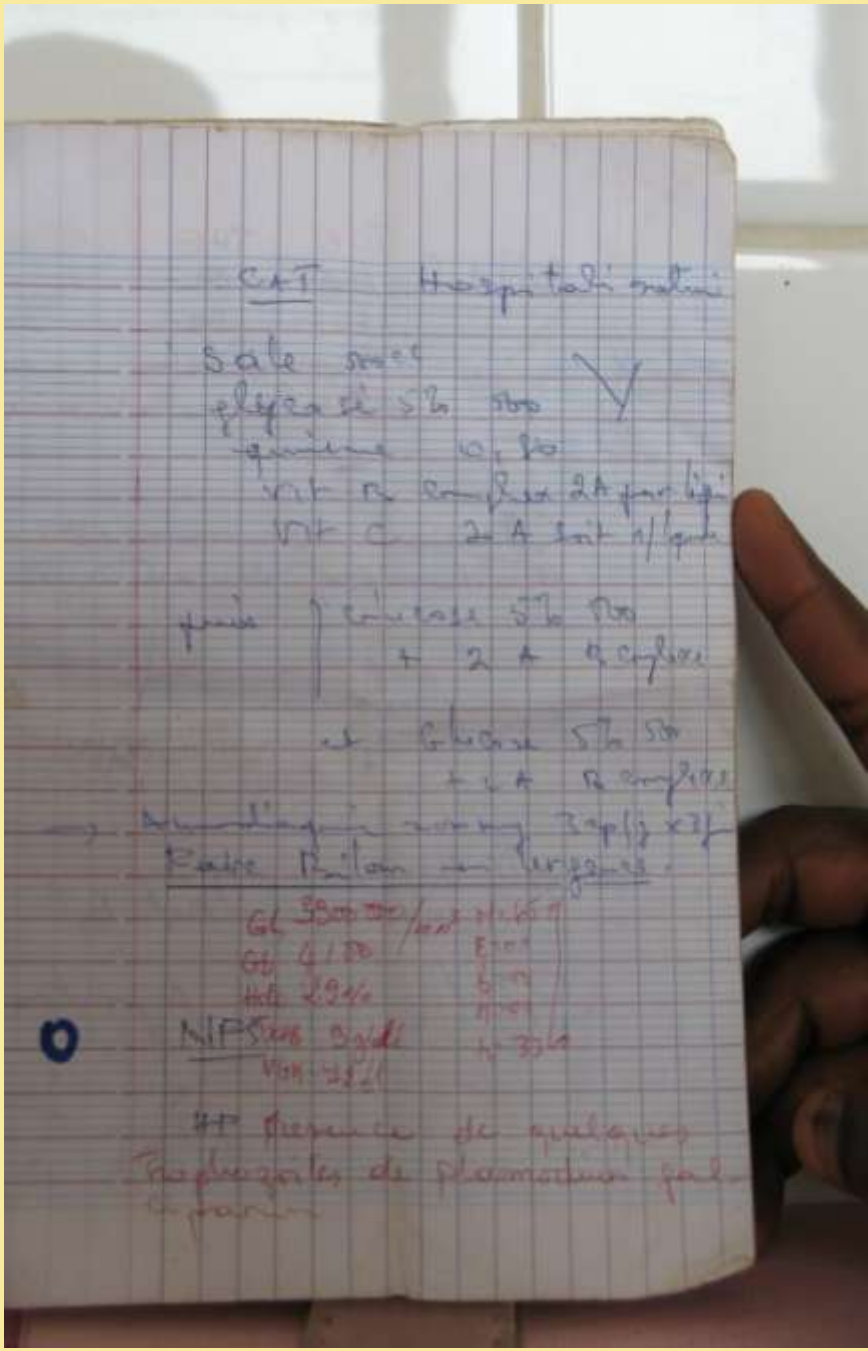
1. Connectivity through introduction of the Mobile Phone Technology (emergencies, image transport, pulse oximetry in respiratory diseases and vital signs etc.)

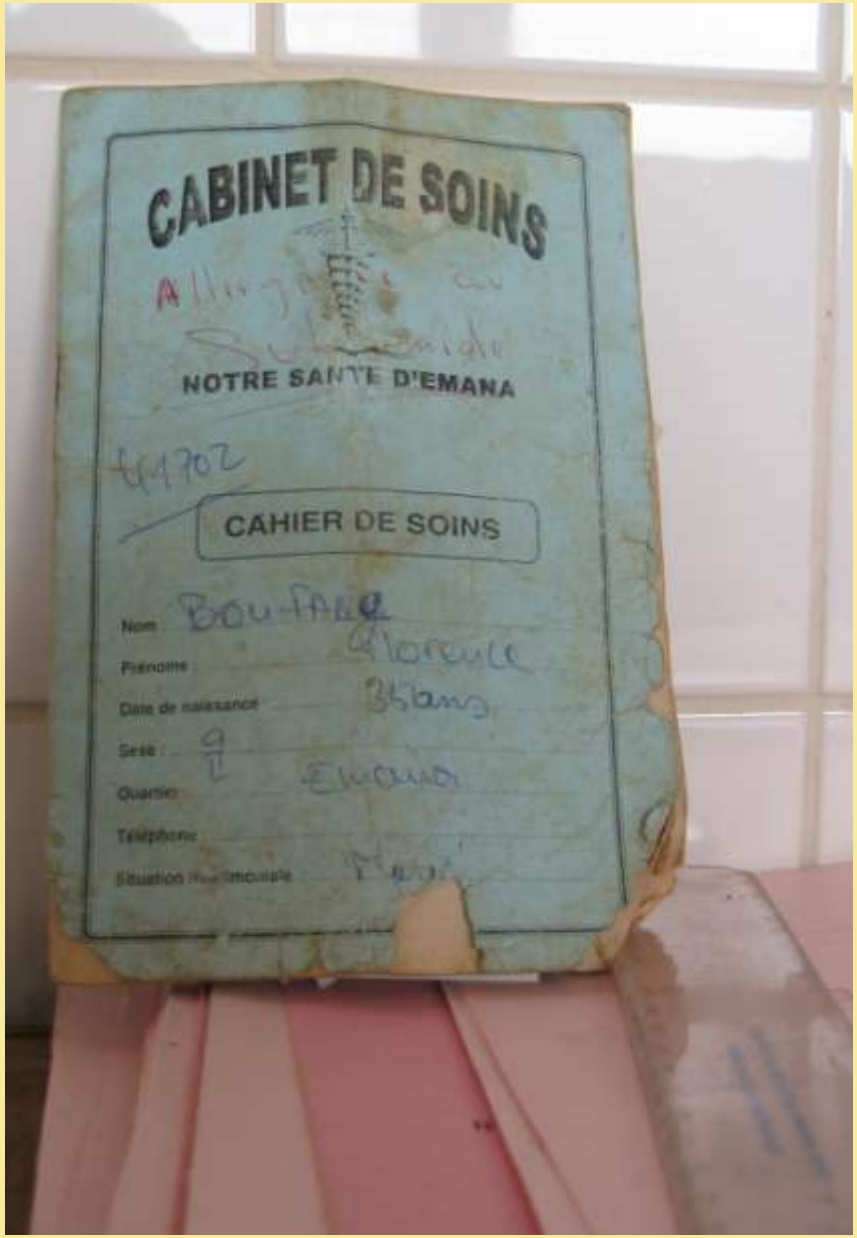
2. Medical records and archives.

3. Data Management and policy development

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)


MINISTERE DE LA SANTE PUBLIQUE
HOPITAL CENTRAL DE YAOUNDE
Centre National d'Hypertension et de Diabetologie
REPUBLIQUE DU CAMEROUN
Paix - Travail - Patrie
Reçu de M
Tega
La somme
CINQ CENTS
500 Frs
Motif
07/05 2007




CABINET DE SOINS
NOTRE SANTE D'EMANA
CAHIER DE SOINS
Nom
Prénoms
Date de naissance
Sexe
Quartier
Téléphone
Situation matrimoniale


DOSSIER MEDICAL

Cost-effectiveness and Technological Applications

Devices and Technology are not the answer to all Health Problems

Vaccination
And
Education

Comprehensive Needs assessment and Capacity considerations

Device and Technological Considerations

World Health Organization. First WHO global Forum on medical devices: Context, outcomes and future actions. 2011.(http://www.who.int/medical_devices/gfmd_report_final.pdf.)

Particularity of Health Technology required in low- and middle-income countries

In contrast to CAT and PET scans and implantable devices examples of Health technologies considered by WHO to be appropriate and needed For low-resource settings include:

- Low cost infant warmers
- Point-of-use water purifiers
- Portable low-cost ventilators
- Self-contained parasite-detection systems
- Low-technology child-restraint seats
- Reusable new-born suction devices

World Health Organization . Compendium of new and emerging technologies. 2011.(http://whqlibdoc.who.int/hq/2011/WHO_HSS_EHT_DIM_11.02_eng.pdf.)

Considerations about technology applications in Developing Countries

1. Cost and poverty constraints and the tendency to consider new or innovative technology superfluous or beyond their reach.
2. Lack of assiduous and multidisciplinary needs assessment in costing and setting competing health priorities and potential solutions.
3. Lack of evidence-based policy development and the promotion of innovation.

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Information Technology Comes to Medicine

(Electronic Health Record system or Electronic medical records)

Core Functionalities

1. Health information and data
2. Results management
3. Order entry and support
4. Decision support

Other functionalities

1. Electronic communication and connectivity
2. Patient support
3. Administrative support
4. Reporting and population health management

The New era of Computers and Medical Informatics

- **Computation**
- **Archive**
- **Connection**
- **Conversation**

Connection: medical examples

- Telehealth for diagnosis

- Telehealth for management
  (eg tracking vital signs remotely)


A


B

SUB SAHARAN TELEMEDICINE INITIATIVE

Held in Gaborone, Botswana on 1 March 2007, it was the third meeting of the Telemedicine Task Force, which is composed of the main relevant African organizations, the World Health Organization, the European Commission and the European Space Agency

SUB SAHARAN TELEMEDICINE INITIATIVE

Satellite solutions delivering information and communication technologies can help improve health in sub-Saharan Africa; this was the main conclusion of a dedicated telemedicine task force which met recently in Botswana

SUB SAHARAN TELEMEDICINE INITIATIVE

Telemedicine is healthcare's new frontier, a means of facilitating the distribution of human resources and professional competences.

It can speed up diagnosis and therapeutic care delivery and allow peripheral and primary healthcare providers to receive continuous assistance from specialized centers .

SUB SAHARAN TELEMEDICINE INITIATIVE: Three activities are proposed:

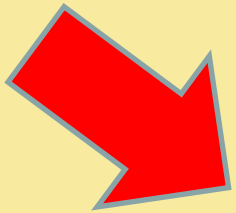
1. Focusing on the health workforce (scaling-up numbers, improving performance, increasing quality);

2. Focussing on clinical services (increasing health service coverage, reaching isolated areas)

3. Strengthening the intelligence gathering capacity of health systems and their ability to use information for decision making.

Connection: medical examples

- "Lab-on-a-chip" technology
  - Rapid screening
  - Point-care-Tuberculosis tests
  - Bilirubinemia monitoring
  - Oximetry and vital signs monitoring
- Cell-phone platforms
- Telemedicine Kiosks



- Cost-effective identification of disease in remote areas
- Prioritization of intervention efforts.
- Reduction of high costs associated with building and running of conventional rural/remote healthcenters

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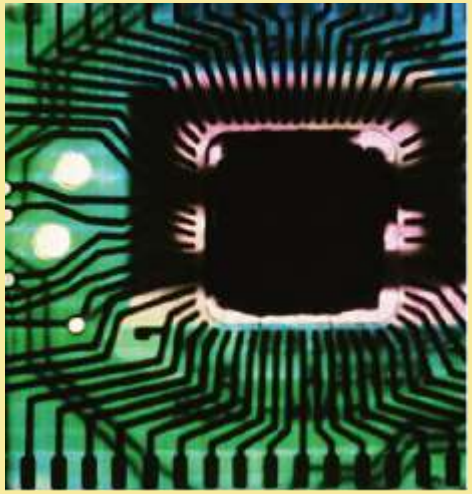
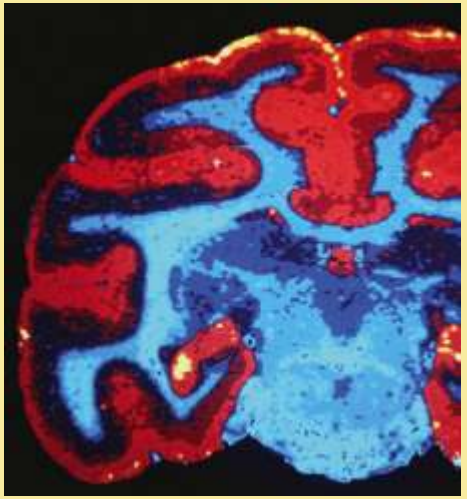
And what about the future?





The Future is already here for some!

- "Medicare smartcard on the way"

- Medicare smart card

that carries their photo and health records,
giving paramedics and doctors quick access to potentially life-saving information."

Need for practical solutions to support clinical care

Rule of 5's for applications

Canadian Centre for Health Evidence

- 5 seconds or less to come up
- 5 clicks or less to get the information required
- 5 minutes or less to learn to use application
- User should need to use the application at least 5 times per week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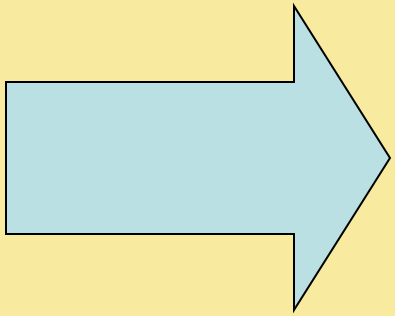
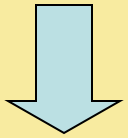
CAHIER DE SOINS

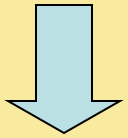


e-Health Development

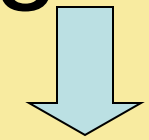
Stock Taking



Policy Development



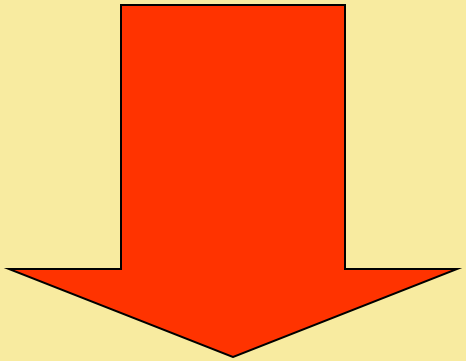
Strategic Planning



Implementation

e-Health Development

Centralized coordinated development policy with a time-scale may be important



Capacity-building now at levels where needs and opportunities present themselves is more critical and utimately More productive

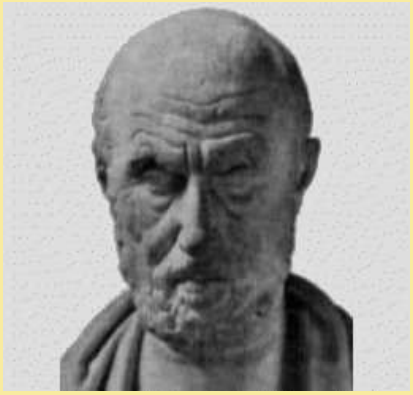
CHALLENGES:COMMUNICATION

"Our patients are most at risk when they cross the boundaries in our health care system"

We need technology that can either ameliorate and not get in the way of communication between patients and their clinicians

Will e-health create another information chasms in our health care system?

In the context of Globalization, what about cross border Competition and systems that perform poorly?



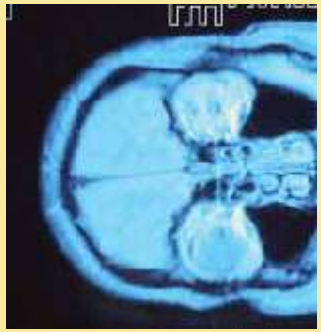
Whatever I see or hear, professionally or privately,
which ought not to be divulged,
I will keep secret and tell no one."
I have a duty to ensure privacy and confidentiality
as part of my use of this new technology

ENSURING PRIVACY AND CONFIDENTIALITY

For the average Cameroonian, are privacy and confidentiality concerns of utmost importance in the search of effective healthcare?

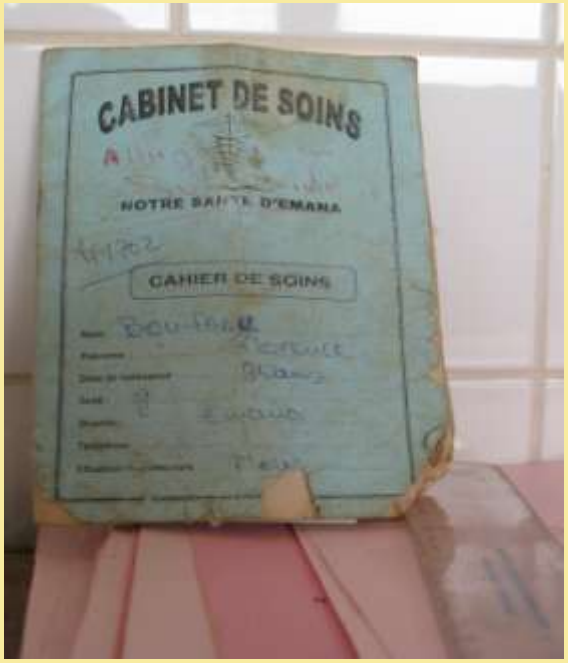
Does he need to be educated on their importance?

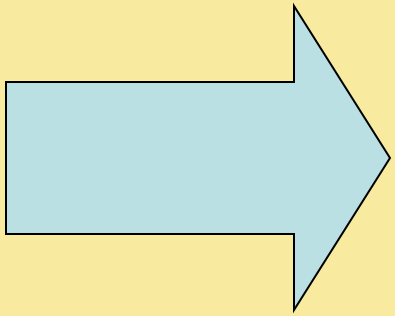
These issues must be addressed up front and in consultation with all stakeholders in all future projects or they will fail.



Prevailing opinion

Many patients and others believe that critical personal health information is already being shared between health care providers for their own (or common) good!





Rules for e-health - 9 'c's & 1 'e'

- Confidentiality
- Consumer involvement and confidence
- Clinical focus
- Clinician involvement, training & support
- Change management
- Compatibility between systems
- Common record structure
- Communication standards
- Cash

EVALUATION

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Concluding remarks

1. We must rethink and develop local norms for what is considered Health Technology
2. We must carryout location-specific needs assessment to avoid the adoption of ineffective or inappropriate technologies and wastage of scanty resources in the face of competing priorities.
3. We must promote innovation through collaborative partnerships that respect local specificities in terms of needs, priorities and constraints.
4. Health technology must not be adopted for its own sake. Technology and devices must be adopted or acquired, regardless of their cost, when they meet real needs and provide solutions with measurable value to healthcare.

Possibly the Ultimate Challenge

How do we use this technology, in order
to provide better health care outcomes
for the people who trust us for their health care advice and management.

MIYAKA