

Applications:

Use of Electronic Medical Records (EMR) System in antenatal and Maternity Setting in Malawi.

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Agenda

I. About Baobab Health

II. Solutions developed and implemented: Case of Antenatal, Maternity EMR

III. Methods of development

IV. Tools used for development

V. Key features of EMR



- Population: 15.91 million

- 29 Districts

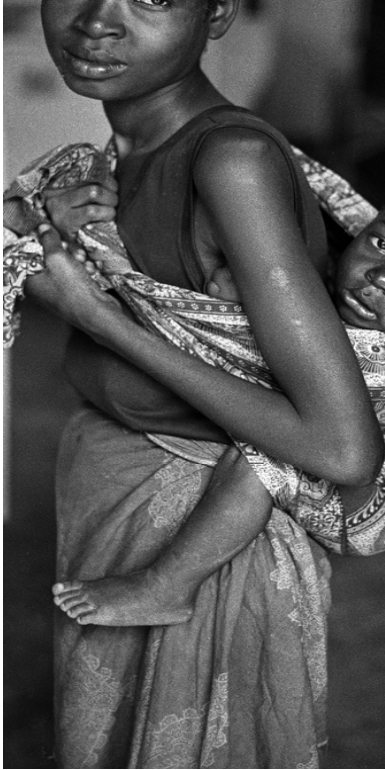




- Founded in 2001
- Registered local NGO
- Lead in the improvement of health care delivery through information and communication technology in the developing world.
- Innovation
 - Local capacity development
- Partners include CDC, The International Union Against TB and Lung Disease, WDF, The Lighthouse, Dignitas, Wellcome Trust, Village Reach, PIH, LIN, Uni of Pits.

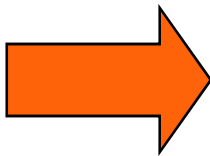


About Baobab: Defining problem statement



Need for information

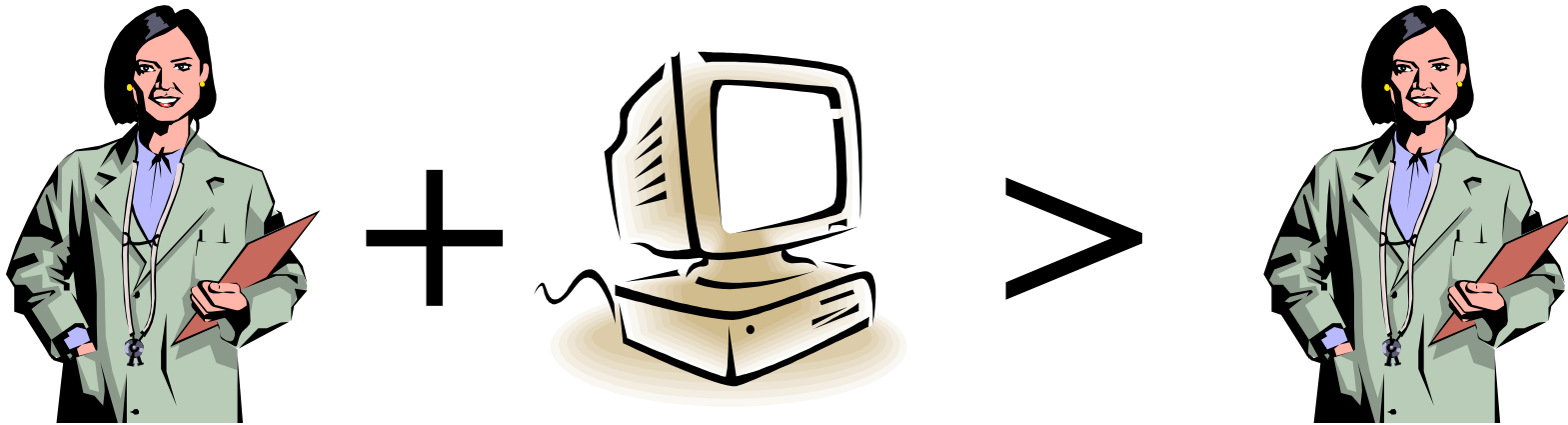
- Patient level
- Health care provider level
- Policy level
- Research



**Better Health care for patients =
healthier population**

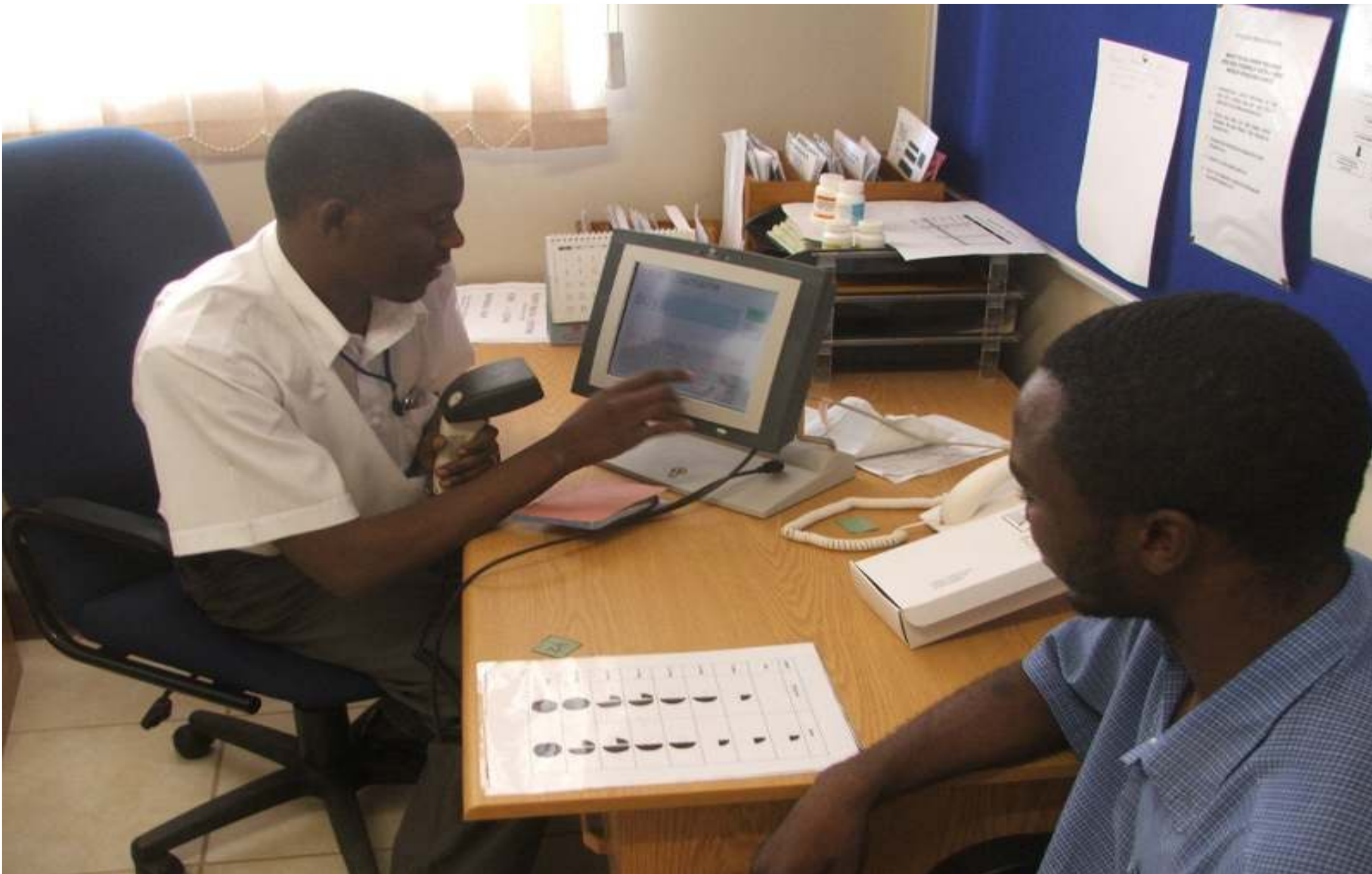


Medical Informatics: A Proposed Fundamental Theorem



“A person working in partnership with an information resource is ‘better’ than that same person unassisted”

Dr. Charles P. Friedman (JAMIA 2009)



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Solutions developed and implemented: Case of Antenatal, Maternity EMR at Bwaila

- Background:
- Mortality rate: 675 per 100,000.
- Infant mortality rate : 66 per 1,000
- 14 % HIV prevalence
- Malawi has adopted option B+: Starting mothers on treatment as soon as they are found HIV+



Implications of Option B+

- Creates need of identifying and maintaining patients in care
- Needs integrated patient management since patients will access multiple services (ANC; ART programme)
- Minimising loss to follow up
- Adherence to care guidelines



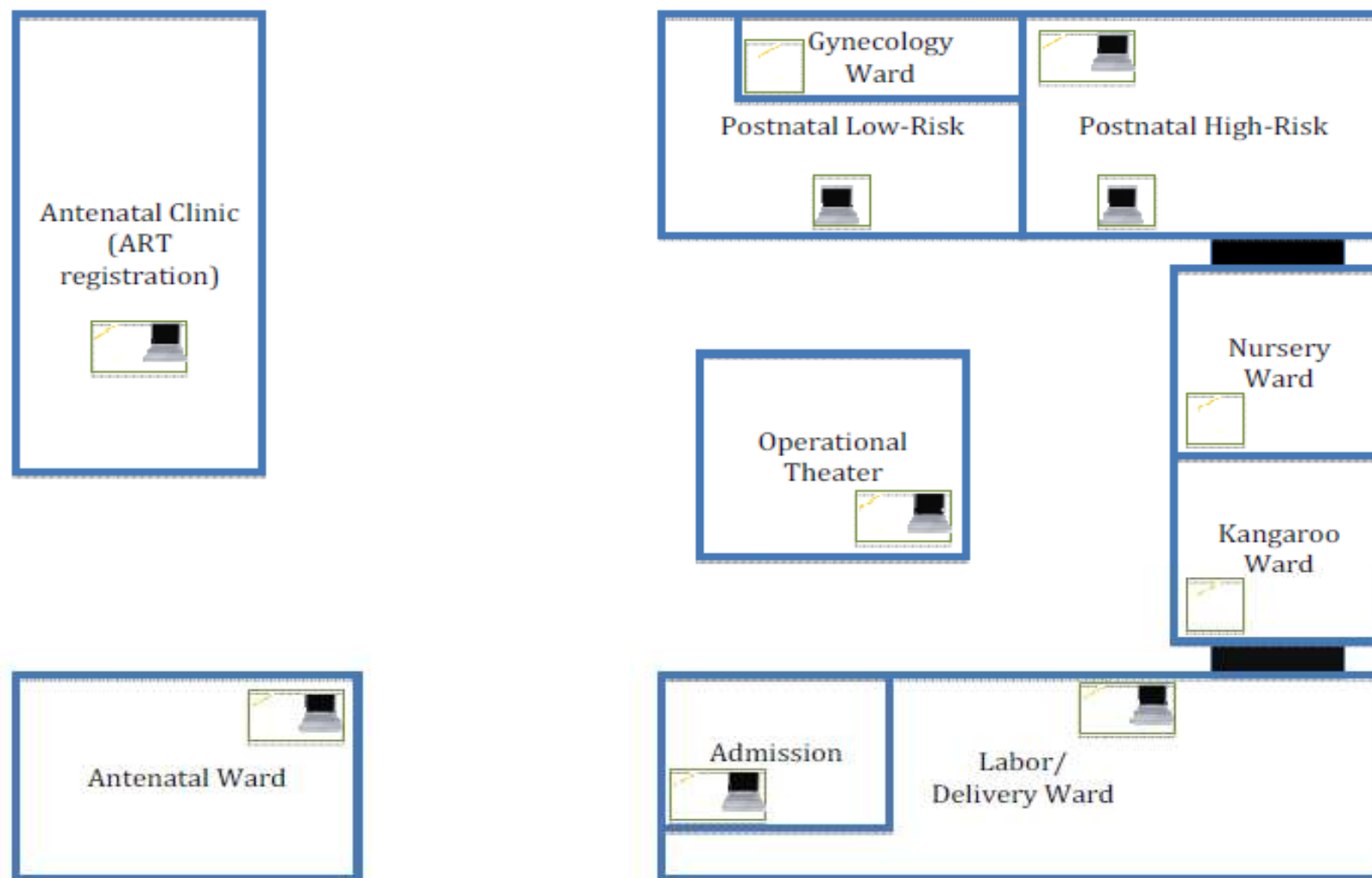
Setting: Bwaila Maternity Hospital



Average 1,500 births a month
Offers ANC
Family planning
Maternity services
ART Services



Bwaila Map and Data Sources



= Nurses Station



= Hardcopy Documentation



= Electronic Medical Register

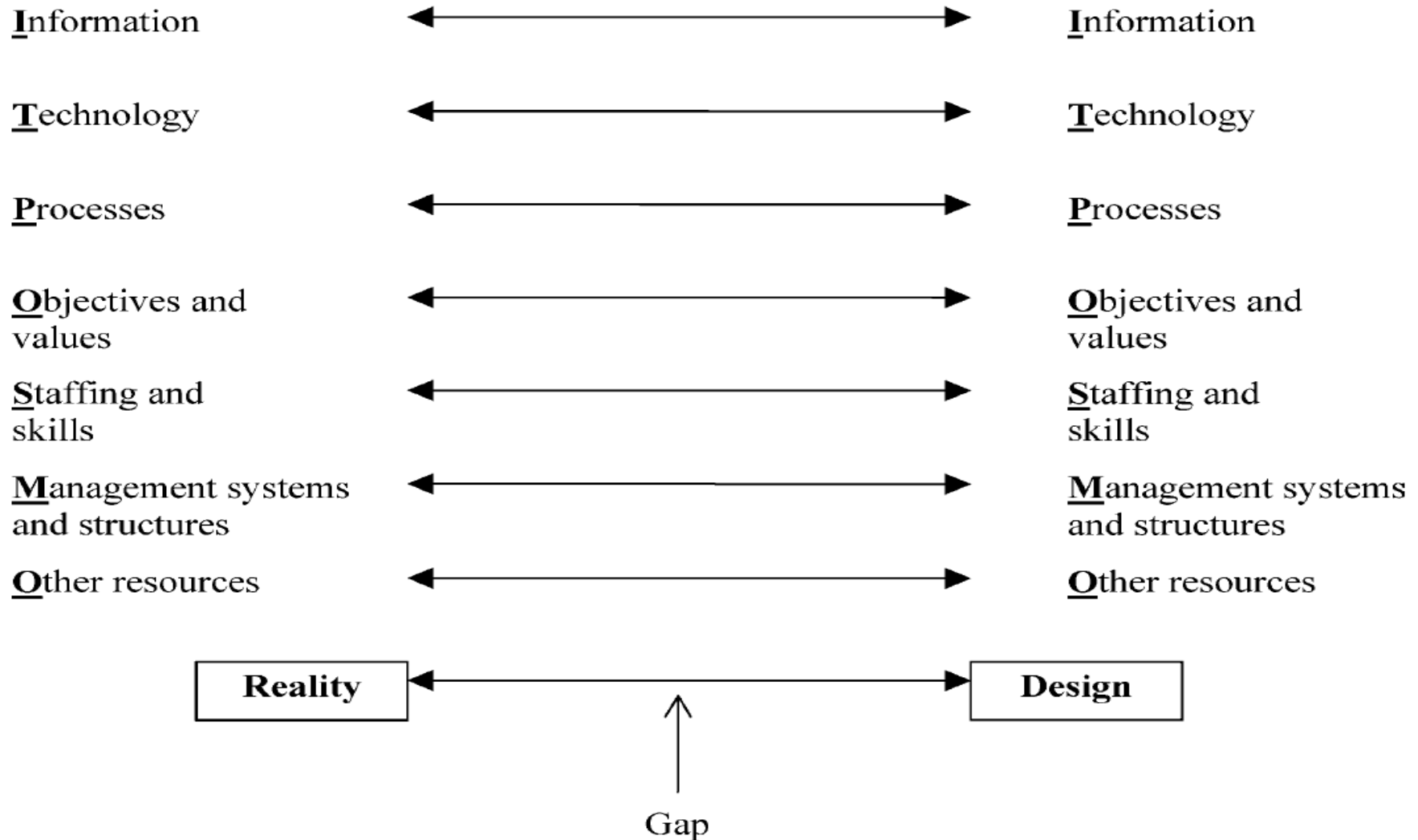


Method of development

- User centred design based on: Agile software development
 - User interviews
 - Desk research on guidelines
 - Observation and workflow mapping
- Users involved to define high level requirements
- Prototype developed and deployed: Incremental development.
- Iterative development through : gap analysis using model by Heeks



Method of development: Gap Analysis



Tools used for developing the EMR



Key Features: Unique patient identification

FORM-102

MALAWI

HEALTH PASSPORT
WOMAN HEALTH PROFILE

NAME _____
DZINA _____

DATE OF _____
TSIKU LOI _____ / _____ / year

VILLAGE _____
Mukwa _____

Please bring th _____
Outside bwera _____

Signature of it _____
Issued date _____

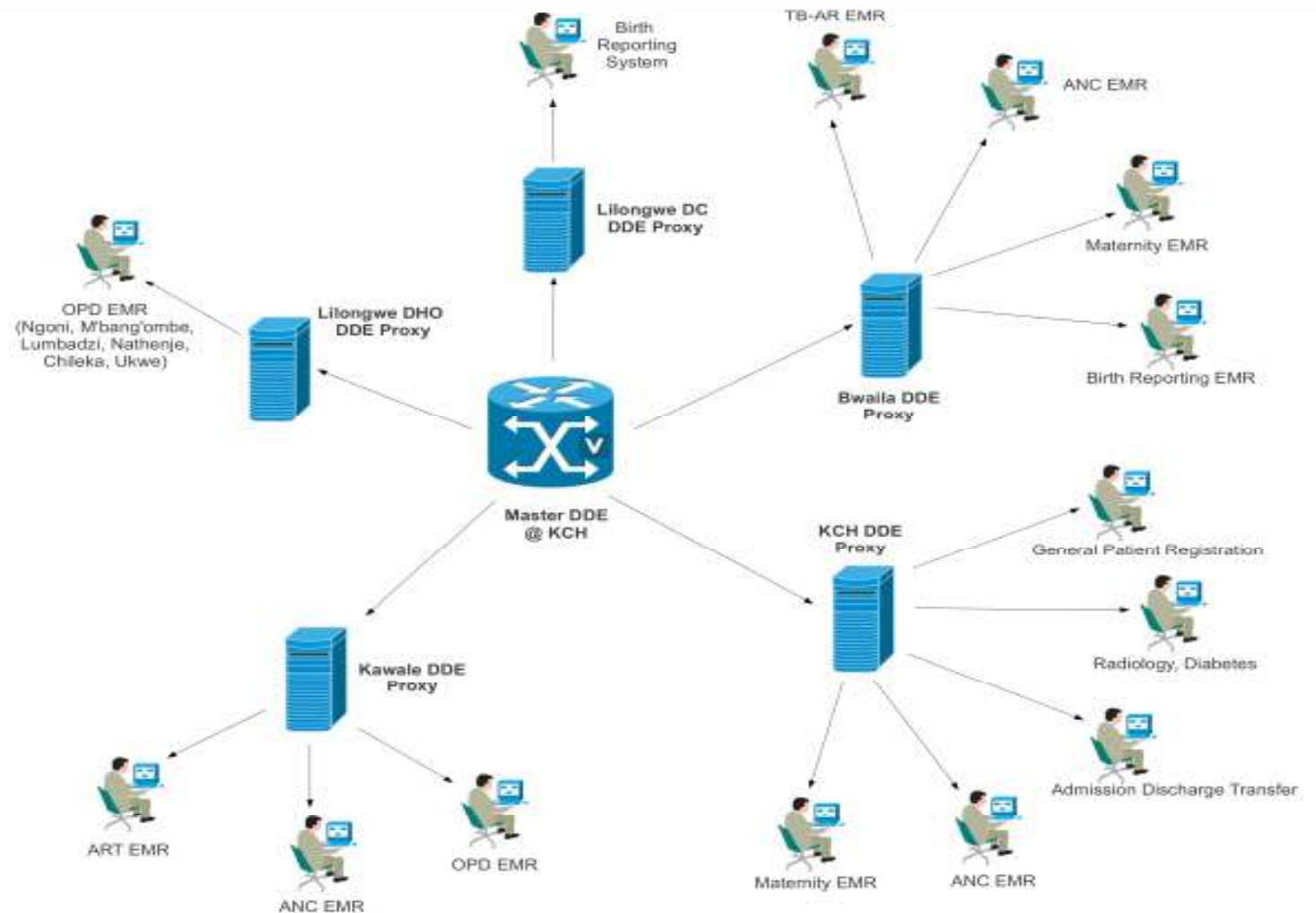
Barcode: Maria Banda
KU2J08 15/Aug/1983(F)
Chimphangu

Signature of the nurse or doctor
Nchi kapena namuna



Contd: Ability to follow up patients across facilities, using centralised health ID generation and synchronisation.

Lilongwe Electronic Medical Record (EMR) System Health Network and Demographics Data Exchange (DDE)



Key Properties

- Unique patient identification across facilities
- Ability to track patient movement across facilities
- Referral of patients across facilities with possibilities of including Voice Over Internet Protocol
- All patients will be issued with a 6-digit ID to base 30 which will be able to accommodate up to over 30 million patients

Embedding care protocols so that adherence is enhanced

The interface displays a 'Vitals' section with a 'Diastolic Blood Pressure (mm Hg)' field containing the value '99'. A secondary display shows a full blood pressure reading of '126/99'. A red warning box is overlaid on the screen, stating: 'Client is at risk of pre-eclampsia. Please refer her for Urine Protein test.' with an 'OK' button. Below the warning, there is a numeric keypad with buttons for digits 0-9, and 'Unknown' and 'Delete' buttons. At the bottom of the interface are 'Cancel', 'Clear', 'Back', and 'Next' buttons.

Diastolic Blood Pressure (mm Hg)

99

Vitals

Blo

Client is at risk of pre-eclampsia. Please refer her for Urine Protein test.

OK

126/99

1

1 2 3

4 5 6

7 8 9

0

Unknown Delete

Cancel Clear Back Next

Embedding care protocols so that adherence is enhanced

Baby 5th Minute APGAR

APGAR = 2+1+0+1+2

	0 Point	1 Point	2 Points
Color	Pale/blue	Baby pink/ blue extremities	Completely pink
Heart Rate	Absent	Slow - Below 100 bpm	Above 100 bpm
Muscle Tone	Flaccid	Some flexion of Extremities	Active Motion
Reflex Irritability	None	Grimace	Vigorous cry
Respiratory Effort	Absent	Slow - irregular	Good crying

6/10 - Fairly Low

Cancel

Clear

Back

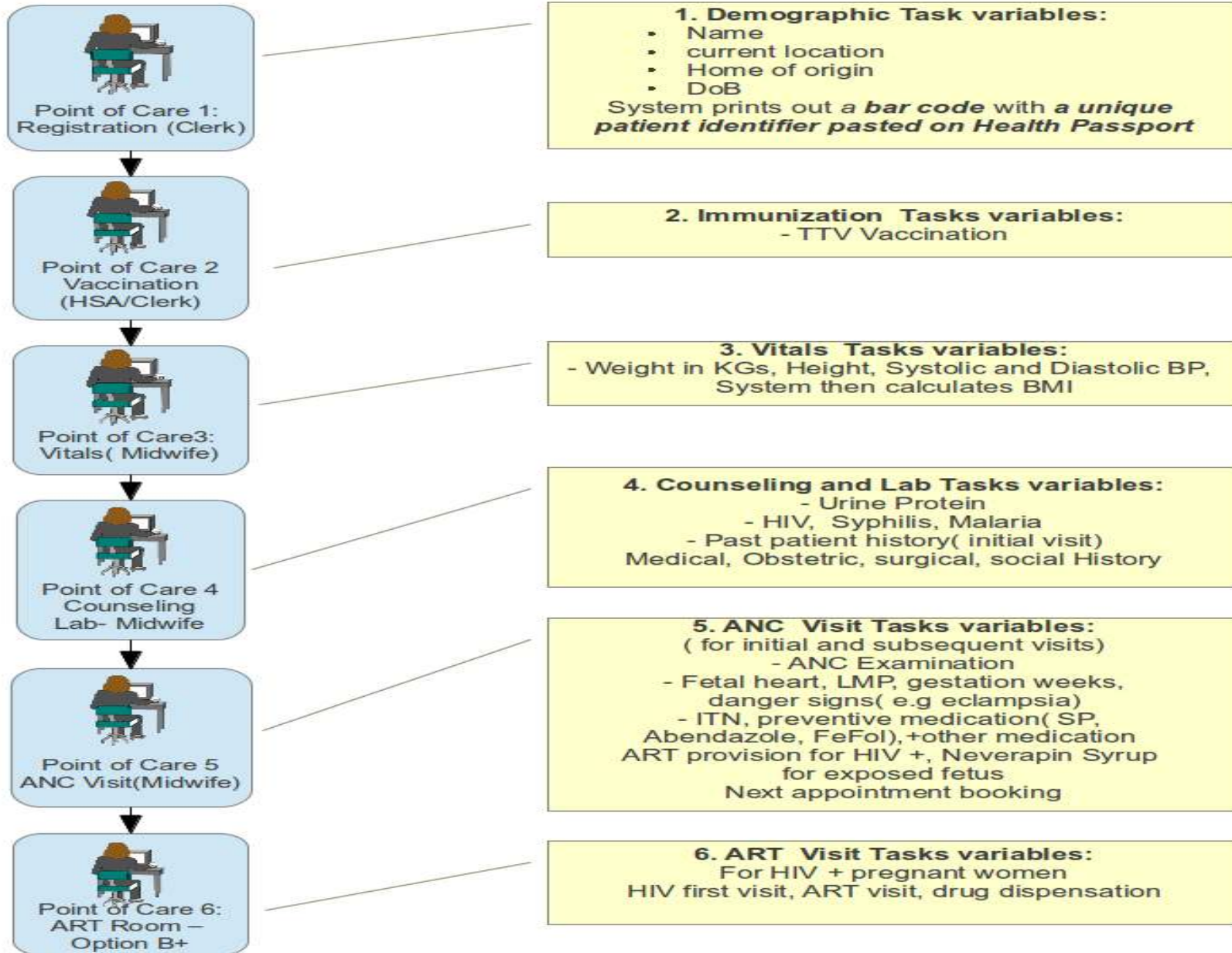
Next

Hardware and power considerations



Roles and privileges

ANC EMRS Work-flow- Bwaila FHU



Sample Outputs



Republic of Malawi

Birth Cohort
Q3, 2013

Bwaila Maternity Unit
Cumulative figures from 22 Apr, 2013

Category	Total	Cumulative Total
Total Women Who Delivered	3893	6496

Pregnancy Delivery Terms

Post Term (> 42 wks)	130	187
Full Term (38 - 42 wks)	2697	4294
Near Term (34 - 37 wks)	612	1211
Pre Term (< 34 wks)	115	240
Unknown	339	564



Lessons learned

- Need for representation from all sections within the health facility in order to have comprehensive user requirements.
- Tightly coupling a solution to care processes presents an opportunity to improve patient care.
- Systems need to be introduced in the right precedence in order to avoid information overload.
- Value proposition needs to be identified at an early stage of EMR development.



Patient registration



Thank you

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github.com/BAOBABHEALTHTRUST

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National Statistics Office, 2010, Malawi Demographic Survey.

