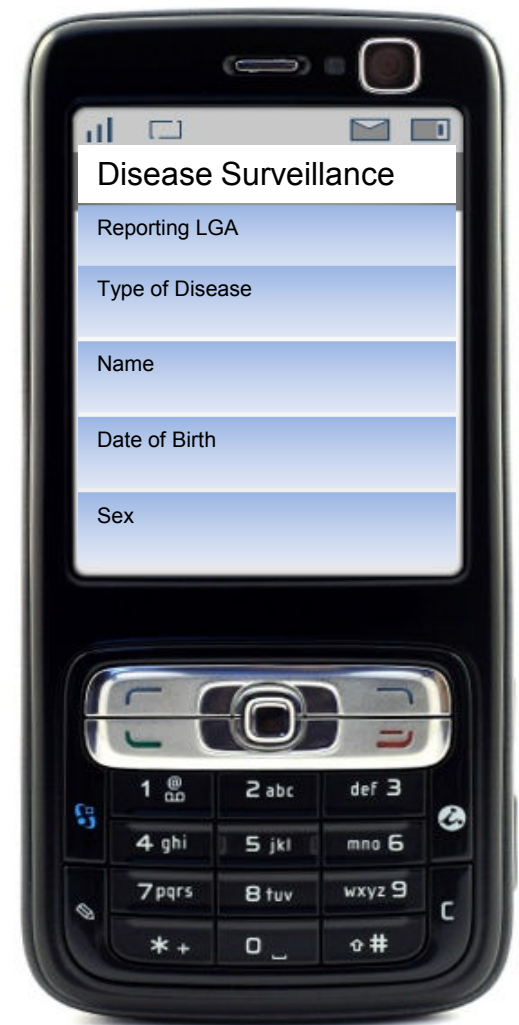


E-Health: Mobile Phone in Disease Surveillance

by

ValueFirst Nigeria Ltd



Abstract

- Globally epidemics continue to ravage the world, more so in developing countries like Nigeria where only recently 231 died from the outbreak of Cholera and 4500 were infected in the North-East of the country, but what is more worrying about epidemics in the developing countries is the shortage of disease surveillance system that can give early warnings before an outbreak becomes a full blown epidemic.
- In our ever mobile world a few minutes can make the difference between an outbreak to an epidemic, within minutes the area of outbreak can significant change and only technology can keep pace with the mobility of outbreaks, the developed countries have lead the response with eHealth and the developing countries are following suit with mHealth
- There are many successful mHealth deployments in disease surveillance including case studies in India, Gathar-Uganda, Tamil-Nadul Sri lanka etc, sadly though even though Nigeria has the highest mobile subscribers (over 77million) in Africa with extensive penetration even in rural areas, we have no mobile technology deployed to save lives especially with reference to disease surveillance
- It is clear we have a problem, we have the tools, the technology, know-how and resources to fix it, but have done little in the way of using this technology to improve the life chances of Nigerians and reduce disease outbreak.
- If we must achieve the MDGs 4-6 then today we must start to deploy Ehealth and mHealth solutions into healthcare services and Disease Surveillance, ValueFirst has started to use mHealth in a project called mPREVENT for sending free immunization reminder alerts to mothers to ensure the timeliness of immunization and eliminate dropout

Introduction

- The world over, epidemics continue to present grave challenges for governments and health providers. In these same places, there has been an explosive growth of ICT and in particular mobile communications (phones) over the past decade.
- There is evidence that supports eHealth & mHealth, while a lot has been said about eHealth little has been said about the potential of mobile communications to radically improve healthcare services—even in some of the most remote and resource-poor environments.
- In this session we would look at issues at the heart of mobile phones and healthcare, the health needs to which mHealth can be applied, and the mHealth applications that promise the greatest impact on healthcare.
- mHealth usage and application in Disease surveillance
- And look at the building blocks required to make mHealth more widely available through sustainable implementations.

Simple Definitions

- eHealth - Is using information and communication technology (ICT)—such as computers, mobile phones, internet and satellite communications—for health services and information.
- mHealth – is using mobile communications—such as mobile phones and PDAs —for health services and information.
- mHealth and eHealth are inextricably linked—both are used to improve health outcomes and their technologies work in conjunction.
- mHealth programs can serve as the access point for entering patient data into national health information systems, and as remote information tools that provide information to healthcare clinics, home providers, health workers in the field and patients.

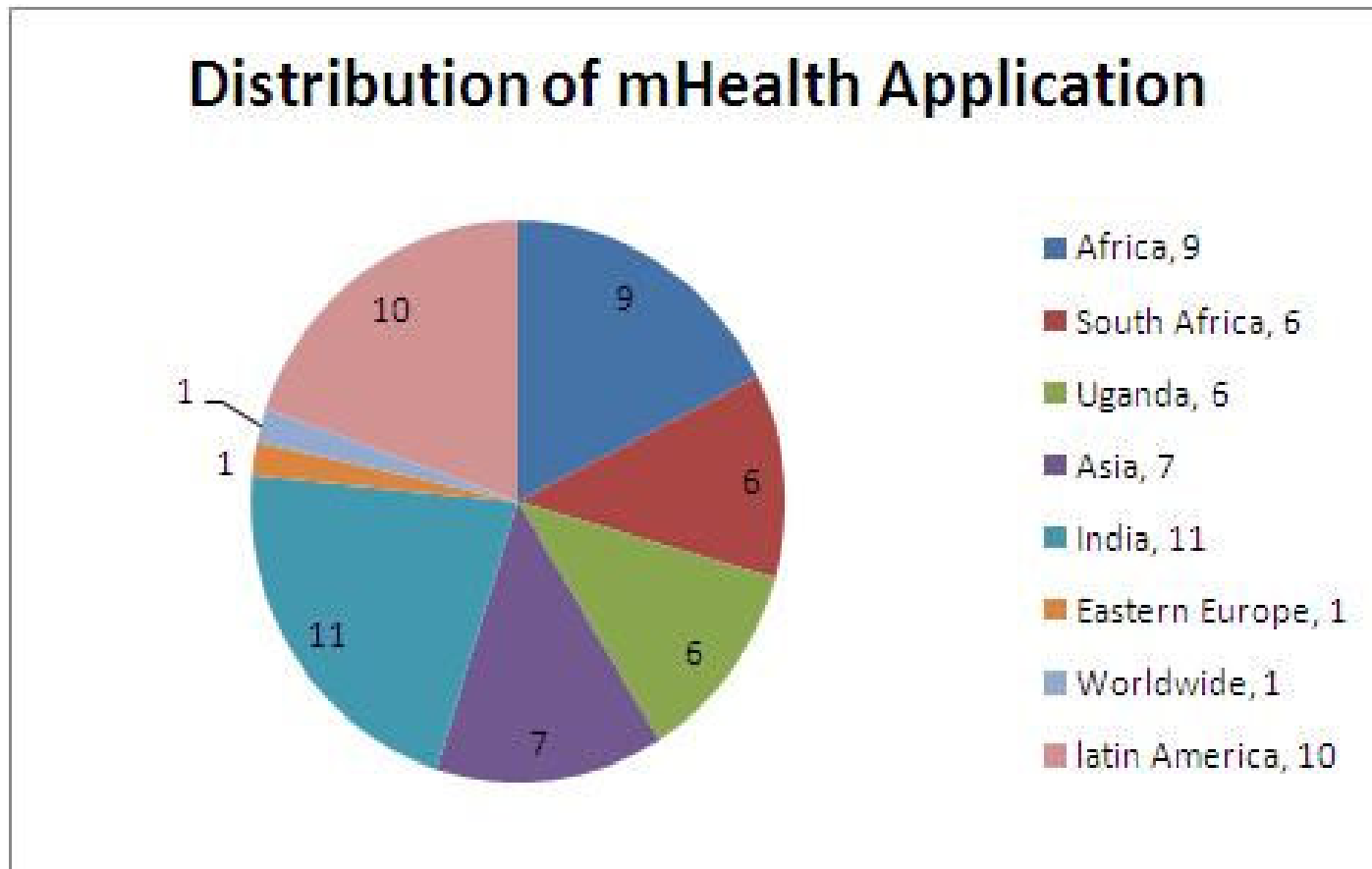
Potential of Mobile Phones to Improve Health

- Mobile phones are ideal tools for communication and data transfer and this is central to mHealth, and thus offers an effective means of improving healthcare and bringing healthcare services to people via low-cost handsets
- Over 70million Nigerians have access to mobile phones even in the rural areas and use them for communication and data transfer
- Because of mobile phones health workers are providing real-time health information from any location directly to the National Health Information System thus effectively ensuring key information such as preventing an epidemic
- Because of mobile phone all patients and citizens can receive health news and alerts like preventive information, reminder alerts etc
- Because of mobile phones all patients on regimented medications such as HIV/AIDS receive reminders to take their drugs on a timely basis

mHealth - Application

- A growing number of developing countries are using mobile technology to address health needs. Especially for
 - Disease Surveillance and Epidemic tracking
 - Remote Monitoring
 - Remote Data Gathering
 - Education and Awareness
 - Communication and training for health workers
- Leaders are India, South Africa, Uganda, Peru, and Rwanda who stand out for their level of mHealth activity.
- Some Disease Surveillance Application
 - Acute Encephalitis Syndrome Surveillance Information System (AESSIMS), India
 - Alerta DISAMAR, Peru
 - GATHER, Uganda
 - Handhelds for Health, India
 - Remote Interaction, Consultation, and Epidemiology (RICE), Vietnam
 - Tamil Nadu Health Watch, India
- Disease and Epidemic Outbreak Tracking –India. Incidents of Japanese Encephalitis were tracked in real-time in Andhra Pradesh, India via mobile phones. The government used the information to better prioritize vaccinations based on evidence of clusters of outbreaks

Distribution of mHealth Application



mHealth in Disease Surveillance

- Outbreaks of communicable diseases often begin in pockets, and, when left undetected, can develop into epidemics. Recent instances of such devastating outbreaks abound, from cholera and TB to dengue fever and Severe Acute Respiratory Syndrome (SARS).
- Prior to the adoption of mobile networks, public health officials relied upon written forms for such emergency tracking.
- Deployment of mobile devices, with their ability to quickly capture and transmit data on disease incidence, has been decisive in the prevention and containment of outbreaks
- The migration of this function to mobile platforms is simultaneously improving response time, data quality and lowering costs.
- Disease and epidemic outbreak tracking mHealth applications are being used in Peru, Rwanda, and India as an early warning system, allowing public health officials to monitor and respond adequately to the spread of infectious diseases

Case Study- GATHER UGANDA

- Faced with low medical staff and lost of time in health information to the ministry of health
- AED Satellite equipped rural health workers with PDA's and GPRS wireless access points in order to transmit their health data collection to the ministry of health
- Clinics were required to regularly send data on public health programs and routine epidemiological data back to the regional health centers
- Diarrhea & typhoid outbreaks have been detected early
- 4years into the project, over 3,000 health centers send data.
- It is now being replicated in Mozambique and in South Africa in 2008

Case Study-2 Tamil Nadul Health Watch

- The consortium of the Indian Institute of Technology, Madras, the National Centre for Biological Sciences, Bangalore, Carnegie Mellon University's Auton Lab, LIRNEasia, University of Alberta, Respere Lanka, Lanka Jathika Sarvodaya Society and the International Development Research Centre
- Collected disease data from nurses via short messaging service (SMS) and the aggregated data could be viewed using specialized software
- The objective is to develop a module that will alert health officials and enable them to come up with appropriate interventions
- The system detected spreading respiratory tract infections in Sri Lanka and escalating diarrhoea cases in Tamil Nadu within a days of implementation

Impacts of mHealth

- mHealth programs have shown a significant positive impact on increase in life chances by reduction of disease contraction, reduction in infant mortality etc
- mHealth has affected early reporting and produced quicker response over the traditional paper approach
- This has directly saved lives in preventing epidemics and also cost of treatments.

mHealth in Nigeria

- Nigeria has no National mHealth program, though we have the biggest mobile phone community in Africa
- The NPHCDA has an mHealth solution—used in collecting data from midwives in the field in the MSS Scheme
- ValueFirst is leading the implementation of mHealth solutions with mPREVENT—targeted at reducing immunization dropout and increasing timeliness of immunization compliance and achieving MDG-4

mHealth – Way Forward

- Government leadership and support is critical to the success of any mHealth Project
- Ownership must be taken by the Ministry of Health
- Partnership with Solution providers and Network providers is the best delivery option
- End-users must remain at the centre of design and development of successful mHealth solutions
 - Using technology users are used to in the way they are used to using them, as End-user acceptance is critical to the success of the project
- Plan for short-term and long-term funding and budgetary allocation
 - mHealth projects are far more likely to be sustainable if the project is institutionalized into existing government health programs and can receive budget attention this is consistent with extensive research work on mHealth by Dr. Adesina Iluyemi, PhD, University of Portsmouth, United Kingdom findings on sustainable mHealth projects
- Set measurable goals –by setting goals and benchmarks, mHealth projects can provide proof of success.

Deploying mHealth Disease Surveillance in Nigeria

- Use a hybrid model that combines the features of Gprs and Short Messaging Service (SMS)
- The data collected will be aggregated in a specially designed and developed software that would allow reports viewed in different formats
- Allow all authorized user access to view the report
- The best service delivery model is a fully hosted service

Form



Simple Experiment
using SMS to report
Disease outbreak.



Send your text to
07032249000



Sample Report

May 2011 Surveillance Report

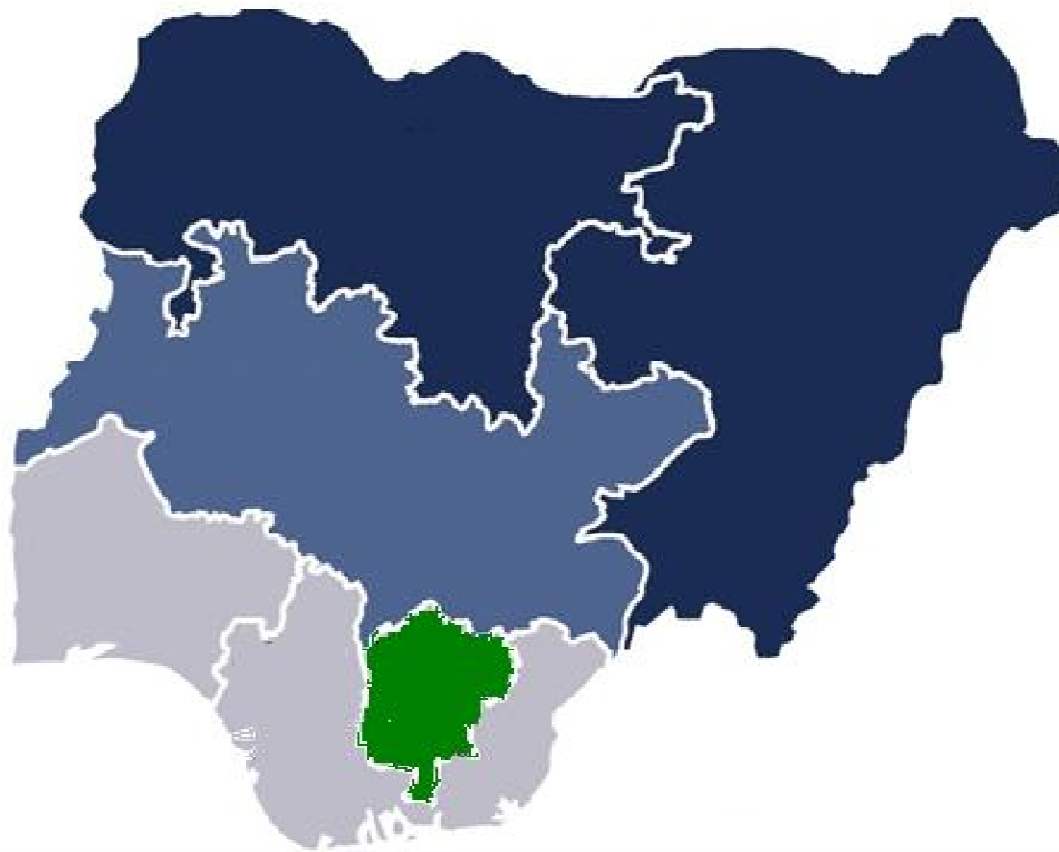
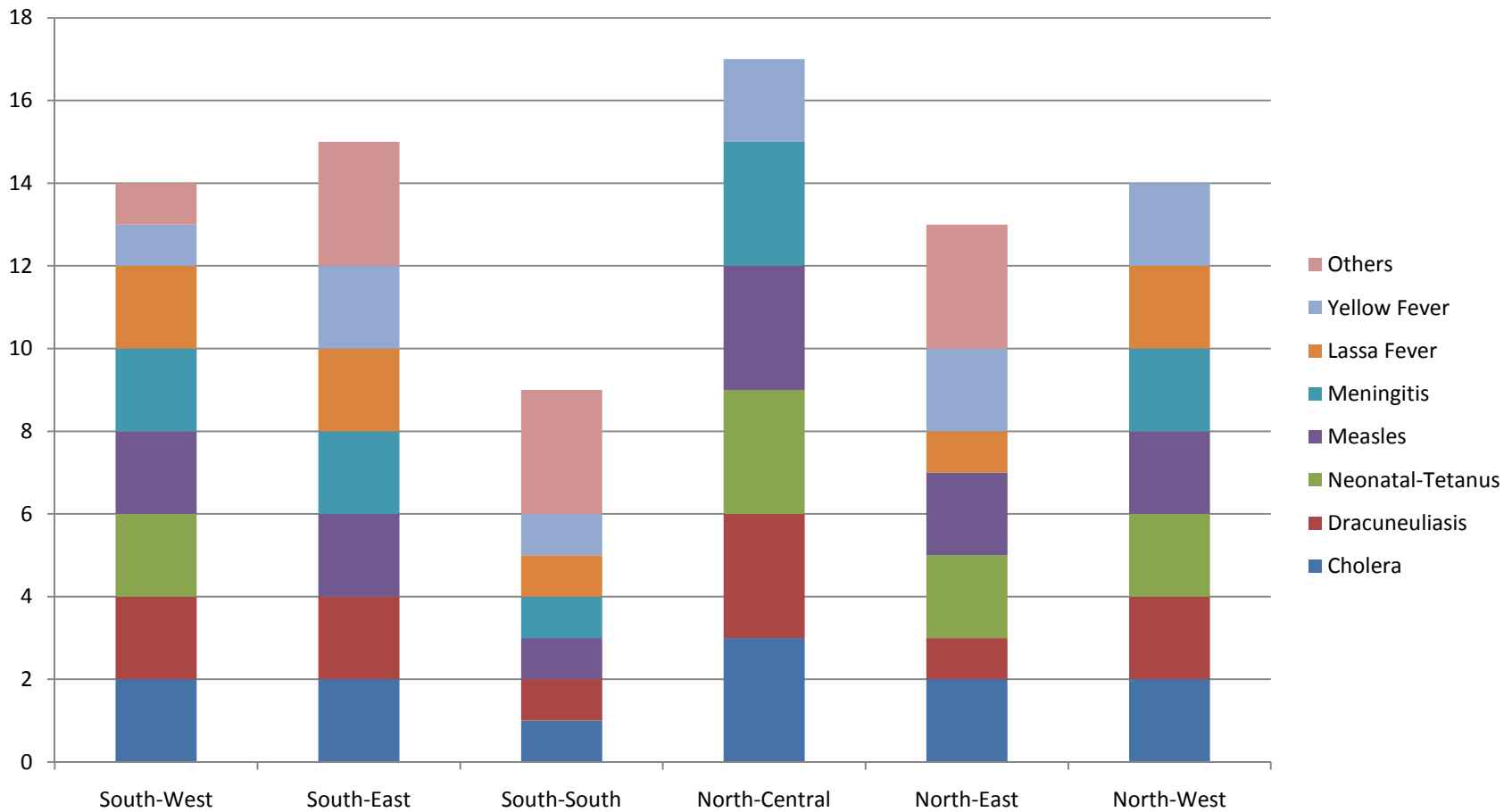
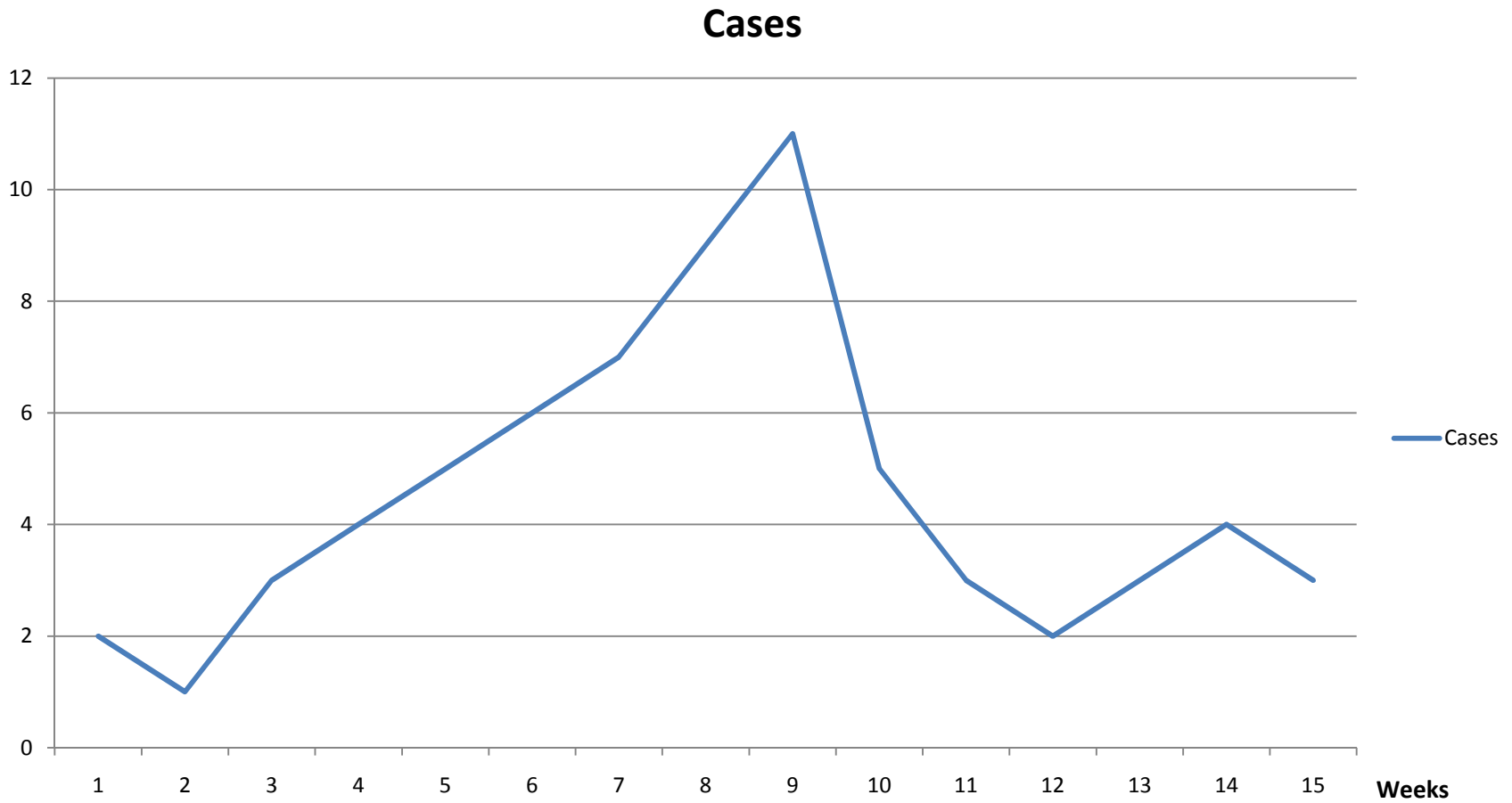


Chart of Reported Cases



Reports



Periodic Report

Date	LGA	Disease	Surname	First name	DoB	Outcome		
22-04-11	Abc	Cholera	xyx	Mno	11-09-99	Alive		
23-04-11	BBB	Tetanus	Ggg	Ddd	03-03-03	Alive		
23-04-11	Ccc	Yellow Fever	Gdgdg	v b d	02-02-88	Alive		
23-04-11	Ccc	Cholera	Fdhddh	Tehdb	08-08-96	Alive		
24-04-11	Fff	Measles	Fbfkkf	Hfhfhf	09-12-09	Alive		

Location Report

Date	LGA	Disease	Surname	First name	DoB	Outcome		
22-04-11	Abc	Cholera	xyx	Mno	11-09-99	Alive		
23-04-11	Abc	Tetanus	Ggg	Ddd	03-03-03	Alive		
23-04-11	Abc	Yellow Fever	Gdgdg	v b d	02-02-88	Alive		
23-04-11	Abc	Cholera	Fdhddh	Tehdb	08-08-96	Alive		
24-04-11	Abc	Measles	Fbfkkf	Hfhfhf	09-12-09	Alive		

Detail Report

1	Date	25-04-2011
2	LGA	ABC
3	Disease	Cholera
4	Surname	xyzzz
5	Lastname	AABCD
6	Date of Birth	22-11-2001
7	Outcome	Alive

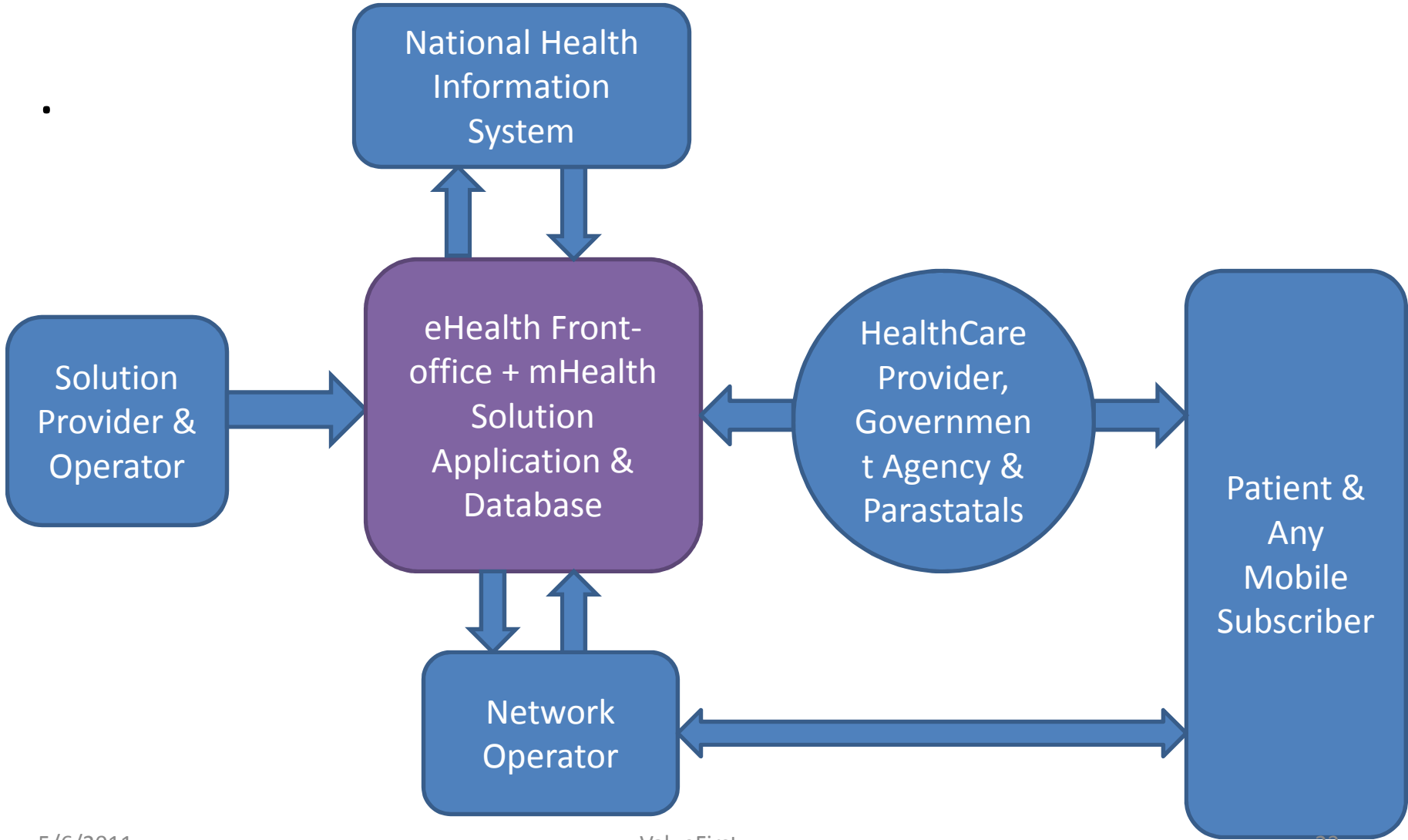
We have all we need

Stakeholders	Roles
Patient or Any Mobile Subscriber	Receive Alerts & Educational messages
Hospitals/Health Care Provider/Health officers	<ol style="list-style-type: none"> 1. Field Officers send disease surveillance information to system 2. Review Surveillance Reports and see trends 3. Provide better care and alert others
Min. Of Health, its Agencies & parastatals	<ol style="list-style-type: none"> 1. Project Owners, initiate, supervise and monitor solution 2. Ensure health providers actively partake 3. View Reports of Disease Surveillance and take appropriate actions 4. Implementation of policy and strategy,
Government	<ol style="list-style-type: none"> 1. Form mHealth policy and strategy 2. Provide funding
Network Providers	Provide enabling network access for mHealth
Solution Providers	Design, Develop, deploy, host, manage and maintain mHealth solution platform

5/6/2011

Value First

Schematic



mHealth –mPREVENT

- ***Clinic records of 512 Nigerian children were evaluated for timeliness in receiving vaccines and the completion rates of the schedule. About 30% of the children presented after four weeks of age for their first immunization; 18.9-65% of the children were delayed in receiving various vaccines compared to the recommended ages for receiving the vaccines. Only 227 (44.3%) children were fully immunized*** - Institute of Child Health, University of Benin, Dr. Ayebo E. Sadoh and Charles O. Eregie
- mPREVENT is an mHealth solution designed to give free immunization reminder alerts to mothers, the aim is to ensure
 - The timeliness of baby vaccination
 - Eliminate dropouts from Routine immunization
- Let us agree to a target that all participants will register at least 10 babies monthly using the mPREVENT forms on your phone.
- Each registration will cost you normal SMS charges and Valuefirst will incur development, hosting and operation cost and cost of SMS alert to the mothers
- Now you are all mHealth enabled users - Congratulations

Conclusion

- mHealth is here to stay, because it works and because its impact, benefits and contribution to improving healthy life for citizens are significant. For example
 - Prevention of epidemics by early reporting and data gathering and advisory using mHealth
- All the necessary stakeholders and environment to implement a successful and sustainable mHealth initiative in Nigeria are all available
- There are only 3 things needed to jump-start the Nigerian mHealth initiative
 - Government adoption, commitments and support of mHealth
 - Healthcare Providers adoption, commitments and support
 - Funding! Funding!! Funding!!!
- If you notice mHealth is the developing countries way of using technology to bridge the digital divide and it would be sad if again amongst developing countries we fail to bridge the digital divide, meet the MDGs and improve the life of the citizens of this country