Electronic Integrated Disease Surveillance and Response eIDSR implementation in Tanzania

Joseph Joachim J¹, Ally Yassin A²
1 RTI International, Dar es Salaam, Tanzania; 2 Ministry of Health, Dodoma, Tanzania;

The 5th Annual Global Digital Health Forum 10th – 11th Dec 2018, Washington DC
Introduction

eIDSR implemented to address

▪ The challenges with manual IDSR
▪ The challenges of timeliness of reporting and data quality
▪ Lack of proper analysis tool and data sharing mechanism
Outline

- Development of eIDSR
- Pilot and rolling out of eIDSR
- Training Methodology
- Changes to the System before Scale Up
- Visualizations, Data analysis and Feedback in DHIS2
- Challenges and Successes of eIDSR implementation
- Take away messages
Development of eIDSR

eIDSR uses USSD mobile technology

Why USSD?

- Does not require Internet connectivity
- It works in any mobile phone
- Quick alerts and notifications to responsible people

USSD Code for eIDSR in Tanzania is *152*05*01#
Development of eIDSR cont....

eIDSR- dhis2 linkage

- eIDSR Server
- Mobile Network Aggregator (Starfish)
- Health Facility
- SMS alert for reported Case

- National Level
- Regional Level
- District Level

- Investigate
- Analyze
- Respond
- Weekly aggregate Report
- Verification

- Prepare and send reports
  - Immediate notifiable
  - Weekly aggregate Report
  - Validation
Pilot and rolling out of eIDSR

Rollout was done in phases depend on

- Availability of funds
- Donor support
- System improvement

eIDSR Participants in Mwanza Region April 2015
Training Methodology

- Conduct ToT at National, Regional and District level
- Training steps used to send Weekly and immediate outbreak report
- Share experiences from the facilities which performing very well

eIDSR Successful Implementation in Tanzania

eIDSR Training session in Shinyanga Region July 2018
Changes to the System before Scale Up

Gathering feedback from users during supportive supervision, through structured questionnaire and interview

- Adding 2 more mobile network providers
- Have at least two users registered per facility
Visualizations, Data analysis and feedback in DHIS2
Challenges of eIDSR implementation

- Donor dependence to pay monthly fee to the mobile aggregator (Starfish) and system maintenance including sms bundle, and overall system maintenance
- Inadequate of IT personnel at ministry to support the system
- Poor network connectivity
- Staff turnover especially in private facilities
Success of eIDSR

- Improved timeliness, completeness
- Improved the quality of IDS data, through the validation process before sending to the DHIS2.
- Early notification of outbreaks
  - Example the cases of cholera outbreak occurred 2015 in Tanzania, the alert and notification was sent to the national and sub level through eIDSR.
- Dedicated partners and IDS focal persons at national and sub-national levels
- Coverage of IDS is 96.8% countrywide, 7182 / 7419 facilities
- Developed a platform for providing help desk support to end user in Tanzania we developed eIDSR Panel, a platform for supporting end user
Percentage of Timely and Complete Reports by Regions W31, 2018

National Target 80%
Take away message

- Involvement of diverse stakeholders
- Select appropriate technology and training methodology
- Regular supportive supervision
- Sharing feedback among key stakeholders
  - Share analyzed data i.e. number of out break cases reported if any.
  - Weekly summary report.
- Data quality assessment field visit
- Regular System maintenance i.e. DHIS2 upgrade
- Facilitate training for new eIDSR user, on job and refresher training
Thank you
Establishing a mobile Emergency Operating Center for Ebola response in the Democratic Republic of the Congo (DRC) and Digital tool in the outbreak (DHIS2)

Dr Ousmane Ly,
Digital Health Advisor
PATH/MoH DRC
Learning Objectives

In this presentation I would like to talk about:

1. EOC and Mobile EOC implementation challenges
2. Digital Health Tools use challenges
Background

- May 2018 Democratic Republic of Congo (DRC) declares its 9th Ebola Virus Disease (EVD) outbreak
- Since 1976, this disease has recurred in the DRC
- In 2014, West Africa recorded the most complicated and deadliest epidemic ever, with more than 11,000 deaths
- Inter-human transmission is very easy, the measures of struggles are based on a set of interventions:
  - case management,
  - infection prevention and control measures,
  - monitoring and search of contacts,
  - quality laboratory services,
  - safe and dignified burials and social mobilization
DRC Emergency Operating Center (EOC)

• An emergency operations center (EOC) is a physical location for the coordination of information and resources to support incident management activities. Such a center may be a temporary facility or may be established in a permanent location.

• The coordination of response activities by the DRC Ministry of Health and its partners from the EOC in Mbandaka/Kinshasa enabled the rapid control of the ninth epidemic of EVD in the province of Ecuador.

• EOC Kinshasa has enabled the creation of an epidemiological data visualization dashboard for real-time monitoring on the DHIS2 platform. This integration has contributed to the interoperability and interconnectivity of epidemiological surveillance data with the National Health Information System (NHIS).
EOC Operational Modes

**Watch Mode**
- EOC Manager
- Watch Staff
- Core EOC Staff (other sections)
- Event Based Surveillance

**Alert Mode**
- Staff from Watch Mode +
- Subject Matter Experts Alerted and Available
- Surveillance Enhanced
- Mission Analysis Conducted
- Coordination with other Ministries Initiated
- IAP Development Initiated
- Deployment Preparation Initiated

**Response Mode**
- Staff from Alert Mode +
- Incident Manager Appointed
- IMS Staff Recalled
- Subject Matter Experts Recalled
- Liaison with other Ministries Established
- EOC Activated
- IAP Developed
- Resources Deployed

**Critical Information Requirements**

An EOC may operate in all three modes simultaneously.

Source: CDC Basic PHEM Module 6
Mobile EOC at Mbandaka: quick response under MoH leadership

• Deployment of investigators within 48 hours
• Minister Ilunga activated EOC for Bikoro outbreak and naming an interim EOC coordinator
• Kinshasa EOC was initially planned for use as data management and visualization center, but its function was focused on data visualization as WHO and MoH moved operational management to Bikoro and Mbandaka.
• At instruction of Minister Ilunga, extension of Kinshasa EOC was established in Mbandaka named Mobile EOC in coordination with WHO and OCHA
**EOC Activation Levels**

* Activation Levels only apply to Response Mode
* An EOC can only operate at one Activation Level at a time for a specific event

**Level 1**
The highest level of activation, this level is reserved for the largest-scale responses, which often require substantial Ministry-wide effort

**Level 2**
This level of activation often requires significant staff augmentation

**Level 3**
The lowest level of activation and effort.

**NOTE: Watch Staff is always in Watch Mode**

Source: CDC Basic PHEM Module 6
Mobile EOC tools & facilities

- ArcGIS and ArcGIS online mapping software
- DHIS2 Data Warehouse Software
- EWARS Alert Notification Software
- Mobile Application DHIS2 Tracker
- ANDROID Smartphone and Tablets
- Common Geographic Reference of DRC
- OpenStreet Map DRC
- Vsat and telco’s network for Internet and communication access
- Operating room with visualization facilities
Mobile EOC activities

• From May 13, 2018 to July 15, 2018, 64 digital maps were produced every day.

• A dynamic cartographic visualization dashboard was created with ArcGIS online.

• A dynamic dashboard for monitoring the epidemic was carried out on DHIS2.

• Mobile applications for Alerts and notifications platform was deployed.

• Mobile applications for contact tracking and case notifications were set up but could not be deployed.

• Several meetings of the DRC’s Common Geographical Referential were held to correct the maps, district boundaries and exact geographic coordinates of the health structures with the participation of UCLA.

• OpenStreet Map community of the DRC, work strongly for the correction of cartographic data.
DHIS2 National Health Information System implementation features for all outbreak decision's makers.
From Manual map to digital map and dynamic map
SEM Oly Ilunga uses his tablet for decision making.
Challenges
Global challenge

• Logistics issues working in the middle of the forest
  ○ Travelling 16 Km take 3 hours in certain health zones
• Social behavior communication with the host community including pygmy population
• Coordination among multiple partners
  ○ Very lack coordination between NGO and International agency
• Data-driven decision management
  ○ Need to consolidated database and standardized tools using data from multiple sources: MoH-DHIS2 vs WHO-EWARS
• Need to have Key performance indicators data,
• Data discrepancies among coordination levels
• Late decision establishing some sub-coordination like Itipo (one big epicenter)
EOC challenge

- Logistics issues
  - IT Equipements, local provider have not a good quality, and cost is very higher
- Communication Issues:
  - Vsat not functional some time, and very expensive
  - Telco’s network don’t give sufficient internet bandwidth
- Coordination among multiple partners
  - Very lack coordination between MoH, NGO and International agency (some player)
- Digital tools
  - Need to consolidated database and standardized tools using data from multiple sources: MoH-DHIS2 vs WHO-EWARS vs OCHA-TABLEAU etc...
  - Don’t use any toll if it is not mature: like DHIS2 Android tracker app on mobile phone
Failed to use DHIS2 ANDROID Tracker application: BUG OF THE MOBILE APP

Click for manual synchronization

Attempt to download to the server

The application stops and asks to be restarted

DHIS2 Tracker keeps stopping

Message from the phone
Next step Mobile App for EOC with AfricaCDC: automatical record of contact tracer GPS information
Transmits Data From all responders

Automatic Tracking Every 15 Minutes

Dashboards

Track Individuals Last Known Locations

Identify & Locate Resource Specialties

Audit Response Team Members in the Field

Fully interoperable with DHIS2
Conclusion

• Collaboration, sharing, inclusion of all stakeholder is the key of success and sustainability
• Integration and interoperability of digital health tool in eIDSR is very important
• DHIS2 is mature for visualisation of IDSR data but the majority mobile app is not mature
• Time is countdown: the next outbreak is her, and need good DHIS2 mobile app:
  o Unfortunately the country facing the 10th Ebola outbreak in North Kivu province since 1th august, only one week after the end of the 9th outbreak in Equator province (24 July)
  o Fighting zone with wave of rebel attacks is the big challenge
Thank You!
Progress and Challenges in Implementing DHIS 2 for Disease Surveillance in Guinea

Global Digital Health Forum, December 11, 2018

Eileen Reynolds

Photo credit: Patrick Adams
Why invest in disease surveillance/DHIS 2?

Background

DHIS 2 in Guinea 2015-2018

Next steps

Lessons learned

Challenges

Opportunities
Why invest in disease surveillance /DHIS 2?

- A case of an unknown disease started in a village in Guinea in Dec 2013, Ebola not confirmed until March 2014…
- Soon the disease spread to Conakry, the capital and to Sierra Leone and Liberia
- 28,652 cases, 11,325 deaths from West Africa Ebola outbreak
- Weak capacity in data management cited as contributing factor
- Lack of integrated data collection, timely aggregation, analysis and sharing of data hampered the response

*Triage training, Guinea, Photo credit: Patrick Adams*
- 2015-2019: CDC, Global Health Security Agenda
- Real-Time Surveillance Action Package:
  - “improved country.. capacity to analyze and link data from and between strengthened, real-time surveillance systems, including interoperable, interconnected electronic reporting systems.”
Scenario in 2015

- Ebola outbreak ongoing
- For other diseases/events:
  - Pieces of information held by different stakeholders
  - Difficult to track cases
- Is DHIS 2 feasible for routine HIS and disease surveillance?
- USAID, Global Fund support for routine HIS
- Validation of DHIS 2 by MOH
Configure, pilot test and roll out DHIS 2 for routine HIS

Requirements gathering and workshop for disease surveillance

Roadmap to add disease surveillance to DHIS 2:
- Aggregate + Individual Cases (Tracker)

No changes to data collected
Individual Case Notifications in DHIS 2 Tracker

Health facilities report suspect cases to District Health Office by phone & case form. Receive text/email alerts with lab results.

District conducts investigation, enters info on paper case form, enters case form into DHIS 2, sends sample to lab. Receives notification via SMS/email and checks results in DHIS 2.

Lab receives and logs sample in DHIS 2, conducts tests, and enters results into DHIS 2, triggering notification to District, Facility.

Specific programs (EPI, Malaria, etc.) view/analyze case data in DHIS 2.

National Health Security Agency, enter final case classification, view, analyze, develop reports, and use information.
2017: Pilot DHIS 2 for Disease Surveillance

- 2 regions, 10 districts
- National labs + National Health Security Agency

Evaluation Results:
  - Weekly aggregate reports: high completeness
  - Individual reports:
    - Lower individual case reports vs. aggregate
    - Lack of labs data
    - Lack of follow up
  - Move forward with aggregate reports
2018: DHIS 2 Disease Surveillance Roll Out

- Aggregate weekly reports roll out in DHIS 2
- Case forms revised & Configured in Tracker
- Training of Trainers
- Dec 2018-Feb 2019: Rollout of new case forms/reporting in DHIS 2 Tracker
Evolution of national disease surveillance reporting in Guinea

2015-2016: Aggregate Data transmitted by phone, case forms on paper

2017: Aggregate and case data transmitted via Excel workbook, paper case forms in parallel

2017: DHIS 2 piloted in 2 regions for aggregate and case-based surveillance

2018: Aggregate data reported in DHIS 2 and in Excel workbook

Planned for 2019: DHIS 2 used for aggregate and case-based surveillance
Next Steps – 2019

- Transition from Excel to DHIS 2
- Transition management to MOH, Health Security Agency
- DHIS 2 sustainability planning
- Increase analysis and use of surveillance data
- DHIS 2 Android at health center level

Ministry of Health of Guinea, DHIS 2 Dashboard
Lessons Learned & Challenges

- Parallel reporting system
- Lack of supervision & response discouraged use
- Engagement and use of DHIS 2 at central level
- Change management strategy
- Basic computer skills training needed
- Weak data use
- Sustainability (internet, DHIS 2 tech support, hosting, etc.)

Health Center level health workers learning to use DHIS 2 Android on Tablets, December 2018
Opportunities

▪ DHIS 2 as global good means better chances of support beyond any one project

▪ Sources of tech support:
  – University computer sciences
  – MOH IT team
  – Local team
  – West Africa Health Informatics Team

▪ Sources of data use support:
  – Field Epidemiology Training Program
  – University MPH program

▪ Mobilize partners and advocate for resources to support the investments made
More Information

Eileen Reynolds
Project Manager
ereynolds@rti.org

Pia MacDonald
Principal Investigator
pmacdonald@rti.org

Dr. Boubacar Diallo
Project Director
bidiallo@guinea.rti.org