GHSA and Ebola Technical Areas:
Targets and Expected Outcomes

Mr. Ray L Ransom

Associate Director for Informatics
Division of Global Health Protection
Center for Global Health

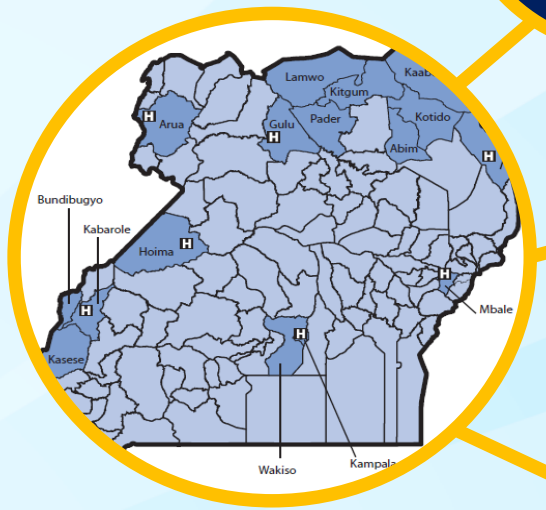
GHSA/Ebola Grantees Meeting
February 11, 2016

Elements of Success - Uganda

Prevent

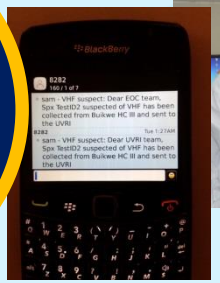
Detect

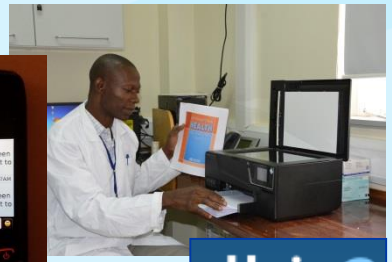
Respond



Nationwide Lab Network

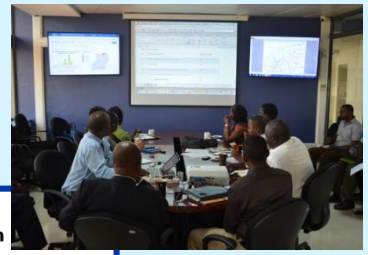
Real-Time Information System





dhis2

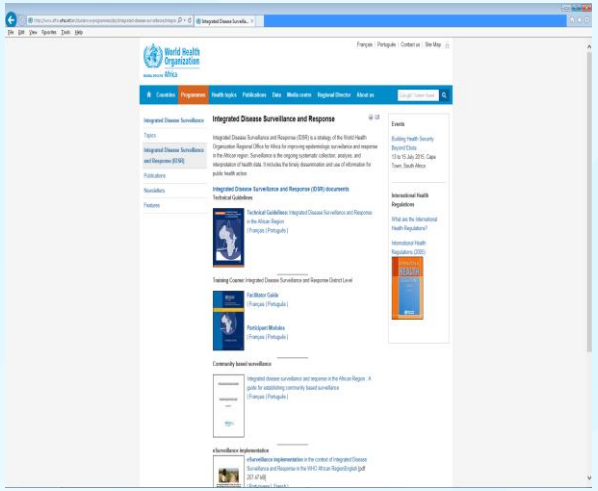
Emergency Operations Center

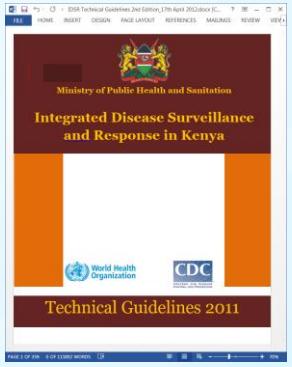


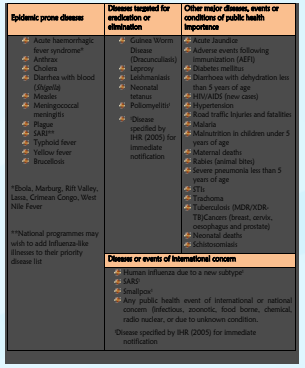
Uganda
Ministry of Health
Public Health
Emergency Operations Centre

Slide courtesy of Jeff Borchert, CDC Uganda

Elements of Success – IDSR Capacity



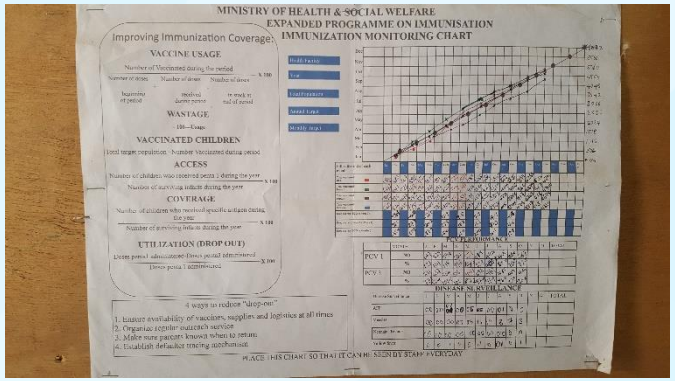


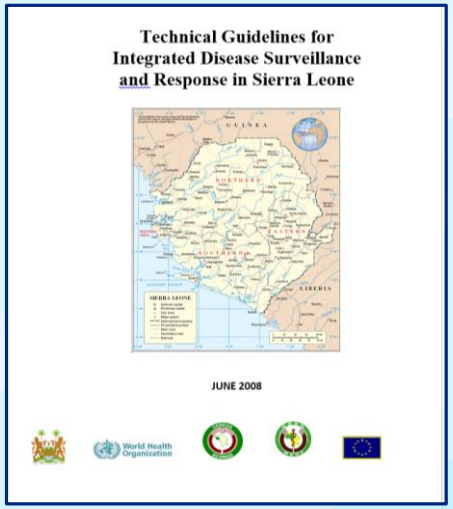


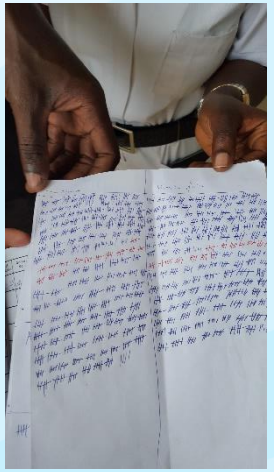
- A framework for strengthening national disease surveillance and response systems
- 1998 - Adopted by WHO/AFRO Member States
- 2006 - Recommended as framework for implementing IHR
- 43/46 WHO-AFRO Member States Implementing IDSR
- Applied in other WHO regions including SEARO and EMRO.
- Extensive resources available from WHO/AFRO for IDSR planning and implementation

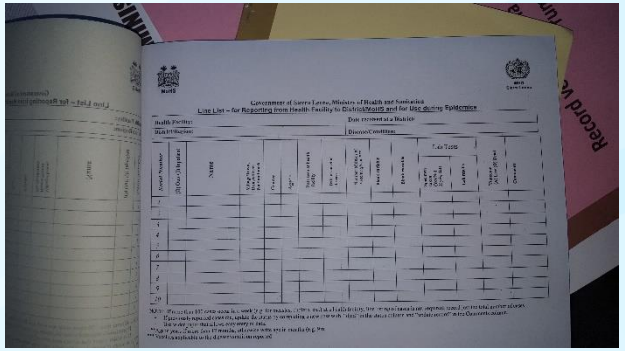
Images from documents developed by MoH Kenya in conjunction with WHO Kenya, WHO/AFRO, and Helen Perry, CDC

Opportunities – West Africa



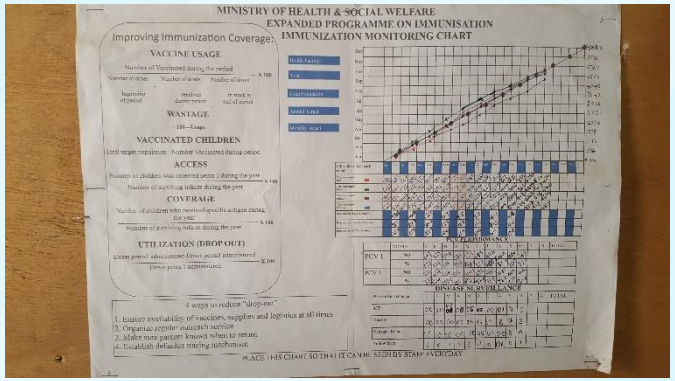


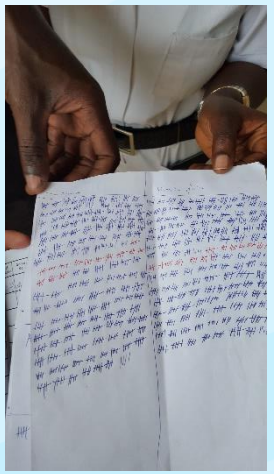


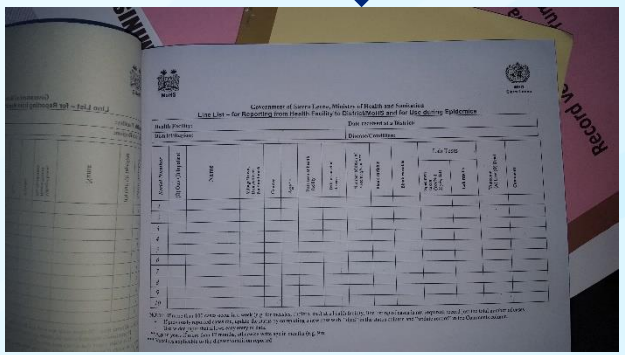


- Existing IDSR-based surveillance activities and Data sources
- World Bank Investments
- WHO Partnerships
- Funded Technical Partners
- Common needs and priorities

Challenges and Opportunities – West Africa

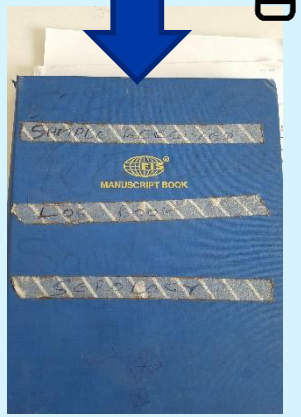




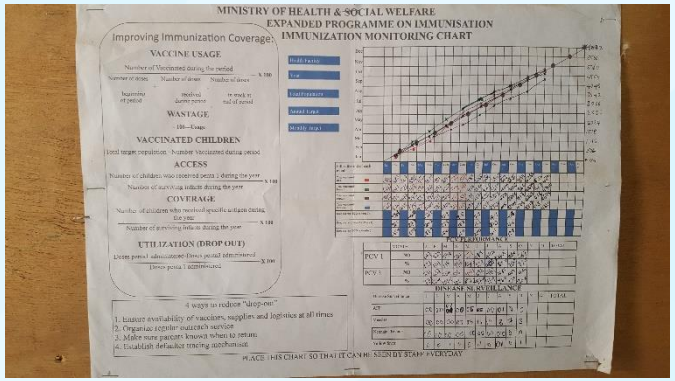


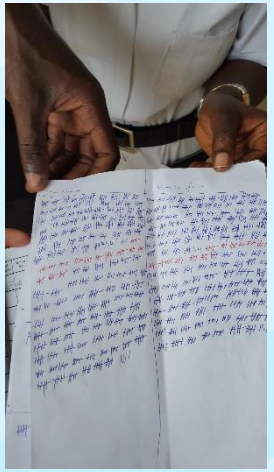
DHIS-2

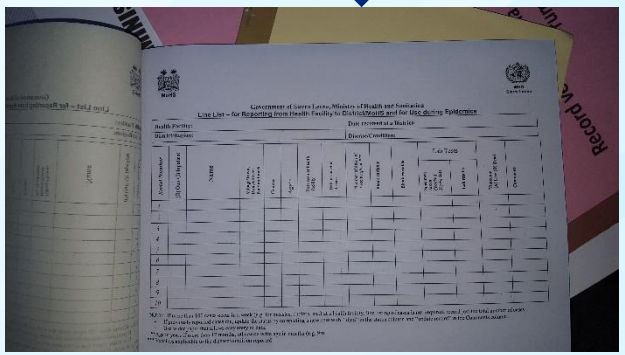
Routine Surveillance

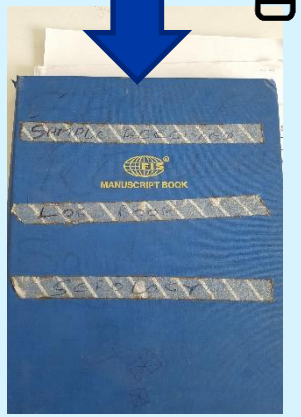


Challenges and Opportunities – West Africa







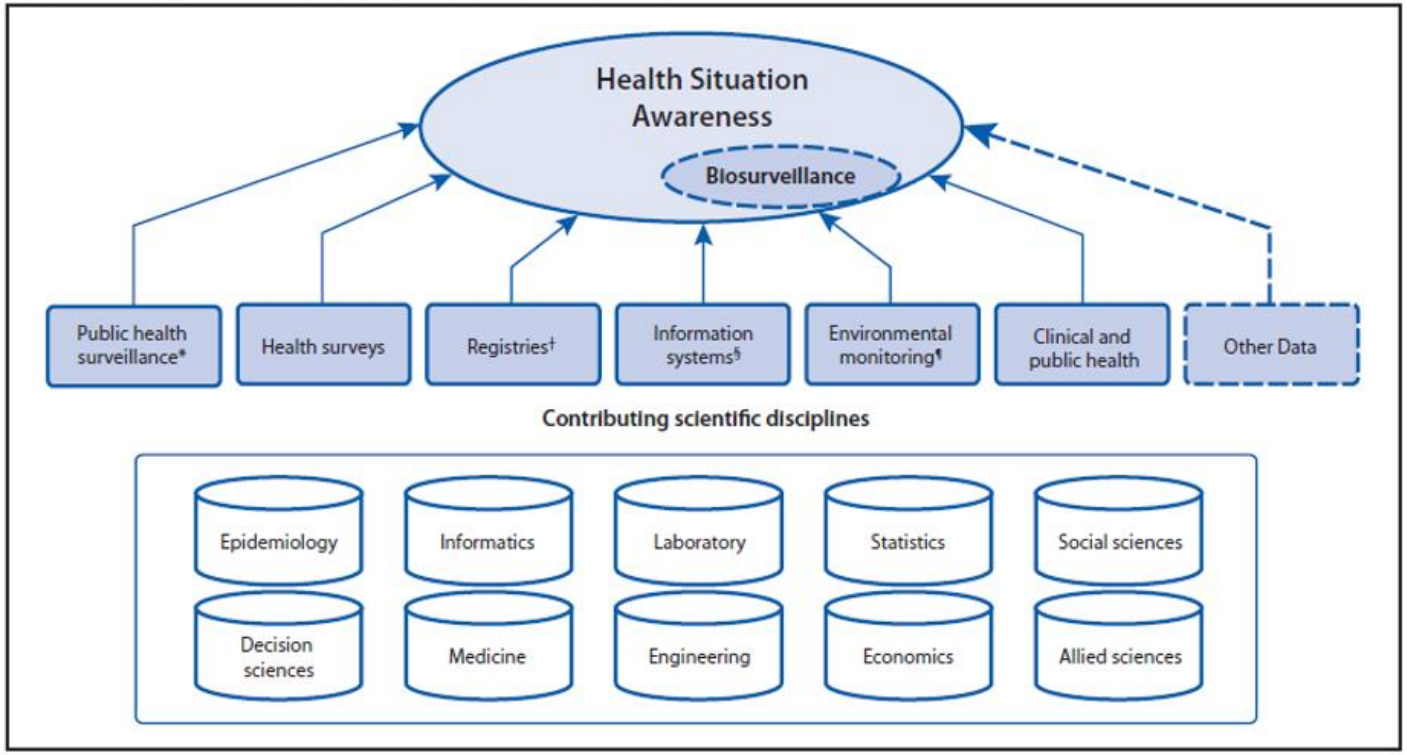


Overcoming Challenges – Uganda

- Investing across health system – building capacity for early detection
- Coordination
- Setting priorities – Bi-lateral and Multi-lateral partnerships
- Standards
- Disease-specific considerations : Coordinated solutions
- Data governance
- Data quality and use
- Systems interoperability – Data Integration and Exchange

Where are We Headed?

FIGURE 1. Various data feeds to support health situation awareness



* Systematic and continuous collection, analysis, and interpretation of data, closely integrated with the timely and coherent dissemination of the results and assessment to those who have the right to know so that action can be taken (Porta MA, Dictionary of Epidemiology, 5th Ed., Oxford University Press, 2008).
† Vital registration, cancer registries, and exposure registries.
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¶ Weather, climate change, and pollution.

CDC's Vision for Public Health Surveillance in the 21st Century, *MMWR Supplement/Vol. 61 July 27, 2012*

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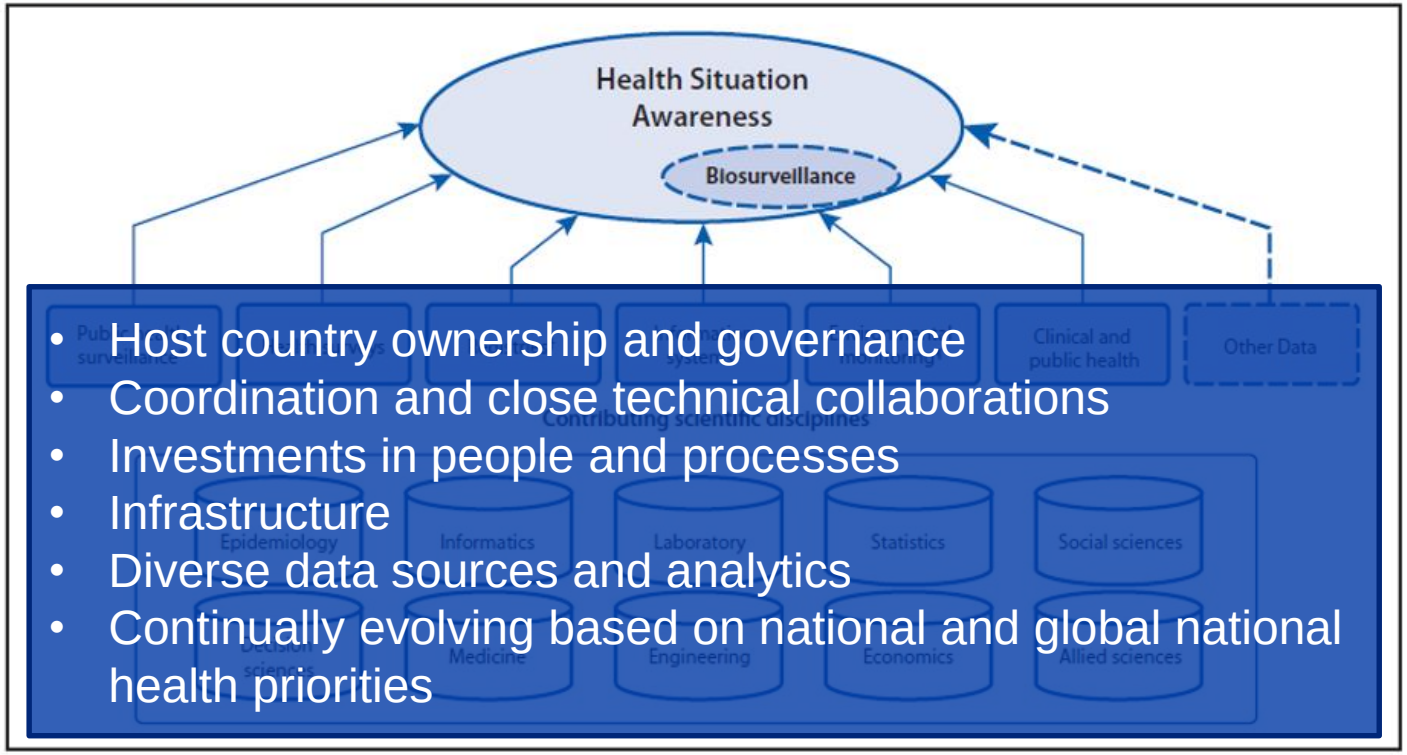

- Host country ownership and governance
- Coordination and close technical collaborations
- Investments in people and processes
- Infrastructure
- Diverse data sources and analytics
- Continually evolving based on national and global national health priorities

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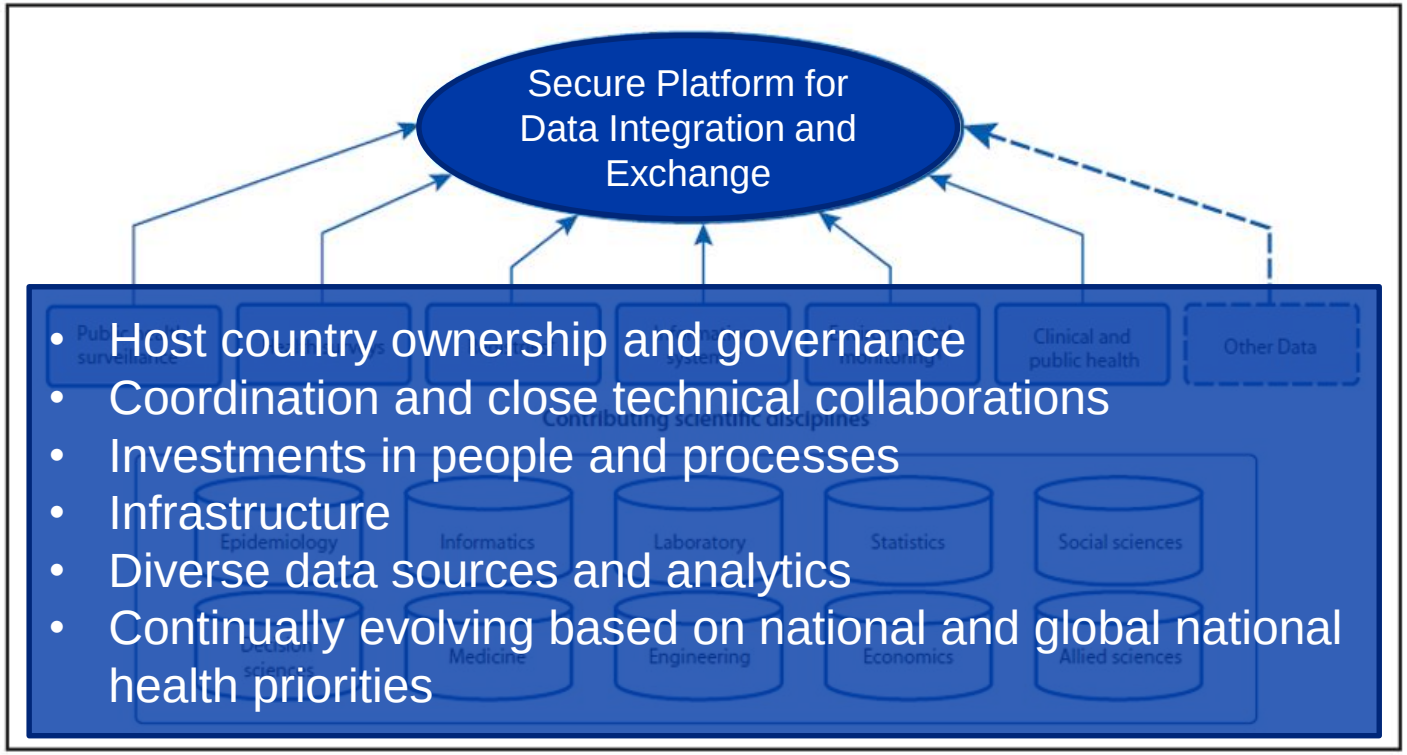

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CDC Global Health Security Agenda/Ebola Grantee Meeting

Accountability. Results. Sustainability.

CDC & GLOBAL HEALTH SECURITY AGENDA

GHSA and Ebola Technical Areas:

Workforce Development

Targets and Expected Outcomes

Bassam Jarrar

WIDB Deputy (Acting)
DGHP/CGH

GHSA/Ebola Grantees Meeting
February 11, 2016

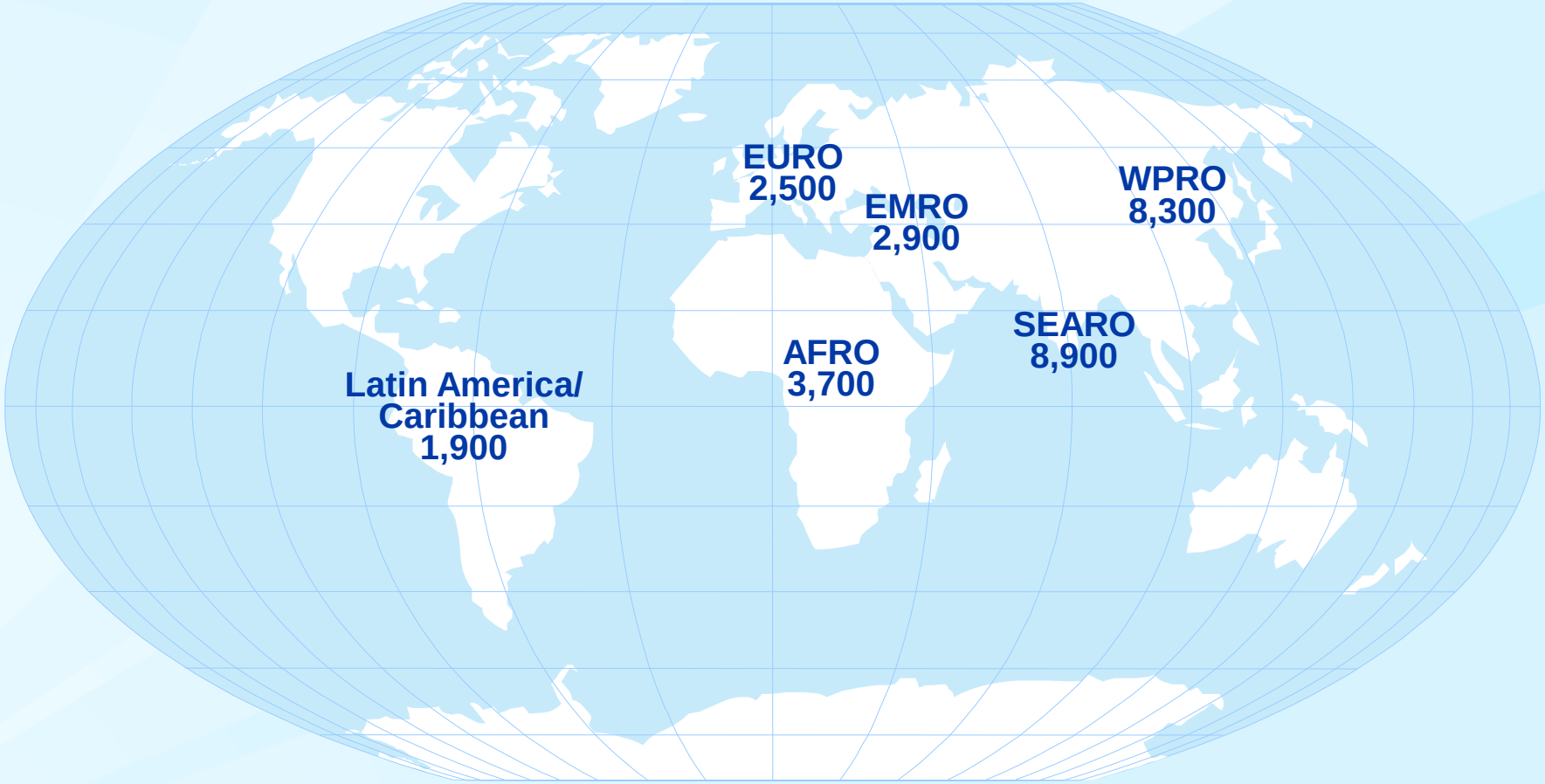
USG Global Health Security Agenda:

Goals	Objectives
Prevent avoidable epidemics	• Prevent the emergence and spread of **antimicrobial drug resistant** organisms • Promote national **biosafety and biosecurity** systems • Prevent spillover of zoonotic diseases into human populations • Ensure that 90% or more of 1 year old population has received measles-containing vaccine
Detect threats early	• Launch, strengthen and link global networks for **real-time biosurveillance*** • Strengthen the global norm of rapid, transparent **reporting and sample sharing** in the event of health emergencies of international concern • Develop and deploy novel diagnostics and strengthen laboratory systems* • **Train and deploy an effective biosurveillance workforce**
Respond rapidly and effectively	• Develop an interconnected global network of Emergency Operations Centers and multi-sectoral response to biological incidents* • In the event of a suspected or confirmed biological attack, have the capacity to **link public health and law enforcement** for the purpose of attribution. • Improve global access to **medical and non-medical countermeasures** during health emergencies

USG Global Health Security Agenda: Workforce Development Targets

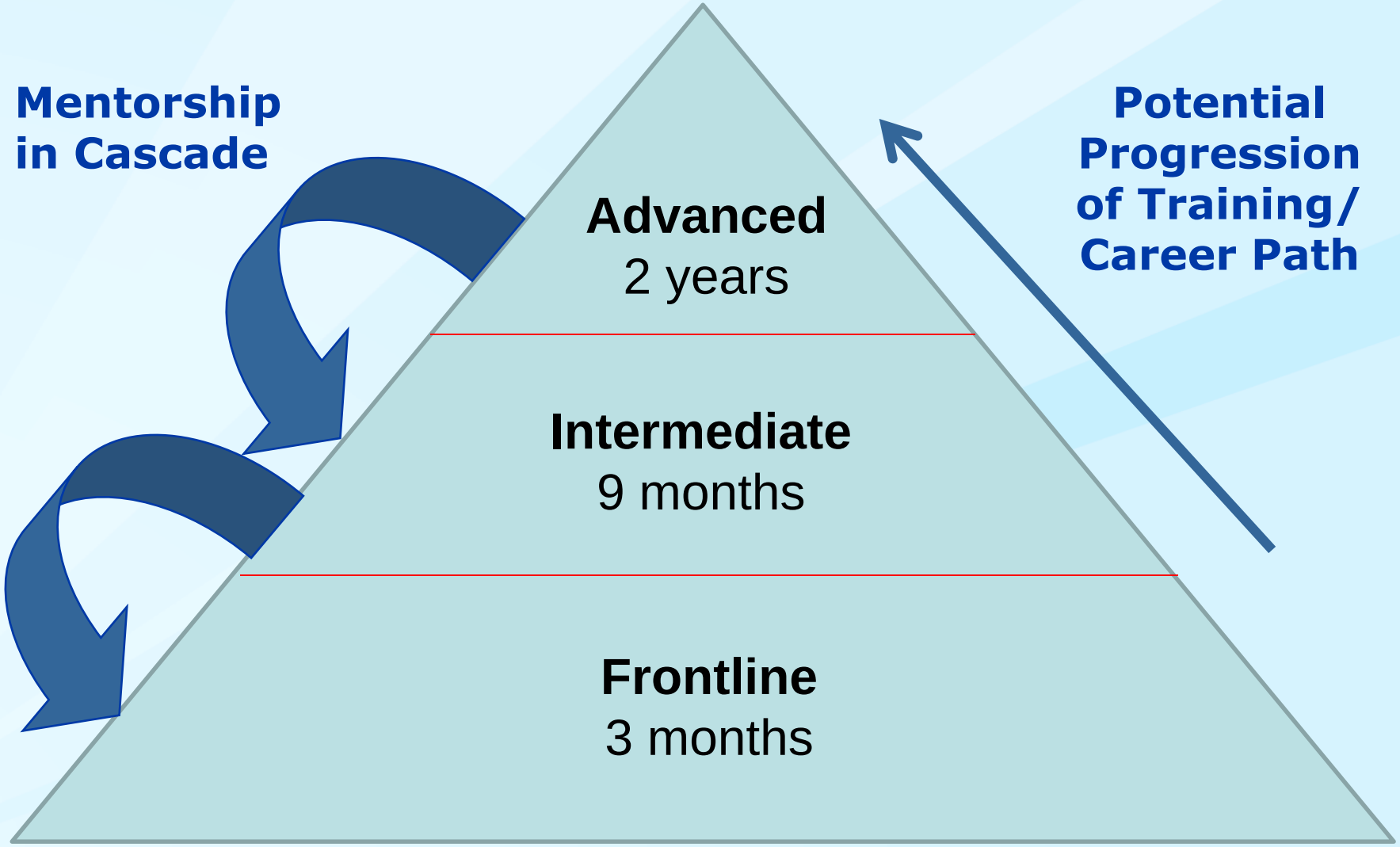
Goals	Objectives
Five year Target	A workforce including physicians, veterinarians, biostatisticians, laboratory scientists, farming/livestock professionals, and at least **1 trained field epidemiologist per 200,000 population**, who can systematically cooperate to meet relevant IHR and PVS core competencies.
As Measured by	One trained field epidemiologist per 200,000 population, and one trained veterinarian per 400,000 animal units (or per 500,000 population), who can systematically cooperate to meet relevant IHR and PVS core competencies.
Desired Impact	Prevention, detection, and response activities conducted effectively and sustainably by a fully competent, coordinated, evaluated and occupationally diverse multi-sectoral workforce.

Estimated Number of Additional Field Epidemiologists Needed to Meet Target of 1/200,000 population



~ 29,000 additional intermediate or advanced level trained FETP epidemiologists

CDC Strategy to Achieve GHSA Goals
FETP Pyramid



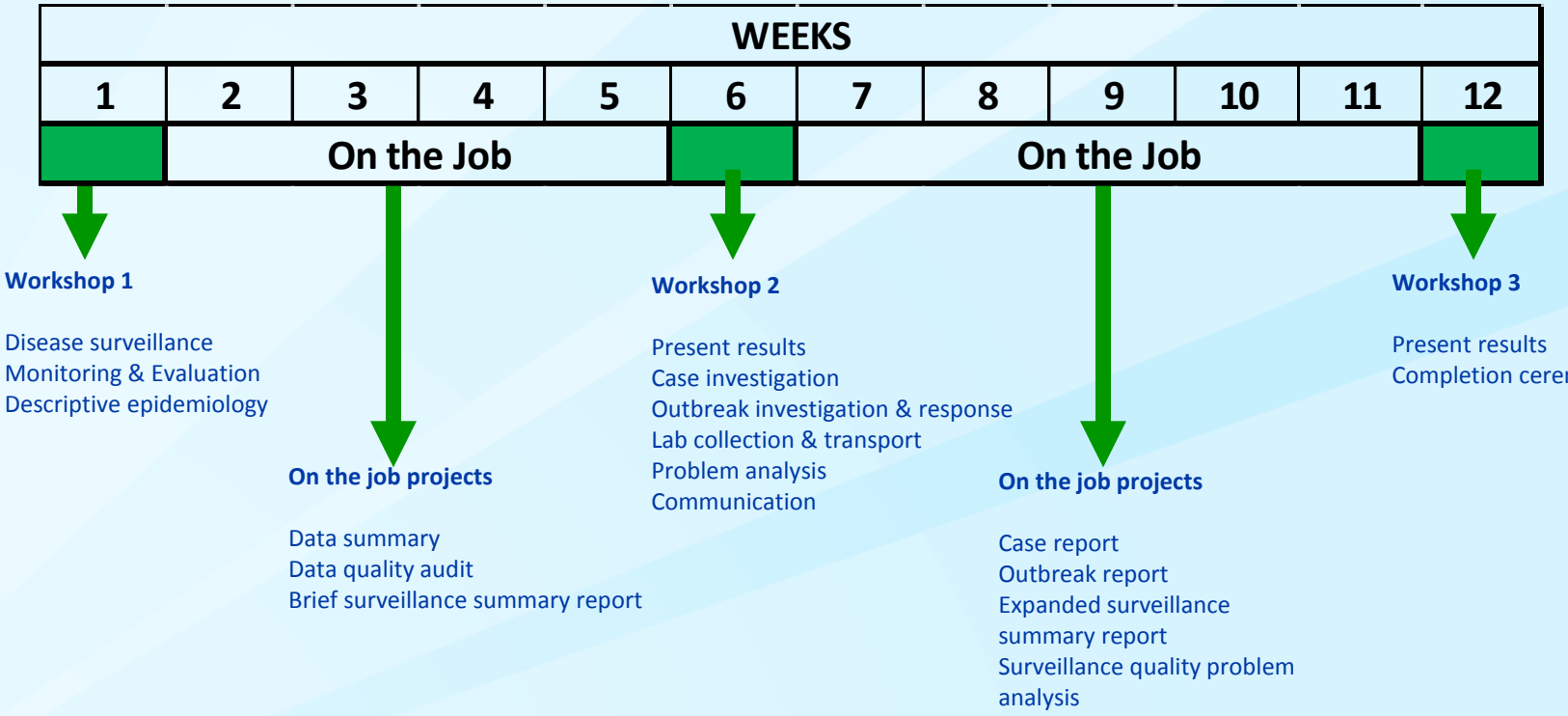
Traditional 2-Year FETP

- Country-specific (or regional)
- Two-year, full-time postgraduate program
- For health professionals
- To learn and gain experience in applied epidemiology
- Through supervised, on-the-job, competency-based training and service
- Approach = Learning while doing

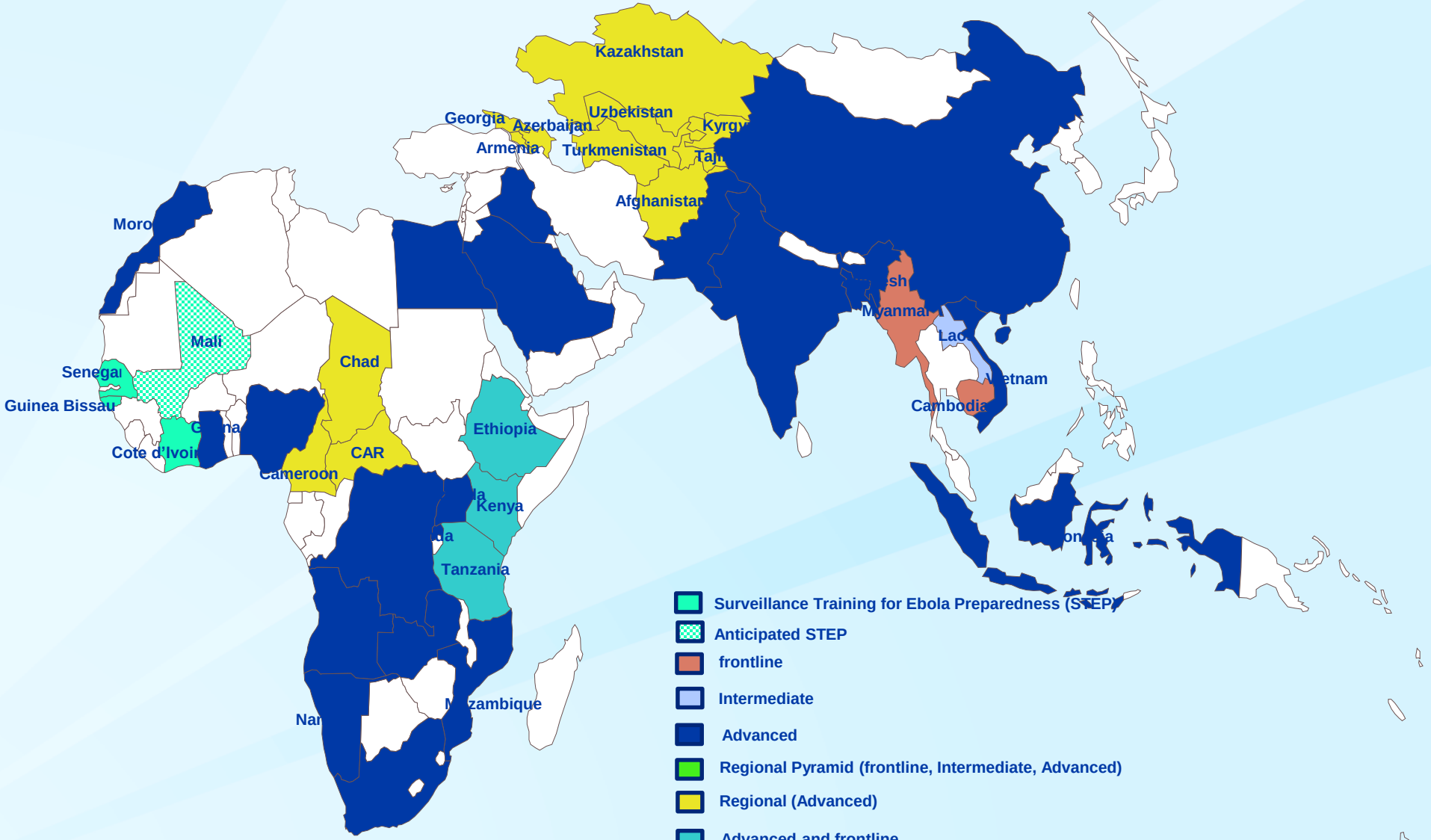
  ~20% classroom training

  ~80% field work - gain practical experience while providing epidemiologic services of the MOH

General Program Schedule
Frontline FETP



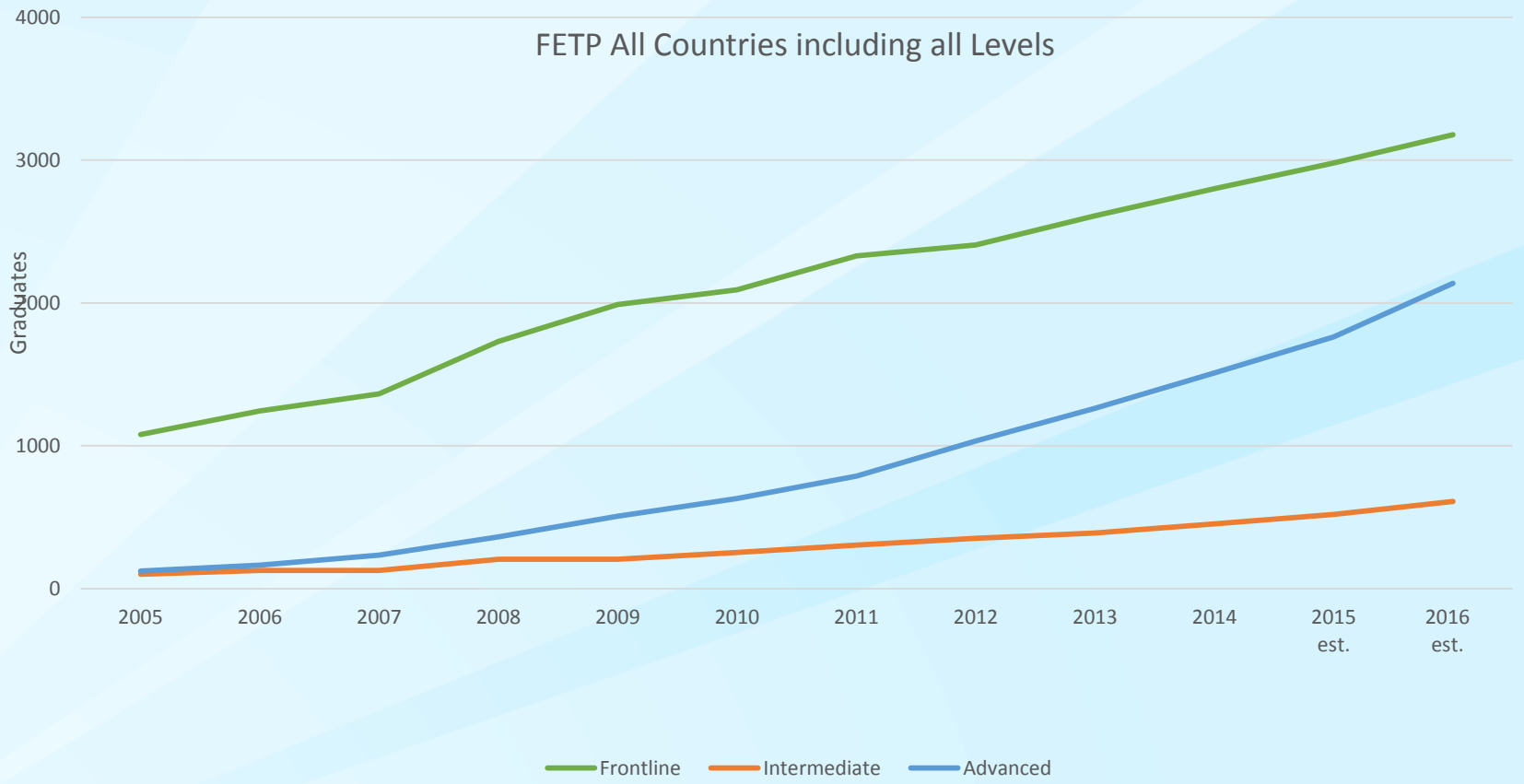
FETPS with Current RA/ Sustained Technical Assistance: 2015



World map by www.freeworldmaps.net

April 15, 2015

Cumulative FETP Graduates by Year (2005-2016 estimates)

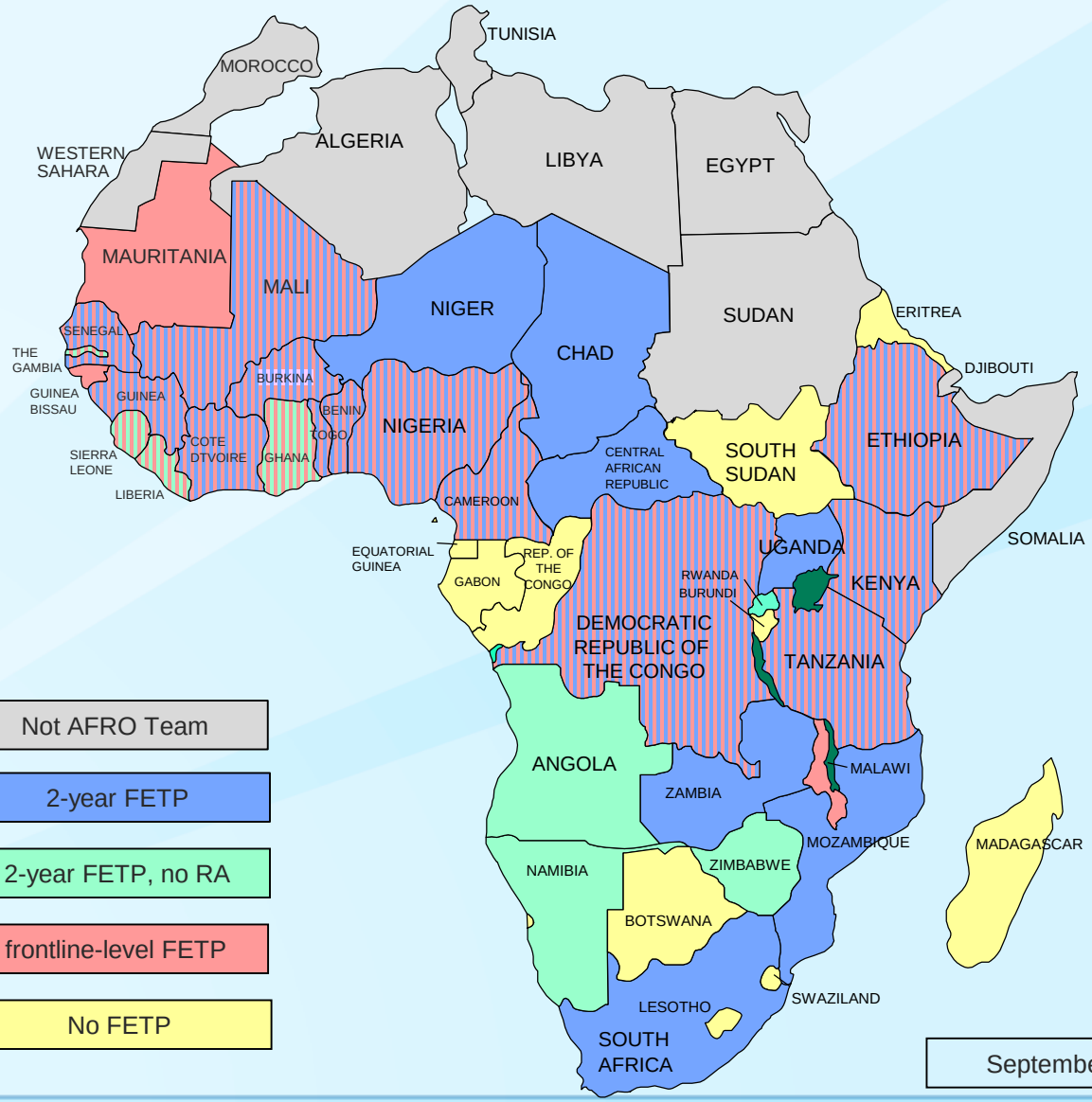


FETPs — Advanced & Frontline (Projected)

French
West Africa FELTP
Burkina Faso (host)
Benin
Côte d'Ivoire
Guinea
Mali
Niger
Togo
Senegal

English
West Africa FELTP
Ghana (host)
Liberia
Sierra Leone
The Gambia

Central Africa
FELTP
Cameroon (host)
Central African Rep.
Chad



Not AFRO Team

2-year FETP

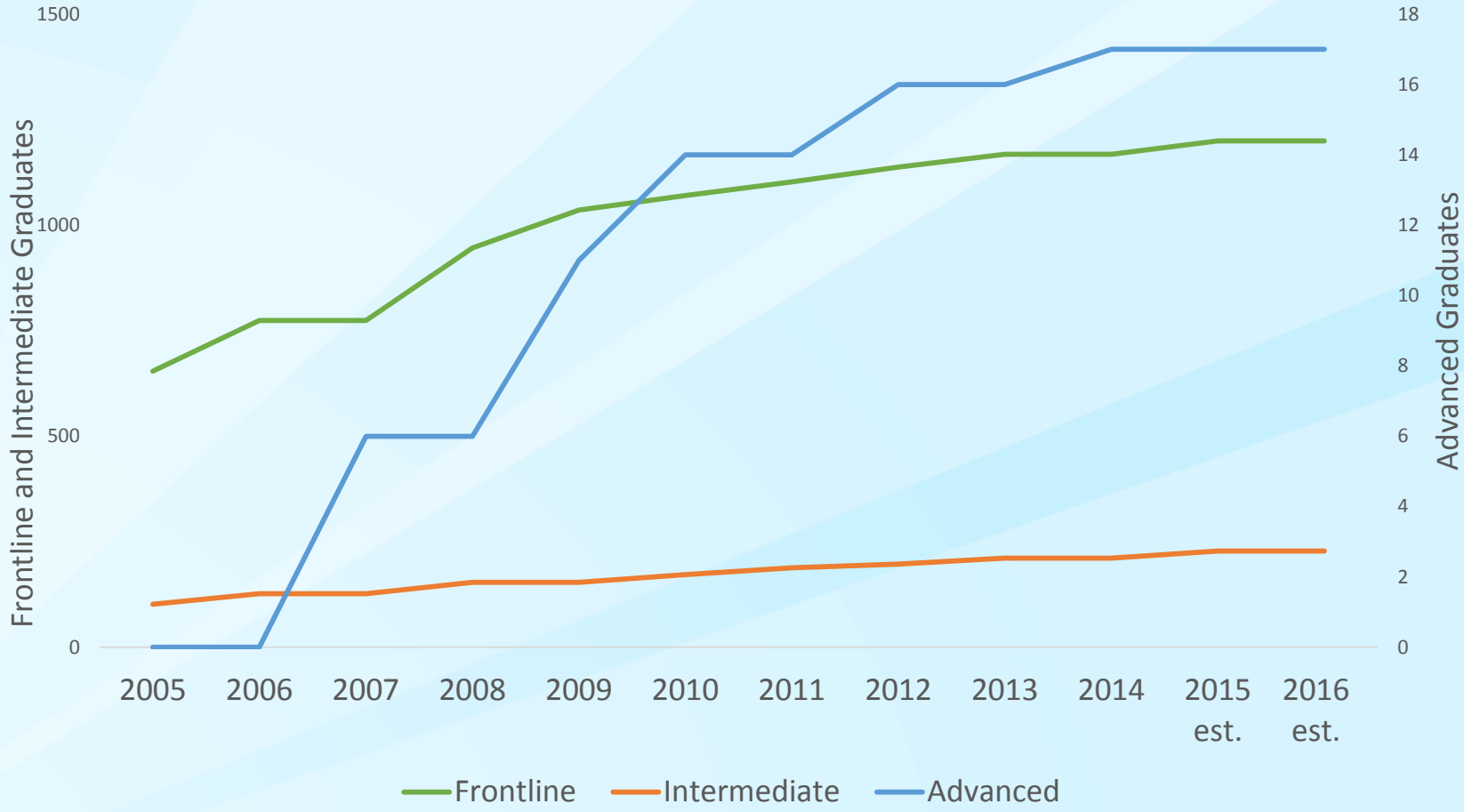
2-year FETP, no RA

frontline-level FETP

No FETP

September 2015

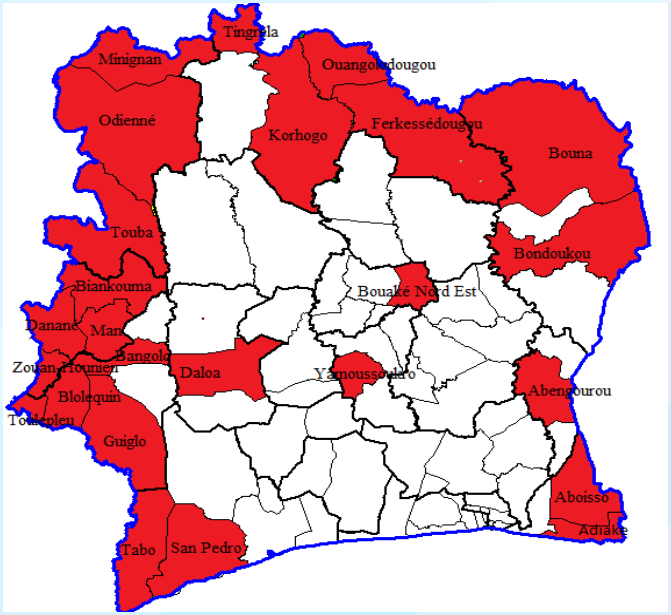
Reaching the Goal
Guatemala



- 1 per 200,000 = 80 (Current FETP Intermediate and Advanced graduates = 252)

2014 FETP and the Ebola Response

- Programs which have sent residents to affected countries:
  - Ethiopia - Uganda
  - DRC - Cameroon
  - Nigeria - Haiti
  - Indonesia - China
  - Morocco - Kenya
  - European - U.S.A.



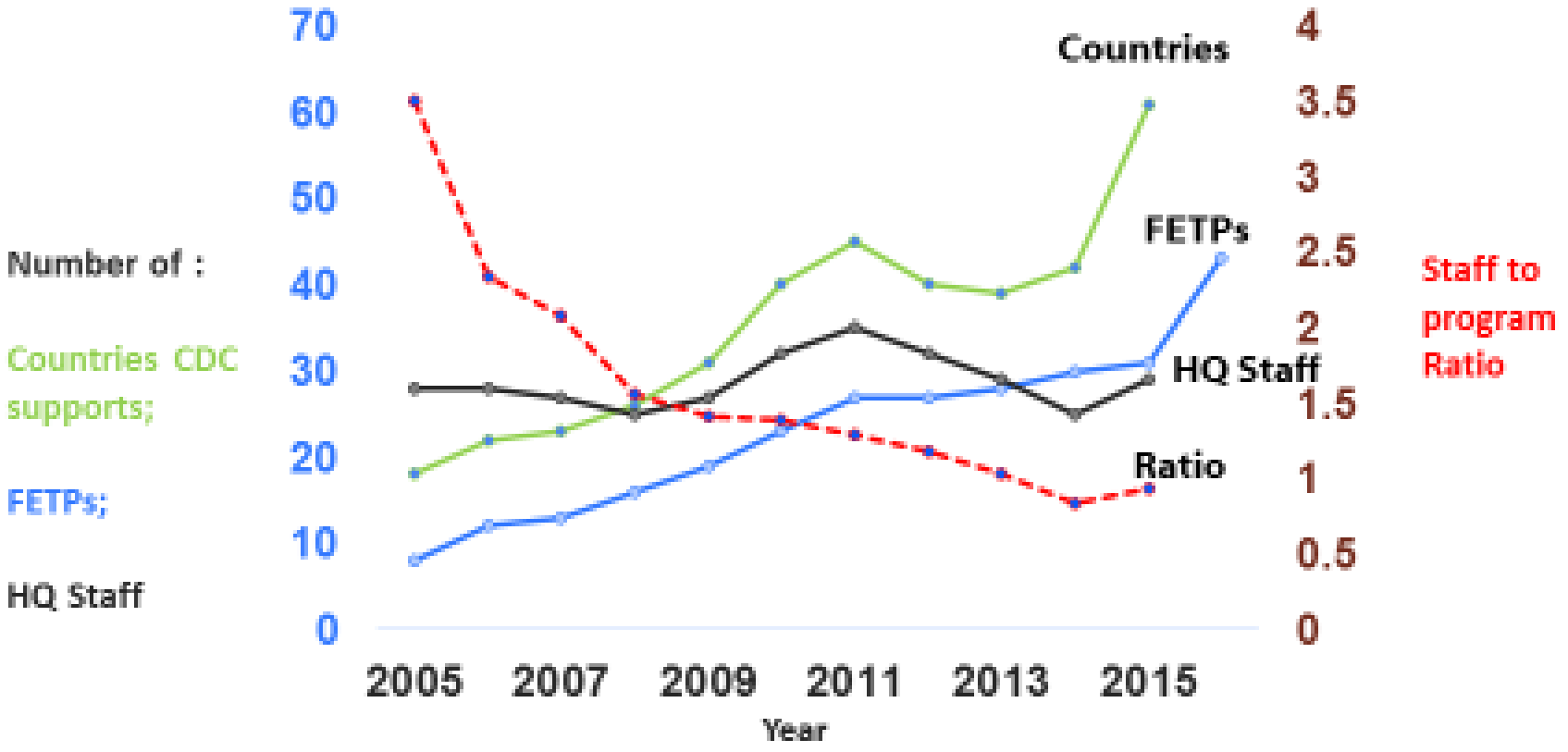
Donewell (ZE), Godbless (TZ), Arthur (UG), Justin (TZ)
Sasita (TZ), Herilinda (TZ), Theophil (TZ), Naod (ET)

- Surveillance Training for Ebola Preparedness (STEP)
  - 4 High Risk Countries: Mali, CdI, GB, Gambia

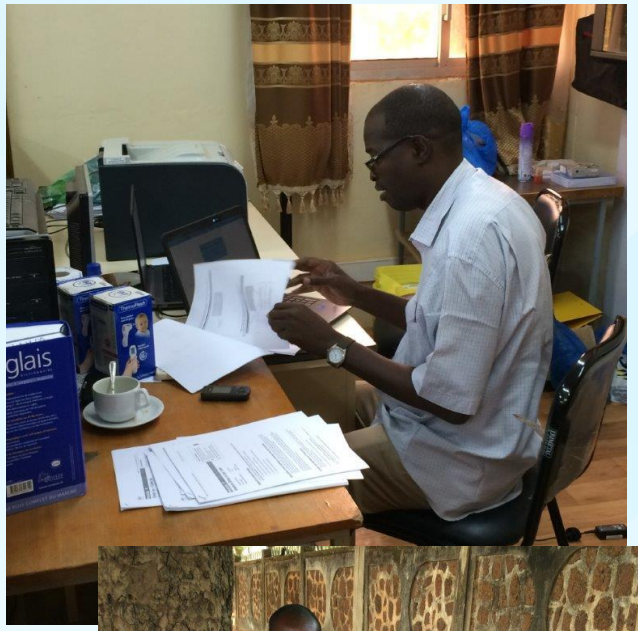
Challenges

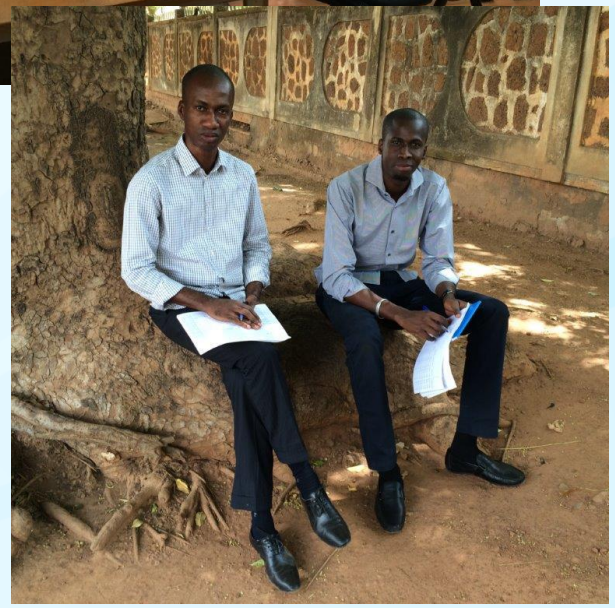
- MoH commitment to the program
  (Space, salaries, career ladder, support for regular day to day activities, etc)
- Need for an Advocacy/Sustainability Plan
- Mentoring and supervision
- Coordination of multiple training efforts
- Support the development of 25 country specific programs
- 7-10 years for country to establish FETP
- Frontline Resident Advisors

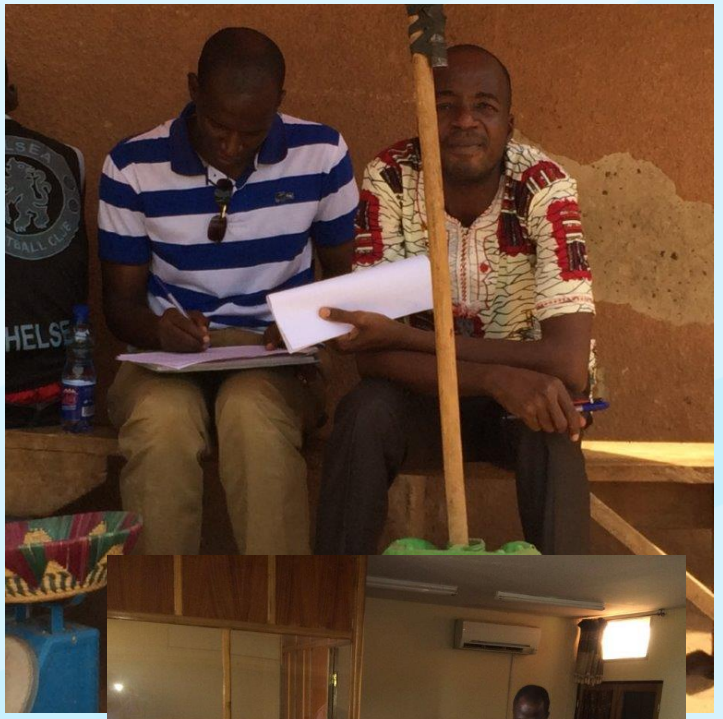
FETP HQ Staff Support for Programs by Year: 2005-2015



Thank you







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GHSA and Ebola Technical Areas:
Targets and Expected Outcomes

National Laboratory Systems

Joel M. Montgomery, PhD

Chief - Epidemiology, Informatics, Surveillance and Laboratory Branch (GDD Branch)
DGHP|CGH|CDC

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February 11, 2016

Leading and Contributing

Detect threats early

National Laboratory Systems

Leading	Contributing
• South Africa • Thailand • United States	• Canada • China • Ethiopia • Finland • Georgia • Israel • Japan • Malaysia • Mexico • Peru • Switzerland • United Kingdom • Yemen

Endpoint

Detect threats early

National Laboratory Systems

5-Year Target:

- Real-time biosurveillance with a national lab system
- Effective modern point-of-care and lab-based diagnostics

Desired Impact:

- National Laboratory System providing quality assured laboratory data for public health action

Building by Doing

Strengthening lab capacity through
Acute Febrile Illness (AFI) Surveillance

Uganda & Liberia

Ugandan district lab – courtesy T. Shoemaker

Why AFI Surveillance?

- Limited access to clinical laboratory diagnostics requires informed empiric case management
- Potential to identify risk factors, seasonality, temporal change for improved disease prevention & control
- Malaria over-diagnosis in endemic regions common resulting in misguided therapy
- Hospitalized febrile illness often associated with high mortality in low and middle-income countries
- Detect emerging infections & outbreaks early

Uganda

*"Identifying Causes of Fever to Improve Public Health Response"**

- Flagship project covering 5 action packages including lab systems

  ***Goal:** Identify leading causes of acute febrile illness (AFI) other than malaria and build sustainable laboratory and surveillance capacity with focus on vector-borne & zoonotic diseases*

- Establishing 6 sentinel surveillance sites in collaboration Uganda Malaria Surveillance Program (UMSP)
  - 30,000 pediatric inpatients will be directly impacted by this program
  - Improved diagnostics will potentially benefit all Ugandans
- Defining burden of acute febrile illness and identify common etiologies
- Strong and growing laboratory workforce
- Established specimen transport network
  - GHSA demonstration project/VHF network

**Collaboration between DVBD/NCEZID/CDC, UVRI, Makerere Univ and the Ugandan MOH*

Ugandan Virus Research Institute arbovirology lab


Microbiology Laboratory, Makerere University School of Medicine, Kampala

Decades long Ugandan Virus Research Institute and CDC collaboration

- Influenza
- PMI
- PEPFAR
- VHF
- Vector-borne diseases

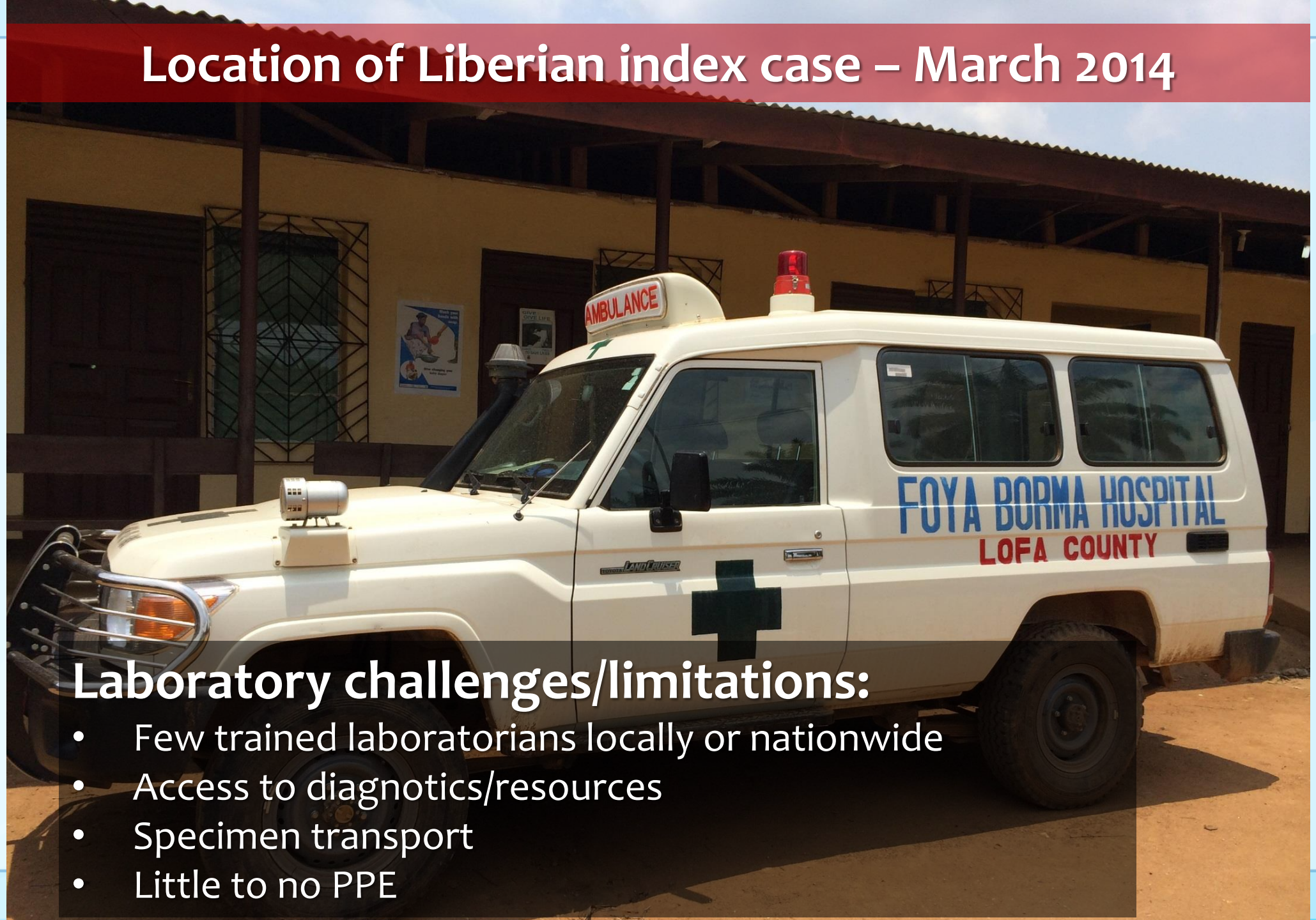
Photos courtesy R. Ransom & K. Kugeler

View from above in northern Liberia
- Pristine forests

Photo courtesy J. Montgomery

Photo courtesy J. Montgomery

Location of Liberian index case – March 2014



Laboratory challenges/limitations:

- Few trained laboratorians locally or nationwide
- Access to diagnotics/resources
- Specimen transport
- Little to no PPE

Lab challenges:

- First location for Ebola lab diagnosis in-country (US-NIH, DOD & Liberian MOHSW
- Very remote location
- Inadequate power supply

Photos courtesy T. Lo & R. Ransom

US-CDC, NIH, Liberian MOHSW mobile laboratory near ELWA-3 Ebola Isolation facility

Photo courtesy B. Fields

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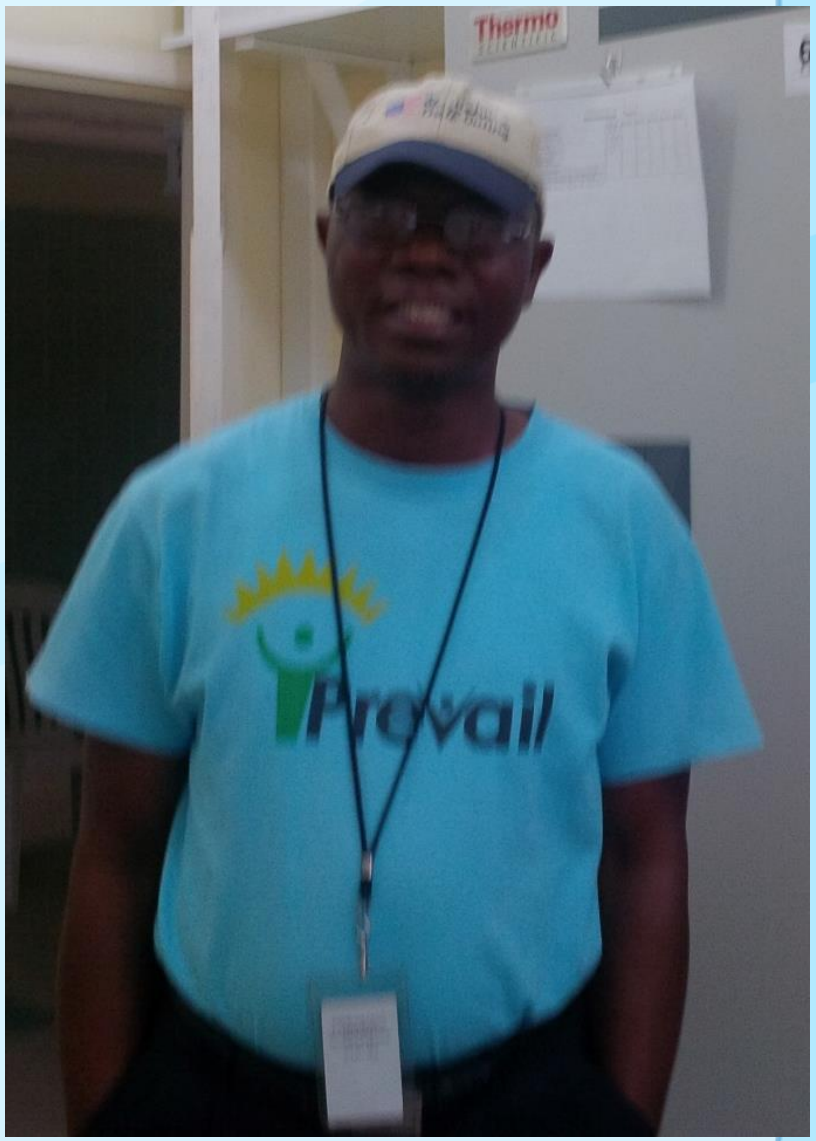
Photo courtesy B. Fields

Mobile laboratory in Bong County, Liberia

- Photo courtesy R. Ransom

Photos courtesy B. Fields



Partnership for Research on Ebola Vaccines in Liberia (PREVAIL) – US NIH, LIBR and Liberian MOHSW – JFK Hospital, Monrovia, Liberia

Overcoming Challenges – Uganda & Liberia

- Dedication to improving the public health workforce
  - Not just epidemiologists but laboratorians as well – FE*L*TP or a new model?
- Improving specimen transport through novel mechanisms
  - i.e. Riders for Health, multipurposed transport networks
- Improving biosafety and biosecurity
  - Infection prevention and control includes laboratorians
- Improving reporting time of lab results & linkage with surveillance data
  - Surveillance data has to bidirectional – *data for action*
- Development of or consideration for a tiered lab approach
  - Advanced lab capabilities at the national level to use of simple technologies at the district level
  - Multipathogen detection platforms (i.e. TAC – Univ of VA) to RDTs/POC dx

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Peter Rzeszotarski

Division of Emergency Operations

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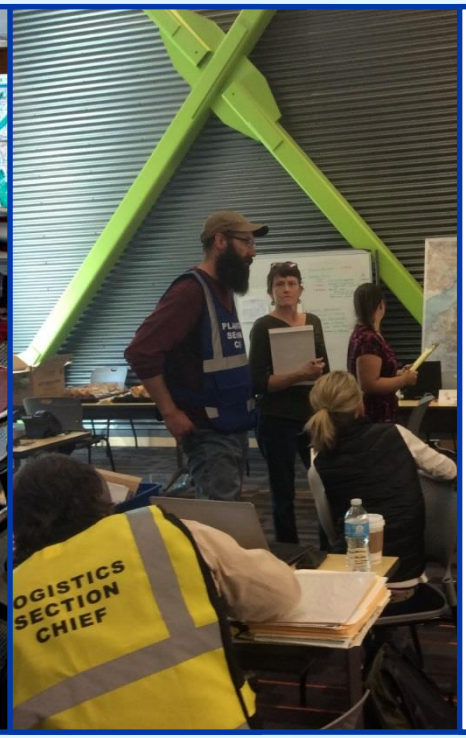
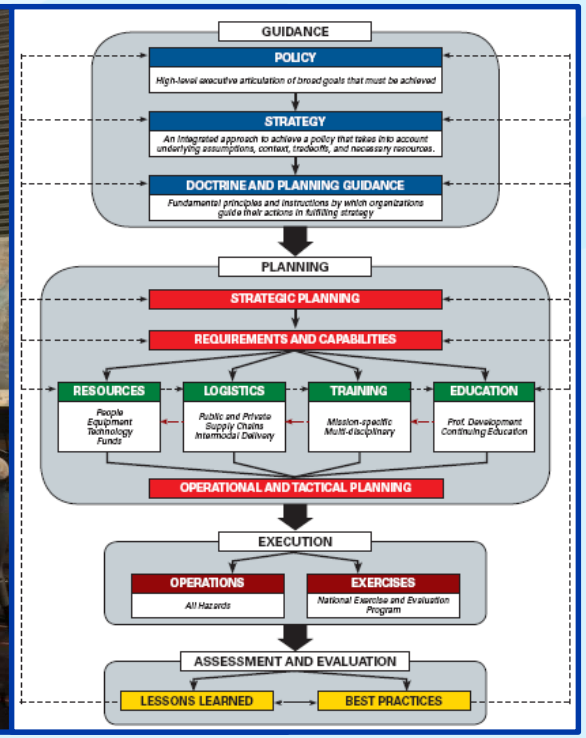
February 11, 2016

Components of a Functional EOC





"Stuff" / Staff / Systems

Requirements

For infrastructure:

- WHO EOCNET standard = Basic, General, Enhanced levels of infrastructure (WHO EOCNET ICT standards being drafted)
- Best practice = 8 m^2 / person assigned to EOC

For staffing:

- WHO EOCNET Framework = ICS structure (WHO EOCNET training and exercise standards being drafted)
- Best practice = minimum of 6-8 core EM staff + analysts (EBS & IBS) in EOC (+ surge staff identified / trained)

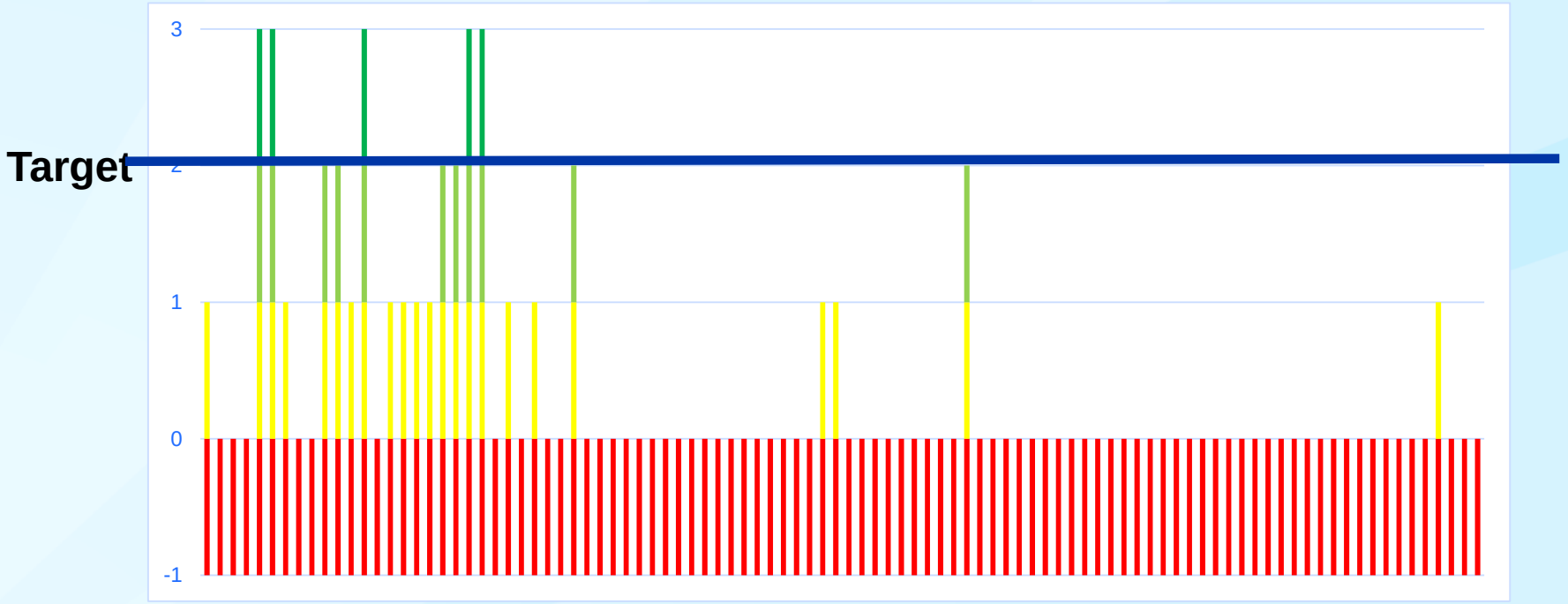
For systems:

- WHO EOCNET standard = All Hazards Plan + Concept of Operations (WHO EOCNET plans and procedures standards being drafted)
- Best practice = documented framework of policies, plans, and procedures

WHO Assessment Levels

- Level <1 is the foundation, which typically requires the presence of certain critical attributes in order to proceed to the next level of capability (i.e., the attributes at level <1 are considered prerequisites to reaching level 1).
- Level 1 reflects the achievement of moderate levels of functioning and usually implies that the required inputs and processes related to the attribute are present.
- Level 2 reflects the transition from inputs and processes to outputs and outcomes, indicating strong levels of functioning. States Parties are expected to achieve level 2 with respect to all core capacities.
- Level 3 reflects advanced achievement whereby knowledge, findings, lessons learned and experience gained from the outputs and outcomes are evaluated, documented and shared both within the country and internationally.

Example Assessment Results



Challenges

- **Mission clarity of EOC**
  (delegated authorities, assigned roles, required relationships)
- **Leadership commitment to EOC**
  (EOC vs core programs)
- **Resource (funding) limitations**
  (for capital obligations, for sustained operation of EOC, and for response use)
- **Infrastructure functionality**
  (low bandwidths, unnecessary equipment)
- **Lack of qualified personnel**
  (credentialing = education + training + certification + licensure + experience)
- **Lack of priorities**
  (for planning and for operations)
- **Lack of documentation**
  (reliance on greybeards, record keeping dismissed, absence of accountability)

CDC Global Health Security Agenda/Ebola Grantee Meeting

Accountability. Results. Sustainability.

CDC & GLOBAL HEALTH SECURITY AGENDA