

Ebola Virus Disease Outbreak in West Africa: current epidemiological situation and response-Lab roles

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Ebolavirus and Marburgvirus, respectively, in the family Filoviridae

- Ebola and Marburg hemorrhagic fever are caused by members of the genera Ebolavirus and Marburgvirus, respectively, in the family Filoviridae.
- The names of these viruses have undergone several taxonomic changes since they were first discovered, including new changes officially accepted in 2013

Species of Ebolaviruses

- **Currently, the genus Ebolavirus contains five recognized viral species:**
- **Zaire ebolavirus, Sudan ebolavirus, Tai Forest ebolavirus (formerly Cote d'Ivoire ebolavirus), Reston ebolavirus and Bundibugyo ebolavirus.**
- **The common name for the single virus in each of these species is Ebola virus (formerly Zaire ebolavirus), Sudan virus (formerly Sudan ebolavirus), Tai Forest virus (formerly Cote d'Ivoire ebolavirus), Reston virus (formerly Reston ebolavirus) and Bundibugyo virus**

Presentation outline

Current epidemiological situation

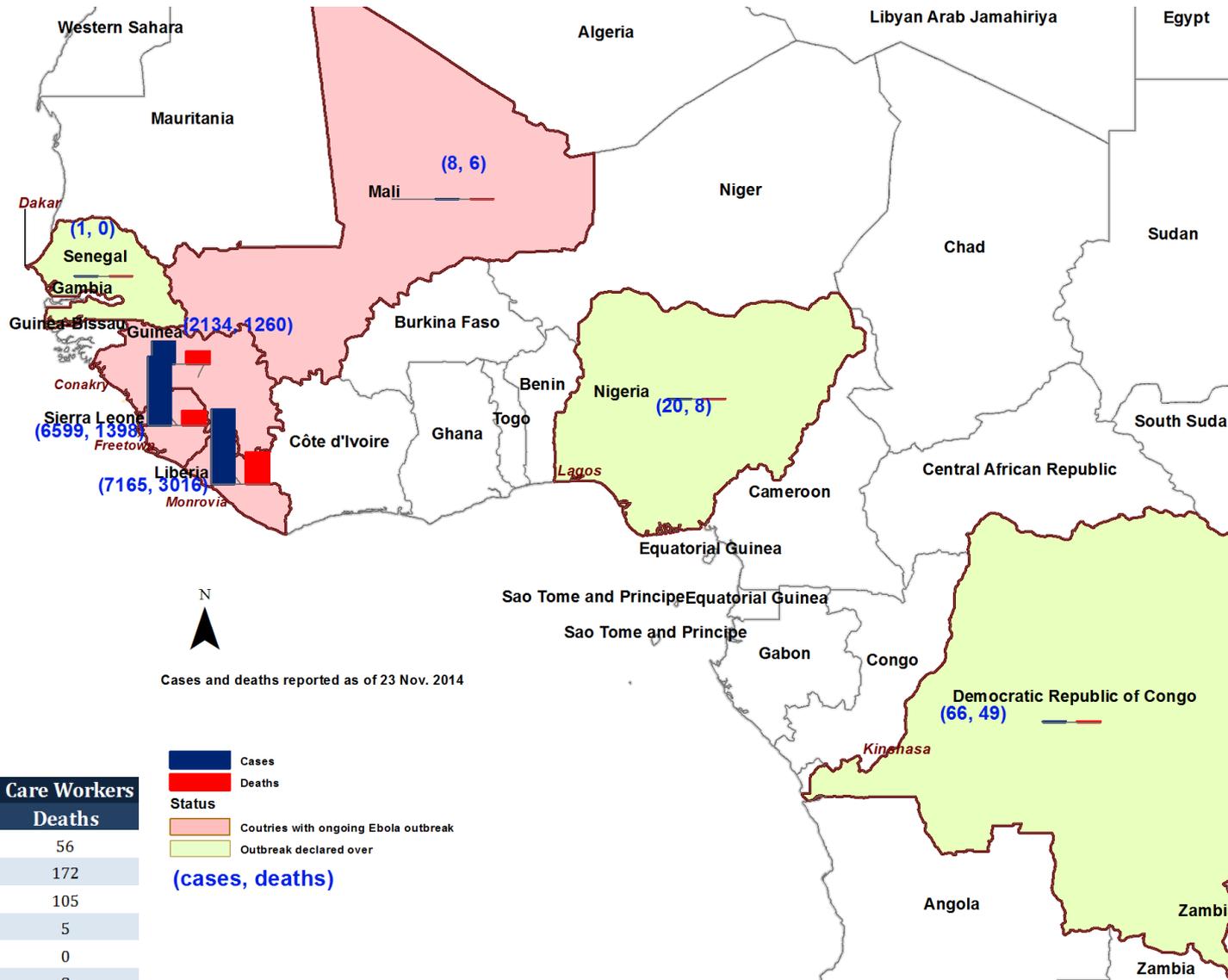
WHO overall risk assessment

Response measures including lab capacity strengthening

Way forward

Ebola Virus Disease in West Africa (Situation as of 23 November 2014)

- As of 23 November 2014, a total of 15 996 EVD cases including 5 734 deaths have been reported from six West African countries (Guinea, Liberia, Sierra Leone, Nigeria, Senegal and Mali).
- WHO declared end of Ebola outbreak in Senegal, Nigeria and DR Congo.

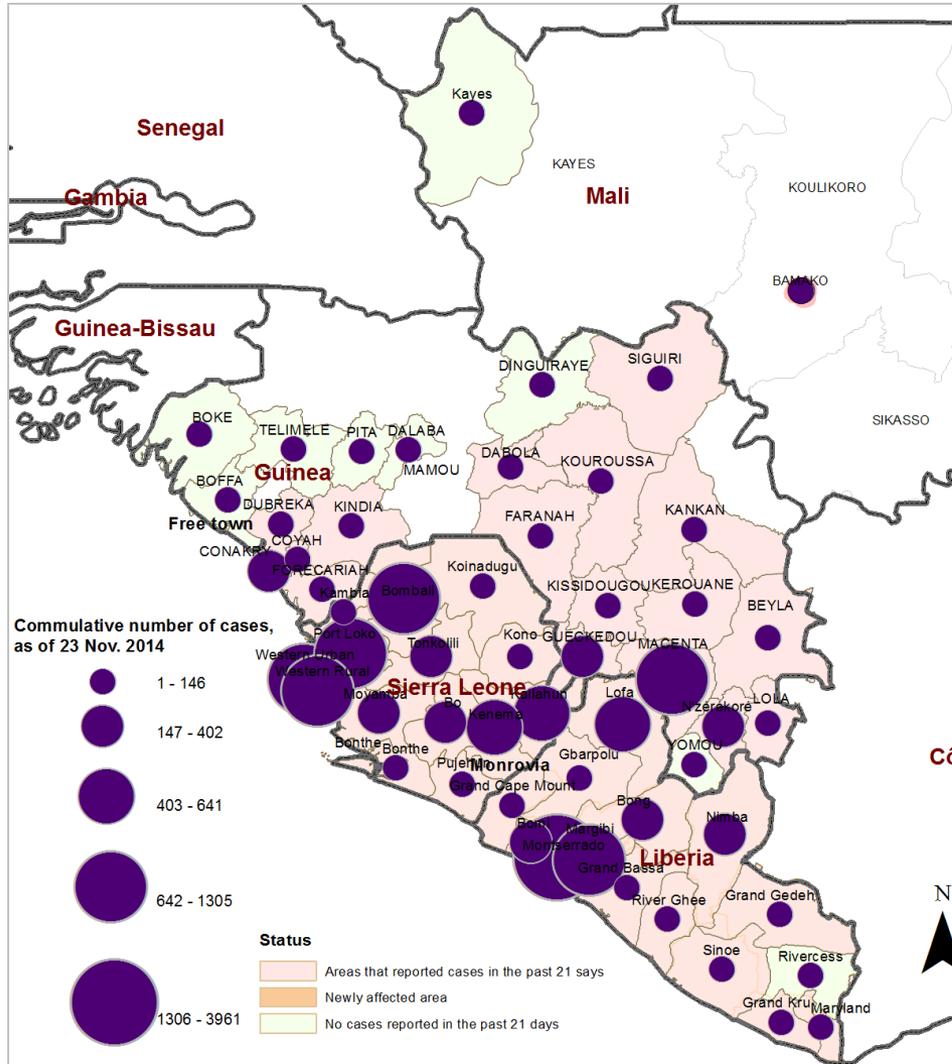


Countries	Cumulative number		Health Care Workers	
	Cases	Deaths	Cases	Deaths
Guinea	2134	1260	97	56
Liberia	7168	3016	342	172
Sierra Leone	6599	1398	136	105
Nigeria	20	8	11	5
Senegal	1	0	0	0
DR Congo	66	49	8	8
Mali	8	6		
Total	15996	5737	594	346

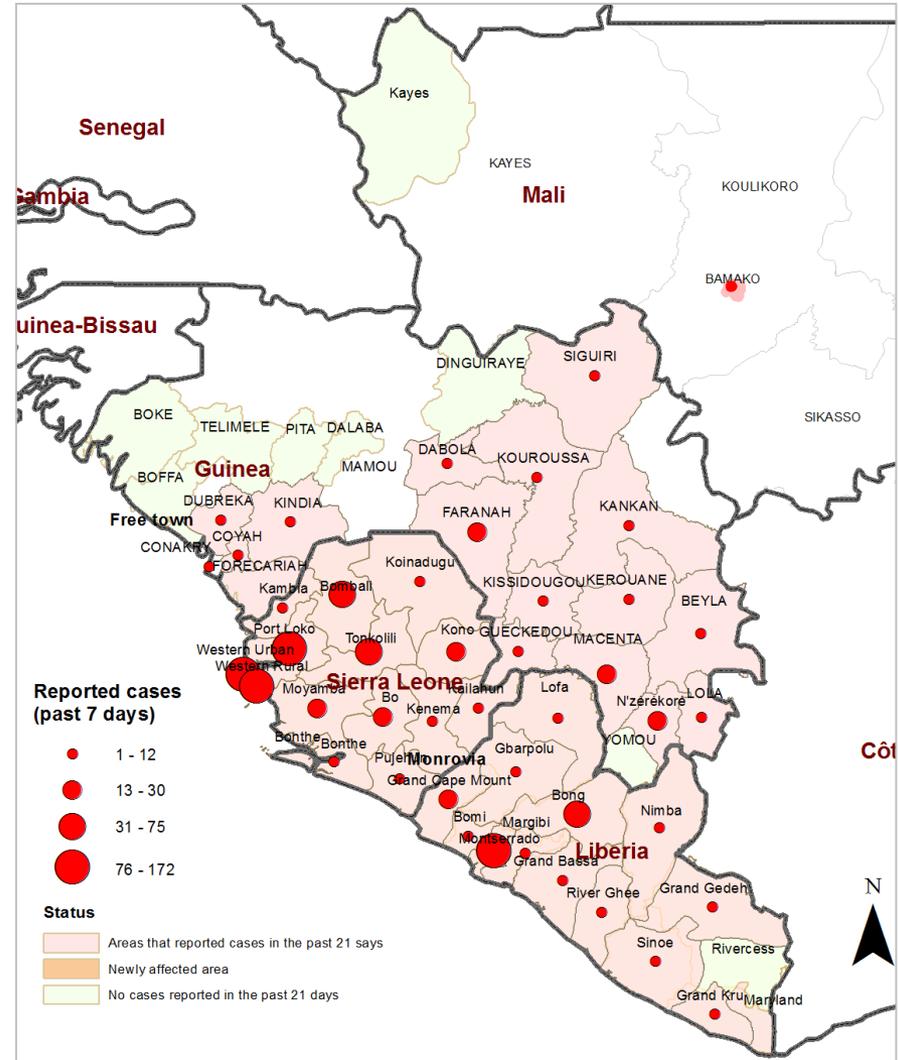
*Declared end of Ebola outbreak. **EVD outbreak in DRC is distinct

Ebola Virus Disease in West Africa (Situation as of 23 November 2014)

In the 3 most affected countries (Guinea, Liberia and Sierra Leone), most of the affected districts reported new cases in the past 7 days with the majority of the cases coming from Sierra Leone (Port Loko, Western Area Rural, Western Area Urban, Tonkolili and Bombali) and Liberia (Montserrado and Bong).

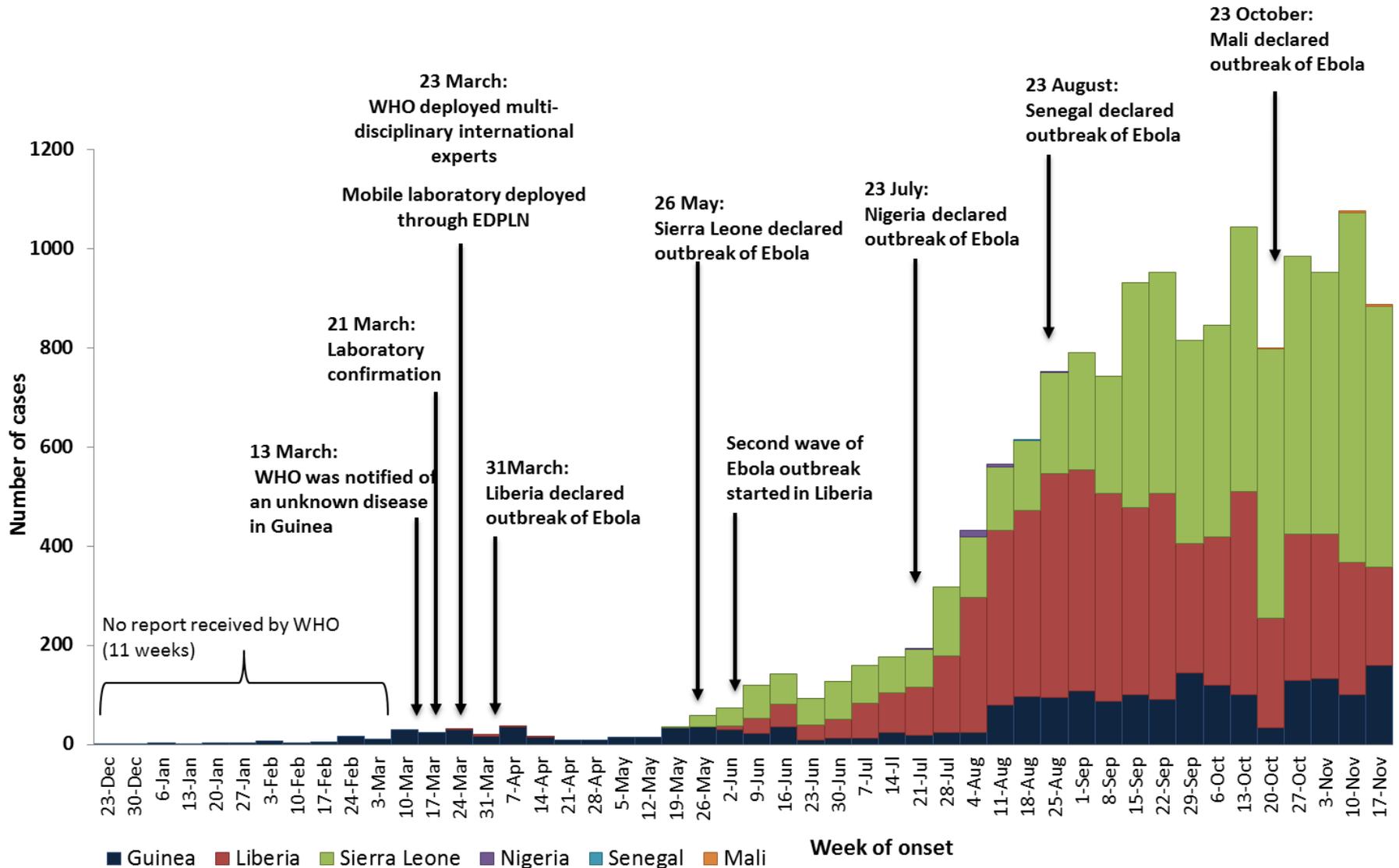


Geographic distribution of cases of Ebola Virus Disease in West Africa, as of 23 Nov. 2014

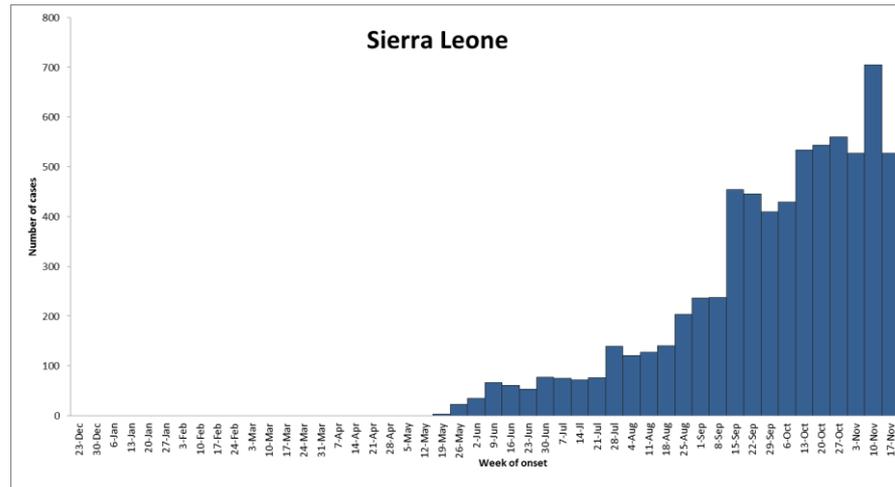
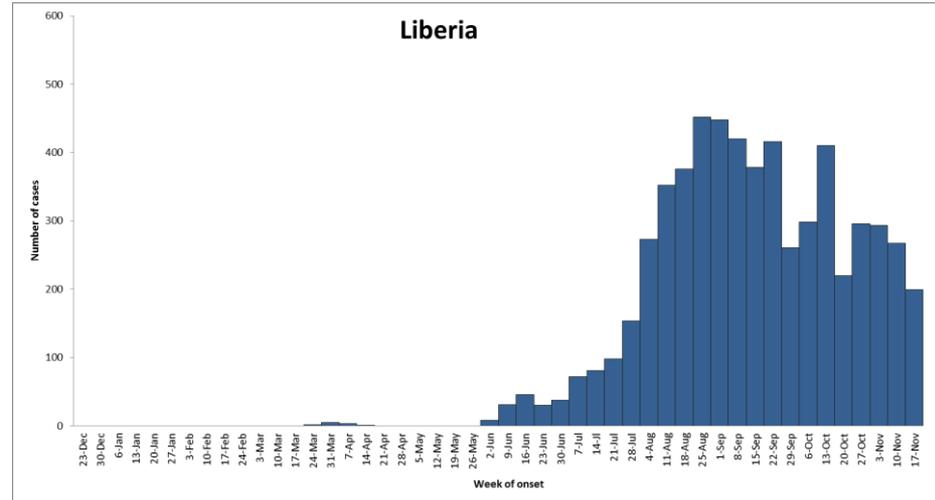
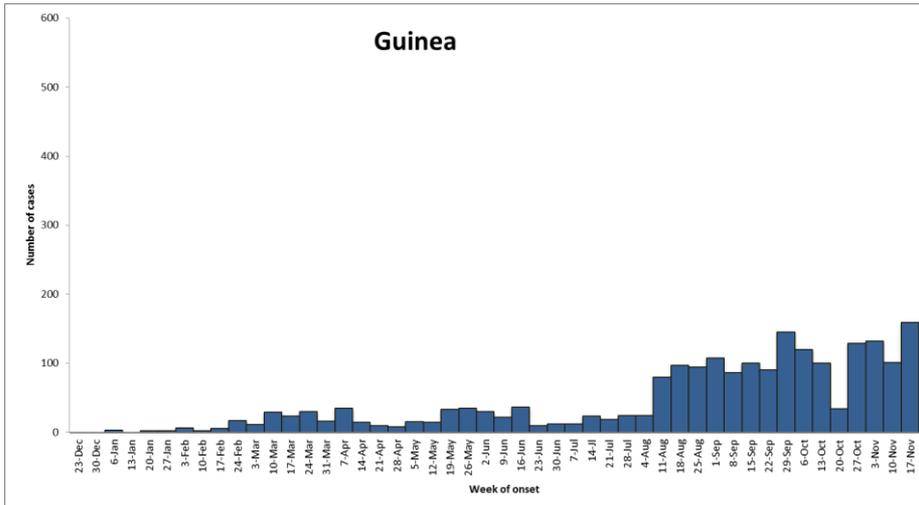


Geographic distribution of cases of Ebola Virus Disease in West Africa reported in the past 7 days (17—23 Nov 2014)

Combined Epicurve by week of onset, December 2013 to 23 November 2014

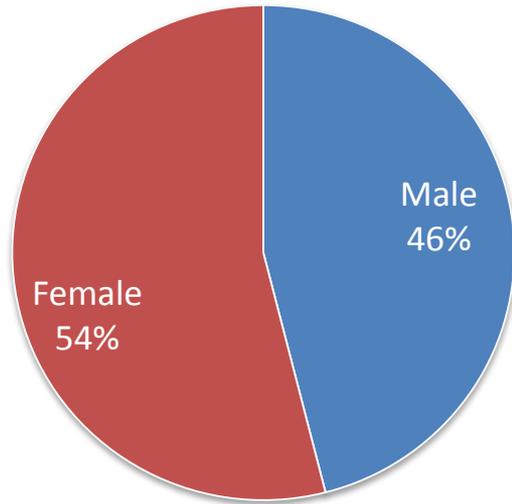


Ebola Virus Disease in West Africa (Situation as of 23 November 2014)

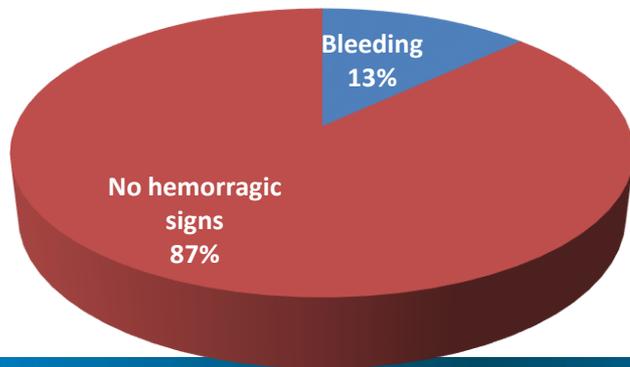


Guinea: gender distribution & clinical profile

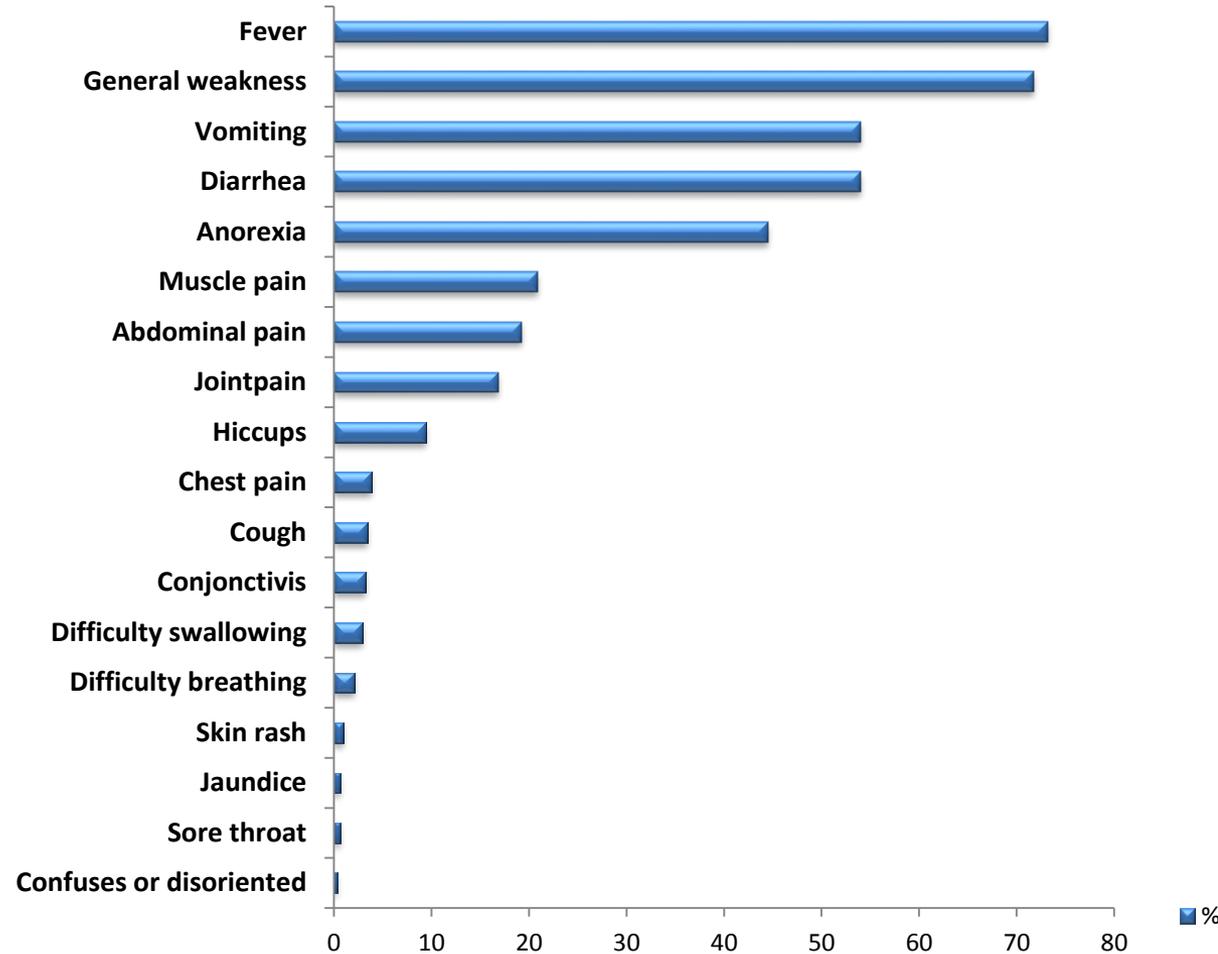
Gender distribution



Hemorrhagic signs

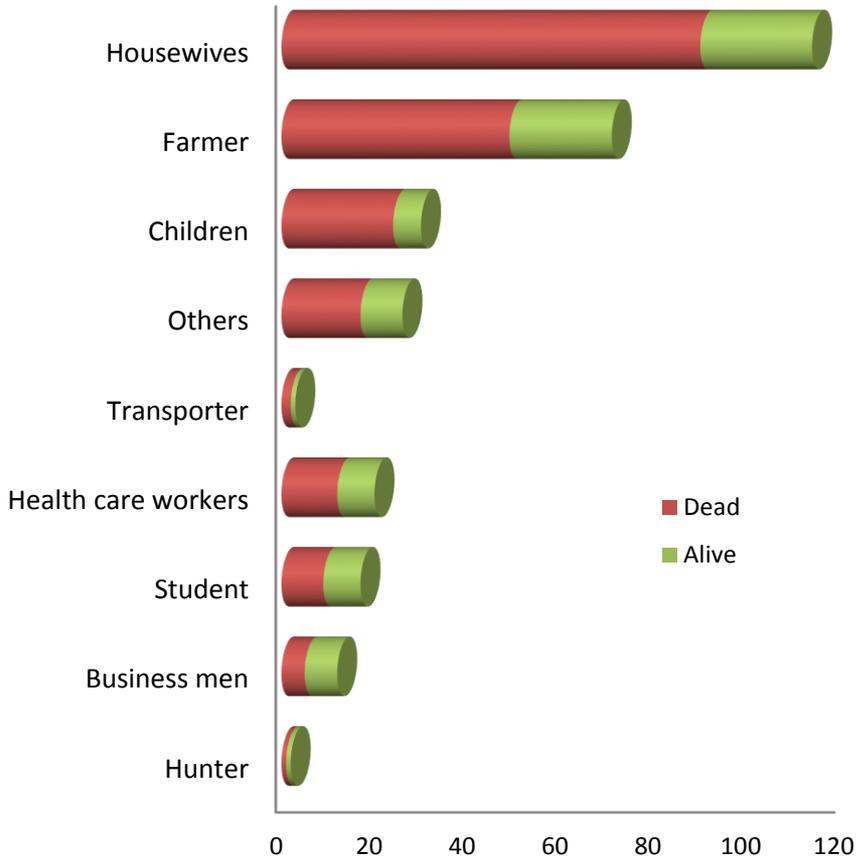


Clinical profile

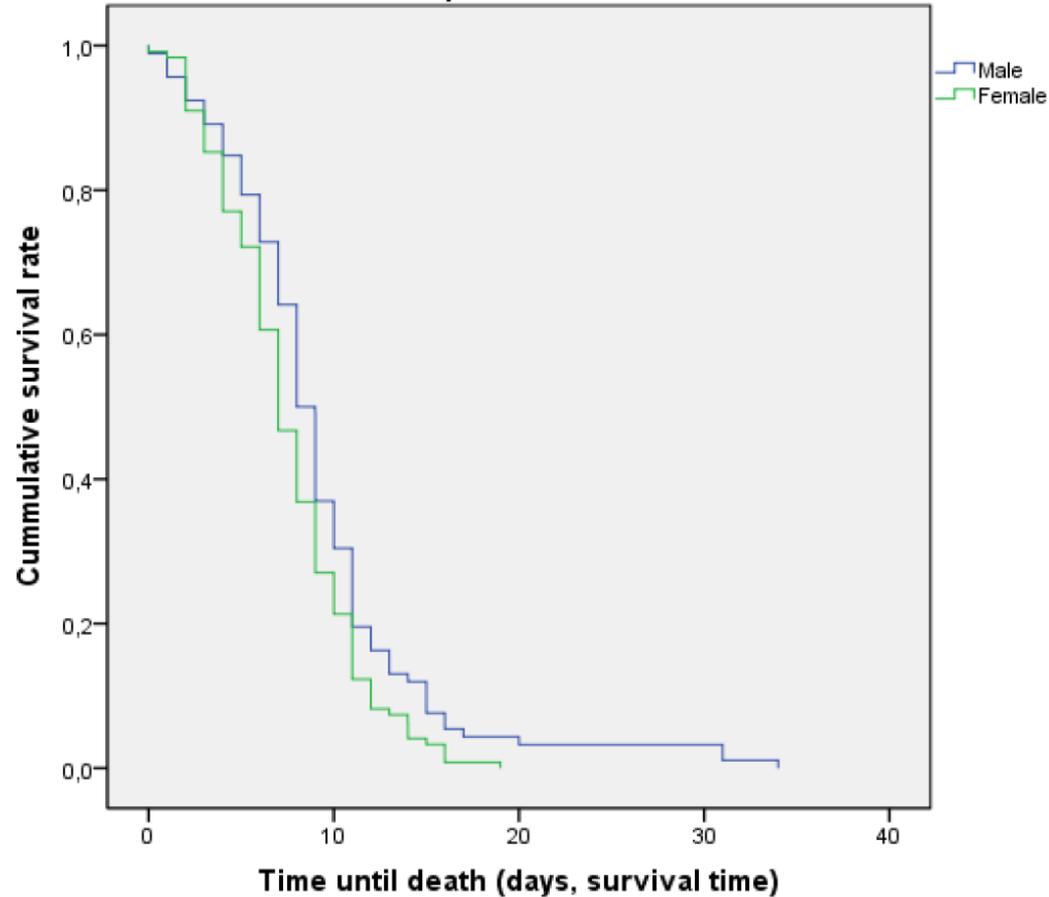


Guinea: gender distribution & clinical profile

Patient profile and outcome



Kaplan-Meier survival curve



Survival time was shorter for female than male (P=0.02).

Median survival time: 7 for female and 8 for male.

Risk assessment

- Continued transmission particularly in the 3 West(African countries
- Public Health Emergency of International Concern
- First large Ebola Virus Disease outbreak reported in multiple countries at the same time
- Complex mix of Ebola virus transmission documented
 - Rural outbreak, Urban outbreak, Cross-border and Sub- Regional spread (Liberia to Nigeria)
- Unusual number of health care workers among the cases and deaths indicating poor infection prevention practices
- Community resistance, traditional and cultural beliefs acting as drivers of the outbreak

Summary of response measures

- Public health matter of international concern
- National plans
- Massive deployment of international experts
- **Deployment of mobile laboratories**
- Outbreak logistics (PPEs...)
- Provision of APHEF funds
- Establishment of the Sub-regional Ebola Coordination Centre
- High level advocacy
- Information products



Regional laboratory response and capacity

Deployment of mobile laboratories

IP CDC,
EU France
Russian US DOD
NICD

Training of lab personnel on collection and shipment of EVD suspected specimens

Emerging Dangerous Pathogens Lab Network EDPLN alerted and prepared



Lab as a public health tool for EVD surveillance, response and IPC

Objectives

- Ensure all the material, reagents and supplies for suspected EVD specimen collection and shipment are in place
- Ensure safe collection of sample from Ebola Suspected Case
- Ensure safe and appropriate transportation of sample(s) to Reference Labs including mobile labs in the field

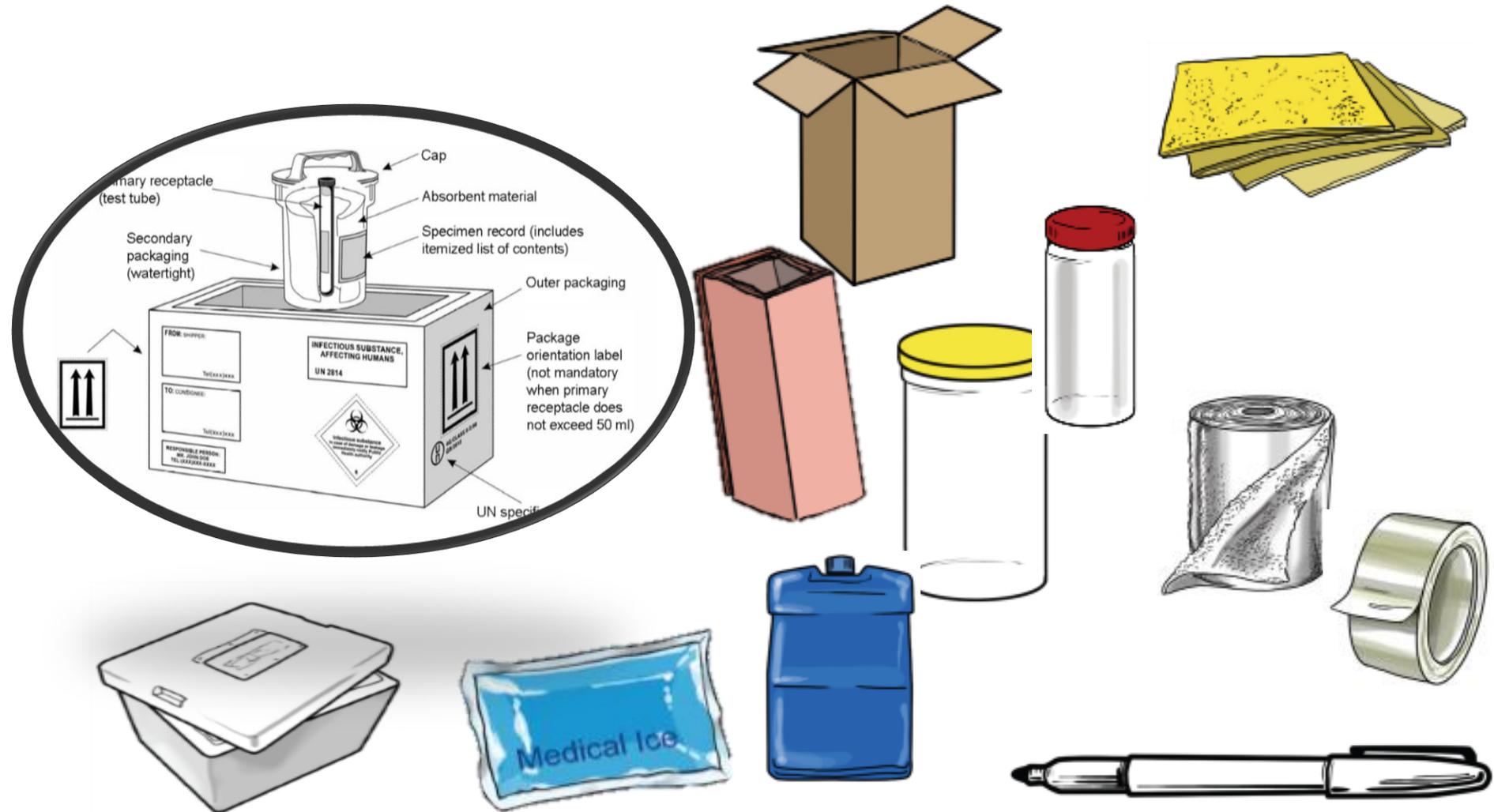
Expected Outcomes

- All key material reagents and supplies to collect and ship EVD suspected specimens are in place
- All steps for specimen collection and transportation identified
- All key measures for infection prevention and control (IPC) understood and well known

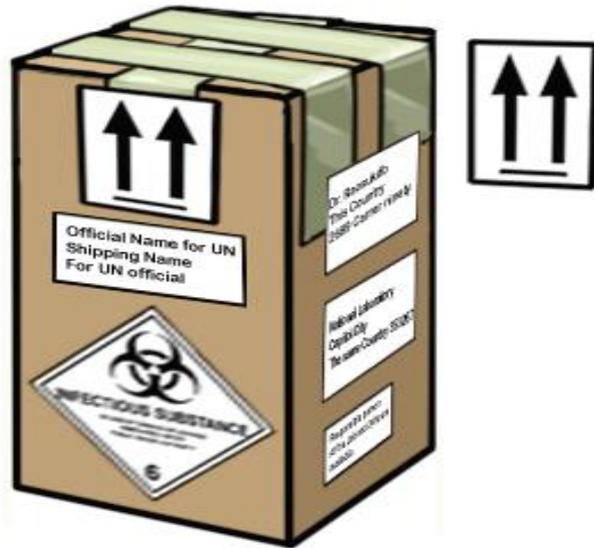
Shipping of an EVD blood specimen

- **Packing, shipping and transport of all samples related to a suspected case of EVD must comply with the requirement of the Transportation of Dangerous Goods (TDGR) and be performed by a TDG certified individual.**
- **These regulations require handling and shipping patient's samples according to the international procedures for transport of category A infectious substances (UN2814)**

Prepare all shipment materials before handling the sample(s)



Mark and label the box



Finalize the shipment



Several challenges remain

● Technical expertise

- ❖ Contact tracing, Ebola treatment centres, IPC
- ❖ **Insufficient mobile labs**
- ❖ **HCWs including lab experts fear to work on EVD**
- ❖ **Need for simpler lab techniques to diagnose EVD (RDTs)**

● Communication

- ❖ Public health awareness & EVD reporting

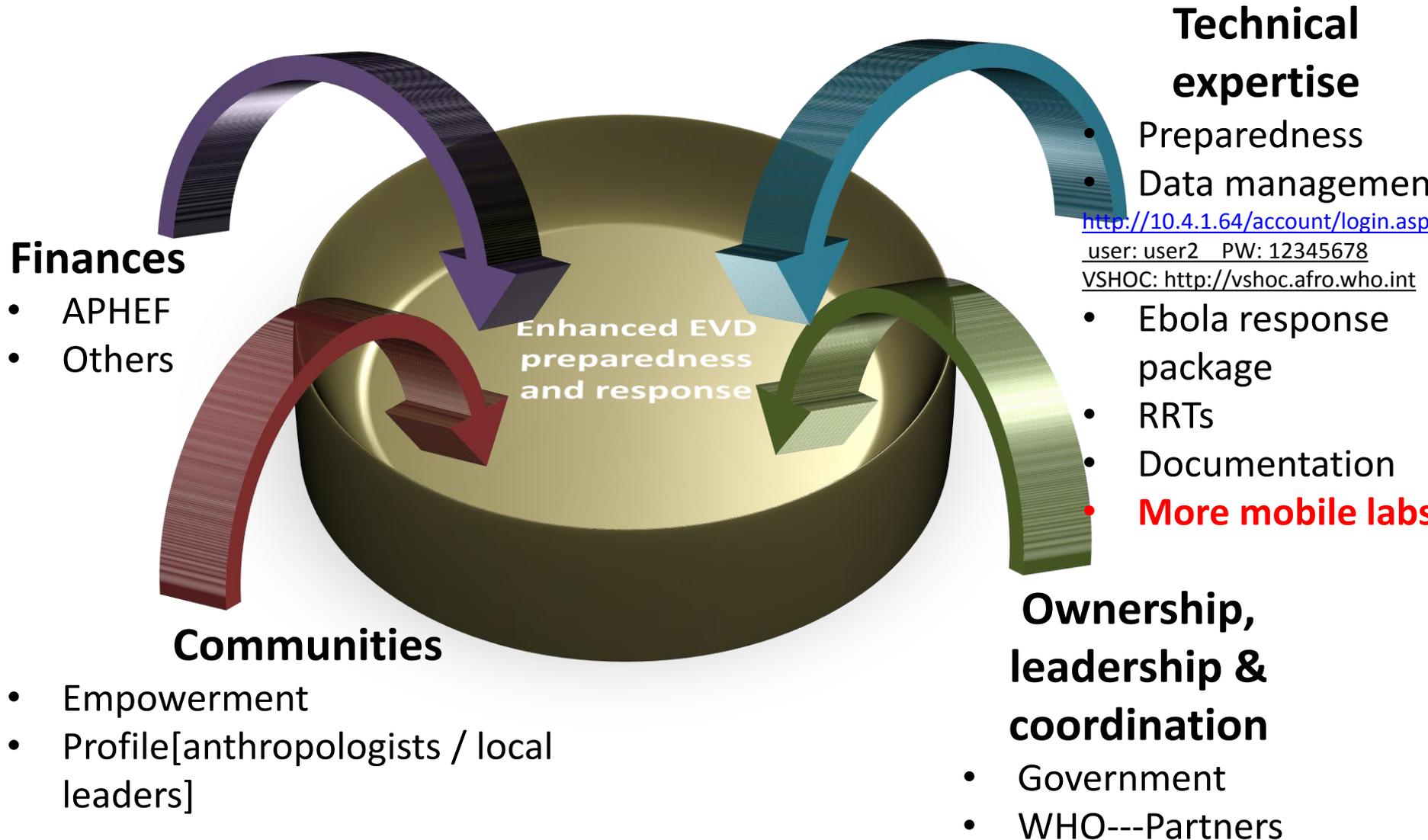
● Leadership & coordination

- ❖ Effective functioning of Task Forces in the affected countries
- ❖ Coordination of international partners in the field

● Cross-border challenges-International travel

- ❖ Provision of health services
- ❖ Closure of borders/travel ban...

Way forward



Thank You

Merci

Obrigado

