



**World Health
Organization**

REGIONAL OFFICE FOR

Africa

Fostering Africa-Europe Cooperation in High- Consequence Pathogens' Research

High-consequence pathogens threats in Africa

**Overview of Biosafety and
Biosecurity in Member States of WHO African Region**

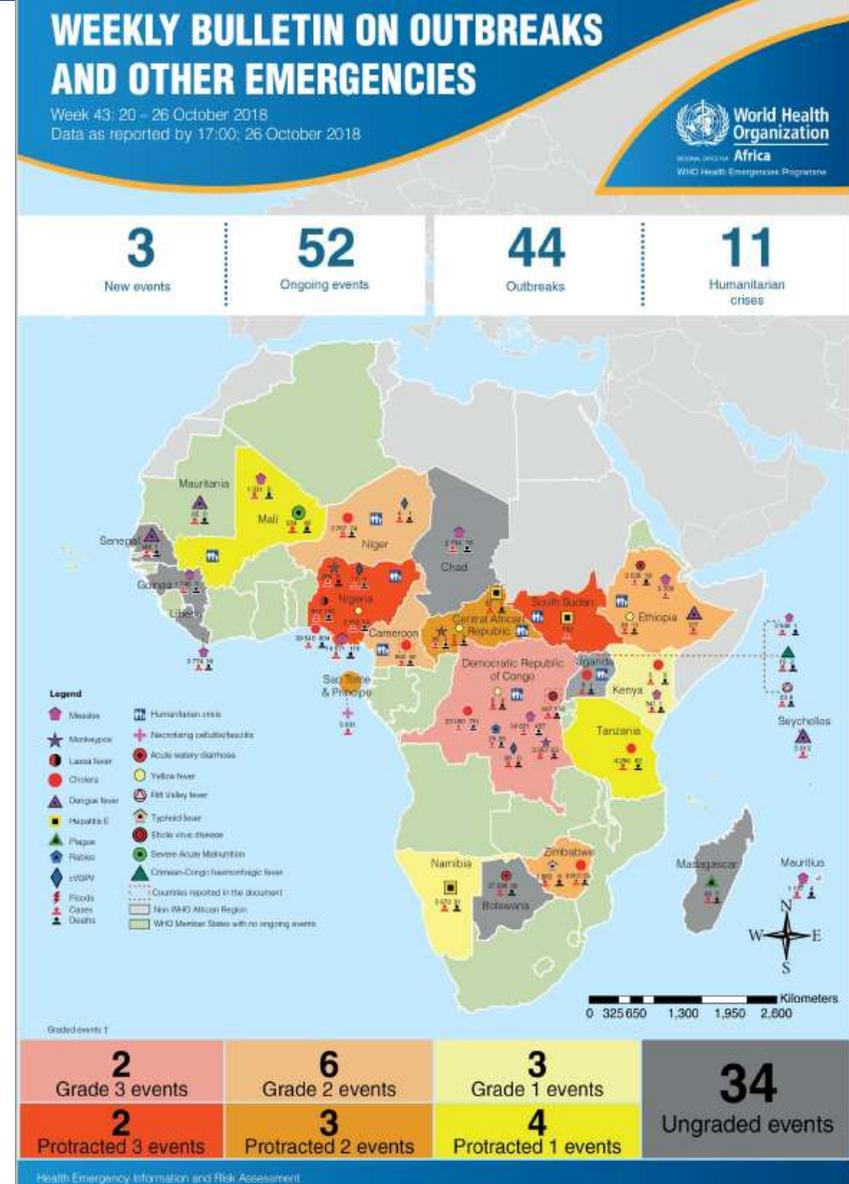
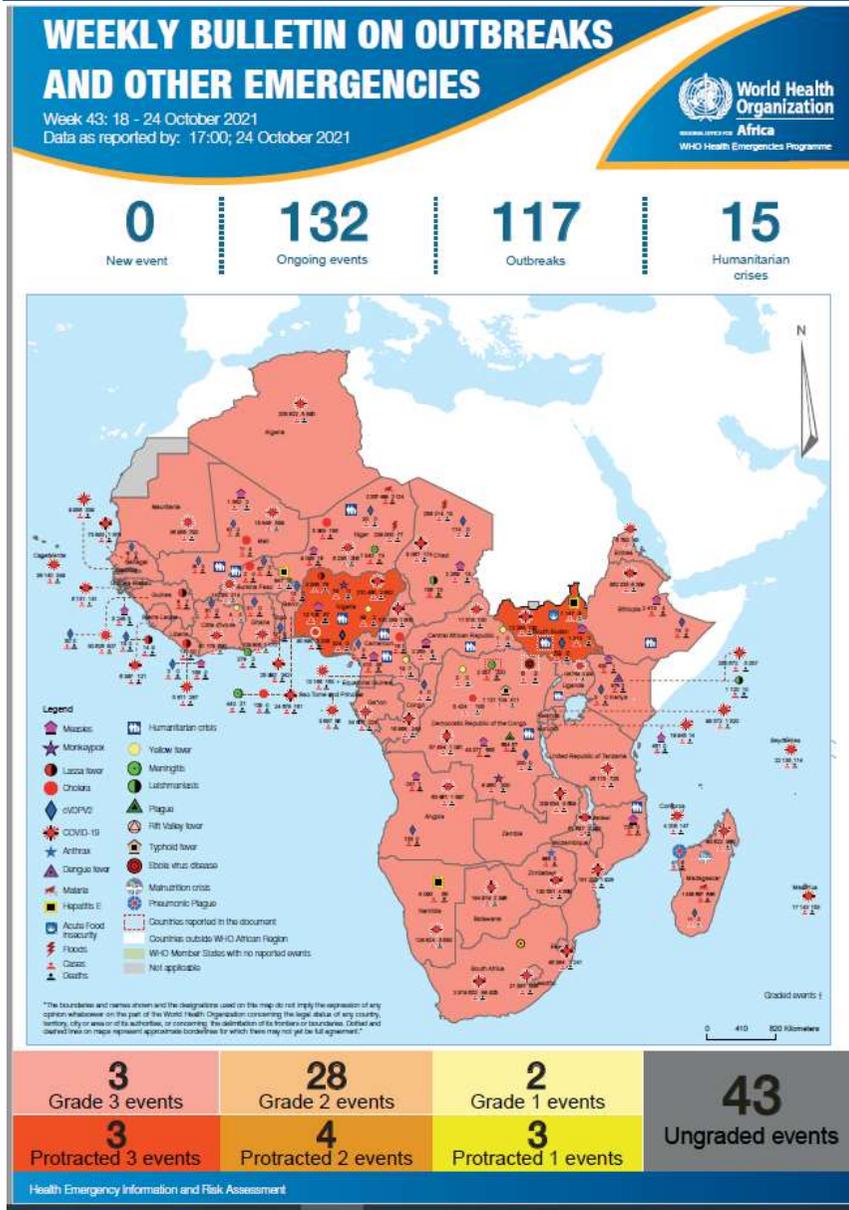
05 November 2021

Dr. Tieble TRAORE
Technical Officer
Emergency Preparedness

erinha

European Research Infrastructure
on Highly Pathogenic Agents

Public health emergencies in the WHO African region, (outbreaks and emergencies in, Week 43: 18 - 24 October 2021)



More info on the WHO AFRO website <http://www.afro.who.int/en/clusters-a-programmes/whe/outbreaks-and-other-emergencies-updates.html>

Emerging/Re-emerging and Dangerous Pathogens

The entire Region is at risk of health emergencies

- **Major challenge and threat to global health security**

- Ebola
- Rift valley fever
- Plague
- Monkeypox
- Lassa fever
- SARS (severe acute respiratory syndrome)
- Tularemia
- MERS-CoV (Middle East respiratory syndrome virus)
- Nipah
- Legionellosis
- Borreliosis
- Melioidosis etc.
- **SARS-CoV-2**

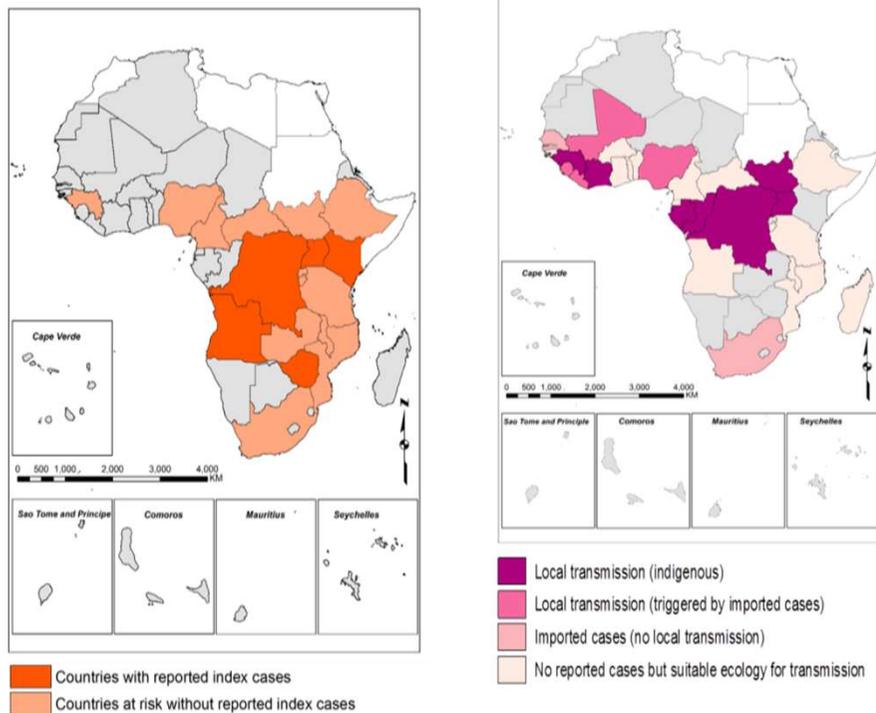
- **WHO EDPLN was established to assist WHO in:**

- Enhancing both readiness and response (timely lab detection and management of outbreaks)
- Facilitating transfer of safe and diagnostic technologies, practices and training to laboratories in affected countries (see IHR(2005))
- Providing evidence-based strategies and tools and practices for rapid detection and containment

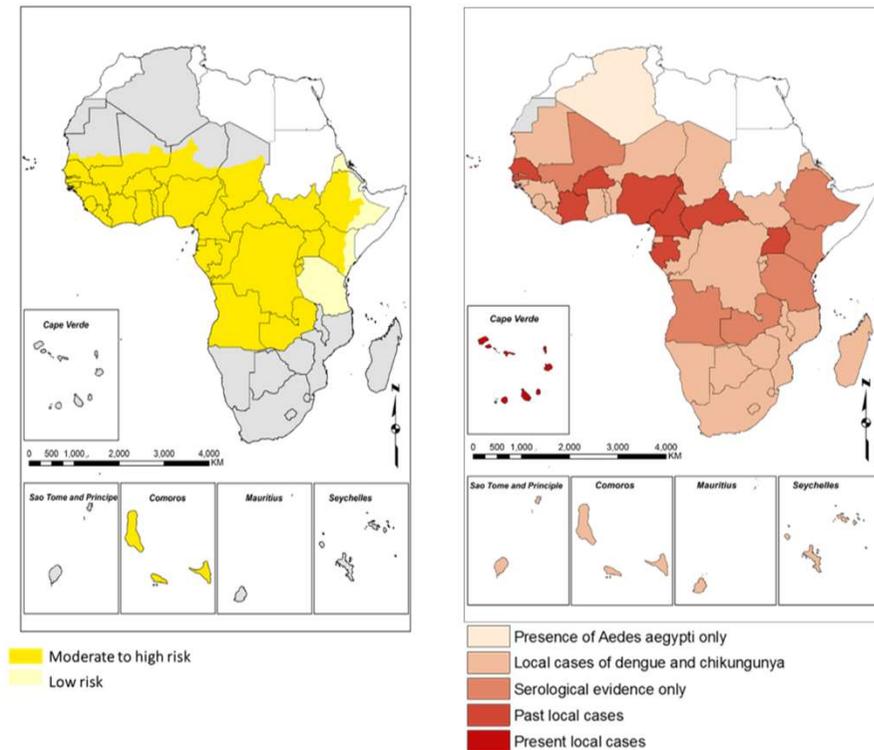
*WHO EDPLN: WHO Emerging and Dangerous Pathogens Laboratory Network (EDPLN)

Regional Strategy for Health Security and Emergencies

Marburg and Ebola risk mapping

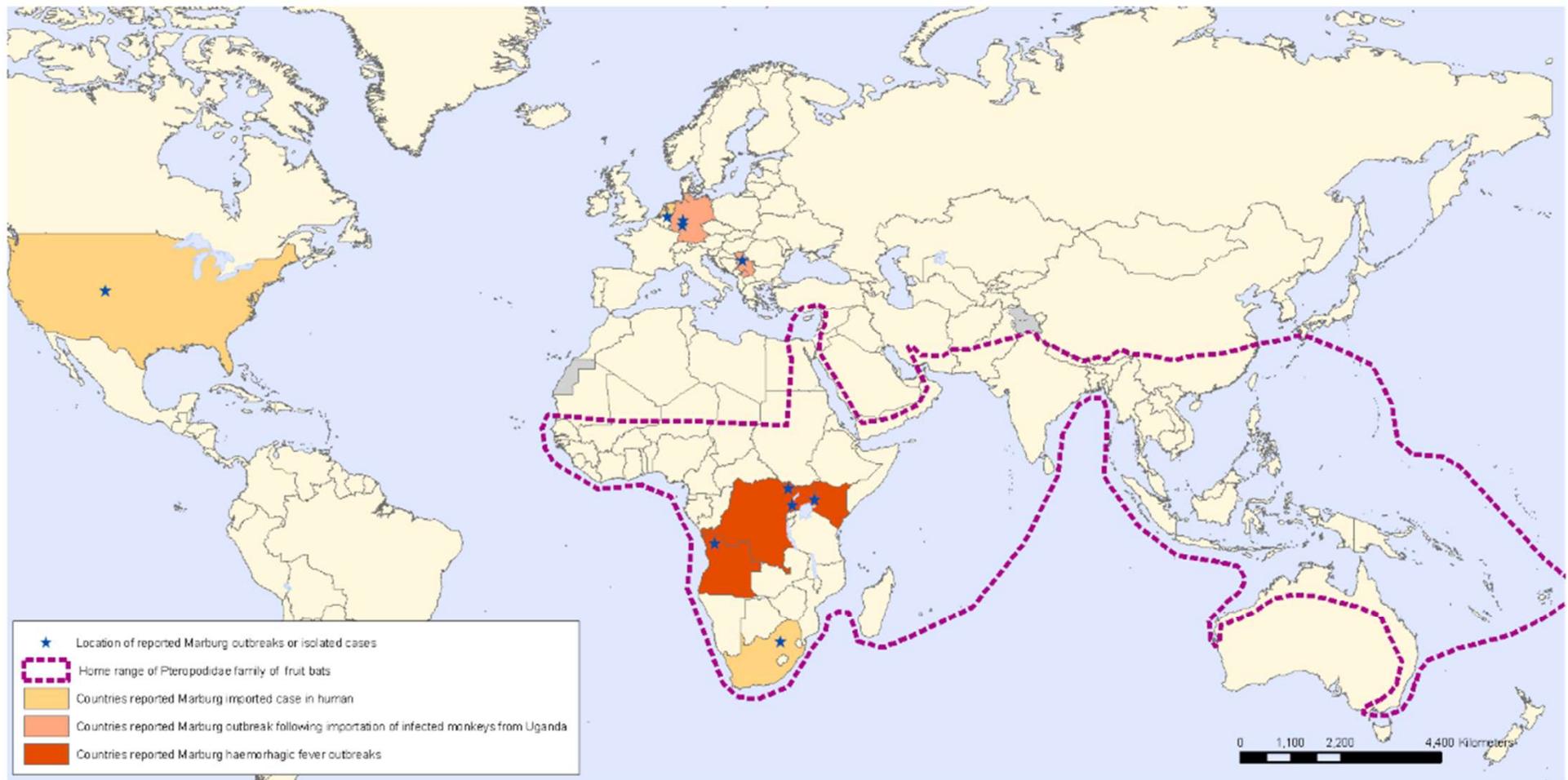


Yellow fever and Zika risk mapping



Source: WHO AFRO 2016

Geographic distribution of Marburg haemorrhagic fever outbreaks and fruit bats of Pteropodidae Family



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: Global Alert and Response Department
World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization

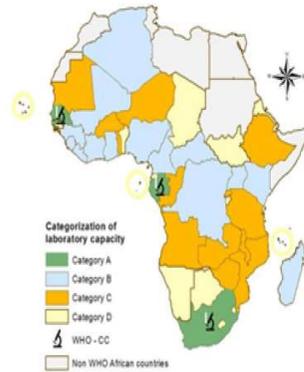
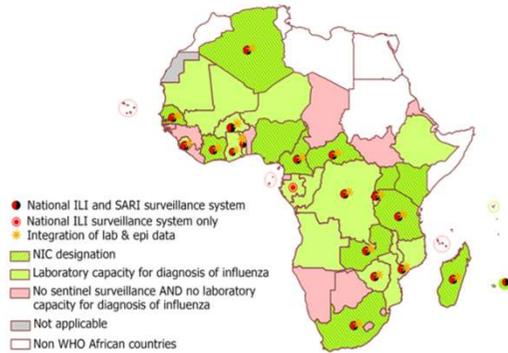


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https://www.who.int/health-topics/marburg-virus-disease/#tab=tab_1

Functional AFR Lab Networks to diagnose pathogens

Flu lab Network

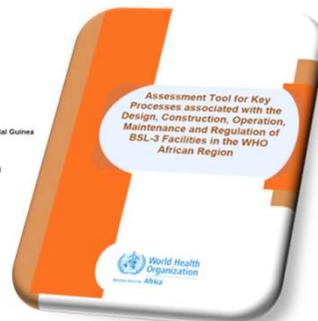


Resources from AFR Influenza Lab Networks: Crucial for MERS-CoV & EVD

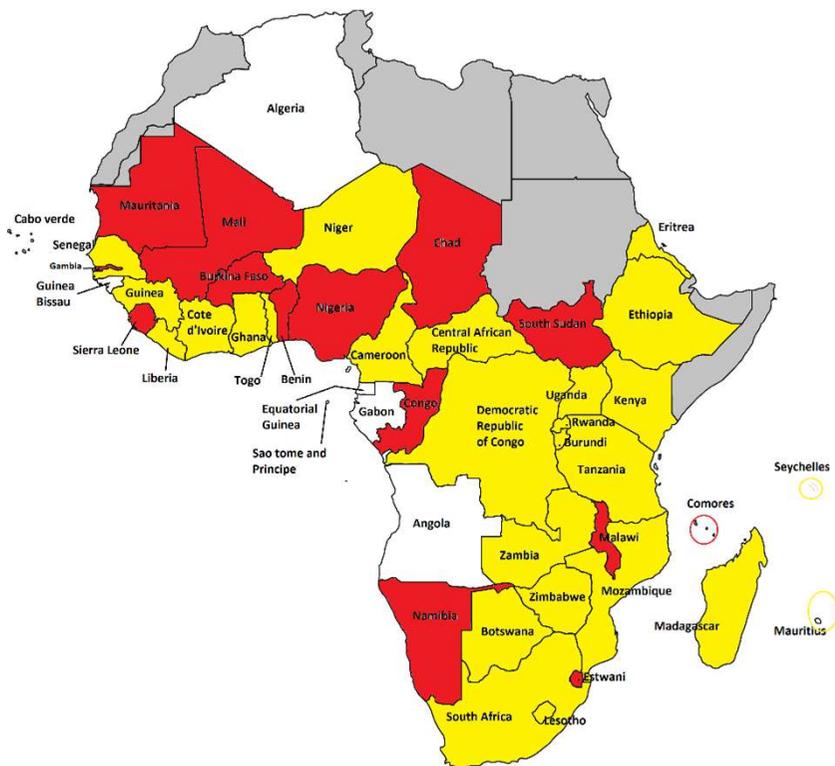
Cat A	Countries with VHF laboratory capacity and designated as regional reference laboratories for neighboring countries
Cat B	Countries with VHF laboratory capacity and ensuring national confirmation of VHF
Cat C	Countries without existing VHF laboratory capacity but have a laboratory capacity for confirmation of influenza viruses by PCR (Potential laboratory to be upgraded for VHF confirmation capacity)
Cat D	Countries without VHF and other EDP laboratory capacity and sending VHF suspected clinical specimens to a designated regional reference laboratory



EDPLN



Biosafety and Biosecurity

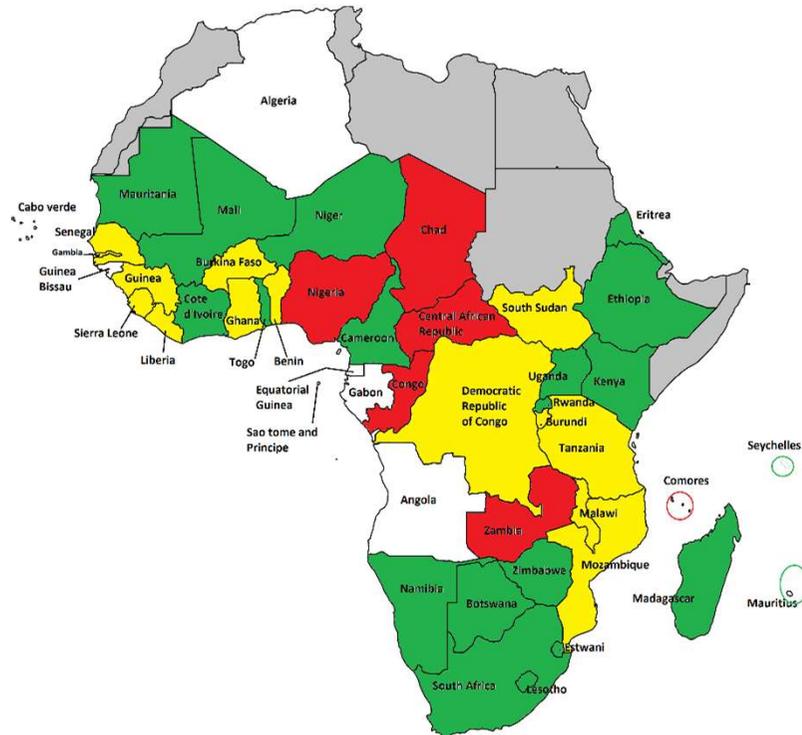


P.6.1 Whole-of-government biosafety and biosecurity system in place for all sectors (including human, animal and agriculture facilities)

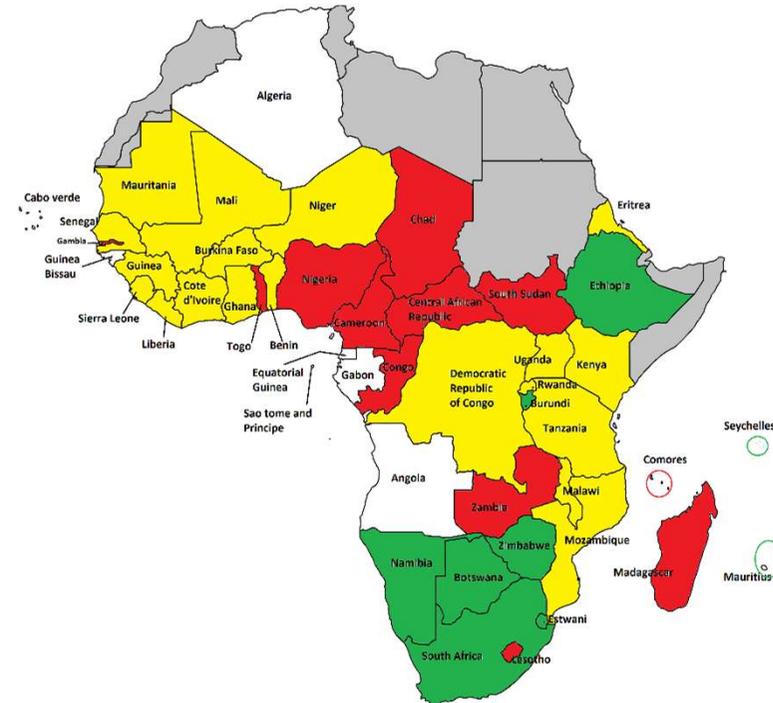


P.6.2 Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)

National Laboratory Systems

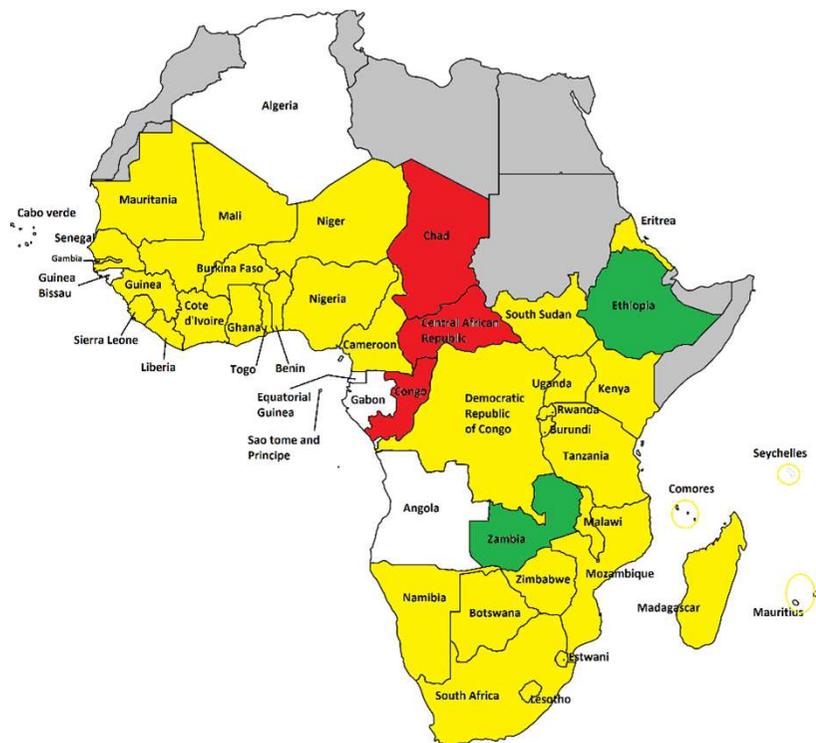


D.1.1 Laboratory testing for detection of priority diseases



D.1.2 Specimen referral and transport system

National Laboratory Systems



D.1.3 Effective national diagnostic network



D.1.4 Laboratory quality system



Biosafety and Biosecurity: Train-the-Trainers course

**Support from Public Health England,
Public Health Canada**

Specimen Referral & Transport

- Specimen Referral & Transport

- **WHO Global Consultative Meeting on the Safe Shipment of Infectious Substances held in Geneva, March 2018**

- **WHO global training & certification programme enhanced for shippers of infectious substances**

>2000 shippers certified in face-to-face trainings since 2007

- *New online platform for recertification (required every 2 years) released in 2018, enhanced for interactivity and user-satisfaction.*

- *Online training available in multi-lingual format, French and Spanish released in 2019.*



Specimen Referral & Transport

The WHO guidance on the safe transport of infectious substances, revised biennially

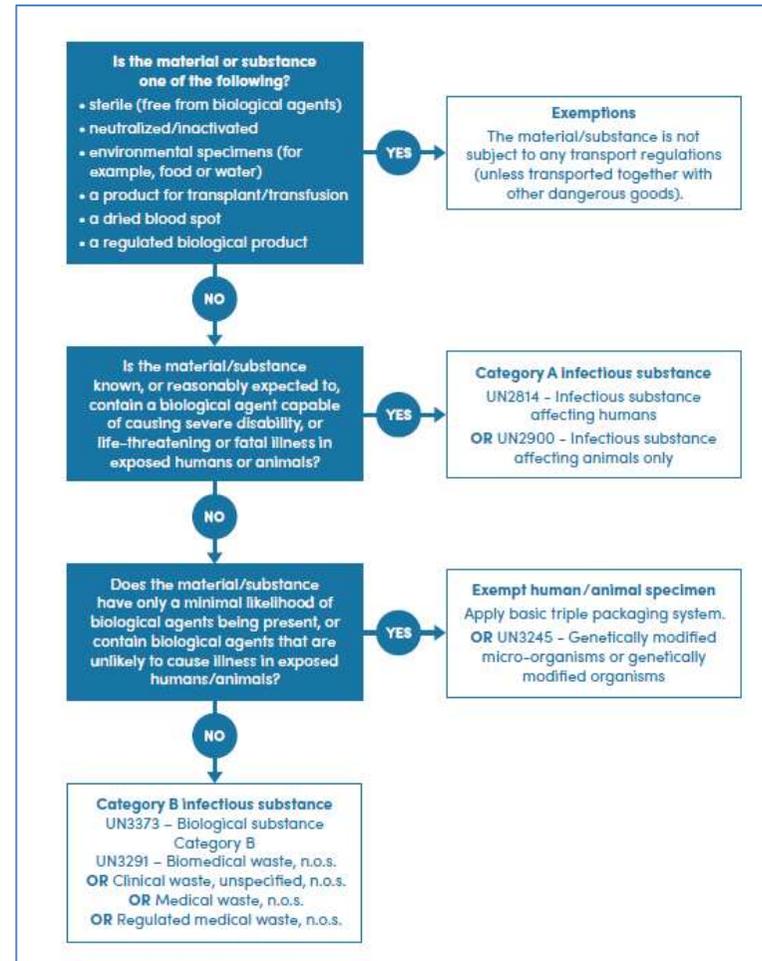


Figure 6.2 Classification of infectious substances for transportation

Source: WHO Laboratory Biosafety Manual Fourth Edition

Biosafety & Biosecurity Regimes

Basic hands-on biosafety training:

- *Conducted in Kenya (EN) and Senegal (FR) in March 2018 for AFR – 39 Member States represented*



Training cascaded in several Member States : Senegal, Benin, Chad, South Sudan , Mauritania, Algeria, Malawi and Zambia



Networking BSL-4/high containment laboratories, Lyon, 13-15 Dec 2017

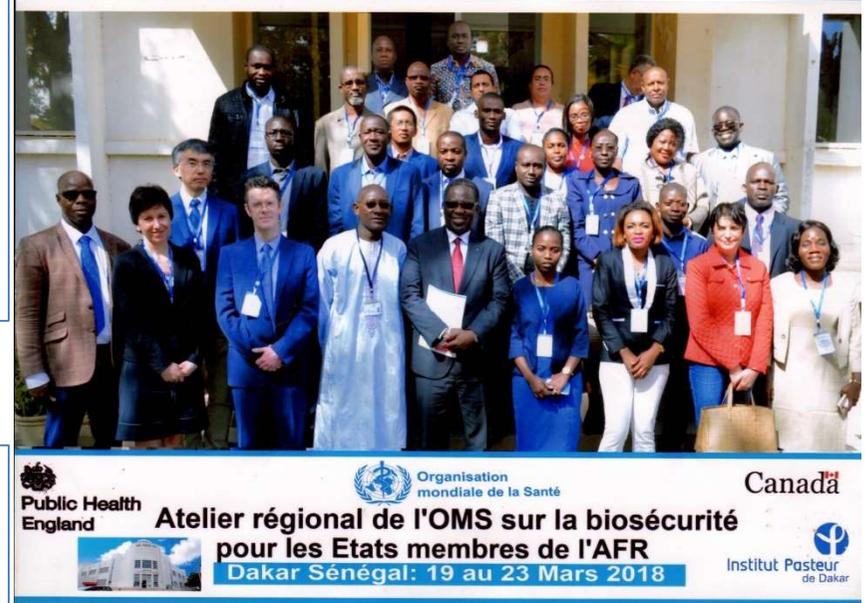
National level biosafety training

Sierra Leone:

- National Level Biosafety Training 5 Days
- Venue: University of Makeni, Bombali District
- Total Participants: 22 (5 National, 17 District MOHS, 2 from Bombali District)
- Total Attendees: 30 (22 participants, 2 national facilitators, 1 national support staff, 1 national driver, 2 WHO staff, 2 staff from partner organizations)

South Sudan:

- National Level Biosafety Training 5 Days
- Venue: National Public Health Lab, Juba
- Total Participants: 15 (10 National, 5 State Ministry of Health)
- Total Attendees: 21 (15 participants, 2 national facilitators, 2 WHO staff, 2 staff from partner organizations)



Biosafety & Biosecurity Regimes

WHO YouTube Biosafety Video Series created for various **topics** including Biosafety Cabinets (BSCs), good microbiological practices and procedures and waste management.

<https://www.who.int/activities/strengthening-public-health-laboratory-services/videos#>

Biological safety cabinet (BSC):

- Introduction
- Preparatory steps
- Best practices for safe usage
- Incident management



Biosafety & Biosecurity Regimes: WHO Laboratory Biosafety Manual 4th edition

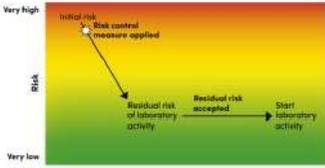
- A central core document
- 7 additional monographs to address:
 - Risk assessment,
 - Laboratory design and maintenance,
 - Biological safety cabinets and isolators
 - PPE
 - Decontamination and waste management
 - Biosafety programme management, and
 - Emergency/outbreak response

WHO Laboratory Biosafety Manual 4th edition (LBM4) publication

Risk-based approach: Practical implications and opportunities

LBM4: a core document and 7 subject-specific monographs (risk assessment, laboratory design and maintenance, waste management etc)

LBM4 advocates for a structured way to assess risk



Risk assessment process



Risk assessment is a key element to reduce risk to acceptable and safe level considering:

- What resources are available for risk control measures?
- What strategies are most applicable for the resources available?
- Are strategies effective, sustainable and achievable in the local context?

Risk is a combination of the probability of an incident occurring while working with a biological material (hazard), and the consequences of such an incident.

- Risk based approach is flexible and locally applicable
- It is complementary to existing national regulations
- Can be used by diagnostic, research, production, animal and human laboratories
- Intended to prevent exposure and release of infectious agents
- Good microbiological practice and procedures remains critically important

English, Russian, French and Portuguese

549 Participants

92 Countries

66% female, 32% male, 2% prefer not to say

15 Questions asked

Speakers:
Dr Kathrin Summermatter, IFIK University of Bern, Switzerland
Dr Kazunobu Kojima, WHO

What you told us:
Are you likely to implement a risk approach to biosafety now? Yes 90%, No 1%, Don't know/other 9%

What do you think will be the greatest challenge to implement? Training 31%, Management 19%, Funding 18%, Equipment 15%, Supply 13%

Next webinar: April 7th
barnadasc@who.int

Virtual knowledge sharing sessions

WHO Public Health laboratories knowledge information sharing platform



Date	Session	Topic	Participants AFRO countries	Nb countries AFRO	Total participants	Total nb of countries
3/6/20	2	Biosafety guidelines for handling COVID-19 specimens	68	27	159	59
14/10/20	13	Biosafety Considerations for testing of SARS-CoV-2 infections with special focus to the implementation of Antigen based RDTs, a risk-based approach				
28/10/20	14	Special Q&A session on SARS-CoV-2 antigen RDTs (including biosafety considerations)	47	20	212	65
24/03/20	17	WHO Laboratory Biosafety Manual 4th edition (LBM4) publication Risk-based approach: Practical implications and opportunities	173	39	1203	120

WHO Guidance for Stepwise Implementation of Biosafety and Biosecurity Regulatory Framework



- STEP 1: Mobilize national commitment and resources for the development and implementation of a national biosafety and biosecurity policy
- STEP 2: Conduct a national evaluation and surveys
- STEP 3: Establish national institutions and operational mechanisms and develop best-fitting regulations
- STEP 4: Strengthen expertise to support implementation of a suitable regulatory system
- STEP 5: Implement and enforce regulations
- STEP 6: Establish national information exchange networks and international partnerships
- STEP 7: Review performance and adaptability to the national context and evolving risks

ISSUES AND PROPOSED ACTIONS

- **Lack of national policy and strategy for laboratory services**
- **Insufficient funding**
- **Inadequately trained laboratory staff**
- **Weak laboratory infrastructure**
- **Old or inadequately serviced equipment**
- **Lack of essential reagents and consumable**
- **Limited quality assurance and control protocols**
- **Low priority and recognition in national health delivery systems**
- **No or insufficient mobile laboratories**
- **Training /human resources**

- **Develop a comprehensive national laboratory policy**
- **Formulate a national laboratory strategic plan**
- **Establish or strengthen laboratory leadership**
- **Set up a national public health reference laboratory**
- **Strengthen the public health laboratory supply and distribution**
- **Improve public health laboratory quality systems**
- **Strengthen laboratory staff training at all levels**
- **Ensure maintenance of laboratory equipment**
- **Strengthen laboratory management information systems**
- **Monitor and evaluate laboratory services**
- **Ensure adequate funding for public health laboratory services**
- **Develop or improve mobile laboratory system**
- **Training and continuous professional development**



THANK YOU FOR YOUR ATTENTION
MERCI POUR VOTRE ATTENTION
