Event-based surveillance Framework

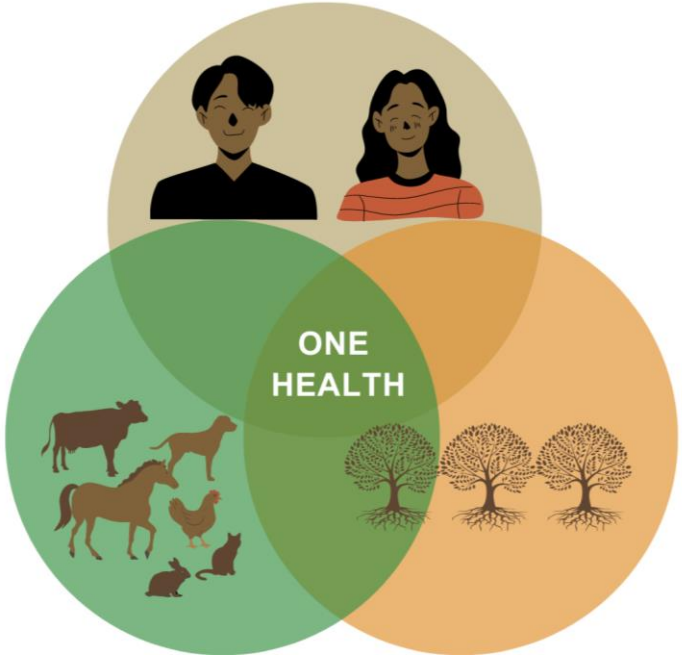
2nd Meeting of the Eastern Africa Sub-Regional Network for Rabies Control

Addis Ababa Ethopia
10-12 October 2023

What is One Health

One Health is a collaborative, multisectoral and transdisciplinary approach used to attain optimal health outcomes for people, animals, plants, and their shared environment.

-Africa CDC framework for One Health Practice in NPHIs, 2020



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Why the focus on zoonoses?

zoonoses: infectious diseases that can be transmitted between animals and humans through food, water, fomites, or vectors

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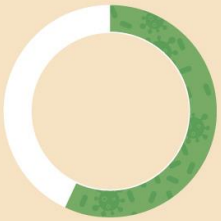
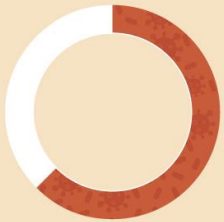
Zoonotic diseases by the numbers



60%

OF EXISTING HUMAN INFECTIOUS DISEASES ARE ZOONOTIC



75%

OF EMERGING INFECTIOUS DISEASES OF HUMANS (INCLUDING EBOLA, HIV, AND INFLUENZA) HAVE AN ANIMAL ORIGIN

80%

OF AGENTS WITH POTENTIAL BIOTERRORIST USE ARE ZOONOTIC PATHOGENS

5 NEW HUMAN DISEASES APPEAR EVERY YEAR. THREE ARE OF ANIMAL ORIGIN

Source: https://www.oie.int/en/for-the-media/onehealth

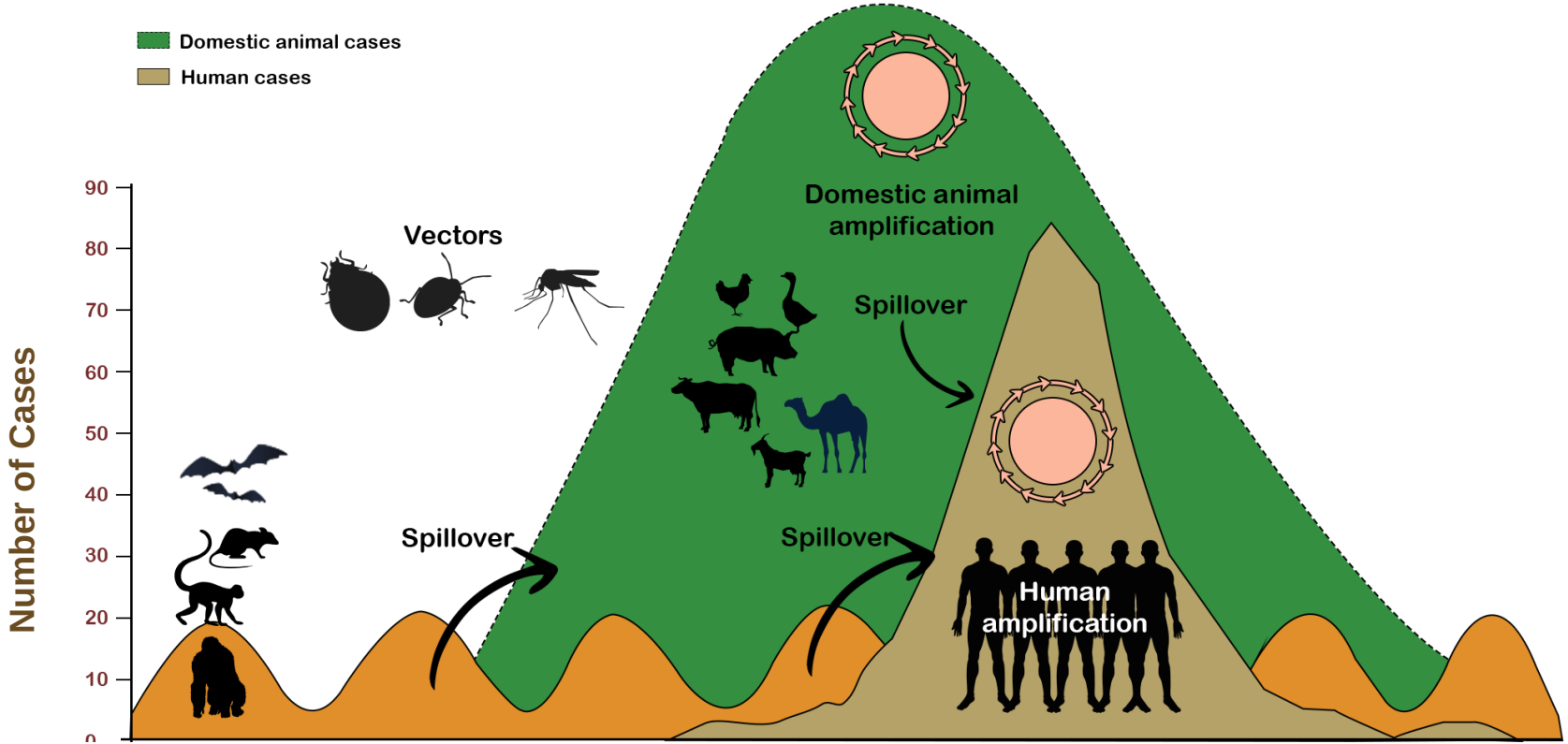
Significant Public Health Impact

- **2.4 billion people infected each year** in developing countries
- **9 in 10 people die** as a result
- >170 million cases and >3.5 million deaths of COVID-19 so far...

Significant Socio-Economic Burden

- >$3.6 trillion loss from COVID-19...
- >$53 billion loss from 2014-16 Ebola outbreak
- >$40 billion for SARS
- >$20 billion for Zika

Potential for early detection across multiple sectors



Source: Karesh et al - The Lancet

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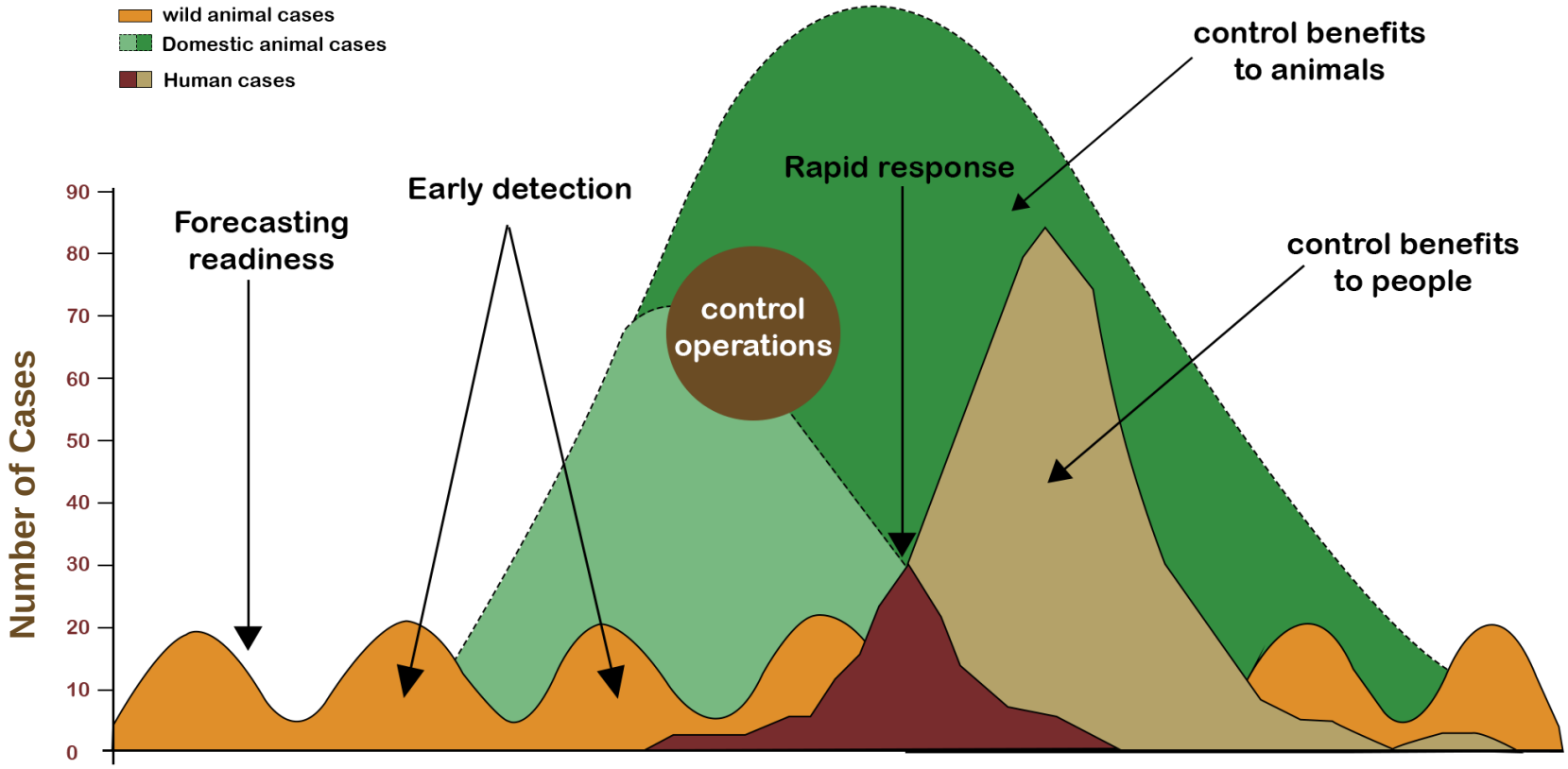
Potential for multisectoral response efforts



Source: Karesh et al - The Lancet

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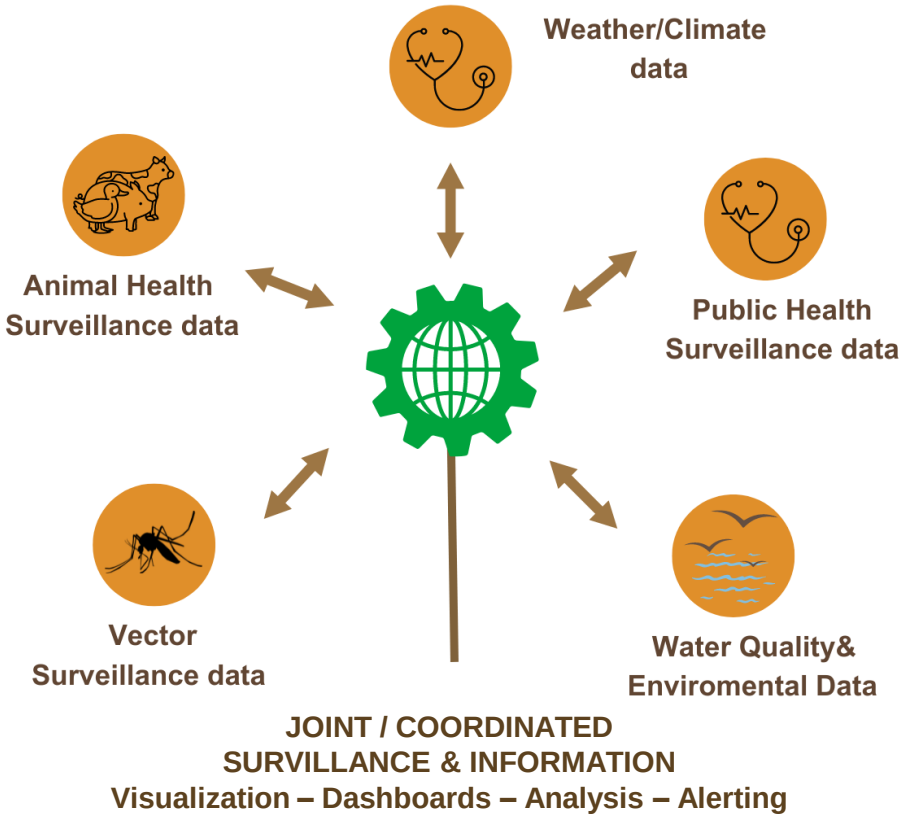
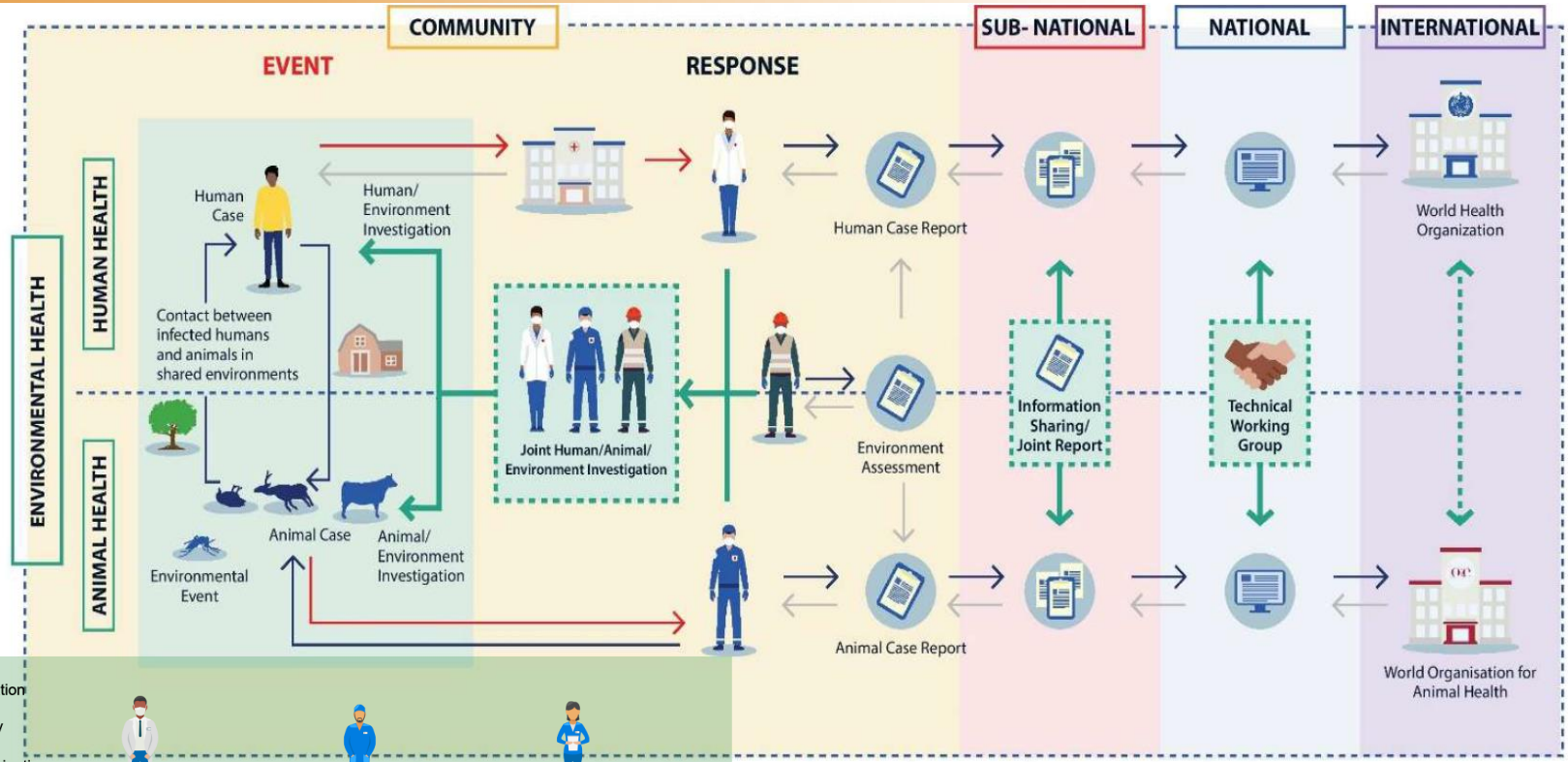
Collaborative/Coordinated Surveillance

Figure 1: Hypothetical Collaborative Surveillance and Information Sharing System



- The systematic strengthening of capacity and collaboration among diverse stakeholders, both within and beyond the health sector, with the ultimate goal of enhancing public health intelligence and improving evidence for decision making
- It involves multisectoral workforce and multisectoral data sources with single interporable platform for disease notification and information sharing accross sectors

Example of collaborative surveillance & response

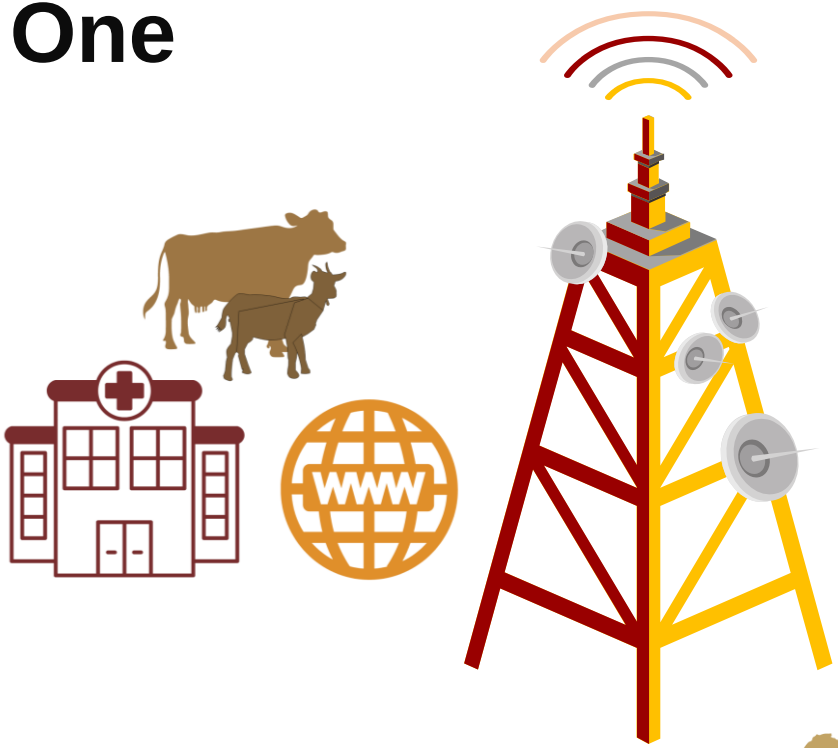


Ghai, R. et al. preprint - *A Generalizable One Health Pathway for the Control of Zoonotic Diseases*.

Collaborative surveillance:

for zoonoses and other One Health issues

Focus on event-based surveillance in the community



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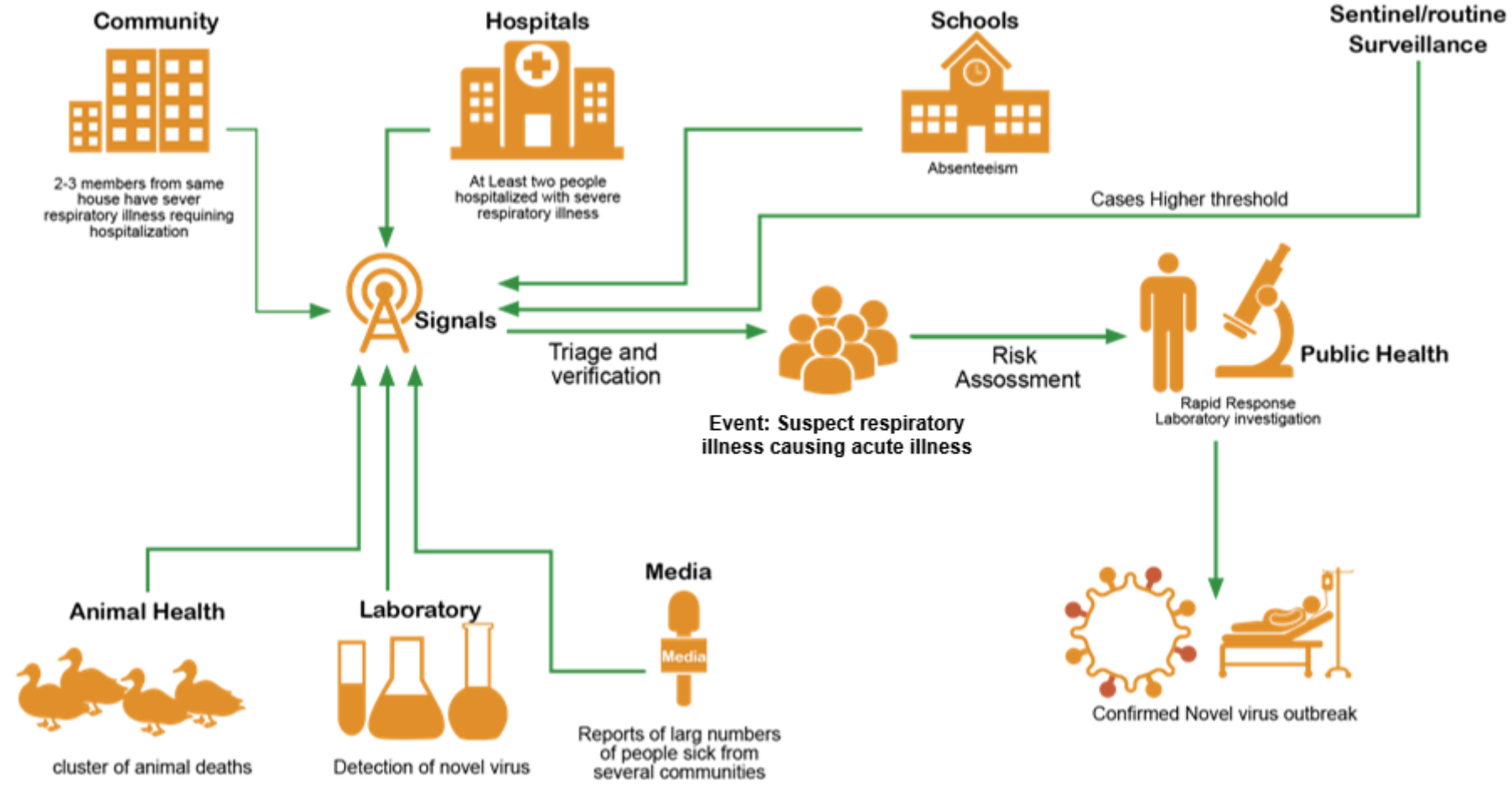
Event Based Surveillance

- **Event-based surveillance (EBS) is the organized and rapid capture of information about events that are of potential risk to public health.**
  - A component of early warning alert and response system (EWARS)

Importance of EBS

- Early Detection of Outbreak
- Reduction in Transmission of Diseases
- Enhances Prompt Response
- Reduction in Morbidity and Mortality
- Involvement of Community in Outbreak detection
- Building of Trust in Agency by the community

Possible data sources for EBS



EBS approaches

Community EBS

- At the community level, by community members

Health Facility EBS

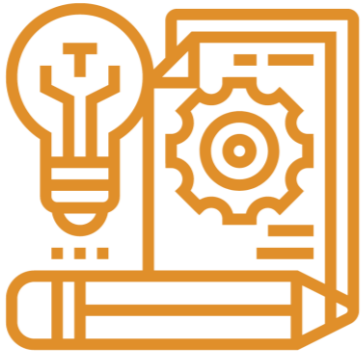
- At the health facilities by HCW

Hotlines

- Community engagement through a hotline
- Hotlines can be at national or subnational levels

Media Scanning

- Official sources
- Unofficial sources



What is CEBS?

What is Community Event-based Surveillance (CEBS)?

“The systematic detection and reporting of signals of public health significance within a community by community members”

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What is required to implement CEBS?

Designated, trained focal point such as a community health worker (CHW)/animal/environmental

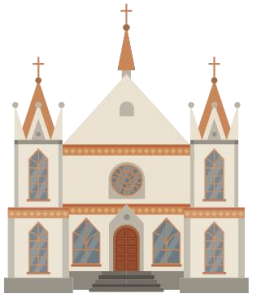
A network of key informants who can support the CHW in detecting signals

Communities sensitized on signals to look for

An established reporting mechanism

Sources of signals for CEBS

- Community members
- Livestock keepers
- Traditional healers
- Schools
- Faith-based congregations
- Local markets
- Drug shops
- Social media
- Mass media
- Internet



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Examples of signals for CEBS

Two or more persons with similar severe signs/symptoms from the same community within one week

A cluster of unexplained animal deaths within one week

An illness with novel or rare symptoms

Any person with fever and rash

Hotlines

A toll-free phone line that the general public can use to contact an institution/organization about a particular health concern

Within EBS, a hotline can be used to capture signals reported by the community or health facility

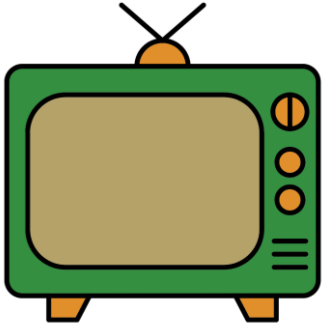
Requirements for Establishing a Hotline

- Trained personnel
- Dedicated contact number and social media handle
- Office space
- Desktop computers
- Telephone with either software phones or landline
- FAQ or reference book for operators to consult when communicating with callers

EBS approaches / modalities

Media Scanning

- Official sources
- Unofficial sources



Internet Bio-surveillance or Digital Disease Detection

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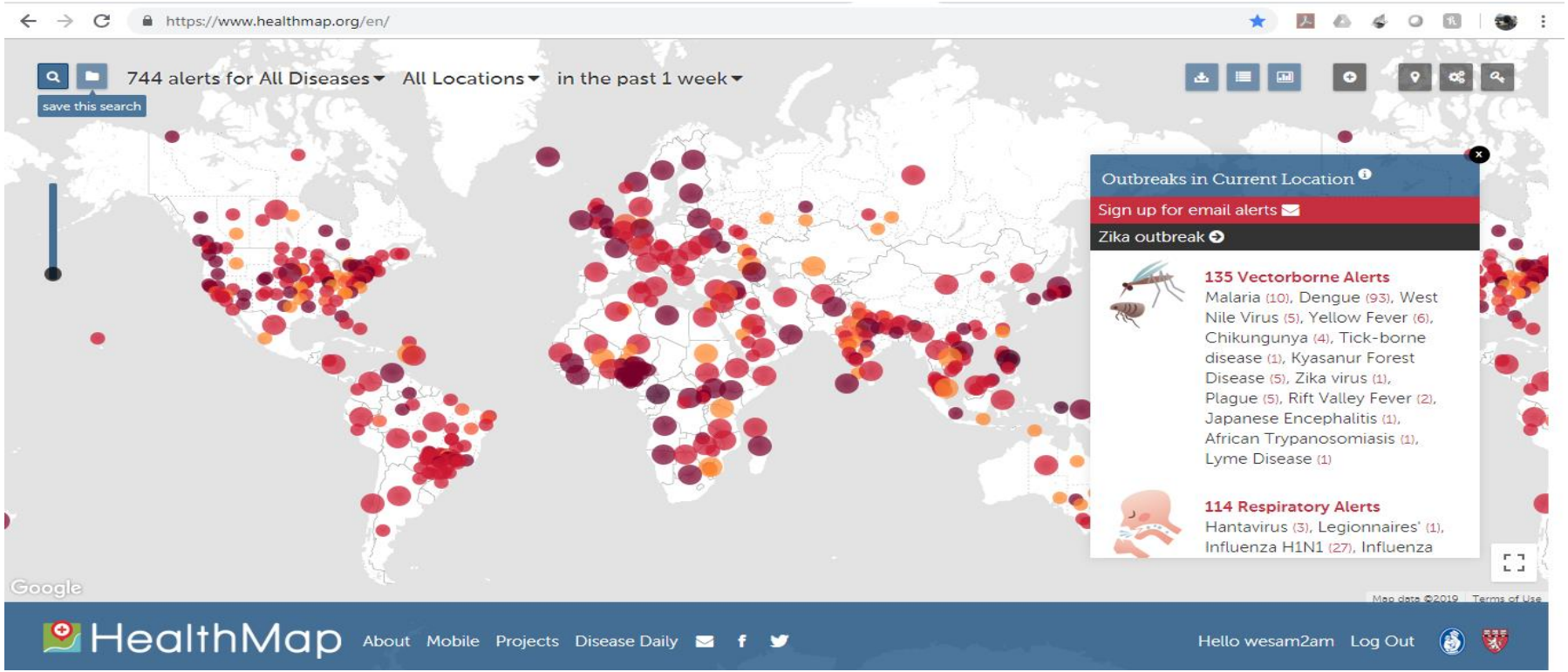
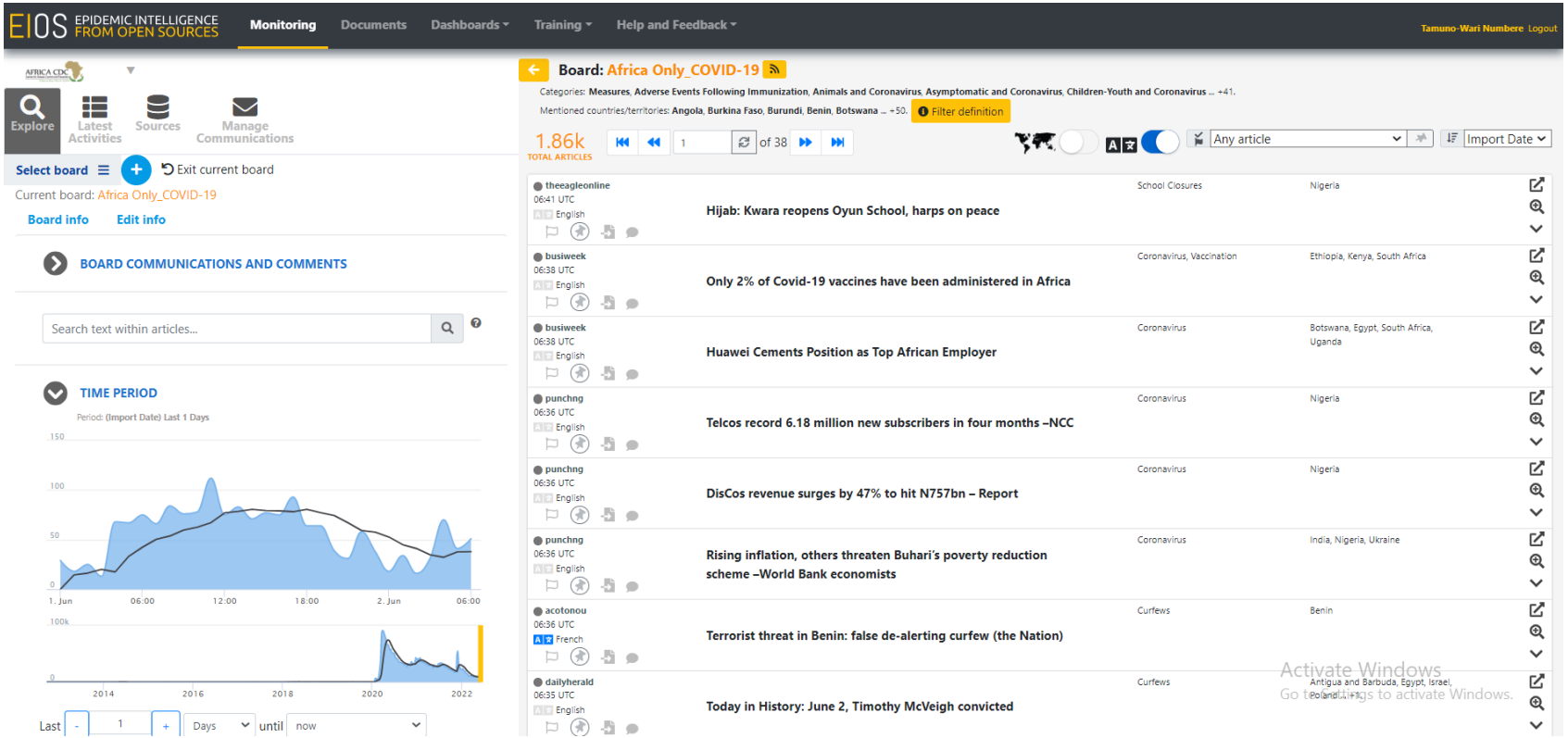
Health Map



https://www.healthmap.org/en/

Epidemic Intelligence from Open Sources (EIOS)



https://portal.who.int/eios/Login?returnurl=%2feios%2f

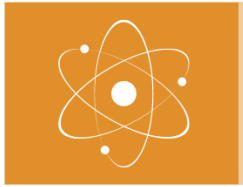
EBS approaches/modalities

Health Facility EBS

- At the health facilities by HCW

What is required to implement HEBS?

Trained healthcare workforce to detect signals in health facilities



A designated, trained surveillance focal point

An established reporting mechanism

Remember: Signal detection and signal reporting are the key activities for health facilities in HEBS

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Examples of signals for HEBS

Any severe illness in health staff after taking care of a patient with similar illness

Large, sudden increases in admission for any severe illness of the same type

Any severe, unusual, unexplainable illness including a failure to respond to standard treatment

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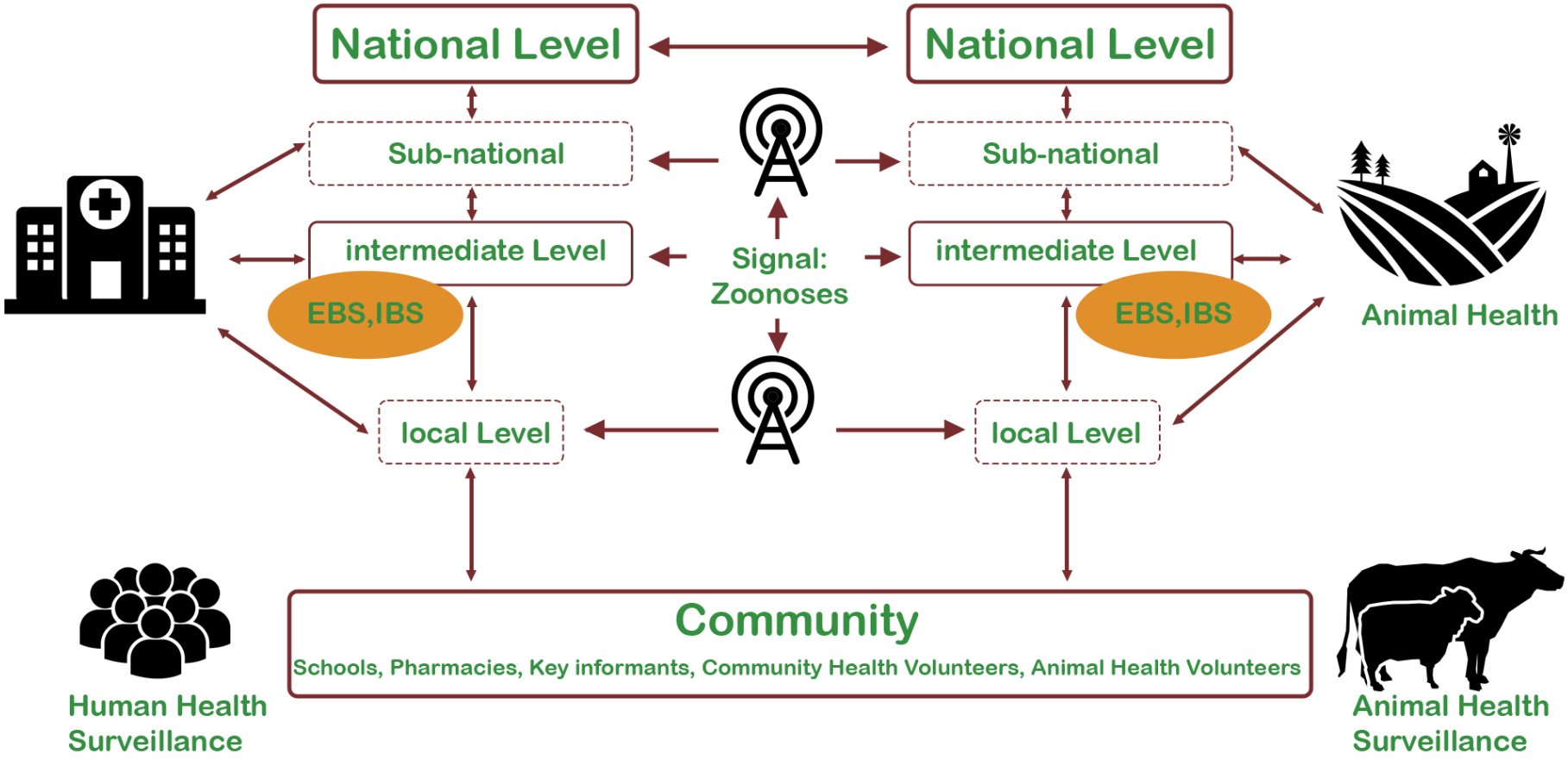
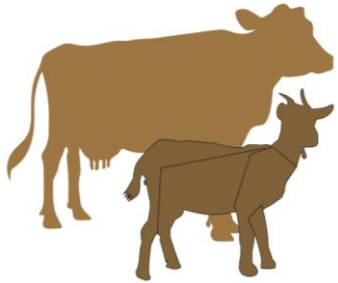

National Level
National Level
Sub-national
Sub-national
intermediate Level
intermediate Level
EBS,IBS
EBS,IBS
Signal:
Zoonoses
local Level
local Level
Animal Health
Community
Schools, Pharmacies, Key informants, Community Health Volunteers, Animal Health Volunteers
Human Health
Surveillance
Animal Health
Surveillance

Example EBS signals in animals

- Large, unexpected, and sudden animal deaths
- Sudden increase in animal abortions
- Unprovoked abnormal aggressiveness
- Unexpectedly large increase of animal cases with similar symptoms
  - hemorrhage
  - respiratory signs
  - neurologic signs
- Sudden decrease in animal productivity in a farm
  - e.g milk yield, egg production, work efficiency



Example EBS signals in humans

Cluster of humans with

- diarrhea and/or gastro-intestinal (GI) symptoms
- fever +/- rash
- hemorrhagic symptoms
- jaundice
- neurologic symptoms and/or dog bites
- respiratory symptoms
- sudden death
- severe illness in veterinarians, wildlife staff or community member after contact with a sick or dead animal

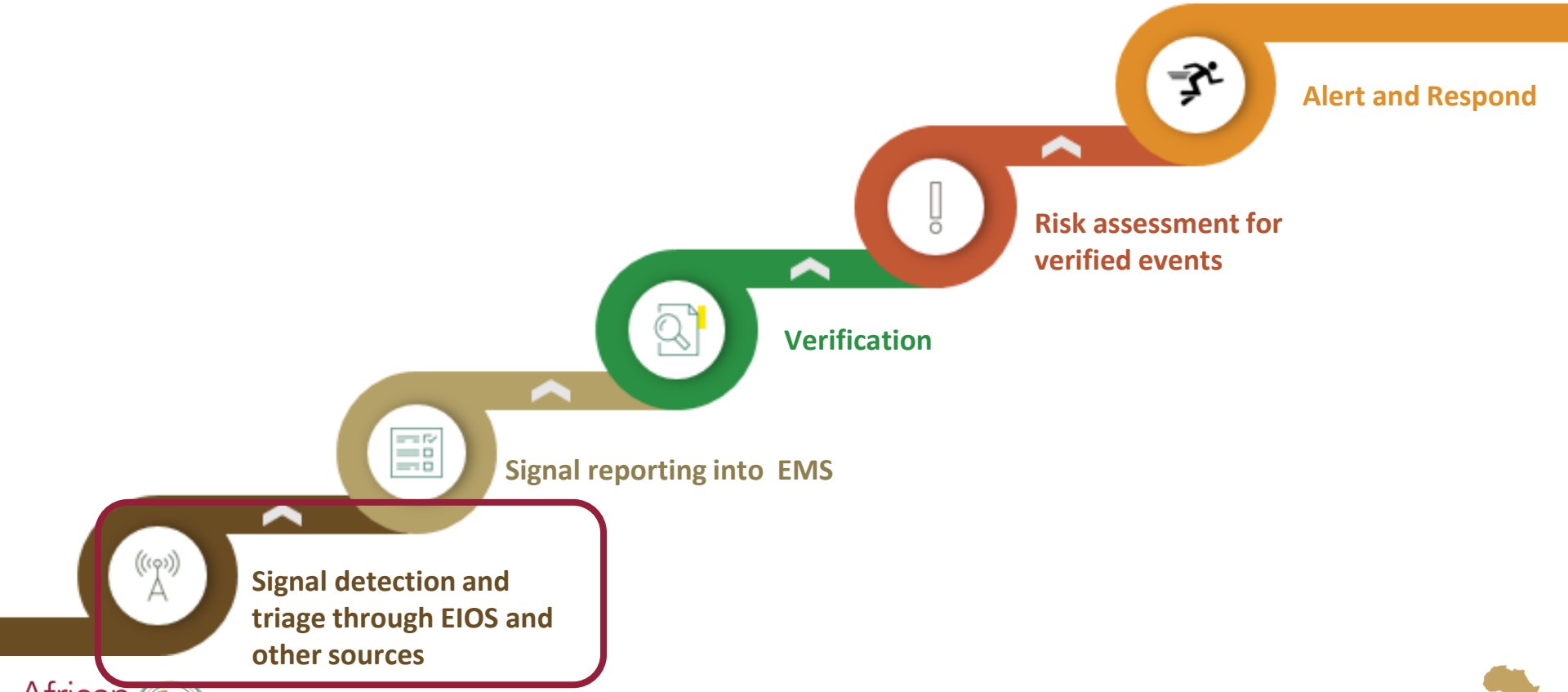
Example EBS signals in the environment

- Harmful algal blooms
- Severe weather changes and natural disasters
- Chemical, toxin or other hazardous waste spills

Signals in humans/animals with **common environmental exposure**

- Severe illness or rare disease among community members or animals sharing:
  - a common water source
  - a common source of food/prey
  - a common feeding ground/environment

Steps of EBS



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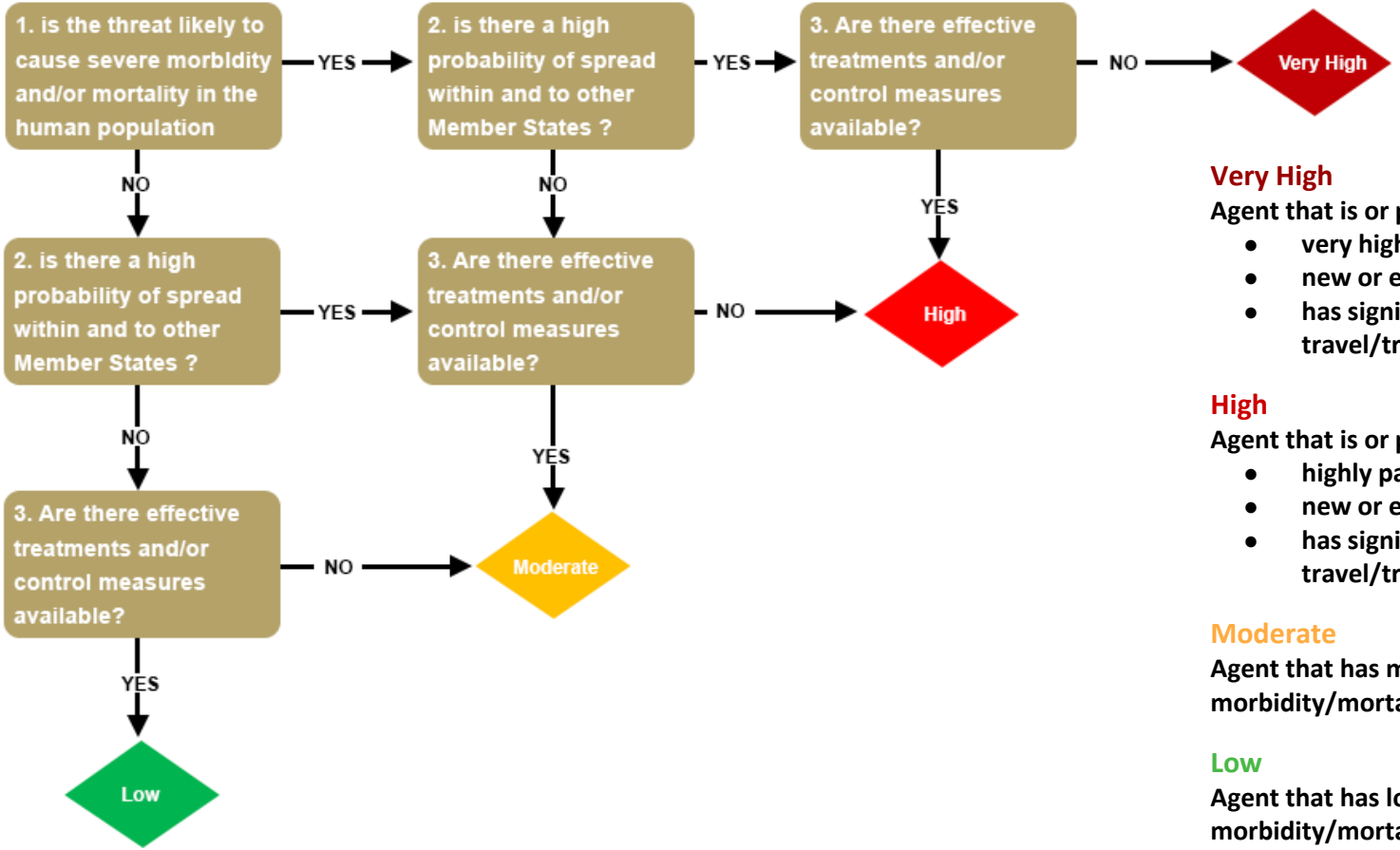


Very High

Agent that is or potentially

- very highly pathogenic and transmittable,
- new or emerging, or
- has significant potential to disrupt travel/trade

High

Agent that is or potentially

- highly pathogenic and transmittable,
- new or emerging, or
- has significant potential to disrupt travel/trade

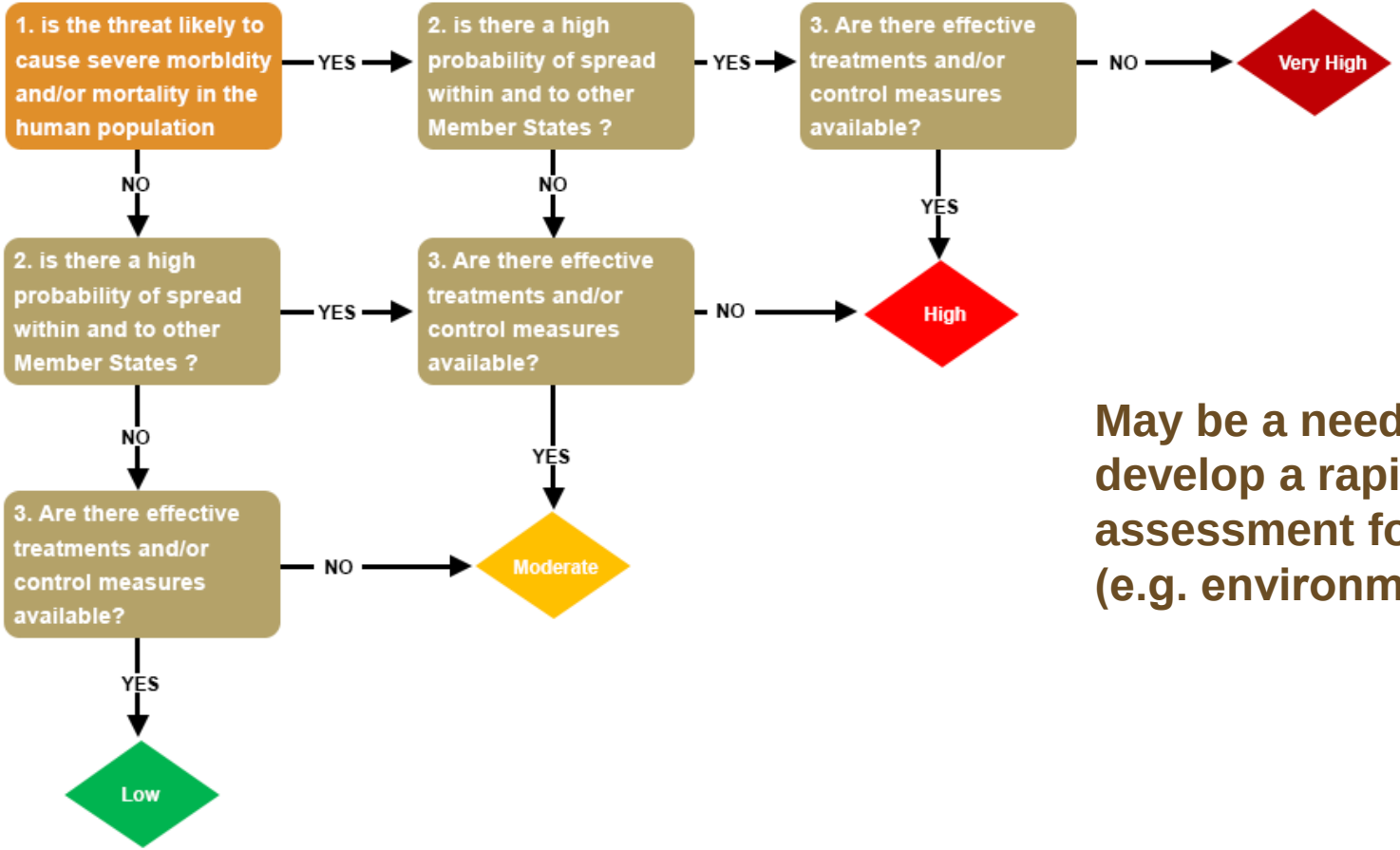
Moderate

Agent that has moderate potential to cause morbidity/mortality

Low

Agent that has low potential to cause morbidity/mortality

NOTE: If there are specific groups at increased risk of infection, consider performing separate risk assessment for each group . if in doubt for any questions, select higher risk answer.



May be a need to also develop a rapid risk assessment for other sectors (e.g. environment…)

NOTE: If the threat is zoonotic or likely to cause severe morbidity and /or mortality in the human population,also complete the **Human Health Risk Assessment Algorithm**

Risk level and type of response recommended

Low risk

Standard alert, routine distribution: Africa CDC (HQ + rcc)

Continue to monitor; repeat risk assessment if situation changes

Moderate risk

Urgent alert, routine distribution: Africa CDC (HQ + RCC), AU Commission

Discuss with affected Member State and relevant RCC(s) about needs

High risk

Urgent alert, expanded distribution: Africa CDC (HQ + RCC), AU Commission, Member States, international partners

Consider deployment (as requested) in consultation with affected Member State and relevant RCC(s)

Very high risk

Emergency alert, expanded distribution: Africa CDC (HQ + RCC), AU Commission, Member States, international partners, general public Consider deployment and use of AU logistics in consultation with affected Member State and relevant RCC(s)

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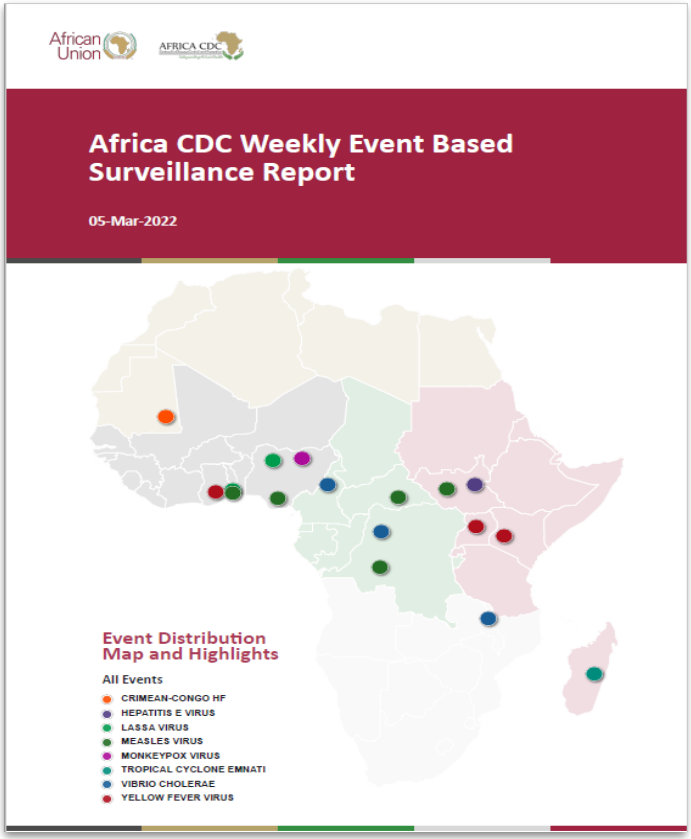
Internal EBS Report



High Risk Events

COVID-19 in Africa

11,209,273 confirmed case(s)
249,347 death(s) **(CFR: 2.2%)**

SARS-CoV-2	Agent/Pathogen	21-Feb-2020	First Reported by Africa CDC	25-Feb-2022	Previous Africa CDC Report
14-Feb-2020	First Occurred	Africa	Country	All 55 Member	Location
Ministry of Health	Source	VERY HIGH	GeoScope	HIGH	Risk Assessment

Update to event:

As of 6 p.m. East African Time (EAT) 3 March 2022, a total of 11,209,273 COVID-19 cases and 249,347 deaths (CFR: 2.2%) have been reported in 55 African Union (AU) Member States (MS). This represents 2.6% of all cases and 4.2% of all deaths reported globally. Thirty-three (60%) AU MS are reporting CFRs higher than the global CFR of 1.4%. Since the beginning of the pandemic, 53 (96%) AU MS have experienced a third wave, 47 (85%) countries have experienced a fourth wave, and nine countries (Algeria, Benin, Congo Republic, Egypt, Guinea-Bissau, Kenya, Mauritius, Somalia and Tunisia) are experiencing a fifth wave of COVID-19 cases. All five variants of concern (VOC) have been reported circulating in Africa: 53 AU MS have reported the presence of the Alpha (48 MS), Beta (44), Gamma (6), Delta (50), and/or Omicron (43) VOCs. For Epi week 8 (21 - 27 Feb 2022), 58,613 new COVID-19 cases were reported, which is a 31% decrease in the number of new cases reported compared to Epi week 7. The Northern region accounted for 56% of the new COVID-19 cases reported for this week, followed by the Southern (33%), Eastern (7%), Western (3%) and Central (1%) regions. The countries reporting the highest incidence (COVID-19 new cases per 1 million populations per day) this week are Seychelles (593), Libya (159), Tunisia (114) and Mauritius (99). This week, 1,694 new deaths were reported, which is a 40% increase in the number of new deaths reported compared to the previous week.

Response:

Africa CDC's Emergency Operation Centre (EOC) has been activated for COVID-19 since 27 January 2020. For more information on Africa CDC's response efforts please refer to Africa CDC's website, the weekly COVID-19 Outbreak brief (https://africacdc.org/download/outbreak-brief-111-coronavirus-disease-2019-covid-19-pandemic/), Hot spot dashboard (https://africacdc.netlify.app/), PGI Dashboard (https://africacdc.org/institutes/africa-pathogen-genomics-initiative/), and Vaccination Dashboard (https://africacdc.org/covid-19-vaccination/).

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External Dashboards

COVID-19 Africa Hotspot Dashboard

Data shown through **Week 9: 28 February - 6 March 2022**

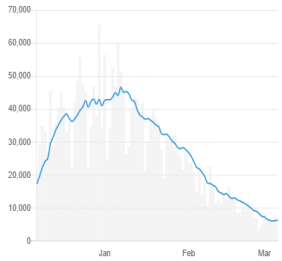
This dashboard is intended for internal use by PERC partners to identify growing or widespread COVID-19 outbreaks. More →

Please email covid19-eiu@vitalstrategies.org with any questions or feedback.

Continent overview

Cumulative Cases
11,235,270

Daily New Cases (7d avg)
6,405
-23.7% week-over-week change

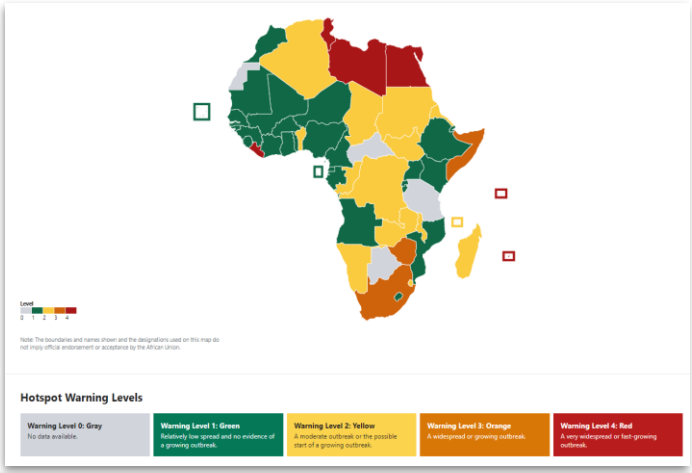


Cumulative Deaths
249,805

Daily New Deaths (7d avg)
93
-62.0% week-over-week change

Cumulative Tests
100,376,468

Daily New Tests (7d avg)
152,661
+18.5% week-over-week change



How is my country doing on key measures?

Country	Hotspot Level	Hotspot Level Trend	New Case Trend (2 week)	New Cases (4 Week)	New Cases/1M /Week	New Death Trend (2 week)	New Deaths/10M /Week	New Test Trend (2 week)	New Tests/1M /Week	Weekly %Pos	Most Recent Epi Data
Algeria	2	—	-59%		4	-63%	2	No data	0	No data	13/03/2022
Angola	3	↑	86%		4	No deaths	0	48%	714	1%	13/03/2022
Benin	0	↓	No data		0	No data	0	No data	0	No data	03/03/2022
Botswana	0	—	No data		0	No data	0	No data	0	No data	05/03/2022
Burkina Faso	0	↓	No data		0	No data	0	No data	0	No data	05/03/2022
Burundi	1	—	-7%		6	No deaths	0	-29%	721	1%	12/03/2022
Cabo Verde	1	—	-33%		13	No deaths	0	-41%	2,573	1%	09/03/2022
Cameroon	0	↓	No data		0	No data	0	No data	0	No data	03/03/2022
Central African Republic	0	—	No data		0	No data	0	No data	0	No data	25/02/2022
Chad	1	↓	-67%		0	No deaths	0	Up from 0	79	0%	09/03/2022
Comoros	2	—	40%		23	No deaths	0	No data	0	No data	13/03/2022
Congo Republic	2	↑	-45%		5	No deaths	0	No data	0	No data	11/03/2022
Cote d'Ivoire	1	—	-37%		2	-50%	0	-11%	491	0%	13/03/2022
Djibouti	1	—	400%		15	No deaths	0	43%	3,211	0%	13/03/2022
DR Congo	1	↓	-17%		2	No deaths	0	-41%	34	5%	12/03/2022

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AFRICAN UNION
INTERAFRICAN BUREAU FOR ANIMAL RESOURCES

Pan African Veterinary Vaccine Center of African Union
AU-PANVAC

Advancing One Health in Africa

- Convening
- Collaboration
- Coordination
- Communication