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Figure 1 at the front page: *Fundamental issues during an outbreak emergency in the East African Community with cross-border surveillance being centre-stage.*

This SOP is a joint venture of an EAC expert group that met first in July 2018 in Arusha, Tanzania:

'A systems approach begins when first you see the world through the eyes of another.'

C. West Churchman (1968)

Background:

This SOP was developed within the scope of the implementation of the EAC Regional Contingency Plan for Epidemics due to Communicable Diseases, Conditions and Other Events of Public Health Concern.

Purpose of the SOP:

The purpose of this SOP is to describe processes, resources and necessary steps of cross-border surveillance of epidemic-prone diseases in the EAC region.

Scope of the SOP:

- Define the parts and interconnections of the institutional framework involved in cross-border surveillance in the EAC region
- List the necessary steps to effectively gather local outbreak information in cross-border zones, facilitate and prioritize its bottom-up transfer and enable rapid and effective response operations in these vulnerable areas.

Target audience:

This document is relevant for professionals at all levels of the EAC Outbreak Early Warning and Emergency Response Structure, especially at EAC and Partner State institutions marked red in figure 2.

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List of Abbreviations

CSTWG	Country Surveillance Technical Working Group
DHT	District Health Team
EAC	East African Community
IHR	International Health Regulation
NFP	National Focal Point (here NFP for the Implementation of the Contingency Plan)
RCO	Regional Coordinating Officer
RMC	Regional Managing Committee
RRADAO	Regional Risk Assessment and Data Analysis Officer
RRT	Regional Response Team
SOP	Standard Operating Procedure
WHO	World Health Organisation

Introduction

Cross-border Surveillance takes place in the field of tension between national sovereignty, freedom of movement and trade, and outbreak early warning. It is driven by the ancient fear of migrating pathogens and the very recent insight that (re-) emerging infectious diseases do not respect national border constructs. A frame to cope with the occurring dilemmas is given through both the International Health Regulations (IHR, 2005) and the EAC Treaty.

It is, however, not the legal framework that finally determines the value of cross-border surveillance in the EAC region and beyond. It has a value of its own for the transborder population as well as for public health, the economy, tourism and trade of the bordering nations. In this context, cross-border districts are to be considered as exceptionally exposed and vulnerable. Therefore, surveillance activities should entail components that go beyond routine surveillance, i.e. aiming at higher sensitivity, early supra-national synchronization, and, subsequently, a joint response.

In 2011, the Institutional Framework for Cross-border Integrated Disease Surveillance and Response in the East Africa Region was developed as part of a World Bank funded project. Although the framework was never fully implemented at Partner State or EAC level, this SOP is clearly dedicated to this project. It would have been and it still could be a viable systemic approach to truly integrated cross-border health surveillance.

For the time being, however, this Framework will serve as a point of reference. The main task for the user of this SOP is to establish, resuscitate, train and empower the institutions and functions suggested by the Framework and discussed in this SOP. In a second step, these entities must be integrated in a cross-border surveillance network. The emphasis here is on the lines of communication, notification, and activation. The emergent property of such an investment were cross-border outbreak awareness on the one hand and interinstitutional trust on the other which together create the base for an effective joint outbreak response in the EAC region. Papers, however, cannot substitute for real-life capacity building.

Consequently, this document is, in the best case, an emerging SOP.

It covers cross-border surveillance activities. Joint outbreak investigations and joint outbreak response in cross-border areas as equally important neighbouring fields are merely touched here. They should be thoroughly treated in another document.

I. SOP Step 1: Appreciation of the Institutional SETUP for Cross-border Surveillance

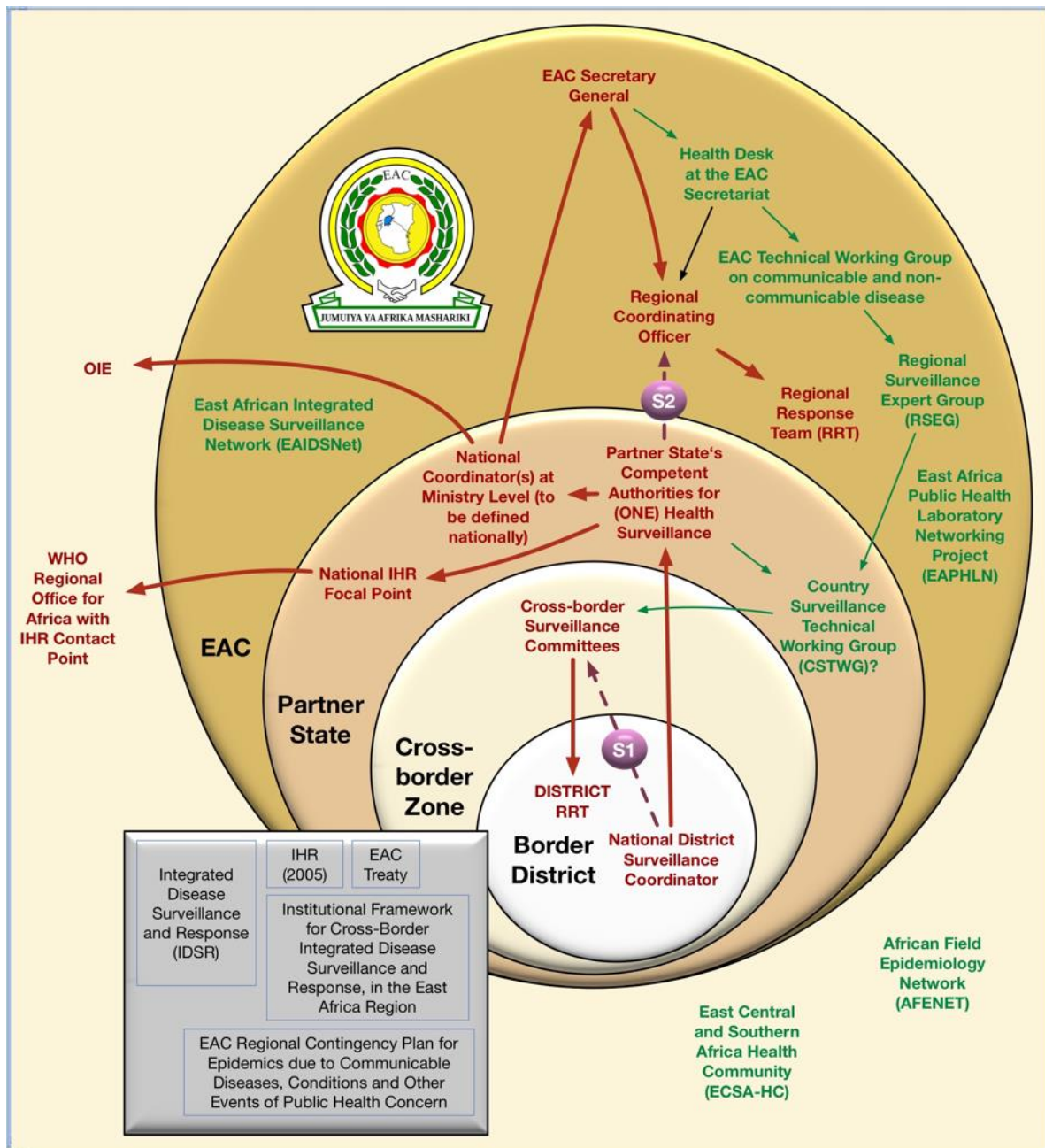


Figure 2: The institutional setup of cross-border communication: The entities in red are directly involved in operational notification, information or activation; S1 and S2 indicate two informational shortcuts that are suggested to fasten the bottom-up alert deriving from Border districts (see Section II for details). The entities in green represent important administrative links that are not discussed here in detail. For the functioning of the system however, it is assumed that they are vital.

Basic Operating Procedure #1

1.1 Appreciate the institutions defined by the ‘Institutional Framework for Cross-border Integrated Disease Surveillance and Response in the East Africa Region’

Following the Framework, every entity shown in figure 2 on the right is a necessary component of effective cross-border surveillance¹. It constitutes a complex system that spreads over five levels (Border district, Cross-border area, Partner State, EAC level, international level). Additional national levels are possible. The entities in red are to be directly involved in operational notification and activation activities. They are the backbone of the cross-border surveillance system. The entities in green represent important administrative links that are not discussed here. Subject to a binding legal framework, the two informational shortcuts (S1 and S2 in fig. 2) are to fasten the bottom-up alert deriving from Border districts (see II. for details). They represent an innovation of cross-border surveillance to enable rapid outbreak response at all levels.

1.2 (Re-) establish or substitute missing institutions or functions

Paper is patient. The institutions and functions of the Framework have never been fully established in all relevant Border Districts and, partly, neither at all higher levels. So, this Institutional Framework should never be taken as granted. Considering the situation at hand, you should therefore inquire:

- if the entities exist and the points of contact are known,
- if they are in possession of the resources needed² and
- if they are fully aware of their roles and responsibilities.

If you discover vacancies, four different scenarios are possible that depend on the outbreak alert phase and your function:

	Inter-epidemic Phase	Outbreak Alert Phase
Political function	Every effort shall be made for a thorough implementation of the Framework down to district level. This task requires significant human, social, financial, and technological resources ³ . It is both a political and technical challenge!	Support the technical level in the realization of ad-hoc substitutes for the missing functions. Allocate emergency funding if appropriate.
Technical function	Provide the political level with technical advice and a formal proposal for a short-term implementation of missing entities.	Implement effective ad-hoc regulations in the sense of good-enough solutions.

¹ At EAC level, there are further relevant institutions, e.g. EAREN (Eastern Africa Regional Epidemiology Network) and EARLN (Eastern Africa Regional Laboratory Network)

² See Annex A for the human resources suggested for the Cross-border Surveillance Committee and Annex B for a suggested composition of the District Rapid Response Team

³ The ‘Institutional Framework for Cross-border Integrated Disease Surveillance and Response in the East Africa Region (2011)’ initially estimated total costs of USD 225,000 distributed to an implementation period of five years.

In the search for a good-enough and ad-hoc solution, it is important to appreciate and, if necessary, substitute for each of the three key objectives of the system, i.e. to

- effectively gather local outbreak information in cross-border zones,
- facilitate and prioritize its bottom-up transfer and
- enable a rapid and effective response operations within these vulnerable areas.

II. SOP Step 2: Connecting the parts for Integrated Cross-border Surveillance

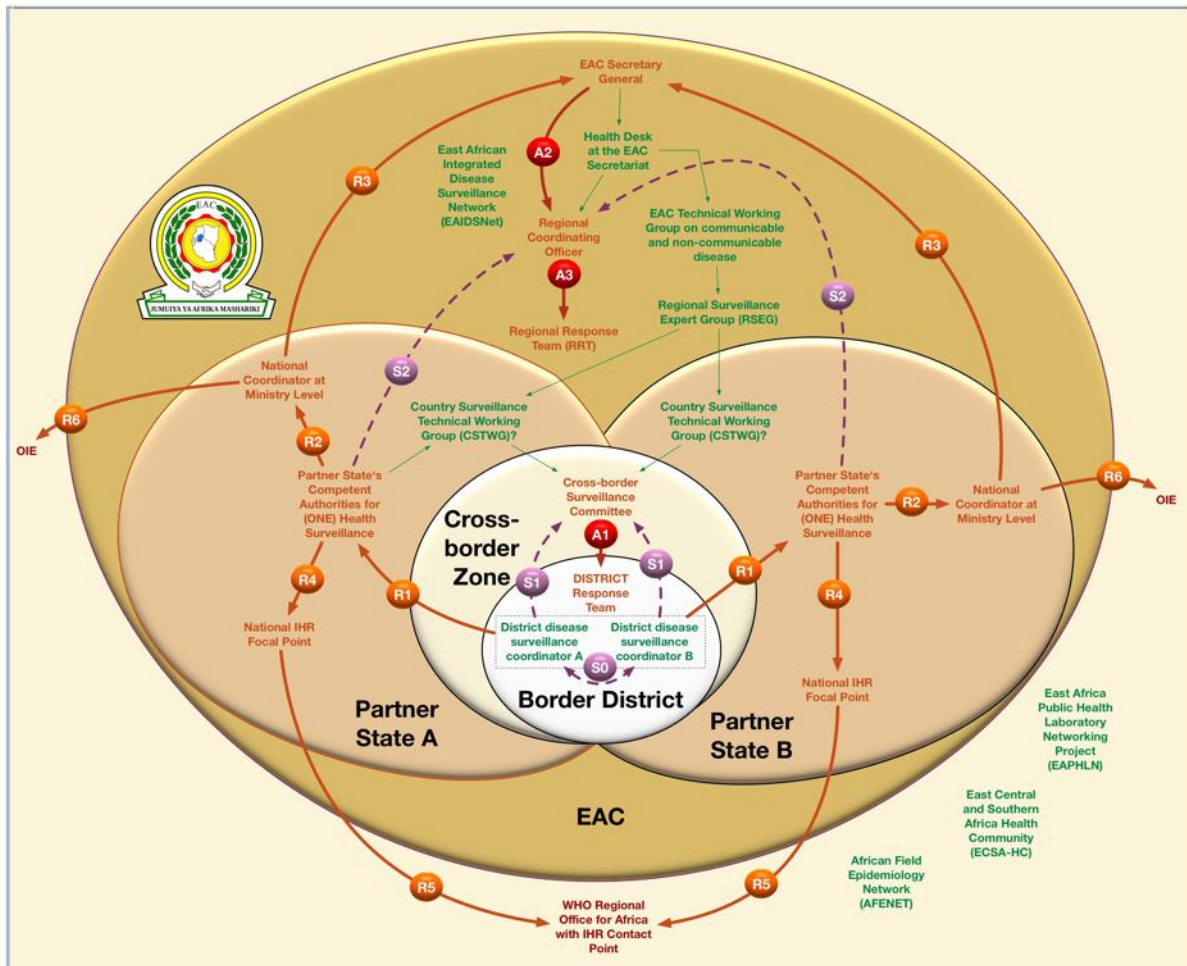


Figure 3: The institutional setup of cross-border surveillance with the relevant notification, information and activation links deriving from one joint Cross-border zone and involving necessarily two Partner States (details are described in the text below); S1 and S2 indicate two informational shortcuts that are suggested to prioritize and facilitate the bottom-up alert deriving from this Border district.

Basic Operating Procedure # 2.1

Identify or establish all functional and informational links between the entities as shown in figure 3.

A system is different from the sum of its parts. If the EAC cross-border surveillance system is more (or, in the worst case, less) than this sum, depends on the quality of the links between its entities as shown in figure 3. The links are organized in four different categories:

- a) Green arrows in figure 3 represent important administrative links that are not discussed here in detail. However, it is important that they are vital.
- b) Orange arrows in figure 3 represent regular (R1 to R5) outbreak notification links which, in principle, are not different from notification processes deriving from a non-border district. They are in detail discussed in the 'SOP for Reporting Emergencies and Activating EAC Regional Emergency Response'.
- c) Purple arrows in figure 3 represent three border region-specific informational shortcuts (S0, S1, S2) that exist on different levels to facilitate and prioritize outbreak-related information deriving from border districts.

S0	This shortcut represents direct communication and coordination between the district disease surveillance coordinators of both neighbouring countries about all notifiable incidents and all other aspects of potential epidemiological relevance (including outbreak rumours).
S1	This shortcut represents the notification of the Cross-border surveillance committee through the district disease surveillance coordinators. If S0 works, this committee should always receive two notifications.
S2	This shortcut represents direct communication between the Competent Authority of a Partner State dealing with human or animal health surveillance. If surveillance data deriving from Border districts reach an outbreak threshold in an analysis at this level, this link enables fast information of the Regional Coordinating Officer (RCO).

- d) Red arrows in fig. 3 represent selected activation links (A1, A2, A3) as far as they are relevant for a prioritized or even provisional response operation in the face of an outbreak in an epidemiologically highly relevant border district. For the entire activation process, that is more complex, see the EAC Reporting and Activating SOP.

A1	The Cross-border Surveillance Committee – configured as a One Health entity - activates the District Response Team (DRT) as a First Responder.
A2	The EAC Secretary General formally activates the response process by issuing an Initial Directive to the Regional Coordinating Officer (RCO).
A3	The Regional Response Team (RRT) activated by the RCO after coordination with the affected country National Public Health Rapid Response Team and deliberations by the Regional Managing Committee within 48 hours after the EAC Secretary General's Initial Directive.

Basic Operating Procedure #2.2

Test all links that are relevant for your level, your specific task and the situation at hand. Open the intercommunication.

III. SOP Step 3: Setting thresholds for reporting outbreak information deriving from cross-border districts.

There is nothing like over-reporting in cross-border surveillance. Reports that are not relevant will be filtered at higher-level epidemiological analysis. Not reporting incidents that are identified as overlooked nucleus of a public health emergency is a frequent and much-feared phenomenon. For cross-border surveillance the generic paradigm for a reporting threshold is: If you suspect it, report it!⁴ The following table shows some specific thresholds:

1. Any condition that is notifiable according to Article 6 of the International Health Regulations (IHR)⁵.
2. Any infectious human case suffering from epidemic prone infections specified at the EAC list of priority diseases (plus XDR-Tb)⁶ if there is evidence of a formerly unknown or uncommon epidemiological link to another EAC Partner State. These epidemic prone priority diseases are specified in Annex C.
3. Any increase in the number of infectious human cases (suspected or confirmed) suffering from epidemic prone infections specified at the EAC list of priority diseases (see above) reaching or exceeding the disease-specific thresholds as follows:

• Ebola, Marburg, Lassa, Crimean Congo	• 1 case
• All other epidemic prone diseases from the list of priority diseases (see above)	• A local cluster fulfilling the national outbreak criteria <u>or</u> (for professional use only) a weekly incidence exceeding the upper threshold of two standard deviations from the seasonal mean.
4. Any notifiable animal disease outbreak (according to national thresholds) if involving an entity from the EAC Priority Animal Disease List according to Annex C.
5. Anything apart from the incidents specified above that is considered relevant by the **District Surveillance Coordinator**, local health care providers or local laboratories. See section IV. for details.

Basic Operating Procedure # 3

Consider the different reporting frequencies suggested below (see IV.) with the longer timeframe only valid for the routine reporting of disease incidences. Exceeding a critical threshold must be reported not later than 24 hours after the observation.

⁴ Mind that this zero-risk approach is not easily applicable for scaling and escalating the appropriate outbreak response measures where the challenge lies in the right balance between too few and too much.

⁵ See Annex D for an adapted IHR-(2005)-Decision-support Instrument

⁶ See Annex C for the EAC List of Priority Diseases

IV. SOP Step 4: Surveillance Reporting Timeframes

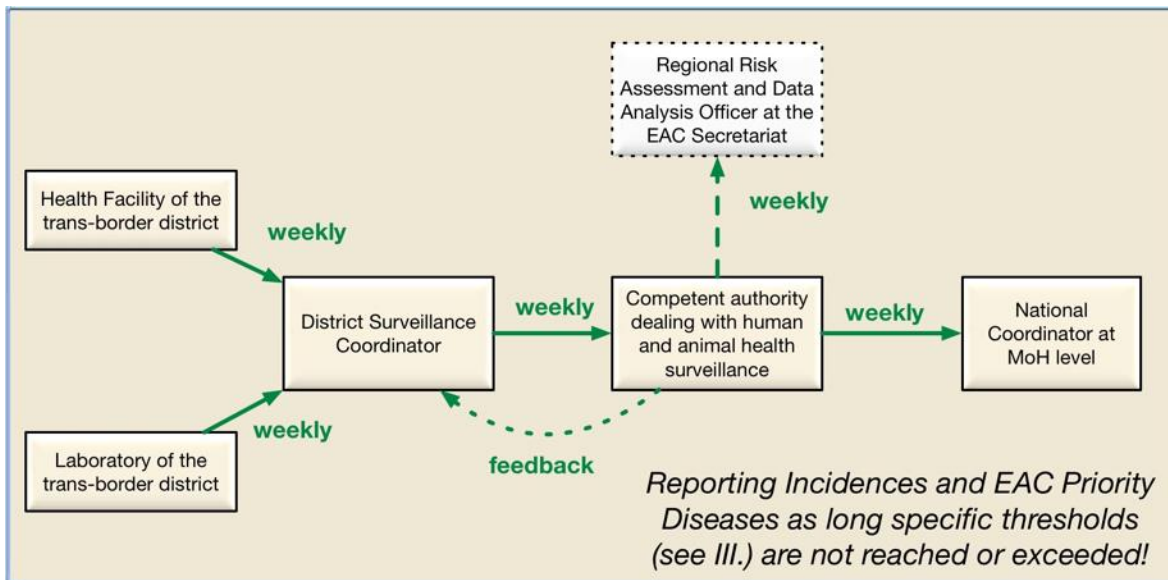


Figure 4: Timeframes for reporting if no threshold is reached or exceeded

Initially, two border district health facilities that most likely handle patients from the cross-border zone had been selected as sentinels for the cross-border surveillance in each border district. Although there is a new target since 2017 that aims to include all health facilities in the cross-border surveillance activities, the two-facility-target should still be perceived as the minimum standard to gather meaningful data. Likewise, relevant veterinary data shall be provided by the veterinary counterparts. These entities shall report on a weekly basis the EAC priority diseases (see Annex E) to the district disease surveillance coordinator who in turn will forward weekly reports to the Competent Authority of the Partner State dealing with human or animal health surveillance. For the timeframes see the figure 4 and 5.

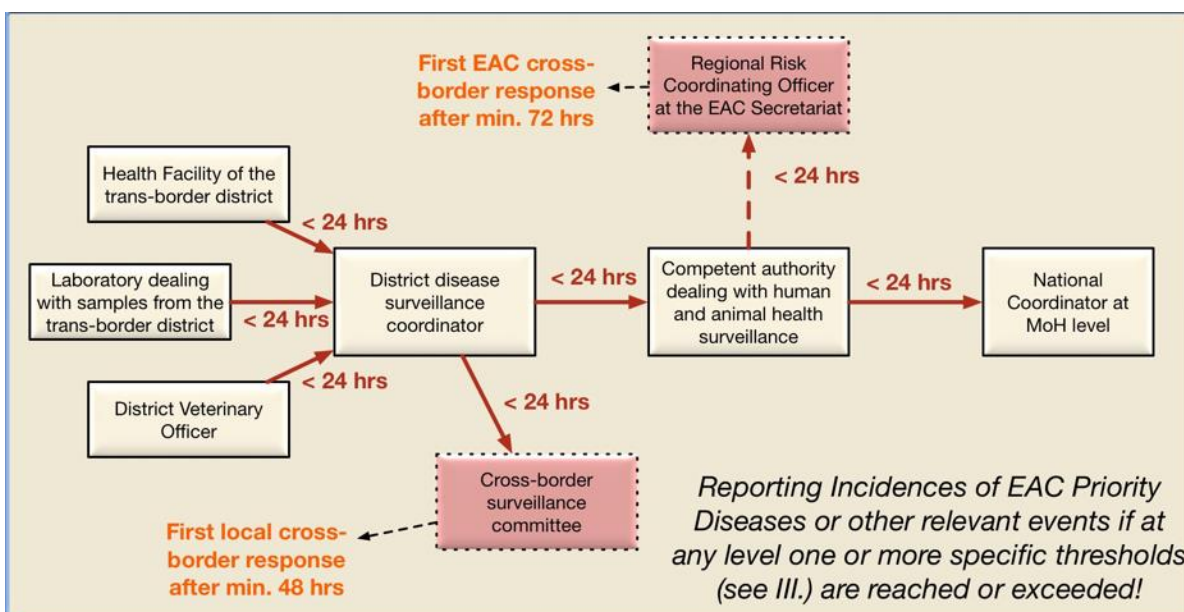


Figure 5: Timeframes for reporting Threshold incidents

V. SOP Step V: Specifying Unusual Events

Adding event-based elements to an indicator-based surveillance system can increase its overall sensitivity as an Early Warning System significantly. Defining an unusual event, however, is not as straightforward as applying a statistical threshold to an incidence chart. In some cases, the definition must remain vague to cover new and unknown events that escape a precise description.

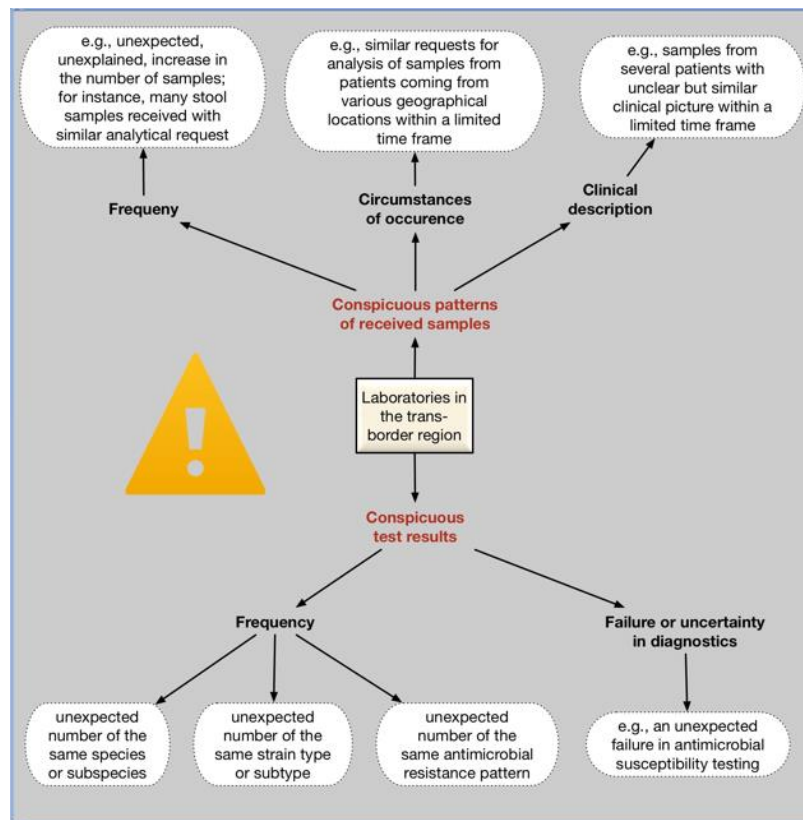
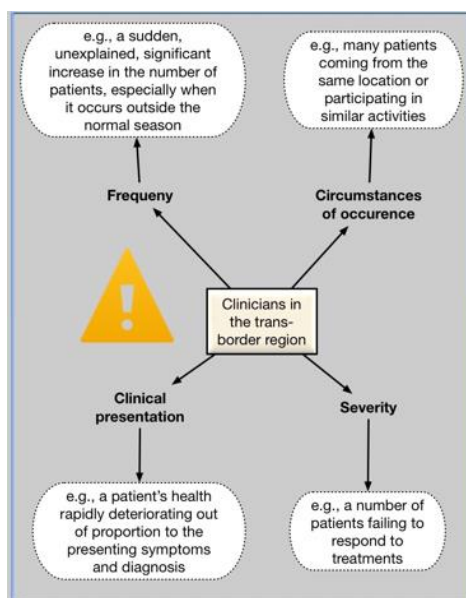


Figure 6: Criteria for unusual events in border district laboratories adapted from (6).



There are, however, recurrent patterns even among newly emerging threats. Figure 6 and 7 below summarize those patterns based on a description in the Guidance Document for National Focal Points (2011)⁷. The entire document is recommended for all user of this SOP who want to learn more about Public Health Event Reporting.

Basic Operating Procedure #4
Define criteria and reporting path for an unusual event during community-based surveillance.

Figure 7: Criteria for unusual events in border district clinical facilities adapted from (6). Event-based veterinary surveillance shall use equivalent definitions.

⁷ MacDonald et al.: Detection of events of public health importance under the international health regulations: a toolkit to improve reporting of unusual events by frontline healthcare workers. BMC Public Health 2011 11:713. considering the authors' "Toolkit for local implementation of the International Health Regulations (2005)"

VI. Potential future elements of cross-border Surveillance

The following specific epidemiological instruments can add tremendous value to the overall early-warning function and the predictive value of the cross-border surveillance system. They will be covered by this SOP as soon as resources for their implementation become available:

- Community-based surveillance
- Vector Surveillance
- Syndromic Surveillance
- Screening and Sentinel Surveys

Annexes

Annex A – The Cross-Border Surveillance Committee

TERMS OF REFERENCE FOR CROSS-BORDER SURVEILLANCE COMMITTEES

IDENTIFICATION

The Cross-border Surveillance Committee is composed of:

- The district focal person responsible for integrated disease surveillance and response
- The district focal person responsible for laboratory services
- The district medical officer of health or his appointee who will be a clinician
- The district focal person responsible for environmental health
- A senior health worker and member of a Hospital Management Team from the biggest health facility in the district
- One focal person responsible for animal/wildlife health
- One local immigration official
- The local district commissioner or his appointee who will personally attend team meetings for consistency

The committees may also co-opt other members from time to time as may be necessary. For proper functioning and continuity, it is desirable that the committee members are nominated as individuals and not the offices they hold.

FUNCTIONS

These will include but will not be limited to:

- Developing annual plans to guide implementation of committee and RRTs activities
- Developing Emergency Preparedness and Response Plans
- Carrying out situation analysis of all resources available in the zones and develop a data bank of the resources
- Organizing routine quarterly and emergency meetings of the committee
- Overseeing surveillance and response activities at designated ground crossing points
- Working with DHTs to ensure formation/activation of district RRTs
- Ensuring adequate stockpiles of lab supplies and medicines for outbreak investigation and response
- Sending immediate, daily, weekly, monthly and quarterly reports to the Country Surveillance Technical Working Groups (CSTWG) during outbreaks of diseases, conditions and other health events
- Supporting the rapid response teams to undertake outbreak investigation and response activities
- Organising trainings of district teams in collaboration with the CSTWGs

EMOLUMENTS

Members of the cross-border surveillance teams will be entitled to emoluments as per project guidelines and as will be deemed fit by the CSTWG.

REPORTING

The cross-border surveillance committees will report to the respective CSTWGs regarding their activities. This will entail maintaining and availing records of minutes, plans and such other documents as may be needed for monitoring and evaluation.

Annex B - The suggested composition of a District Response Team (DRT)

The DRT shall comprise of:

- A clinician
- A nurse
- A lab personnel
- A public health educator/officer
- A Health officer
- A veterinary officer
- A water engineer
- A health records officer
- A field epidemiologist (with veterinary and human health focus)

The team may co-opt other members from time to time as the need may arise.

Annex C – EAC List of Priority Diseases

East Africa Community Priority human diseases, conditions and events		
Epidemic prone diseases	Diseases targeted for eradication or elimination	Other major diseases, events or conditions of public health importance
<ol style="list-style-type: none"> 1. Acute haemorrhagic fever syndrome* 2. Cholera 3. Bacillary dysentery 4. Measles 5. Meningococcal meningitis 6. Plague 7. Typhoid fever 8. Yellow fever 9. Hepatitis E 10. Epidemic typhus 	<ol style="list-style-type: none"> 1. Dracunculiasis 2. Neonatal tetanus 3. (AFP) Poliomyelitis¹ 4. Trypanosomiasis 5. Oncocerciasis 6. Trachoma¹ 	<ol style="list-style-type: none"> 1. Diarrhoea in <5 years 2. HIV/AIDS (new cases) 3. STIs 4. Malaria 5. Rabies (animal bites) 6. Pneumonia <5 years 7. A Tuberculosis b. MDR/XDR-TB 8. Selected NCDs
	Diseases or events of international concern	
	<ol style="list-style-type: none"> 1. Human influenza due to a new subtype¹ 2. SARS¹ 3. Smallpox¹ 4. Any public health event of international or national concern (infectious, zoonotic, food borne, chemical, radio nuclear, or due to unknown condition) 	
*Ebola, Marburg, Rift Valley, Lassa, Crimean Congo, West Nile Fever, Dengue haemorrhagic fever	¹ Disease specified by IHR (2005) for immediate notification	

East Africa Community trans-boundary priority animal diseases:

- Highly pathogenic Avian Influenza
- Rift valley fever
- Trypanosomiasis
- Rabies
- African Swine Fever (ASF)
- Anthrax

Annex D – Adapted IHR (2005) Decision-support Instrument

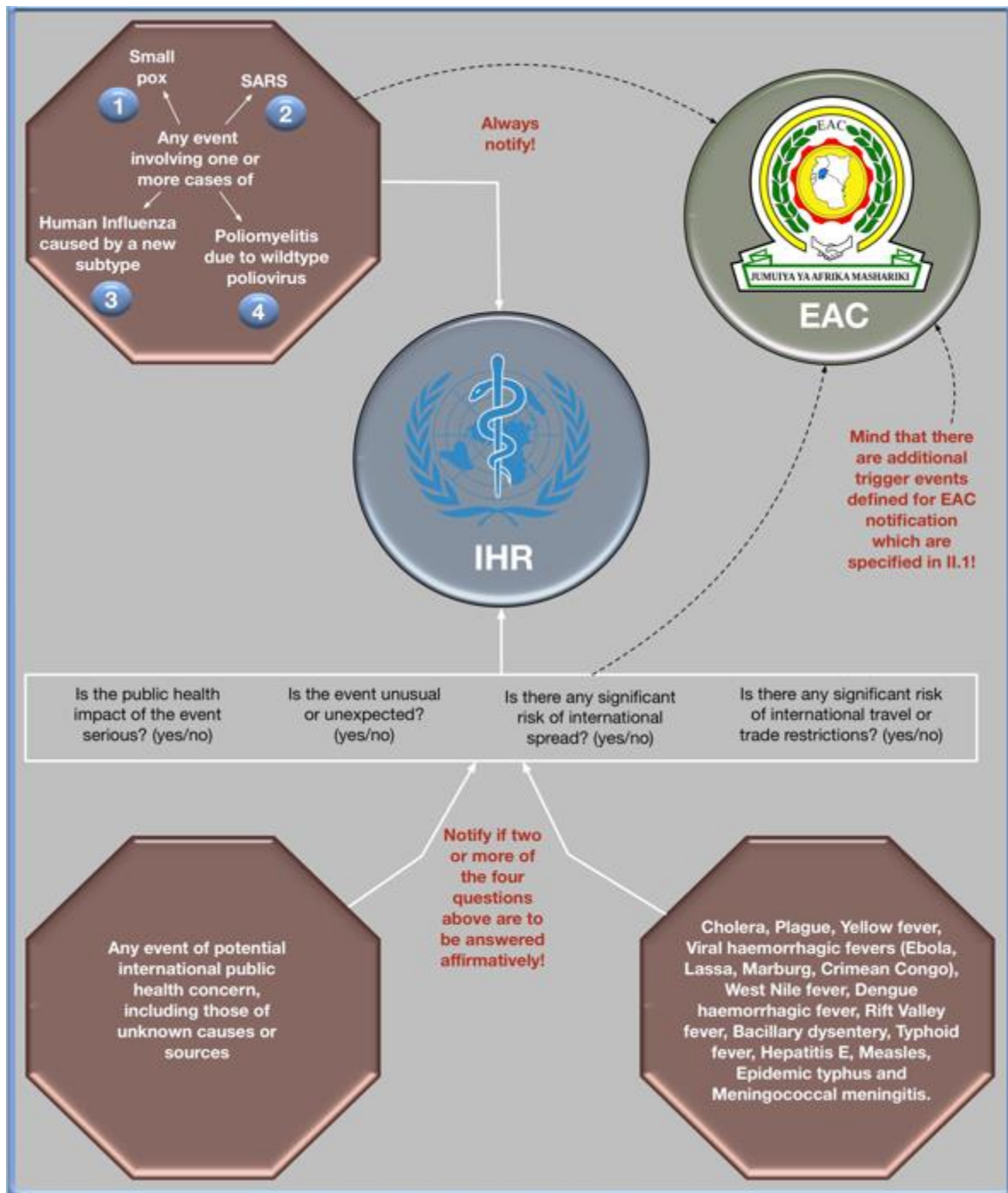


Figure 7: Notification Triggers according to the IHR (2005)

	Approved by	Authorized by
Designation		
Name		
Signature		
Date		