

e-LEARNING TRAINING MODULES FOR EVENT-BASED SURVEILLANCE (EBS)

Introduction

Event-based surveillance (EBS) is a critical tool needed to support and strengthen the continental early warning and response (EWAR) capacity. This e-learning training package will support building capacity of the countries on implementation of EBS to improve their EWAR. EBS, alongside indicator-based surveillance (IBS), is a component of the early warning, alert and response (EWAR) function of a national surveillance system. This training covers the four types of EBS: 1) community, 2) health facility, 3) media and 4) hotline and highlights the process of each type of EBS, including the stakeholders involved and the data sources and tools to be used to capture and report data. Six training modules are covered which are overview of public health surveillance, community events based surveillance, health facility events based surveillance, media scanning, hotlines, and EBS monitoring and evaluation.

Learning objectives

1. To support countries in operationalizing EBS at different levels of the health system
2. To impart knowledge and skills on the understanding, and application of EBS in identification, notification and response to health risks
3. To enhance multisectoral, One Health collaboration in public health surveillance
4. To act as a reference resource for countries

Targeted audience

1. Surveillance officers, at health facility level – HCW (clinicians, nurses, lab staff and other paramedics)
2. Environmental Health, Animal Health, Climate specialist, Wildlife
3. Other One Health Stake Holders

Course structure

1. The course will begin with a pre-test and post-test to measure the level of understanding of the participants
2. The course is composed of five modules which are overview of public health surveillance, community events based surveillance, health facility events based surveillance, hotlines, media scanning, and EBS monitoring and evaluation. Each module contains several sessions
3. Each session contains an introduction, main contents, session summary and quiz

Minimum skills requirements

Computer, internet and conducive learning environment.

Ethics Issues

1. When a person registers for a course it is a best practice to finish it.
2. Adhere to all instructions for a self-paced e-learning including issues related to plagiarism, sharing the course contents with unregistered person.

Certificate of participation

A participant will be awarded a certificate of participation after completion of all six modules and attaining the minimum pass mark of 75% in the post test knowledge checks at the end of each of the module

Course evaluation

At the end of the course the participant will be requested to fill in an evaluation form to get participants feedback on areas that needs improvements.

Module 1: Overview of Public Health Surveillance

Introduction

Public health surveillance is the ongoing systematic collection, collation, analysis and interpretation of health data for planning, decision-making, implementation, and evaluation of public health practices, and timely dissemination of information to relevant stakeholders. Surveillance aims to detect health risks as early as possible, and ensures that key stakeholders are made aware of, and receive pertinent information on the situation.

There are many public health events that go unnoticed in Africa. Strengthening countries' disease surveillance and response systems is central to improving public health security in each country and globally.

The aim of this module is to give a learner a highlight of the concept and types of surveillance, and early warning and response. This module contains the following sessions:

Session 1: Integrated Disease Surveillance and Response

Session 2: Epidemic Intelligence

Session 3: Early Warning and Response

Session 4: Event-based Surveillance and One Health

By the end of this module, you will be able to:

- Understand the concept of Integrated Disease Surveillance
- Explain the relationship between IBS and EBS
- Explain the concept of Epidemic Intelligence
- Explain the concept of Early Warning and Response
- Describe the link between EBS, IBS and Epidemic intelligence and Early Warning and Response
- Understand how to conduct EBS using a one health approach

Session 1: Integrated Disease Surveillance

Integrated disease surveillance is an approach that aims at collecting health data for multiple diseases, using standardised tools. To ensure robust early warning and prompt response. Integrated Disease Surveillance and Response (IDSR) is an example of a data collection and analysis system that relies on two main channels of information or signal generation: **indicator-based surveillance (IBS)**; and **event-based surveillance (EBS)**.

Public Health surveillance makes use of two main surveillance mechanisms:

1. Indicator-based surveillance (IBS)
2. Event-based surveillance (EBS)

Indicator-based surveillance

Indicator-based surveillance is a more traditional way of reporting diseases to public health officials. IBS involves reports of specific diseases from health care providers to public health officials. Such information may be described as structured information because the information obtained is standardised. It could be defined as the systematic (regular) collection, monitoring, analysis, and interpretation of structured data produced by many well-identified, mostly health-based, formal sources.

The traditional indicator-based surveillance (IBS) system generally collects routine structured surveillance data mostly from health facilities and may miss public health events or emerging outbreaks within a community, especially in areas where access to healthcare is low and/or where there is underutilization of formal health services. A typical example is the Ebola virus disease outbreak in West Africa in 2014-16 which started late December 2013 but was detected in the year 2014. This indicates that signals that could trigger investigation of the event weren't reported promptly. Event-based surveillance that depends on mainly ad hoc data collected from anywhere at any time could have bridged this shortcoming.

Event-based surveillance

Event-based surveillance (EBS) is an organised collection, monitoring, assessment and interpretation of mainly unstructured, ad-hoc information regarding health events or risks, which may represent an acute health risk. Such information can come from many stakeholders and may include formal and informal sources of information from the human, animal, environment, as well as many other sectors.

Session Summary

- IBS collects routine data with well-defined indicators within defined timelines mostly from health facilities
- EBS collects unstructured data in an ad hoc fashion from diverse sources including health facilities
- Event-based Surveillance and Indicator-based Surveillance are two surveillance approaches that complements each other
- In areas where there is limited accessibility to health facilities or poor health seeking behaviour, early detection of alerts and events is made possible by enhancing event-based surveillance

Quiz

1. Event-based surveillance does not depend on mainly ad hoc data collected from anywhere at any time. (True/False)
2. Event-based Surveillance and Indicator-based Surveillance are two surveillance approaches that complements each other. (True/False)

3. EBS collects routine data with well-defined indicators within defined timelines mostly from health facilities (True/False)
4. Structured information obtained from standardised disease specific reports from health care works is an important source of information for; (Select the most appropriate)
 - a) EBS
 - b) IBS
 - c) Both EBS and IBS
 - d) None of the above

Session 2: Epidemic Intelligence

Data from EBS should be a component of epidemic intelligence (EI). Epidemic intelligence is the systematic collection, analysis and communication of any information to detect, verify, assess and investigate events and health risks with an early warning objective. EI spans beyond diseases and pathogens as it is inclusive of all events (e.g., radionuclide, environmental etc.) that could pose a threat to health. EI should integrate both sources of information (IBS and EBS) to efficiently detect acute health events and/or risks. Ideally, a centralised EI unit (which oftentimes can be a surveillance unit) at the national level should be available to collect, collate, and analyse information collected through each type of EBS, or from the designated reporting modalities. Such an EI unit should be able to routinely receive, analyse, and visualise data from both IBS and EBS sources. Where available, an Emergency Operation Centres (EOC) can act as EI hubs by receiving, analysing, and visualising multiple data streams, including EBS, IBS surveillance data.

Session Summary

- IBS and EBS are essential components of epidemic intelligence.
- Epidemic intelligence spans beyond surveillance of diseases and pathogens

Quiz

1. Epidemic intelligence is the systematic collection, analysis and communication of any information to detect, verify, assess and investigate events and health risks with an early warning objective. (True/False)
2. Where available, an Emergency Operation Centres (EOC) can act as EI hubs by receiving, analysing, and visualising multiple data streams, including EBS, IBS surveillance data. (True/False)
3. EI does not integrate both sources of information (IBS and EBS) to efficiently detect acute health events and/or risks. (True/False)
4. Routine analysis of surveillance data may help in early detection of alerts and events. (True/False)

Session 3: Early Warning and Response

EWAR is the organised mechanism to detect any abnormal occurrence or any divergence from the usual or normally observed frequency of phenomena as early as possible from both structured and unstructured data. In places where health services are not well established; where the use of formal services is limited; and for rare conditions or public health events, indicator-based surveillance would not efficiently detect all health risks early enough to trigger a timely response. The principle of EWAR is to have in place a surveillance system with the capability to detect all acute public health risks early enough from all available sources to trigger a timely response.

The general objective of EWAR is to rapidly detect and control acute public health events of any origin, with particular attention to nationally prioritised health risks. Data collected through EWAR must aim to inform and trigger public health responses to acute public health events of all origins —human, animal, environmental, radiological, and chemical, food poisoning, or natural calamity. EWAR relies on two main channels of information: IBS and EBS.

EWAR includes the processes of data collection, verification, risk analysis and communication between the relevant sectors for appropriate response. An effective EWAR represents the capacity of a health system to generate and disseminate timely and meaningful warning information that enables responders, at-risk individuals, and communities to prepare and act appropriately and in sufficient time to manage and reduce public health threats. Early detection and reporting are instrumental to the functionality of EWAR system.

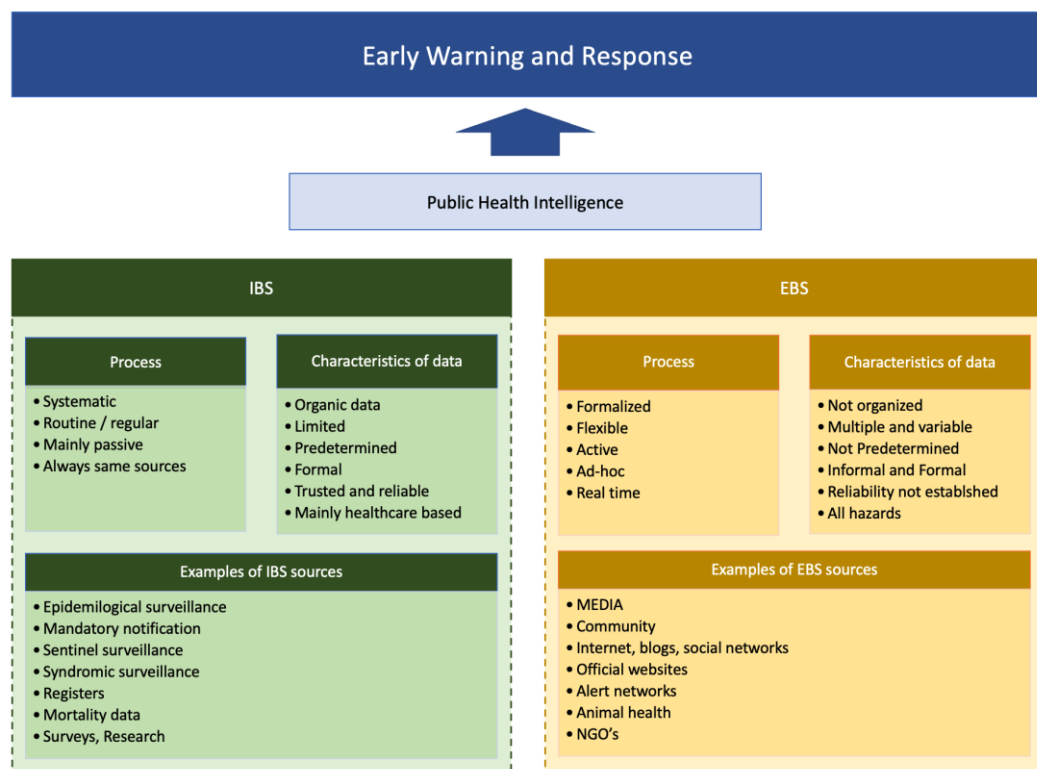


Figure 1: Comparison between IBS and EBS as components of EWAR

Session summary

EWAR provides information that enables early detection and response to all-hazard events

Quiz

1. EWAR is the organised mechanism to detect any abnormal occurrence or any divergence from the usual or normally observed frequency of phenomena as early as possible from both structured and unstructured data. (True/False)
2. The following includes EWAR processes in management of Public Health threats (Select the inappropriate)
 - a) data collection
 - b) verification
 - c) risk analysis
 - d) communication between the relevant sectors
 - e) Treatment
3. EWAR represents the capacity of a health system to generate and disseminate timely and meaningful warning information that enables responders, at-risk individuals, and communities to prepare and act appropriately and in sufficient time to manage and reduce public health threats. (True/False)
4. Data collected through EWAR does not aim to inform and trigger public health responses to acute public health events of all origins (True/False)
5. In places where health services are not well established; where the use of formal services is limited; and for rare conditions or public health events, indicator-based surveillance would not efficiently detect all health risks early enough to trigger a timely response. (True/False)
6. The principle of EWAR is to have in place a surveillance system with the capability to detect all acute public health risks early enough from all available sources. (True/False)

Session 4: Events Based Surveillance and One Health

Increased interaction at the human-animal-environment interface combined with the complex health challenges of zoonotic diseases, antimicrobial resistance, food insecurity, poverty, famine and climate change means that a multisectoral, One Health approach is imperative to effectively prevent and mitigate the effects of these shared challenges.

Over 60% of pathogens that cause human diseases originate from domestic animals or wildlife and 75% of emerging human pathogens are of animal origin¹. When deforestation and land-use changes impact forest cover, interactions between wild animals, humans and their livestock are more likely and increase the likelihood of disease transmission between these populations². Human actions have severely altered 75% of terrestrial environments, 66% of marine environments, and the climate³. Specifically, climate change has also been linked to increased opportunities for viral spill-over from wildlife into humans⁴. Preventing and managing shared health threats is not possible through a single sector approach. To be successful, you need to rely on the full cooperation of the animal, human, and environmental health sectors (Figure 1). One Health, as defined by the tripartite (OIE, FAO, WHO),⁵ is a collaborative, multidisciplinary, and multisectoral approach that can address urgent, ongoing, or potential health threats at the human-animal-environment interface at subnational, national, global, and regional levels. This approach includes ensuring balance and equity among all the relevant stakeholders and disciplines. The One Health approach leverages data, expertise and management across different sectors to enhance the understanding of shared health events. One Health is crucial in EBS because:

1. Signals can be detected through a wide variety of sources and surveillance officers (including animal, environmental and human health sectors). Therefore, a One Health approach is needed in the development of a signal list, integrating all possible sources, and coordinating across sectors for the reporting of multisectoral signals captured for prompt action.
2. Verification of multisectoral signals requires support from different sectors or stakeholders in the field. Thus, the One Health approach facilitates the involvement of all relevant stakeholders when needed.
3. Risk assessment requires a multisectoral and multidisciplinary team, especially for health events that negatively impact multiple populations and species.
4. Health events that impact multiple sectors, require a coordinated, multisectoral response to minimise the overall impact of the event. Acting early to implement prevention and control measures within one

¹ Taylor LH, Latham SM, Woolhouse ME. Risk factors for human disease emergence. *Philos Trans R Soc Lond B Biol Sci*. 2001 Jul 29;356(1411):983-9. doi: 10.1098/rstb.2001.0888. PMID: 11516376; PMCID: PMC1088493.

² Dobson AP, Pimm SL, Hannah L, Kaufman L, Ahumada JA, Ando AW, Bernstein A, Busch J, Daszak P, Engelmann J, Kinnaird MF, Li BV, Loch-Temzelides T, Lovejoy T, Nowak K, Roehrdanz PR, Vale MM. Ecology and economics for pandemic prevention. *Science*. 2020 Jul 24;369(6502):379-381. doi: 10.1126/science.abc3189. PMID: 32703868.

³ The IPBES Global Assessment Report on Biodiversity and Ecosystem Services: <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>

⁴ Carlson, C.J., Albery, G.F., Merow, C. et al. Climate change increases cross-species viral transmission risk. *Nature* (2022). <https://doi.org/10.1038/s41586-022-04788-w>

⁵ A guide developed by FAO, OIE and WHO: <https://trello.com/b/Nft0bj8P/tripartite-zoonoses-guide-tzg>

population can minimise the possibility of spill-over or impact to another population, especially when an event involves a zoonotic disease or other shared health threats.

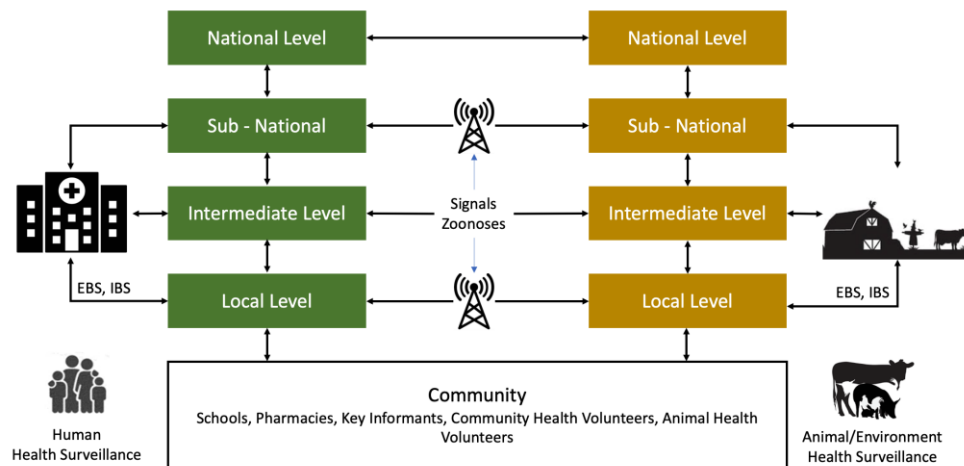


Figure 2: Illustration of the establishment of EBS using One Health Approach

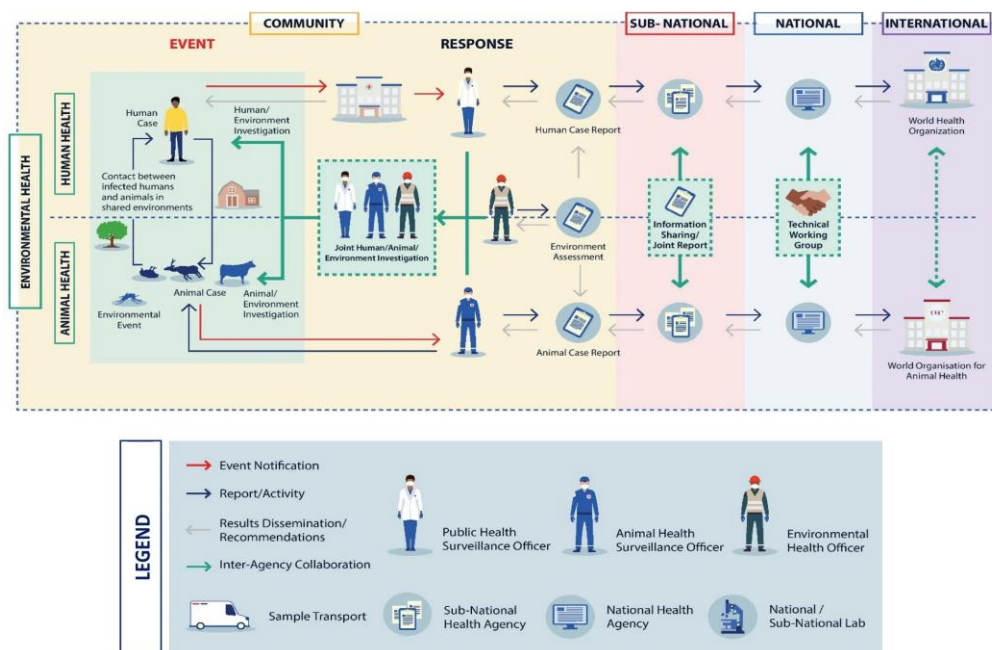


Figure 3: Illustration of the establishment of EBS using One Health Approach

Session Summary

Event-based surveillance is key in strengthening one-health collaboration on surveillance and response to human, animal and environment related events at local, intermediate and national levels.

Quiz

1. Over 60% of pathogens that cause human diseases originate from domestic animals or wildlife and 75% of emerging human pathogens are of animal origin. (True/False)
2. Verification of multisector signals requires support from different sectors or stakeholders in the field. Thus, the One Health approach facilitates the involvement of all relevant stakeholders when needed. (True/False)
3. One Health does not involve collaboration of multidisciplinary, and multisector approach that can address urgent, ongoing, or potential health threats at the human-animal-environment interface (True/False).
4. One Health works at the following levels (Select all that applies)
 - a) Subnational
 - b) National
 - c) Global
 - d) Regional levels
 - e) All of the above
 - f) None of the above
5. Climate change has not been linked to increased opportunities for viral spill-over from wildlife into humans (True/False)
6. Signals can be detected through a wide variety of sources and surveillance officers including animal, environmental and human health sectors. (True/False)
7. One Health approach is not needed in the development of a signal list (True/False)
8. Risk assessment requires a multisector and multidisciplinary team, especially for health events that negatively impact multiple populations and species. (True/False)

Module 2: Community Event-Based Surveillance

Introduction

Community Event-Based Surveillance (CEBS) implementation in community settings is essential for early detection, reporting, and response to emerging public health events.

This module has seven sessions:

Session 1: Overview of CEBS

Session 2: Importance of CEBS

Session 3: Sources of signals for CEBS

Session 4: Steps for conducting CEBS

Session 5: Flow of Information for CEBS

Session 6: Stakeholders' roles and responsibilities

Learning Objectives

This module will cover the basic knowledge of practising CEBS focusing on:

- Signal detection,
- Signal recording and
- Signal reporting.

Definition of Terms:

Community Event-Based Surveillance (CEBS): Is the systematic detection and reporting of events of public health significance within a community, by community members

Event-Based Surveillance (EBS): The organized collection, monitoring, assessment, and interpretation of mainly unstructured ad hoc information regarding health events or risks, which may represent an acute risk to health. Such information can come from diverse sectors and may include animal, environment and other sectors

Indicator-Based Surveillance (IBS): Defined by WHO as the systematic (regular) collection, monitoring, analysis, and interpretation of structured data, i.e., of indicators produced by a number of well-identified, mostly health-based, formal sources

Community health worker (CHW): These are public health workers who are close to and serve members of the community by helping them to adopt healthy behaviours.

Session 1: Overview of CEBS

This session will cover basic concept on the practices of CEBS. Community event-based surveillance (CEBS) is the systematic detection and reporting of events of public health significance within a community, by community members. Community health volunteers, the public, religious leaders, civil society members, teachers, and similar groups are engaged and trained to detect and immediately report unusual health events or health risks occurring in their communities.

CEBS activities and outcomes empower the community to identify public health risks they see and hear about and provide ‘real-time’ information to public health authorities. Community participation, engagement, and a reliable response network are key features of an effective implementation of EBS in the community.

Community signals should be broad (non-disease specific) simplified and free of scientific terminology to facilitate comprehension by community members. These signals should also be limited in number but broad enough to capture all public health risks in the community. Example of signals at community level are:

- a) Two or more cases of people presenting with similar severe signs/symptoms from the same community, school, or workplace within one week. NB: Severe can be elaborated at the community-level as needing to seek medical care within one week.
- b) A cluster of unexplained animal deaths within one week.
- c) An illness with novel or rare symptoms (NB: Novel and rare can be explained as signs/symptoms that the community has not seen before)
- d) Any person with fever or rash

Note: signals can be generated according to the list of pre-determined priority diseases, burden of diseases and other community factors. To simplify the reporting process, signals may be coded.

Session Summary

This session has covered the basic concept of CEBS as an essential for early detection, reporting, and response to emerging and re-emerging public health events.

Quiz:

For the following statement write if it is true or false:

1. CEBS is the systematic detection and reporting of events (True /False)
2. A signal from the community can be any person with fever and rashes (True /False)

Session 2: Importance of CEBS

This session will cover the importance of CEBS.

CEBS implementation in the community settings is essential for early detection, reporting, and response to emerging and re-emerging public health events (PHE). Indicator-based surveillance (IBS) systems generally collect surveillance data from healthcare sources and may miss other public health events or emerging outbreaks within the community, especially in areas where access to healthcare is low and/or where there is underutilization of formal health services.

CHW and other community members may collect information that tallies with pre-determined signals. These signals may be predictive of acute public health risks that need early detection, reporting and response.

Session Summary:

The session has covered the importance of CEBS which aims to complement IBS by capturing events of public health risk at community level.

QUIZ:

1. CEBS is important to compliment Indicator Base Surveillance (True or False)
2. CHWs and other community members may not collect information that tallies with pre-determined signals (True or False)
3. One person presenting with Malaria signs/symptoms from the community, school, or workplace within one week is an example of the signal (True or False)

Session 3: Sources of Signals for CEBS

Introduction: This session will cover sources of signals at community level.

Signals at the community level comes from diverse sources to avoid missing any signals arising from the different locations from the community. EBS signals at the community level may include but not limited to:

- | | |
|------------------------|------------------------------|
| a) Community members | g) Local markets |
| b) Livestock keepers | h) Drug shops |
| c) Community leaders | i) Faith-based congregations |
| d) Political leaders | j) Social media |
| e) Traditional healers | k) Mass media |
| f) Schools | |

Internet social media and mass media have become important communication channels to report signals and disseminate disease risks and interventions; at the community level they can be used as additional sources for signal detection. This happens when community members, community leaders or CHWs become aware of the relevant information disseminated/communicated/disclosed through these channels as information sharing platforms, which may be for non-public health purposes.

Session Summary

This session has covered the sources of signals at the community level to allow wide coverage for quick capturing of information.

Quiz:

1. Select the true answer:
 - a. The following are the sources of CEBS:
 - a) Political leader
 - b) Religious leader
 - c) Traditional healer
 - d) Health Facility Workers
2. WhatsApp, Instagram and Facebook have become important communication channels to report signals and disseminate disease risks and interventions (True or False).

Session 4: Steps for Conducting CEBS

Introduction: This session will cover the steps involved in conducting CEBS.

Information is initially captured as a signal by CHW and is reported to CHW focal person at the health facility (Figure 7). Not all signals may necessarily become real events, as such, they all need to be triaged, verified and risk assessed before a response is initiated.

STEP 1: Signal Detection, Recording, and Reporting

Detecting a signal means identifying the occurrence of one of the pre-determined signals designated by national public health authorities. At the community level, signals are most likely to be detected by CHWs, community residents, traditional leaders, and other key informants because of their engagements in community networks. The CHW supervisor sensitises the CHW, key informants, community members on community EBS signals detection.

Detected signals should be recorded immediately to the CHW supervisor, or designated focal point (e.g. the nearest health facility focal point or Health extension worker, etc.). CHW or community members **identify** the signals. When the signals are detected, CHW **records** in paper-based forms (community EBS signal register).

Once recorded in the community EBS signal register, CHW **reports** the signal immediately to their supervisor. Where the supervisor is not available, the CHW reports directly to the health facility or the community local structure. Reporting of the signals will be conducted in-person or by means of electronic devices (phone call, SMS, WhatsApp). If the signals are detected by the community members, the best practice would be to report to the CHW or other community structures.

In the availability of electronic EBS Application, the CHW's will register signals in paper-based form (Community EBS signal register) and then register the alert in the eEBS app where it will be reviewed for triaging at health facility level.

Health facility surveillance focal person will provide feedback to CHWs who will be responsible to provide feedback to the community structure responsible for signal detection.

Note: The CHW Supervisor proceeds to triage. In the absence of the CHW Supervisor, the Disease Surveillance Focal point or health facility in-charge proceeds to triage.

STEP 2: Triaging

Triage is the process of screening out the data and information that are relevant for early detection purposes. Because of its high sensitivity, CEBS is likely to generate signals from real events and non-events. Once a signal is reported to the local supervisor, the supervisor triages the information provided to establish that it conforms to one of the pre-defined signals. Key steps for triaging are

1. Confirm that the signal conforms to the pre-determined signals.
2. Confirm that the same signal has not been reported from the same or different sources (duplicate reports).
3. If any of the above statements are not true, discard the signal. If all of the above are true, report this to the next level (Disease Surveillance Focal Person at health facility or other relevant official) for verification (Annex 7).
4. Provide feedback to the reporting level.

STEP 3: Verification

Verification is the determination that a signal is a true representation of what is happening/ happened at the source. This involves cross-checking the information available with the source regarding the reported signal. When the signal is confirmed, it becomes an event that is reported to the higher level that will then plan a risk assessment or discard the information if not valid. Key steps for verification are:

A higher-level authority (Disease Surveillance Focal Person at the health facility or other relevant official) verifies the signal through a physical visit, telephone call or other means of communication with the source to establish if the information is true.

The surveillance focal point conducting the verification may want to conduct a second level triage by cross checking if the information reported meets one or more of the pre-defined signals.

1. If the signal is true, it becomes an event and if not true discard, and record accordingly in the relevant tool (Annex 3 and Annex 7).
2. Report events immediately to a higher level for risk assessment (e.g., District, Sub- County, National).
3. The line listing of all the diseases/events/alerts identified during the month should be completed by the CEBS focal person (Annex 8) and submitted monthly to the nearest health facility/sub-district surveillance focal person every month

Provide feedback to the CHW or community member who detected and reported the signal about the outcome of verification

Note: The result of the verification of signals should be recorded in a local register or signal logbook and the entire process **should be completed within 24 hours**.

STEP 4: Risk Assessment

Risk Assessment is a systematic process for gathering, assessing, and documenting information to assign a level of risk of an event to human health. Risk assessment is conducted as part of an investigation of an event. This should take place within 48 hours of the detection of one or more signals. It is conducted by the district and/or national levels depending on the capacity, after receiving the report of an event.

Session

Summary

The session has covered the key steps in implementation of CEBS to allow immediate reporting for effective response of PHE.

QUIZ:

Select the correct answer:

1. Recorded signals can be reported to the health facility through; -
 - a. Phone call
 - b. SMS
 - c. WhatsApp
 - d. Email
- d. A to D is correct.

Select if it is true or false:

1. It is important to report the death of animal and livestock as among a signal for CEBS (True or False)
2. CHW may proceed to triage for some signals (True or False)

Session 5: Flow of Information for CEBS

Introduction

This session will cover the flow of information for EBS from the community level to the national level.

The flow of information for notification and feedback on CEBS is depicted in Figure 6. Signals are detected by a CHW who is among the community and then notifies the CHW Focal Person or Health Facility in-charge immediately. The reporting follows the existing surveillance reporting structure.

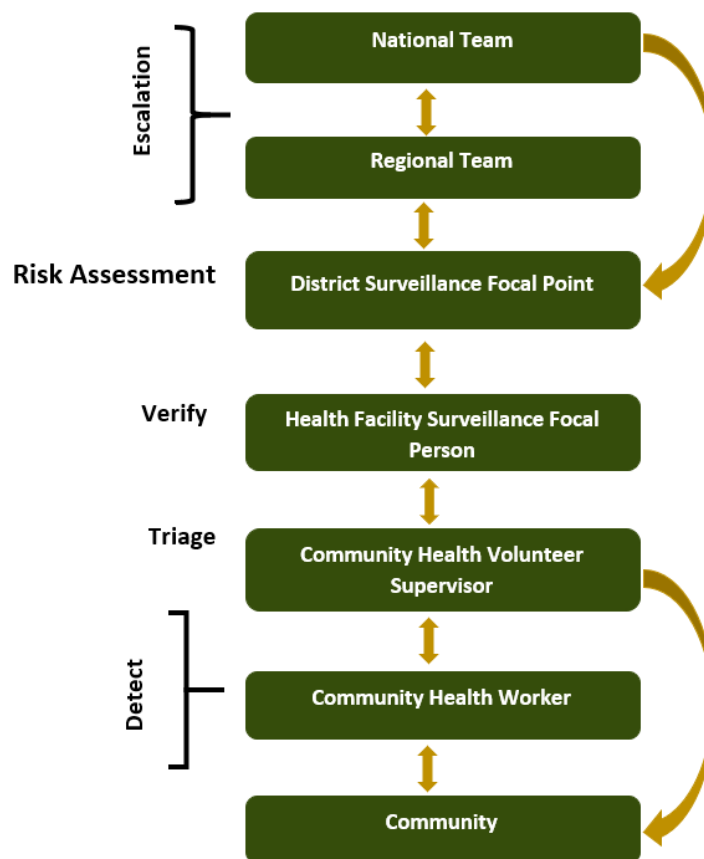


Figure 7: Flow of Information in CEBS

Session Summary

In this session you have covered the flow of information from the community to national level which allows effective reporting of information hence early response of all.

QUIZ:

Select if it is true or false:

1. Signals can be reported to CHW supervisors or direct to the higher levels (True or False)
2. It is not necessary to demand for the feedback after reporting of signals (True or False)

Select the most correct answer:

3. According the flow of information Risk Assessment may be conducted by
 - a. District Surveillance Focal Point
 - b. Community leader
 - c. Community member

- d. Community health Volunteer

Session 6: Stakeholders' roles and responsibilities

Introduction

In this session will cover different stakeholders who plays important roles in the implementation of CEBS. The roles and responsibilities of the CEBS workforce are summarised in Table 5.

Table 5: Roles and responsibilities of the community event-based surveillance (CEBS) workforce

Workforce	Primary roles	Supportive roles
Community key informants (networks)	<p>Make signals observations and report to the CHWs</p> <p>Adopt and mobilise community members to positive behaviour change for health</p>	<p>Provide information needed</p> <p>Participate in the review meetings</p>
Community Health Workers	<p>Use signals to identify possible public health threats in the community</p> <p>Report signals to CHW supervisor or Health Facility</p> <p>Build networks, with other community key informants include animal health workers, pharmacies, traditional healers, women groups, alternative medicine outlets, local admin leaders)</p> <p>Sensitise community and key informants on CEBS</p> <p>Give feedback to community members about reported signals and/or event</p>	<p>Provide additional information for verification</p> <p>Provide additional information to the Risk Assessment team</p> <p>Mobilise community members to action</p> <p>Referral of community members and sick animals</p>

Community Health Worker Supervisors	<p>Ensure the appropriate use of signal definitions to identify priority public health events in the community</p> <p>Conduct triaging of signals</p> <p>Maintain a log of all reported signals in his/her community units</p> <p>Report events to Health facility</p> <p>Give feedback to CHWs on reported signals</p> <p>Supervises CHW</p>	<p>Support Health Facility during signal verification</p> <p>Work with District team to conduct rapid assessment of events</p> <p>Ensure sensitization of the community key informants (networks)</p>
Health Facility Disease Surveillance Focal Person or health facility In-charge / Veterinary field extension officers	<p>Ensure the appropriate triage of signals by CHWs supervisors</p> <p>Verifies triaged signals reported from CHWs supervisor</p> <p>Reports events to District Health Office</p> <p>Provides feedback to CHW supervisors</p> <p>Supervises CHW Supervisors</p> <p>Data analysis and use</p>	<p>Supports district/national team during Risk Assessment</p> <p>Supports to CHW supervisors in providing feedback to the CHW/CAHWs</p> <p>Supports district/national team during response</p>
District Surveillance Focal Person/ Veterinary Surveillance Focal Point	<p>Train and supervise nurse in-charge at health facility / Veterinary field extension officers</p> <p>Conduct initial risk assessment</p> <p>Data analysis and use</p> <p>Provide feedback to the Nurse In-charge at health facility / Veterinary field extension officers</p> <p>Submit reports to the regional / national levels</p> <p>Escalate CEBS activities to the regional / national levels for support</p> <p>Monitoring CEBS activities</p>	<p>Support the Nurse In-charge at health facility / Veterinary field extension officers in verification</p> <p>Mobilisation of resources for CEBS</p> <p>Support evaluation of CEBS</p> <p>Coordinate stakeholders</p>

Session Summary

This session has covered stakeholders' roles in the implementation of CEBS. All stakeholders need to work in a coordinated manner to ensure well-functioning of CEBS.

Quiz:

Match the workforce mentioned in SIDE A to the roles and responsibilities in side B

WORKFORCE (SIDE A)	Answer	RESPONSIBILITY (SIDE B)
1. Community key informants	C	A. Conduct initial risk assessment
2. District Surveillance Focal Person/ Veterinary Surveillance Focal Point	A	B. Supports district/national team during response
3. Community Health Workers	D	C. Make signals observations and report to the CHWs
4. Health Facility Disease Surveillance Focal Person or health facility In-charge / Veterinary field extension officers	B	D. Detect, record and report signal to CHW supervisor or Health Facility Focal Person

Case Study

On 6th of June 2019 at Dr. Fassio, the District Surveillance Officer, received a call from Khady Diallo, the local-level supervisor in the village of Butumba. Ms. Diallo told him that she was informed by a community health worker that five sick persons (2 children and 3 adults) were taken to a traditional healer after they all fell ill with the same symptoms. Ms. Diallo informed Dr. Fassio that all five persons had attended a wedding ceremony at a neighbouring village the day before, ate from the same bowl with their hands, and drank water from the same cup. Around 8 hours later, all became ill with severe vomiting and abdominal pain. All of them attended the local clinic and received IV fluid therapy due to moderate dehydration. The two children were referred to the nearest hospital because their clinical condition did not improve. The youngest (4 years old) died 2 hours ago.

Questions

Complete the following questions using the triage, verification, and risk assessment tools.

1. Is this information reported by the health volunteer an signal? Why?
2. If this information is an signal, who should conduct the triage?
3. Describe how the triage should be conducted for this case scenario:
4. If the signal is not a duplicate and is relevant to EWAR, what is the next step?
5. Who should verify this signal?
6. How should signal verification be conducted?
7. If the signal has been verified as an event, what is the next step?
8. Once the event has been reported, what is the next step? Please, explain:
9. Who should conduct the initial risk assessment?
10. Describe how the initial risk assessment should be conducted:
11. What should be the decision of the risk assessment team after evaluating the event and information available?

Pre and Post Knowledge Check Questions (CEBS)

Write TRUE or FALSE for the following statements:

1. Traditionally, signals are to be reported to CHW Supervisor or health facility surveillance point but may be reported direct to the higher level (TRUE OR FALSE)

2. Sometimes CHW can ask feedback from health facility supervisor after reporting of signals (TRUE OR FALSE)
3. After a signal has been reported, Risk Assessment may be conducted by district Surveillance focal point (TRUE OR FALSE)
4. CHW may proceeds to triage for some detected signals (TRUE OR FALSE)
5. Deaths of animal and livestock due to unknown cause is not a signal to be reported (TRUE OR FALSE)
6. CEBS is a very important component that complement Indicator based surveillance (TRUE OR FALSE)
7. The role of CHW is to provide feedback to the community members about reported signals (TRUE OR FALSE)
8. Community event-based surveillance (CEBS) is the systematic detection and reporting of events of public health significance within a community (TRUE OF FALSE)
9. Community participation, engagement, and a reliable response network are key features of implementation of EBS in the community (TRUE OR FALSE)
10. Signals should also be limited in number but broad enough to capture all public health risks in the community (TRUE OR FALSE)
11. Signals detected should be reported immediately to the CHW supervisor, or designated focal point (TRUE OR FALSE)

Write correct answer for the following statements:

12. Detected and recorded signals can be reported to the health facility or surveillance focal point through:
 - a) Phone call
 - b) Short message service
 - c) WhatsApp
 - d) All of the above
 - e) None of the above
13. Select all sources of signals for CEBS:
 - a) Political leader
 - b) Religious leader
 - c) Traditional healer
 - d) All of the above
 - e) None of the above
14. The role of CHW is to report signals to the:
 - a) CHW supervisor or Health facility
 - b) District surveillance focal point
 - c) Regional level
 - d) All of the above
 - e) None of the above
15. Who are among the following conducts initial risk Assessment
 - a) District Surveillance Focal Point
 - b) Community leaders

- c) Community members
- d) Community health workers

16. Select all steps needed to be conducted by CHW:

- a) Signal detection,
- b) Signal recording and
- c) Signal reporting
- d) Signal verification

Match the workforce mentioned in SIDE A to the roles and responsibilities in the SIDE B

WORKFORCE (SIDE A)	Answer	RESPONSIBILITY (SIDE B)
17. Community key informants	C	E. Conduct initial risk assessment
18. District Surveillance Focal Person/ Veterinary Surveillance Focal Point	A	F. Supports district/national team during response
19. Community Health Workers	D	G. Make signals observations and report to the CHWs
20. Health Facility Disease Surveillance Focal Person or health facility In-charge / Veterinary field extension officers	B	H. Detect, record and report signal to CHW supervisor or Health Facility Focal Person

Module 3: Health Facility Event Based Surveillance

Introduction

This module explains the general concept of Health Facility Event Based Surveillance (HEBS).

The module has five sessions which are:

Session 1. Introduction to HEBS

Session 2. Source of signal at HEBS

Session 3. Steps for conducting HEBS

Session 4. Stakeholders' roles and responsibilities

Session 5. Flow of information for HEBS

Learning Objectives

By the end of this module you should be able to understand:

- Define HEBS and key terminologies used in HEBS
- Explain what health facility event-based surveillance is, why it is important, and how it can be implemented
- List examples of alerts for HEBS
- Understand the process and information flow of HEBS
- Describe the roles and responsibilities of the stakeholders

Definition of Terms

- Signal (also known as Alerts); Any information or patterns of disease considered by the Early Warning and Response system as representing potential acute risk to human health, such as an outbreak. It can be unofficial information about a disease, condition, or event of public health importance, which may be true or invented
- Emerging public health threats- Refers to the new infectious disease and other public health event of the public health concerns. It might be caused by newly identified pathogen, which has emerged and whose the incidence in human has increased and is threatening to increase in the near future (US CDC)
- Re-emerging public health threats- refers to old disease or public health event that was previously controlled but once has risen to be significant public health problem.

This module will take 20-30 minutes to complete

Session 1: Introduction to HEBS

This session will cover; definition of HEBS, aim of the HEBS and example of signals at facility level.

Description of Contents:

Event-based surveillance in health facilities (HEBS) aims to improve early detection and reporting of signals within the health facility that may represent a public health risk, (such as a cluster of illnesses). This approach is not disease specific and doesn't make use of standard case definitions that are typically used in IBS in health facilities. EBS is highly sensitive and broad, hence allowing the detection of emerging or re-emerging public health threats by clinicians, nurses, and other relevant healthcare workers. Examples of signals at the health facility level include:

- a) Illness of HCW after caring for a patient with similar illness
- b) Increase of disease/condition cases based on the clinician's judgement or available data
- c) Any case with unexplained/unusual clinical manifestation/death of a known and unknown disease.
- d) Any case that fails to respond to a known therapy.
- e) Any person with a cough for 2 weeks and more.
- f) any abnormal pattern laboratory result such as increased in laboratory test of certain type or detection of new pathogen

Summary of session:

- Event-based surveillance in health facilities improve early detection and reporting of signals within the health facility.

Quiz:

1. HEBS approach is not disease specific and doesn't make use of standard case definitions that are typically used in IBS in health facilities (TRUE/FALSE).
2. Illness of HCW after caring for a patient with similar illness is signals (TRUE/FALSE).

Session 2: Sources of Signal at HEBS

This session will cover; the source of signals at HEBS

Description of Contents:

Healthcare workers should participate in both IBS and EBS since signals can come from both surveillance systems. General examples of signal sources at health facility level include:

- a) Healthcare workers from the following health facility departments such as wards, pharmacy, laboratory, Outpatient Department (OPD), public health and others
- b) Data gathered over time during routine sentinel surveillance (IBS) can provide alerts or benchmarks against which to compare the early course of an event

Summary of session

The source of signals at HEBS are health care workers and routine data gathered over time at health facility

Quiz

1. Signals cannot come from both surveillance systems IBS and EBS. (TRUE/FALSE).

Session 3: Steps for conducting HEBS

This session will cover; steps for conducting HEBS. These steps will guide the learner to detect, triage and verify signal.

Description of Content:

Information is initially captured as a signal at the healthcare facility as reported by healthcare workers or through trends in data collected at the healthcare facility. Not all signals may necessarily become real events, as such, they all need to be triaged, verified and risk assessed before a response is initiated.

STEP 1: Signal Detection

Detecting a signal means identifying or suspecting the occurrence of one of the pre-determined signals designated by national public health authorities. At health facilities, signals are most likely to be detected by HCWs. Key steps for detection are as follows:

1. The Disease Surveillance Focal Person at the health facility sensitises HCWs on health facility EBS signals and how to report them. In health facilities without Disease Surveillance Focal Person, the health facility officer in charge or any other assigned health care worker could play this role.
2. HCWs detect signals according to the pre-determined list of signals. This may be done by taking note of the number of cases, prescriptions, lab requests, data summaries, reports from caretakers and/or patients. When the signals are detected, the HCW records in a notebook detailing important pieces of information concerning the signal such as time, location, and source.
3. Once recorded, the HCW reports the signals immediately to the health facility Disease Surveillance Focal Person or health facility in-charge. The reporting mechanisms are diverse and include phone calls, SMS, in-person (verbal), electronic platforms, mobile applications, paper-based forms, social media and others.
4. The Disease Surveillance focal person records the signal received and reports to the health facility officer in-charge and Disease Surveillance Focal Person at the District level for their information. The Disease Surveillance focal person at the district then proceeds to triage.

STEP 2: Triage

Once a signal is reported, the Disease Surveillance Focal Person or health facility in-charge takes further steps to triage the signal. Throughout this process, other HCW may be engaged providing relevant information. Key steps for triaging involve:

1. Establish that the information being reported is pertinent to EWAR.
2. Confirm that the signal conforms to the pre-determined signals.
3. Confirm that the same signal has not been reported from the same or different sources (duplicate reports)

4. Register signals that are not duplicates and correspond to one of the pre-defined signals and proceed to verification.
5. Triage can be done by the disease surveillance focal point or the person in charge of the facility.

STEP 3: Verification

The health facility's disease surveillance focal person or the health facility in-charge will verify all triaged signals that meet the signal definition of the pre-defined signal list. Verification can be conducted by:

- Asking other people about the reported signal and visiting the person or health facility from where the signal has been reported.
- In case of inability to access location or event site, a phone call could be made to the hospital officer in charge or Health Facility Disease Surveillance Focal person who then verifies the signal to establish validity. The result of the verification is the confirmation that a signal is true or false.
- Once a signal is verified and confirmed as true, it becomes an event and must be recorded in the register (Annex 3) and reported to the Disease Surveillance Focal person at the district level/ relevant authorities for risk assessment. Feedback should also be provided to the HCWs who reported the signal.

Note: the process of verification and reporting should be completed within 24 hours.

STEP 4: Risk Assessment

Risk Assessment is a systematic process for gathering, assessing, and documenting information to assign a level of risk of an event to human health. **This should take place within 48 hours of the detection of one or more signals.** It is conducted by the district and/or national levels depending on capacity, after receiving the report of an event.

Summary of session:

- Steps for conducting HEBS are detect, triage and verify signal
- Health care worker is responsible to detect signal in health facility
- Triaging ensures the information is relevant to EWAR and avoiding duplication

Quiz

1. Risk assessment should take place within 48 hours of the detection of one or more signals (TRUE/FALSE)
2. Arrange the following steps in ascending order; Detection, verification, risk assessment and triaging. (Detection, Triaging, Verification and Risk assessment)
3. All Alert may necessarily become real events, as such, they are no need to be triaged, verified and risk assessed before a response is initiated (TRUE/FALSE)

Session 4: Stakeholders' roles and responsibilities

This session will cover; key stakeholders, their roles and responsibilities in implementing HEBS.

Description of Content:

The success of HEBS is based on the early detection and immediate notification of signals; the key stakeholders and their respective roles within this HEBS workflow as shown in Table 4.

Table 4: Roles and responsibilities of the health facility event-based surveillance (HEBS) workforce

Workforce	Primary roles	Supportive roles
Healthcare Workers	Use signals to identify possible public health threats in the health facility Report to Disease Surveillance Focal Person at health facility/ Health Facility in-charge	Provide information needed Participate in the sensitization meetings Participate in the review meetings
Disease Surveillance Focal Person at health facility/ Health facility officer in-charge	Adopt and mobilise HCW to positive behaviour change for health Records signal received from the HCW Reports signal to Disease Surveillance Focal Person at District level for their information Conducts triage of the signals Verifies the signal Tracing the source of an event Records and reports the event to a higher level (e.g., District, Sub- County, and National).	Provide additional information for triage and verification Provide additional information to the Risk Assessment team Mobilise community members to action Referral of community members and sick animals

	Provide feedback to the reporting party	Supports district/national team during Risk Assessment Supports district/national team during response
District Disease Surveillance Focal Person	Train and supervise Disease Surveillance Focal Person and/or In-charge at the health facility Conduct initial risk assessment Data analysis and use Provide feedback to the Disease Surveillance Focal Person and/or In-charge at the health facility Submit reports to the regional / national levels Escalate HEBS activities to the regional / national levels for support Monitoring HEBS activities	Support Disease Surveillance Focal person and/or In-charge at health facility in verification Mobilisation of resources for HEBS Support evaluation of HEBS Coordinate stakeholders
Regional / National level Disease Surveillance Focal Person	Lead the training of the HEBS workforce Supervision the HEBS activities Monitoring and evaluation Mobilisation of resources for HEBS Provide feedback Coordinate stakeholders Develop policy and guidelines for HEBS	Support risk assessment and response process Supervision of lower levels

Summary of session:

Health care workers at all levels have great roles and responsibilities in implanting HEBS.

Quiz

- Select primary roles of health care workers in HEBS
 - Mobilize resources for HEBS
 - Use signals to identify possible public health threats in the health facility
 - Conduct initial risk assessment
 - Report to Disease Surveillance Focal Person at health facility/ Health Facility in-charge
- Disease Surveillance Focal Person at health facility conducts triage of the signals (TRUE/FALSE)

Session 5: Flow of information for HEBs

This session will cover; how the information flows from healthcare workers at health facility to the national level. It's also explain the communication channel at all levels.

Description of Contents:

The flow of information for notification and feedback on HEBs is illustrated in Figure 5 Flow of information in HEBs. Signals are detected by HCW in health facilities then notified immediately to Disease Surveillance Focal Person or Health Facility in-charge. The reporting follows the existing surveillance reporting structure.

Regular feedback to information providers regarding the signals and events reported is imperative to sustain motivation for reporting by HCW and focal points. Feedback is one of the core functions of a surveillance system and can help to trigger important actions against the reported signals/events at all levels. When practised over time, it will also help to enhance the balancing between sensitivity and specificity of the surveillance system. For instance, feedback can help to revise the signal definition to reduce system overload. Low specificity would result in the surveillance system documenting many "false" outbreaks and spending a lot of resources and time for verification and investigation.

Feedback can be effected through different ways including supervisory visits, meetings, active calls, short message texts and newsletters. It is important to continuously monitor and evaluate the quality and usefulness of feedback provided. It is important to highlight cross reporting at the different administrative levels between the different sectors (animal, environment, and human)

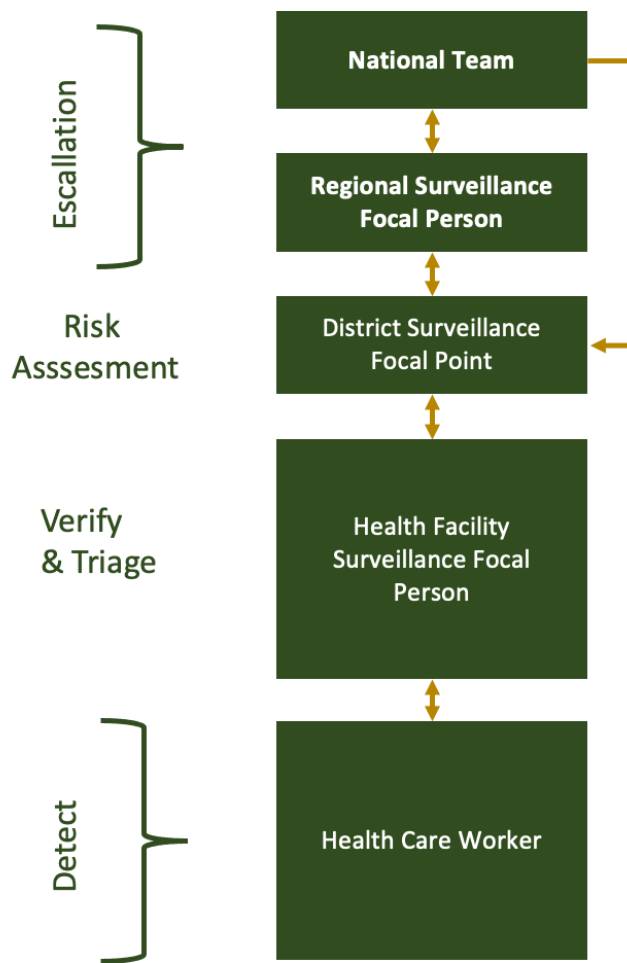


Figure 6 Flow of information in HEBs

Summary of session:

- Providing regular feedback to signal detectors and reporters motivate and sustain signals notification.

Quiz

1. Signals are detected by HCW in health facilities then notified within 48hrs to Disease Surveillance Focal Person or Health Facility in-charge. (TRUE/FALSE)
2. Feedback is one of the core functions of a surveillance system and can help to trigger important actions against the reported signals/events at all levels (TRUE/FALSE)
3. Feedback can be effected through different ways including supervisory visits, meetings, active calls, short message texts and newsletters (TRUE/FALSE)

Pre and Post Knowledge Check Questions

Health Facility EBS

1. Increase of disease/condition cases based on the clinician's judgement or available data is an example of signals at the health facility level (TRUE/FALSE)
2. Event-based surveillance in health facilities (HEBS) does not aim to improve early detection and reporting of signals within the health facility (TRUE/FALSE)
3. Select the correct examples of signals at the health facility level
 - a. Any case with unexplained/unusual clinical manifestation of a known and unknown disease.
 - b. Illness of HCW after caring for a patient with similar illness
 - c. A patient who come to the hospital for wound dressing
 - d. Any case that fails to respond to a known therapy.
4. HEBS approach is not disease specific and doesn't make use of standard case definitions that are typically used in IBS in health facilities (TRUE/FALSE)
5. General examples of signal sources at health facility level include the following except
 - a. Data gathered over time during routine sentinel surveillance (IBS) can provide alerts or benchmarks against which to compare the early course of an event
 - b. Information/news from social media
 - c. Healthcare workers from different departments such as wards, pharmacy, laboratory and Outpatient Department
6. Healthcare workers should not participate in both IBS and EBS (TRUE/FALSE)
7. Healthcare workers from the following health facility departments such as wards, pharmacy, laboratory, Outpatient Department (OPD) are example of signal sources at health facility (TRUE/FALSE)
8. The following are steps for conducting health facility event-based surveillance except
 - a. Detection
 - b. Triage
 - c. Treatment
 - d. Verification

9. Detecting a signal means identifying or suspecting the occurrence of one of the pre-determined signals designated by national public health authorities (TRUE/FALSE)
10. Select key steps for signal detection at health facility level
 - a. The Disease Surveillance Focal Person at the health facility sensitises HCWs on health facility EBS signals and how to report them
 - b. HCWs detect signals according to the pre-determined list of signals
 - c. Register signals that are not duplicates and correspond to one of the pre-defined signals and proceed to verification.
 - d. Once recorded, the HCW reports the signals immediately to the health facility Disease Surveillance Focal Person or health facility in-charge.
 - e. The Disease Surveillance focal person records the signal received and reports to the health facility officer in-charge
11. Key steps for triaging involve establishing the information being reported is pertinent to EWAR (TRUE/FALSE)
12. The process of verification and reporting should not be completed within 24 hours (TRUE/FALSE)
13. The success of HEBS is based on the early detection and immediate notification of signals (TRUE/FALSE)
14. Select the correct key steps for triaging:
 - a. Establish that the information being reported is pertinent to EWAR
 - b. Confirm that the signal conforms to the pre-determined signals.
 - c. Confirm that the same signal has not been reported from the same or different sources (duplicate reports)
 - d. In case of inability to access location or event site, a phone call could be made to the hospital officer in charge
15. The health facility's disease surveillance focal person or the health facility in-charge will verify all triaged signals that meet the signal definition of the pre-defined signal list (TRUE/FALSE)
16. Detecting a signal means identifying and verifying the occurrence of one of the pre-determined signals designated by national public health authorities. (TRUE/FALSE)
17. The reporting mechanisms are diverse and include phone calls, SMS, in-person (verbal), electronic platforms, mobile applications, paper-based forms, social media and others (TRUE/FALSE)
18. Risk assessment is conducted as part of an investigation of an event (TRUE/FALSE)
19. Rearrange the flow of information in chronological order:- health workers ,district surveillance focal person, healthy facility surveillance focal person , national team, regional surveillance focal person (health workers, healthy

facility surveillance focal person, district surveillance focal person, regional surveillance focal person, national team)

20. Signal verification should be conducted by (select true for the correct statement and false for incorrect statement)

A] Asking other people about the reported signal and visiting the person or health facility from where the signal has been reported. (TRUE/FALSE)

B] A phone call could be made to the hospital officer in charge or Health Facility Disease Surveillance Focal person (TRUE/FALSE)

C] After verification, feedback should also be provided to the HCWs who reported the signal. (TRUE/FALSE)

D] If the signal has been verified as an event, the next step is to report (TRUE/FALSE)

Module 4: Media Scanning

This module covers the introduction, steps, flow and requirements to establish media scanning. Participation in this module will enable you to play a full and active role in the successful and effective establishment of media scanning centre in your working place.

This module consists of four sessions;

Session 1: Media scanning and sources

Session 2: Steps of media scanning

Session 3: Flow of information for media scanning

Session 4: Requirements to establish media scanning

Learning Objective.

By the end of this module you will be able to;

- Define media scanning
- Identify Sources of media scanning
- Understand Steps for conducting Media scanning in EBS
- Understand flow of information for Media scanning
- Identify requirements to establish media scanning.

Definition of Terms.

Media scanning - Also known as “media monitoring): The active monitoring of the content of media sources on a continuing basis to get information about specific topics

Social media messaging - Online platforms that enable the general public to report and share information and engages them in social networks, for example Facebook, Twitter, WhatsApp etc.

Triage - The process of screening out the data and information that is relevant for early detection purposes (i.e., the screening out mild/irrelevant events from potential acute public health events, and the cleaning to eliminate duplicates and correct obvious mistakes).

Module Duration: This module will take 20 minutes to complete

Session 1. Media Scanning and Sources.

Introduction

In this session you will learn on media scanning definition, sources and channels of general communication amongst a population and the way they act as gathering tools used to store and disseminate information or data.

Session Content

Definition

Media scanning refers to the regular perusal and/or reading, listening through different sources of media and extracting relevant information pertaining to public health events, which falls within guidelines of an identified signal. It is an active process of regularly reading and/or listening then extracting public health events from media sources (channels of general communication amongst a population). It utilises unstructured data from diverse web-based sources, radio, television, newspapers etc. to provide early warning and situational awareness of human, animal and plant infectious diseases, as well as chemical, radiological and nuclear threats. It emerged in the mid-1990s, relying primarily on text media for its information, then included social media, participatory sources, and non-text-based sources using signals.

Sources

A Source list should be maintained as a resource for EBS analysts to keep track of the location of media sources, as well as of login IDs and passwords, when conducting surveillance for all public health events. This source list is shared among all analysts.

EBS requires a multisector, One Health approach and should rely on sources of information beyond traditional health system sources. While these may be directly linked to human health, data can also be provided by the non-human health sector, local communities, media and international sources. The main sources include the following:

Official Sources

Signals detected through official sources are reliable and do not need further verification. The following are examples of official sources

- a) Websites of governmental sectors including, but not limited to, Ministries of Health, Livestock, Agriculture, Environment, and Foreign Affairs
- b) Websites for official organisations such as universities and internationally recognized Centres of research
- c) Official pages/accounts on social media for governmental and official organisations: most organisations have official accounts on social media which can be considered a reliable source of information
- d) WHO official websites for Early Warning e.g., WHO's International Health Regulations Event Information Site for National Focal Points, which is a secured platform accessible only to national focal points
- e) WHO Disease Outbreak News (DON)

- f) Websites for WHO regional offices, e.g., AFRO, EMRO, EURO, SEARO, WPRO, PAHO
- g) Official public health agencies, e.g., US CDC, ECDC, ACDC websites
- h) Disease-specific sources (e.g., Global Influenza Surveillance and Response)
- i) World Organisation for Animal Health (OIE); World Animal Health Information System
- j) Food and Agriculture Organization of the United Nations (FAO)
- k) International Food Safety Authorities Network (INFOSAN)
- l) The International Atomic Energy Agency (IAEA) for environmental events (radiological and chemical)

Un-official Sources

Signals detected through unofficial sources are not reliable and need to be verified, though they may be a good source for acute public health events. The following are examples of unofficial sources:

- a) Newspapers and magazines
- b) Online content of TV and radio channels
- c) Social media
- d) Blogs
- e) Local and international media
- f) Google
- g) Internet bio-surveillance sources/mechanisms include ProMED, the Global Public Health Information Network (GPHIN), HealthMap, and MEDISYS, among others

Social media platforms such as Facebook, WhatsApp and Twitter are internet-based applications that allow individuals to communicate in a network that boosts information sharing. Information from social media, which at first must be verified, may offer a direct channel to confirmed events.

Session summary

- Media Scanning is the active monitoring of the content of media sources on a continuing basis to get information about specific topics
- Sources of Media Scanning include official and unofficial

Quiz

1. Signals detected through unofficial sources are reliable and do not need to be verified (True/False)
2. The following are official sources of media scanning except
 - a) Websites of governmental sectors
 - b) Websites for official organisations
 - c) Official pages/accounts on social media for governmental and official organisations
 - d) Local and international media
3. EBS should rely on sources of information beyond traditional health system sources (yes/no)

Session 2: Steps for conducting Media Scanning.

Session Introduction

This session covers steps of conducting media scanning. Signals are captured through manual listening and/or reading local media or automatically mining data on digital media and triaged, verified and risk assessed before a response is initiated.

Session Content

STEP 1: Signal Detection

Each signal captured should include data about the signal's detection, triage, and verification, risk assessment until the response. Signal registration should include the minimum data set for tracking the signals. Signal detection involves information scanning that can be done manually and automatically:

Approaches of signal detection;

A. Manual Scanning

This refers to the physically monitoring of media sources for public health events. This process requires taking the following steps

1. Develop a list of keywords related to the list of prioritised signals including diseases, syndromes or events
2. Develop a list of prioritised sources (online, radio, TV, print)

3. Develop a review schedule of the prioritised sources
4. Visit all predetermined sources in the checklist to scan for keywords (online sources, e.g., social media, blogs, websites and others) and review content (print and audio-visual)
5. Designated Media Analyst captures the signal (according to the pre-defined list of signals) from media source and register in a signal logbook/ register (see a sample of signal logbook for in Annex 1)

B. Automated Scanning

Multiple automated technological tools can be used for scanning online information from pre-defined sources. These tools can save time and effort and support the early detection of public health threats. Examples of automated scanning are:

- a) Rich site summary (RSS feeds) is a standardised software tool that monitors predefined websites and informs the user of updates.
- b) Contributor-based sources are based on sharing information among health professionals, in which individuals collect information that can be accessed through shared feeds, for example, ProMed, BioCast
- c) Automated information feeds or services developed by governments or international organisations that collect health information from several sources and then can decrease time spent scanning for individual sources. These are called data aggregators.

Automated scanning requires taking the following steps:

1. Develop a list of keywords related to the list of prioritised signals including diseases, syndromes or events
2. Develop a list of prioritised automated scanning tools (sources of signal information, e.g., ProMED, HealthMap, EIOS etc.)
3. Subscribe/ download and install the automated scanning tool
4. Operationalize the tool using keywords developed in step 1 (may follow instructions provided by various tools)
5. Review the signal information to determine whether it matches any of the pre-determined list of signals.
6. Register the signal and proceed to triage (see registration tool Annex 1)

Note: A signal registration should include the minimum data set for tracking the signals for example:

- Place of occurrence (geographical area) – where it starts and spreads
- Description of signal/ event.
- Magnitude of the event – who is affected (number of cases and/or deaths)
- Date of Signal/event start date
- Date of reporting the signal to the next level
- Source of signal/event
- Name and contact details for reporting person
- Follow-up of the signal: Triage, verification, risk assessment dates.
- EBS analyst tasked to follow up

STEP 2: Triageing

Once the signal information matches any of the pre-determined list of signals, the Media Analyst takes further steps to triage the signals. Key steps for triaging involve:

1. Establish that the signal registered is pertinent to EWAR.
2. Confirm that the signal conforms to the pre-determined signals.
3. Confirm that the same signal has not been reported from the same or different sources (duplicate reports)
4. If the signal is from an official source, register as an event (see signal registration form in Annex 1), notify relevant authorities for risk assessment.
5. If the signal is from an unofficial source, notify relevant authorities for verification.

STEP 3: Verification

Verification is an essential step in confirming the authenticity and characteristics of the signal. Verification should be done at the local level nearest to the location of the signal. The following are the steps for verification:

1. Media Analyst contacts the Disease Surveillance Focal Person at the District level for verification and notifies the National Disease Surveillance Focal Person for his information
2. The Disease Surveillance Focal Person at the district level reports to the health facility focal point (closest to the signal source) who then proceeds to verification using the verification tool (see Annex 2).
3. If the signal is true, it becomes an event and if not, true it is discarded, and recorded accordingly in the relevant tool (Annex 3).
4. Once it is confirmed an event it is immediately reported to a higher level (e.g., District, Provincial, National) who then proceed to conduct a risk assessment
5. Feedback is again provided to the reporting party (Media Analyst)

STEP 4: Risk Assessment

The Disease Surveillance Focal Person at the District level convenes a multi-disciplinary team to determine the extent and magnitude of the event. Refer to 3.2.4 for RRA steps.

Session summary

1. Approaches of signal detection which include manual and automated
2. Steps of Media Scanning which include detection, triaging, verification and risk assessment.

Quiz.

1. Arrange the following steps for conducting media scanning in chronological order.

1. Verification....3
2. Risk Assessments....4
3. Triage....2
4. Detection....1

2. Manual and Automated information scanning are ways of Signal detection (True/False).

3. The following are steps for conducting triage in media scanning except

- a) Establish that the signal registered is pertinent to EWAR.
- b) Confirm that the signal conforms to the pre-determined signals.
- c) Confirm that the same signal has not been reported from the same or different sources (duplicate reports).
- d) If the signal is true, it becomes an event and if not, true it is discarded, and recorded accordingly in the relevant tool.

Session 3: Flow of Information for media scanning.

Session introduction

This session will cover how EBS signals are initially captured by media analysts from pre-determined media sources, registered at the national/regional level (depending on the level where the media scanning centre is located) and flows down to lower levels with a feedback loop in the reverse directions.

Session Content

The figure below shows flow of information on media scanning

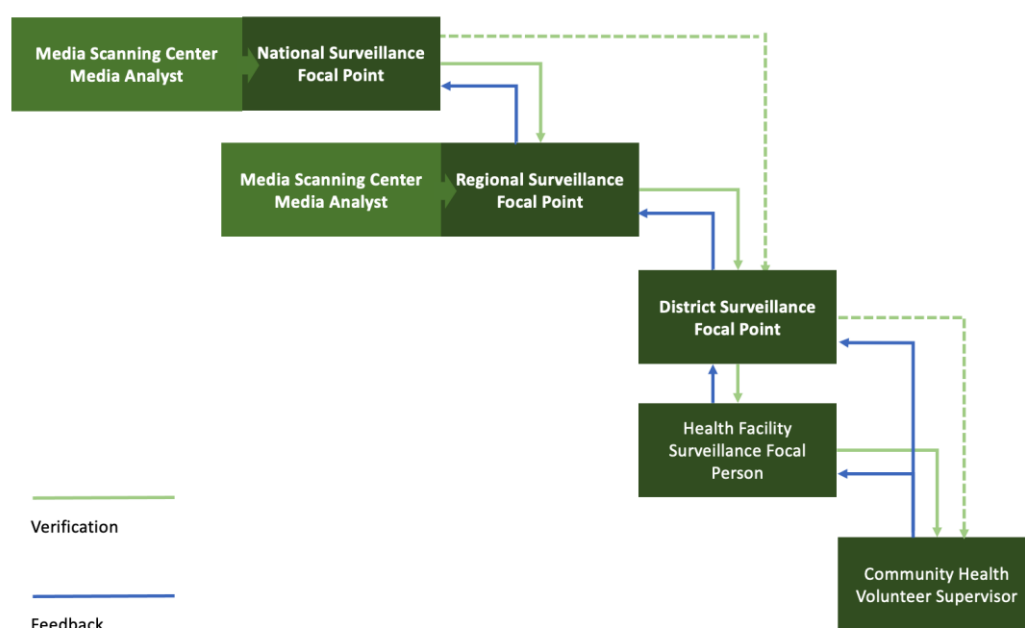


Figure 5 Information flow in Media Scanning EBS

Session summary

1. Flow of information and feedback for Media scanning include verification and feedback mechanisms from community Health volunteer supervisor to National surveillance focal point.

QUIZ

2. EBS signals are initially captured by media analysts and registered at media scanning centre (True /False)

Session 4: Requirements to establish a media scanning centre.

Session introduction

This session will cover a description of minimum requirements to establish a Media Scanning centre including infrastructure and setup options.

Session Content

Requirements

There is a myriad of options for media scanning centre technology. Whether a MS wants to build or reassess its media scanning centre requirements, technology considerations should include the core platform and workforce optimization software. Here we outline the minimum requirements for establishing a functional centre.

Infrastructure

- a) Office space
- b) Radio, TV
- c) Recording devices
- d) Computers connected to the internet
- e) Social media monitoring tools: these let you keep track of the public conversation, postings, account, keyword, and hashtag that is relevant to your business

Setup Options

- a) Perform a complete inventory of all print, radio and television media available: Encouraged to visit multiple media kiosks to ensure all print sources are documented
- a) From this, select sources (rank) that feel most important and relevant to EBS in your country.
- b) Selected resources should be reviewed to ensure they are not currently feeding into main news aggregation sites, including Google news, health maps etc.
- c) Train data collection team to screen local media for stories that may be related to a relevant health event and/or signal as described.

Session Summary.

- a) Minimum requirements for establishment of Media Scanning centre include infrastructure (Office, Radio, TV, recording devices, Computers with internet connectivity and social media monitoring tools).
- b) Setup options for a Media Scanning centre which includes a complete inventory and training of data collection teams.

Quiz

1. The following are the minimum infrastructure requirements for establishing a Media Scanning centre.
 - a) Office space
 - b) Radio, TV
 - c) Recording devices
 - d) Computers connected to the internet
 - e) Social media monitoring tools
 - f) GPS track
2. Training data collection team to screen local media for stories that may be related to a relevant health event is very important (True / False)

Pre and Post Knowledge Check Questions Media Scanning

1. Question 1: Media Scanning is also known as Media Monitoring (True /False)
Answer: True
2. The screening out mild/irrelevant events from potential acute public health events, and the cleaning to eliminate duplicates and correct obvious mistakes is not part of Triage? True /False
Answer: False
3. Does EBS requires a multisector, One Health approach as sources of information (Yes / No)
Answer: Yes
4. Tick the main sources of Media Scanning
 1. Official
 2. Unofficial
 3. Electronic sources
 4. Paper based sources

Answer 1 and 2

5. Tick the source(s) of information that do not require verification
 1. Newspapers and magazines
 2. Online content of TV and radio channels

3. Social media
4. Blogs
5. Local and international media
6. Google
7. Food and Agriculture Organization of the United Nations (FAO)

Answer (7)

6. Signals detected through social media sources are reliable and do not need to be verified (True/False)

Answer: False

7. The following are official sources of media scanning except
 - e) Websites of governmental sectors
 - f) Websites for official organisations
 - g) Official pages/accounts on social media for governmental and official organisations
 - h) Facebook and twitter

Answer: (d)

8. Manual Media Scanning employs the following (Tick the appropriate)
 - i. Developing a list of keywords related to the list of prioritised signals including diseases, syndromes or events
 - ii. Developing a list of prioritised sources (online, radio, TV, print)
 - iii. Use Rich site summary (RSS feeds)
 - iv. Developing a review schedule of the prioritised sources

Answer (i, ii, iv)

9. Capturing signals from media sources and registering in a signal logbook/register are the duties of
 - a) Surveillance officer
 - b) Monitoring & Evaluation Officer
 - c) Media Analyst
 - d) Clinical Officer

Answer (C)

10. Tick the appropriate data set for tracking the signals
 - I. Place of occurrence (geographical area) – where it starts and spreads
 - II. Description of signal/ event.
 - III. Date of Commencing Fever
 - IV. Date of Commencing Vomiting
 - V. Magnitude of the event – who is affected (number of cases and/or deaths)

- VI. Date of Signal/event start date
- VII. Date of reporting the signal to the next level
- VIII. Source of signal/event
- IX. Name and contact details for reporting person

Answer (III and IV)

11. Arrange the following steps for conducting media scanning in chronological order.
- 1.Verification
 - 2.Risk Assessments
 - 3.Triage
 - 4.Detection

Answer (4, 3, 1 and 2)

12. Once a signal is confirmed an event, it needs to wait for 24 hours before being reported to a higher level (e.g., District, Provincial, National) who then proceed to conduct a risk assessment (True/False).

Answer (False)

13. During Risk Assessment, the community health care worker supervisor convenes a multi-disciplinary team to determine the extent and magnitude of the event. (True/ False).

Answer (False)

14. Verification should be done at the local level nearest to the location of the signal. (True/False).

Answer (True)

15. Training data collection team to screen local media for stories that may be related to a relevant health event is very important (True/False)

Answer (True)

16. Once a signal is verified and reported, feedback is not necessarily provided to the reporting party (True /False).

Answer (False)

17. The following are the minimum infrastructure requirements for establishing a Media Scanning centre.

- g) Office space
- h) Radio, TV
- i) Recording devices
- j) Computers connected to the internet
- k) Social media monitoring tools
- l) GPS track

Answer (f)

18. Online platforms e.g. Facebook, WhatsApp and twitter enable the general public to report and share information and engages them in social networks (True/False).

Answer (True)

19. Media scanning utilises unstructured data from diverse web-based sources, radio, television, newspapers etc. to provide early warning and situational awareness of human, animal and plant infectious diseases, as well as chemical, radiological and nuclear threats. (True/False).

Answer (True)

20. Multiple automated technological tools can be used for scanning online information from pre-defined sources. These tools can save time and effort and support the early detection of public health threats. (True/False).

Answer (True)

Module 5: Hotlines

EBS Hotline refers to a specialised data capture service through telephone, SMS or other direct messaging platforms (WhatsApp, Facebook, Twitter, etc.) that provides an effective way to listen/ read and respond to public health emergencies. Within EBS, a hotline can be used to capture signals reported by the community or health facility. It provides a wide range of users to report unusual public health emergencies.

Module content:

This module contains the following sessions:

- Session 1:** Sources for hotlines
- Session 2:** Establishing hotline
- Session 3:** Steps for conducting hotline EBS
- Session 4:** Stakeholders roles and responsibilities
- Session 5:** Flow of Information in Hotline EBS

Module Duration: This module will take 20 minutes to complete

Learning objective.

By the end of this module you will be able to be able to:

- Describe the sources of EBS hotlines
- Understand how to establish EBS hotlines
- Understand the steps for conducting Hotline EBS
- Understand stakeholders' roles and responsibilities

Definition of Terms:

- **Event Based Surveillance (EBS)** is the organised approach to the detection and reporting of 'signals,' defined as information that may represent events of public health importance, often through channels outside of routine surveillance systems.
- **EBS Hotlines** is a platform for gathering information from the public whereby any community member can detect and report signals of public health emergence for early warning and rapid response via calls or direct SMS (WhatsApp, twitter) or in person.

Session 1: Sources of EBS Hotlines

This session is expected to cover different types of sources for EBS hotlines.

Session Content:

Information for EBS hotlines is gathered from the public whereby any community member can detect and report signals of public health emergence for early warning and rapid response. Dedicated number(s) and/or social media accounts should be

shared with the entire public and should be available all the time (24 hours a day, seven days a week) for the public to report signals. The sources include:

- Calls from the general public or health facilities.
- SMS from the general public or health facilities

Concise messages through social media platforms such as WhatsApp, Facebook, Twitter

Session Summary:

- Different sources for EBS hotline include calls and SMS from general public

Quiz:

Write T if the answer is True and F if the answer is False from the following statements:

- Which of the following are the sources of EBS hotlines?
 1. Text book F
 2. SMS T

Session 2: Establishing EBS hotline

In this session, establishment of EBS hotlines process will be covered.

Session Content

Setting up a hotline centre is a daunting task, there are a myriad of options for hotline centre technology. Whether a Member State wants to build or reassess its hotline centre requirements, technology considerations should include the core platform and workforce optimization software.

Minimum

- a) Trained personnel inclusive of risk communication techniques. Note: the number depends on the level the hotline has been established and the catchment population.
- b) Dedicated contact number and social media handle
- c) Office space
- d) Desktop Computers: Each agent should be equipped with a personal desktop for management of operations, data storage and customer references – even if everything is stored on the cloud
- e) Telephone with landline
- f) FAQ or reference book for operators to consult when communicating with callers

Additional (Recommended)

- a) USB Headsets with in-built microphone component
- b) Call recording software/device
- c) Automatic call distribution system: technology automatically routes calls to phone agents based upon organisational rules
- d) Hotline management information system: that will be used to track your calls and the services and advice provided to callers
- e) Event management system (EMS): will be used to capture, track, analyse, and retrieve all signals and events detected

The following are requirements for establishing EBS hotlines:

- The number should be short and toll free (The cost of reporting signals to public health authorities should be zero).
- It is recommended to have a single number that can be used as a hotline to make reporting easy to remember. The same number can be used for hotline, Short Message Service (SMS) and social media platforms to avoid confusion. For example, if the hotline number is 199, messages sent by SMS or Facebook Messenger should also be sent to the same number.
- Community residents should be motivated to self-report events that may impact the public's health, including emerging public health events or outbreaks.
- Disseminate the hotline number by advocacy through health authorities, community health workers, non-governmental organizations, religious and other leaders, or schools and also advertise through messaging in local languages by TV, radio and newspapers.
- Develop partnership with communication companies that can spread the hotline number by text messages to their clients. The messages sent should include the purpose of the EBS, the importance of immediately reporting signals and how signals can be reported.
Train a team of employees to operate the EBS hotline 24 hours to respond to calls or request information from the community.

The Call methodology:

- The responder to the call should start by greeting and thanking them for their proactivity to report to the ministry of health or relevant ministry hosting the hotline, concerning potential public health events.
- Then the responder should follow a prepared set of questions that directly reflect the questions posed in the alert logbook.
- The call should be ended by thanking the caller for their time, patience and proactivity.
- The responder should directly register in the signal logbook the signals that meet the pre-defined list of signals.

- Calls should be returned as soon as possible in situations where a call is interrupted or disconnected or if calls are received while the responder is busy; this will ensure that all signals are collected.

The Messaging methodology:

- Once an SMS or a social media message is received, an instant automated message should greet the sender, thank them and state that an operator will contact them.
- Automated questions or responders can collect information from the sender.
- Data should be registered directly in the alert logbook according to the pre-defined list of signals for the country.
- Information about the sender should be collected for further communication and details about the signals reported. A direct call to the sender may be needed if more information is required.

NB: Hotlines should be established at the national, regional/provincial and district levels.

- At the national level: The hotline with the call respondents can be established at the National Public Health Emergency Operation Centre (PHEOC) to capture and register signals from the entire country.
- At the regional/provincial and district levels: The hotline can be established at the Regional/Provincial Health Authorities premises or at the Regional/Provincial PHEOC if available to capture and register signals from the region/province.

At the district level: The hotline can be established at the District Health Authorities premises to capture and register signals from the district including the health facilities and community focal persons.

Session Summary:

- How to establish and operate EBS hotlines
- Effective communication in management of EBS hotline
- In this session you have learnt:
- Minimum requirements for establishing a hotline include an office, trained personnel, dedicated contact number

Quiz:

Please write **T** if the answer is **True** and **F** if the answer is **False** from the following statements:

The following are requirement for establishing hotlines:

- Having adequate number of staffs to operate hotlines 24/7-**T**
- To self-report signals, communities should be motivated to report using hotline number-**T**
- The hotline number should be short and Toll-free number-**T**

Session 3: Steps for conducting EBS hotline

Introduction: In this session, steps for conducting EBS Hotlines will be covered.

Session content: Information is initially captured as a signal through calls, SMS or direct messaging, which represents a potential acute risk to human health, such as an outbreak. Not all signals may necessarily become real events, as such, they all need to be triaged, verified and risk assessed before a response is initiated. Figure 3 illustrates key steps in Hotline EBS.

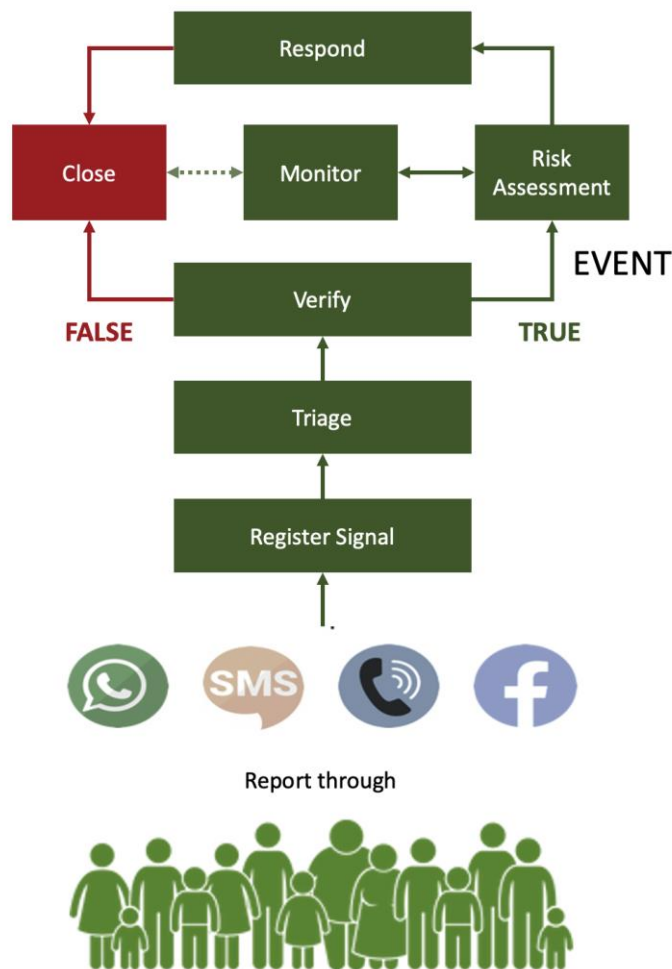


Figure 3 illustrates key steps in Hotline EBS

Step 1: Signal Detection

Detecting a signal means identifying the occurrence of one of the predetermined signals designated by national public health authorities. Signals that are captured from hotlines and correspond to the predefined list of signals, should be registered in a signal logbook or register.

Effective communication is a key component to establishing a successful hotline. This includes that hotlines and hotline operators establish trust with callers; are service oriented, community led; exhibit emotional intelligence; and communication and recommendations are evidence-based.

- **Trust:** Hotlines require trust from both the community and public health institution. It is an important part of hotlines to build and maintain trust among responders and affected callers or reporters.
- **Response oriented, community-led:** The hotline should be community-led and response oriented. To ensure that the hotline meets the needs of the community, engage the community on a regular basis to circulate and share feedback on the service's usefulness.
- **Emotional intelligence:** Hotline operators are expected to respond to calls from the community who are feeling strong emotions like fear, anger, or stress. They should have the expertise and emotional intelligence needed to effectively manage these situations by modelling empathy, active listening, and a non-judgemental attitude.
- **Evidence-based:** Hotline operators should be knowledgeable about the various disease-related and other public health events that they may be asked about in order to accurately address the public's concerns. This includes being familiar with case definitions, transmission routes, prevention measures and other relevant recommendations.

Signal information for the hotline can be received through telephone calls, text messaging and in-person reports. Here we describe the key sources for signal detection based on means of collection i.e. (a) Calls (b) Messaging and (c) In person reports

A. Calls

1. Start by greeting and thanking the caller for being proactive to report to the hotline, concerning potential public health events.

E.g., Welcome to the Public Health Emergency Call Centre/National emergency Call Centre. My name is [INSERT NAME]. How can I help you?"

2. Obtain the name of the caller, and where they are calling from
3. Allow the caller to introduce the report (the call may be recorded where possible)
4. Engage the caller and follow a prepared set of questions that directly reflect the questions posed in the signal logbook. A signal registration should include enquiries for the following data set for tracking the signals:
 - Date and Time of signal/ event
 - Place of occurrence (geographical area) – where it starts and spread
 - Nature of event (description)
 - Magnitude of the event – who is affected (number of cases and/or deaths)
 - Date and time of the call/detection.
 - Date of reporting the event to the next level

- Source for event identification; informant: Name, contact phone
5. Briefly summarise what has been accomplished on the call (The set of people involved (children, adults, males or females) or animals must be documented. Place of event and time noticed must be clearly documented)
 6. Let the caller know what happens next (and include a timescale)⁶.
 7. Ask the caller if there is anything else they wish to report or add to the report
 8. End by thanking the caller for their time, patience and proactiveness.
 9. Return the call as soon as possible in situations where a call is interrupted or disconnected or if calls are received while the responder is busy; this will ensure that all signals are collected
 10. There may be an automated response (BOT⁷), if calls are received while the responder is busy. The automated message should tell the caller to leave the message, or that the responder is busy, and the call will be returned immediately. In addition to an automated response, some hotlines can be equipped with a push-button menu (serving as a triage mechanism) to direct callers to the appropriate topic or contact.
 11. Record the message for future reference (where possible)

B. Messaging

1. Once an SMS or a social media message (direct message) is received, an instant automated message is sent to greet the sender, thanking them and stating that an operator will contact them.
2. **Note:** Automated questions (BOTs) or responders can collect information from the sender.
3. Hotline operator registers in the signal logbook according to the pre-defined list of signals for the country.
4. Collect information about the sender for further communication and details about the signals reported. A direct call to the sender may be needed if more information is required.

⁶ Some hotlines can be equipped with a push-button menu to direct callers to the appropriate topic or contact

⁷ **BOT**, is a software application that runs automated tasks (scripts) over the Internet/communication channel

C. In Person Reports

People who are conversant with the physical location of the call centre may opt to walk in and make in-person reports of public health threats. However, it is not advisable to come in contact with these persons, they might be carriers of an infectious disease.

Note: Signals that are captured from hotlines are to be registered in a signal logbook/register ([Annex 1](#)). Signal registration should include the minimum data set for tracking the signals.

Step 2: Triageing

The objective of triaging raw information is to minimise analysis of duplicate or irrelevant signals and limit unnecessary verification of irrelevant signals, as well as to ensure that genuine events will elicit an effective response. The triage of raw EBS information can be divided into two steps: **filtering** and **selection**.

1. **Filter** the information to screen out duplicates (the same signal reported by the same or different sources that have been registered and processed)
2. Identify and discard the information which is not relevant or does not relate to EWAR such as a single snake bite, injuries etc. depending on the nature of its occurrence and country priority. and select the information that corresponds to one of the pre-defined lists of signals.
3. Register signals that are not duplicates and correspond to one of the pre-defined signals and proceed to verification.

Step 3: Verification

Verification is an essential step in establishing the validity of the signal. Verification should be done at the local level nearest to the location of the signal. The following are the steps for verification:

1. Hotline operator contacts the Disease Surveillance Focal Person at the District level for verification and notifies the National Disease Surveillance Focal Person for this information
2. The Disease Surveillance Focal Person at the district level reports signal to the health facility focal point, CHW's supervisor (with adequate capacity) or responsible person in the animal health or environment sector (depending on the origin of signal) who verifies the signal at the site of occurrence using the verification tool ([Annex 2](#)).

3. If the signal is true, it becomes an event and if not, it is discarded, and recorded accordingly in the event register (Annex 3).
4. Once the signal becomes an event, the district team is notified to conduct a risk assessment
5. Feedback is also provided to the national team (hotline desk, disease surveillance focal point and other relevant offices)

Step 4: Risk Assessment

Risk Assessment is a systematic process for gathering, assessing, and documenting information to assign a risk level to a public health event. Risk assessment is conducted after the validation of a signal as an event. **This should take place within 48 hours of the detection of the signal.** It is conducted by the district, provincial and/or national levels depending on capacity, after receiving the report of an event. The Africa CDC human (Annex 4) and animal health (Annex 5) risk algorithm can be adapted for this purpose. Additionally [ECDC](#) and [WHO](#) have also developed rapid risk assessment tools that can be referenced as well. Key steps for conducting rapid risk assessment are:

1. The Disease Surveillance Focal Person at District level/District medical officer convenes a multi-disciplinary team.
2. The team then conducts rapid risk assessment, based on pre-defined risk questions, by considering Hazard, Exposure and Context.

A. Hazard Assessment

This refers to the identification of the characteristics of a public health hazard and the associated adverse health effects. Hazards can include biological, chemical, radiological and nuclear events. The assessment process includes:

Use available clinical and epidemiological features for laboratory confirmed agents, when available. In all other cases, start with listing possible causes based on:

- a) The initial description of the event.
- b) Known burden of diseases in the affected community; and
- c) Type and distribution of existing hazards (e.g., the number and location of chemical plants and the chemicals they use).

Possible questions to ask:

- a) Is this threat unusual or unexpected?

- b) Is this event new in the country?
- c) Is this occurring in an unusual or unexpected setting, mode of transmission, and/or population group?
- d) Are there novel clinical manifestations that result in severe illness, disability, and/or death?
- e) Is the threat likely to cause severe disease in this population/group?

Considering the pathogen, exposed population, and availability of treatment where the event is occurring, will more than 20% of people infected develop severe illness, severe disability, and/or die?

B. Exposure Assessment

This refers to the evaluation of the exposure of individuals and populations to likely hazards. The key output of the assessment is an estimate of the: (a) number of people or groups known or likely to have been exposed, and (b) number of exposed people or groups who are likely to be susceptible (not immune).

Information required to evaluate exposure includes:

- a) Mode of transmission/exposure (e.g., direct contact, droplet, sexual, occupational).
- b) Incubation period (known or suspected).
- c) Estimation of the potential for transmission (e.g., R_0 basic reproduction number); Immune status of the exposed population.
- d) Disease burden in and distribution of vector or animal hosts/reservoirs for vector-borne and zoonotic diseases.
- e) Dose (e.g. amount ingested/absorbed/inhaled) and duration of exposure

Possible questions to ask:

- a) What is the probability of spread within and beyond the MS?
- b) Is exposure geographically widespread or limited to specific sub-groups (e.g., immunodeficient, comorbidities, socially/economically vulnerable, location)?
- c) Does infection/exposure occur from a low dose?
- d) Is this readily transmitted person-to-person (e.g., by airborne)?
- e) If an animal event, is there a potential for the pathogen to spread from animals to humans?
- f) Are treatment or prevention measures available for animals or people?
- g) Does the event/pathogen cause severe morbidity or mortality in humans?

- h) Does the agent have the potential for person-to-person transmission?

Context Assessment

This refers to the evaluation of the environment in which the event is taking place. This may include: (a) The physical environment such as climate, vegetation, land use (e.g., farming, industry) and water systems/sources (b) Health of the population (e.g., nutritional status, disease burden and previous outbreaks), (c) Infrastructure (e.g., transport links, healthcare, public health infrastructure), (d) Cultural practices and beliefs and/or (e) Political environment (civil wars, terrorist attacks)

Context assessment should consider all factors that can affect the risk level of the event including social, ethical, technical, scientific, economic, environmental and political. For example:

- a) For measles, outbreak spread depends upon factors like the current immunisation coverage in the population, the capacity to quickly organise mass vaccination campaigns if coverage is low, general hygiene and access to health care, the MS surveillance capacity to rapidly detect and isolate cases, and population movement and behaviour.
- b) For water contamination events by chemical agent, the risk of human intoxication will depend on factors like local water use practices, seasonality (cold or hot, rainy or dry), the flow of the water source, capacity to quickly broadcast risk and prevention messages to the public, and public acceptability of control measures.

Possible questions to ask:

- a) Are effective treatments and control measures available in the Member State?
- b) Even if treatment and control measures exist somewhere in the world, answer “no” if they are not immediately and widely available in the specific setting where the event is occurring.
- c) Is there an ongoing socio-political crisis that could hinder mobilisation of resources or possible interventions?
- d) Are the affected areas accessible to responders? (Free of hostility)

Once the team has carried out the hazard, exposure and context assessments, a level of risk should be assigned. This process is called risk characterization. The hazard, exposure and context assessments help to estimate the potential consequences of the event. All types of consequences should be considered in

addition to the expected morbidity and mortality, long-term health consequences, and social, economic, environmental and policy consequences (Tables 1).

Table 1 Risk Assessment, Consequences, Response/Action Mapping

Risk Assessment	Consequences	What to Do
Low	<ul style="list-style-type: none"> • Minor impact for a small population or at-risk group; agent has low potential to cause morbidity/mortality • Limited disruption to normal activities and services • A small number of additional control measures will be needed that require minimal resources • Low increase in costs for authorities and stakeholders. 	Continue to monitor; repeat risk assessment if situation changes
Moderate	<ul style="list-style-type: none"> • Moderate impact as a large population or at-risk group is affected; agent has moderate potential to cause morbidity/mortality • Moderate disruption to normal activities and services • Some additional control measures will be needed and some of these require resources to implement • Moderate increase in costs for authorities and stakeholders 	Discuss with affected health facilities and relevant communities about needs
High	<ul style="list-style-type: none"> • Major impact for a small population or at-risk group; agent has potential to be highly pathogenic, highly transmittable, or has significant potential to disrupt travel/trade • Major disruption to normal activities and services • A significant number of additional control measures will be needed and some of these require significant resources to implement • Significant increase in costs for authorities and stakeholders 	Consider deployment (as requested) in consultation with affected health centre and relevant communities.
Very High	<ul style="list-style-type: none"> • Severe impact for a large population or at-risk group; agent is highly pathogenic, highly transmittable, new or emerging, or has significant potential to disrupt travel/trade 	Consider deployment and need for National support

	<ul style="list-style-type: none"> • Severe disruption to normal activities and services • A significant number of additional control measures will be needed and most of these require significant resources to implement • Serious increase in costs for authorities and stakeholders 	
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Session Summary:

In this session you have covered the following sub sessions:

Steps for EBS hotlines involves:

- Detection
- Triaging
- Verification
- Risk assessment

Risk characterization involves:

- Risk Assessment
- Consequences
- Response
- Action Mapping

Quiz

Please write **T** if the answer is True and **F** if the answer is False from the following statements:

1. Information for the hotline can be received through telephone calls, text messaging and in-person reports **T**
2. Duplicates means, the same signal reported by the same or different sources that have been registered and processed **T**
3. Effective communication in EBS Hotlines should be:
 - a. Service oriented
 - b. Community led
 - c. Exhibit emotional intelligence
 - d. Delayed responses

Session 4: Stakeholders' roles and responsibilities

Session Introduction: In this session, roles of EBS stakeholders' roles and responsibilities in EBS hotlines will be covered.

Session Content: The success of the hotline is based on the early detection and immediate notification of signals. The key stakeholders and respective roles within

the hotline workflow are shown in Table 3 Roles and Responsibilities for Hotline workforce

Table 3: Roles and responsibilities of the hotline event-based surveillance workforce

Workforce	Primary roles	Supportive roles
Hotline operators (may be located at the district, regional/province or national levels)	Use signals to identify possible public health threats Records signal Conducts triage Report the signal to Disease Surveillance Focal Person at the District level	Provide information needed Support risk assessment, investigation and response Participate in the sensitization meetings Participate in the review meetings
Disease Surveillance Focal Person at District level	Records signal received from the Data Analyst Triages and verifies the signal Records and reports the event to a higher level (e.g., District, Sub- County, National). Convene a multi-disciplinary team for risk assessment Provide feedback to the reporting party	Provide additional information for verification Provide additional information to the Risk Assessment team Mobilise community members to action Referral of community members and sick animals Supports district/national team during Risk Assessment Supports district/national team during response
Community, CHW supervisors, health facility surveillance focal person, district surveillance focal person, call centre operators	Support verification and provide feedback	Work with district team to assist risk assessment

Session summary:

- Key stakeholders for EBS hotline are hotlines operators, disease surveillance officers and the community
- There are primary and supportive roles for each EBS hotlines stakeholders

Quiz:

Tick the correct answers

Select the main roles of the hotline operators:

- Records signal ✓
- Conduct investigation of events
- Conducts triage ✓
- Conduct verification of signals
- Report the signal to Disease Surveillance Focal Person at the District level ✓

Session 5: Flow of Information in Hotline EBS

Session Introduction: This session is expected to covers flow of information for EBS hotlines.

Session content: This refers to the movement of public health data between the different levels of EBS. Timely, efficient, and secure information flows are a central factor in the performance of the decision-making process to respond to events. In Hotlines information initiates from community direct national/regional level (depending on level the hotline centre is located) and flows down to lower levels with a feedback loop in the reverse directions. Figure 4 illustrates information Flow through levels in Hotline EBS.

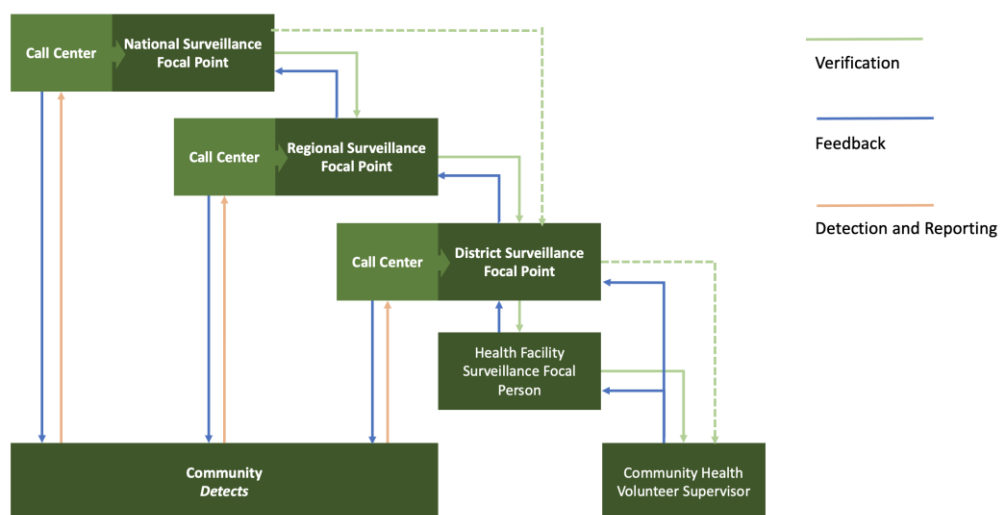


Figure 4 illustrates information Flow through levels in Hotline EBS

The health facility nearby, in collaboration with the intermediate team, sent a National response team to investigate. On further investigation it was determined that one of the young adults was not a resident of the village, but was being nursed at his uncle's place after a terminal diagnosis of oesophageal cancer. The other person was suspected to have peptic ulcers, which was confirmed after inspection of the medications that the patient used.

Session Summary:

In this session you have learnt:

- EBS flow of information refers to the movement of public health data between the different levels of EBS.

Post Quiz:

Tick all the right answers

A central factor in the performance of the decision-making process to respond to events involves:

- Timely reporting ✓
- Efficient responding ✓
- Secure information flows ✓
- Late detection

Pre and Post Knowledge Check Questions EBS Hotlines

Please write **T** if the answer is True and **F** if the answer is False from the following statements:

1. EBS Hotline refers to platform for reporting signals using direct messages (sms, whatsapp, twitter), calls and in person reporting **T**
2. EBS Hotline operator should triage, verify and record all signals detected **F**
3. Detecting a signal means identifying the occurrence of one of the predetermined signals designated by national public health authorities **T**
4. The proper methodology for messaging instructs the EBS hotline operator to greet the sender **T**.
5. Which of the following are the sources of EBS hotlines?
 - a. IDSR report **F**
 - b. Calls from the general public or health facility **T**
6. The following are requirement for establishing hotlines:
 - a. Motivation of communities to report using hotline number **T**
 - b. The hotline number should be long Toll-free number **-F**
 - c. The Hotlines responder should start by greeting and thanking the callers - **T**
 - d. For the purpose of confidentiality, calls should not be recorded **-F**
 - e. Automated questions or responders can collect information from the sender **-T**
 - f. Information about the sender should not be collected for further communication **-F**

- g. Data should be not registered directly in the alert logbook according to the pre-defined list of signals for the country- **F**
- h. Effective communication is a key component to establishing a successful hotline **T**
- i. Triaging confirms a presence of an event **F**
- j. Risk assessment is the step after the verification of an event **T**

Tick the correct answer

7. The following are key sources of hotlines
 - a. Calls ☒
 - b. Messaging ☒
 - c. In-person reporting ☒
 - d. Whatsapp ☒
 - e. IDSR report
 - f. Signal register
8. Verification aims at:
 - a. Confirming the validity of the signal ☒
 - b. An essential step in establishing the validity of the event
 - c. A is true
 - d. B is true
9. Select the main roles for community health worker in EBS hotline
 - a. Convene a multi-disciplinary team for risk assessment
 - b. Provide feedback to the reporting party
 - c. Support verification ☒
 - d. Provide feedback to community ☒
10. Hotlines should be established at the:
 - a. National ☒
 - b. Regional/ provincial ☒
 - c. district levels ☒

Module 6: EBS Monitoring and Evaluation

Introduction

The implementation of a monitoring and evaluation (M&E) plan for event-based surveillance (EBS) systems provides timely information on whether a system is functioning properly and meeting targets, while providing data to guide continuous performance improvement. An EBS M&E plan should ideally describe why, how, and when changes towards a desired public health surveillance goal.

Module content:

This module consists of following sessions:

Session 1: Monitoring and Evaluation Framework in EBS

Session 2: Indicators used in EBS

Session 3: Conduction of EBS Monitoring and Evaluation

Module Duration: This module will take xxx minutes to complete

Learning Objectives

By the end of this module you will be able to:

- Explain Logical Monitoring and Evaluation Framework in EBS
- Describe indicators used in EBS Monitoring and Evaluation
- Explain how EBS Monitoring, and Evaluation can be conducted

Definition of terms

EBS Monitoring is the continuous tracking of planned surveillance activities. Monitoring the performance of the surveillance system involves identifying areas that require strengthening, acting for improvement and monitoring progress

Evaluation is a periodic assessment of whether the objectives have been achieved. Perform evaluation of event-based surveillance system annually, to measure progress against selected program targets

Indicators: An indicator is a specific, observable and measurable characteristic that can be used to show changes or progress a programme is making toward achieving a specific outcome.

Session 1: Logical Monitoring and Evaluation Framework in EBS

There are different models that can be used to assess different programmes.

It is suggested to the use a logical framework termed the results chain, or pipeline, model (figure 1) to track inputs, activities, outputs, outcomes, and impacts of a system. EBS programmes can be assessed routinely on how they are conducted

(inputs & activities); their level of performance (outputs); and their achievements (outcomes & impact).

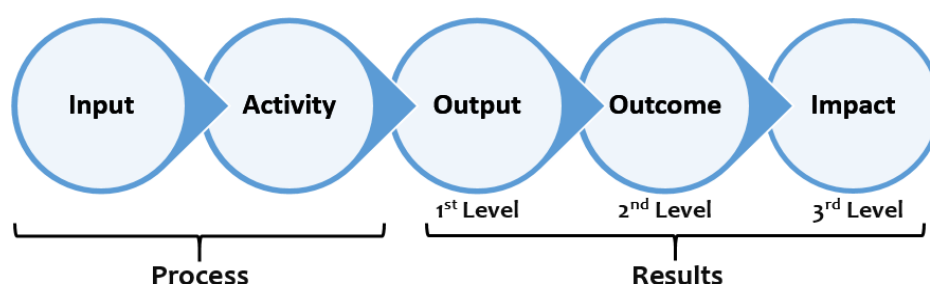


Figure 1: The five basic levels of results chain model

A results chain logic is a diagrammatic framework that hierarchically illustrates how a project or program actions taken at one level will lead to desired results at a higher level, over a defined period of time. It is a diagrammatic framework of the cause-and-effect logic for achieving a project/program objective over a defined period. The model uses a hierarchical causal logic that if lower-level desired results are achieved, then the next higher-level desired results can be achieved, if the critical assumptions hold. The logic is that specific resources (inputs) are required to undertake program tasks (activities) whose accomplishments (outputs) bring about system changes (outcomes) that eventually lead to an overall public health (impact).

This causal logic explains the relationships between actions and results through a series of “if-then” statements that describe the theory of project and program developments underlying those relationships. The linkage design is that results at the same lower level are considered necessary individually and jointly sufficient to achieve the level above them. It explains the links between what was done and what was achieved by demonstrating which actions will contribute to, or influence which results. The overarching questions are: Will the resources allocated deliver the desired results? Has there been measurable progress in the agreed results? The inputs, activities, outputs, outcomes, and impacts presented in a hierarchical conceptual diagram constitute the five basic levels of results chain logic (Figure 1). Each of these levels has a set of actions (or results of a lower level) together with the critical assumptions yields the desired results.

a. Inputs: These are all the resources required for the implementation of the EBS program. The inputs include implementation documents (legal frameworks, policies, guidelines); curriculum and tools; human resource, time, finance, materials, infrastructure, stakeholders (communities, public health and healthcare workers, national and sub-national leadership, multi-sectoral partners) and other resources.

b. Activities: Activities involve any tasks, actions, processes, or procedures undertaken in the course of the EBS program implementation through the utilisation of the inputs. Activities rely on a well thought out strategy for the successful EBS implementation. They include tasks such as planning meetings, procurement of supplies, training and sensitizations, and the rollout such as the

EBS processes (detection, reporting, triaging, verification, risk assessment, and response), support supervision, coordination, and operation support.

c. Outputs: Outputs are the immediate gains of activities during the EBS program implementation activities.

d. Outcomes: These are short-term and medium-term direct changes resulting from the EBS implementation. These include EBS implementation outcomes are demonstrable changes in the promptness of detection of events, timeliness in notifications, and rapidity in response to acute threats to public health.

e. Impacts: The impacts are the overall long-term improvements in health outcomes attributed to the EBS program implementation. The impacts are aligned to the EBS program goals and may be due to the implementation outcomes only or in combination with the outcomes of other health programs. Impacts include reduction in public health emergencies and or reduction in mortalities, disabilities, and morbidities due to acute public health threats.

Session summary

In this session you have learned the use of Logical M & E Framework to track desired results in EBS implementation.

Quiz

1. EBS monitoring is the continuous tracking of planned surveillance activities to measure progress against selected program targets. (True/False)
2. Regarding Logical Framework conducting EBS stakeholders meeting is an activity. (True/False)
3. The logic is that specific inputs are required to undertake activities whose outputs brings about outcomes that leads to impacts (True/False)

Session 2: Sample EBS Indicators

Introduction

In this session you will learn various attributes with respective Indicators

Session Content

There are twelve attributes which are measured by indicators as shown in the table below:

Table: Attributes and EBS indicators:

Attribute	Indicators
Timeliness	Time from event start to detection
	Time from signal detection to reporting (within 24 hours)
	Time from signal detection to verification (within 24 hours)
	Time from signal detection to response
	Time from event verification to risk assessment (within 24 hours)
	Time from event verification to response
Data quality (accuracy and completeness)	Analysis and summaries of EBS data are completed and made available within specified timeframes and are free of errors
Sensitivity	Proportion of events detected through EBS of all reported events in a specific period of time
Specificity	Proportion of detected signals that are verified as genuine public health events/threats
Programmatic	Number of MS supported with training/adaptation (EBS, TOT, EMS)

Indicator Type	Sample indicators
Input indicators (measures resources needed for the implementation of EBS or an EBS-related activity)	<ul style="list-style-type: none"> ● Number of staff and key stakeholders to implement EBS at each level ● Amount of financing for event-based surveillance implementation ● Number and type of resources provided
Process/activity indicators: (measure whether planned activities took place)	<ul style="list-style-type: none"> ● Event-management system established ● Existence of EBS signals for all sources/sites ● Technical guidelines, SOPs, and training materials are available for use ● Equipment and reporting tools for EBS are

	procured and available
Output indicators: (measures the immediate results of EBS-related activities)	<ul style="list-style-type: none"> ● Availability of EBS implementation work plan and signal definitions ● Personnel trained and equipped ● Signals reported, triaged, and verified ● Surveillance units, health facilities and communities that establish EBS ● Monitoring indicators reported ● Evaluation site visits conducted
Outcome indicators: (measure the quality of the surveillance system and the extent to which surveillance and early warning and response (EWAR) objectives were achieved)	<ul style="list-style-type: none"> ● Utility of EBS for surveillance workforce, community and leadership stakeholders ● Events assessed for risk and responded to ● Surveillance staff capable of analyzing and interpreting EBS data for early warning surveillance ● EBS data analyzed into timely and accurate summaries ● Sensitivity ● Positive predictive value (PPV)
Impact indicators: (measure the improvement of overall health that can be attributed to EBS)	<ul style="list-style-type: none"> ● Timely event detection, reporting, and response ● EBS data used to initiate and inform outbreak response & control efforts

Summary

In this session you have learned various attributes with respective Indicators used in EBS.

Quiz

Matching Items

Question	Attributes	Answer	Indicators
1	Data quality (accuracy and completeness)	C	A: Proportion of detected signals that are verified as genuine public health events/threats
2	Sensitivity	B	B: Proportion of events detected through EBS of all reported events in a specific period of time

3	Specificity	A	C: Analysis and summaries of EBS data are completed and made available within specified timeframes and are free of errors
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Session 3: Conducting EBS Monitoring and Evaluation

In this session you will learn how EBS Monitoring and Evaluation are conducted

EBS Monitoring

EBS can be monitored through:

- Supportive supervisions conducted regularly (Monthly and Quarterly) to the regions, districts, health facilities and Community Health Volunteers and other key informants depending on availability of resources and demands.
- Quarterly IDSR Expert Group evaluation meetings
- Monthly data analysis and interpretation done by the Health Care Workers
- Quarterly meetings between Health Care Workers and Community Health Volunteers convened by the Health Care Workers' supervisor conducted to receive C-EBS data activity reports and discuss experiences, challenges, lessons learnt
- Health information or feedback shared by Health Care Workers to the lower levels

EBS Standard data collection tools will include; Alert register, Hotline/Media Alert Logbook (Annex IV), Risk Assessment tool, outbreak investigation reports, Supervisory reports from councils and regions

EBS Evaluation

EBS Evaluation is a periodic assessment of whether the objectives have been achieved. This can be performed annually, to measure progress against selected program targets. At least two events per year should be evaluated from notification to confirmation, assessment, and response.

At each stage people involved should be interviewed and performance of the EBS system assessed and the recommendations made. A team consisting of relevant from Ministry of Health, relevant stakeholders and partners should be formed to conduct evaluation. Surveillance attributes such as usefulness, positive predictive value, representativeness, and flexibility should be used to evaluate EBS performance. Use the results of the evaluation as an input for planning for the following year's activities. Analyse the monitoring and evaluation data after collection (person, place, and time).

- What do the results tell you?
- How has the performance of each village/street (community)/facility changed across time? How do communities/facilities compare to each other?
- Are there other ways to look at the data

Summary

In this session you have learnt how EBS monitoring and evaluation are conducted

Quiz

1. EBS Evaluation is the continuous tracking of planned surveillance activities to measure progress against selected program targets. (True/False)
2. Signal Register are sources of data Monitoring and Evaluation (True/False).

End of Module Questions

1. Timeliness can be measure by the time from event verification to risk assessment within 24 hours (T/F)

Matching item

	Sample indicator	answers	Indicator type
2.	Utility of EBS for surveillance workforce, community, and leadership stakeholders	B	A: Output indicators
3.	EBS data used to initiate and inform outbreak response & control efforts	E	B: Outcome indicators:
4.	Signals reported, triaged, and verified	A	C: Process/activity indicators
5.	Existence of EBS signals for all sources/sites	C	D: Input indicators
6.	Amount of financing for event-based surveillance implementation	D	E: Impact indicators

7. Arrange the following basic level of result chain model in chronological order
 - a. Inputs 1
 - b. Output 3
 - c. Activity 2
 - d. Impact 5
 - e. Outcome 4

8. The following are the indicators used to measure EBS sensitivity.
 - a. Proportion of detected signals that are verified as genuine public health events/threats
 - b. Proportion of events detected through EBS of all reported events in a specific period
 - c. Time from signal detection to response
 - d. Number of MS supported with training/adaptation (EBS, TOT, EMS)

9. Write True or False against each of the following regarding EBS Monitoring and evaluation.
 - a. Monitoring and evaluation are carried out concurrently. False
 - b. Monitoring the performance of the surveillance system involves identifying areas that require strengthening, taking action for improvement and monitoring progress. False
 - c. Evaluation is a periodic assessment of whether planned activities have been implemented. False
 - d. Evaluation of EBS can be performed on daily basis. False

10. Write True or False against each of the following regarding Logical framework in EBS.
 - a. Conducting EBS stakeholders meeting is an activity. True
 - b. Increased promptness of alert response is an output. False
 - c. Decreased number of deaths due to epidemic prone disease is an outcome False
 - d. Procurements of supplies in one of the inputs. False
 - e. Increased timeliness of disease notification is an impact. False

11. A team consisting of relevant from Ministry of Health, relevant stakeholders and partners should be formed to conduct evaluation. (True/False).

12. The impacts are the overall Short-term improvements in health outcomes attributed to the EBS program implementation (True/False)

7.1. Annex 1: Signal Log and/or Register Book

Variables	Response																								
Source of Information																									
(a) Source: CBS, HEBS, Media Scanning, Hotline																									
(b) Reporter Info: Employee at national team, community health volunteer, health-care worker etc.																									
(c) Date and Time: of detection/receiving signal (DD/MM/YYYY and HH:MM)																									
(d) Reference/Contact: Link, Contact name and Phone number																									
Signal Information																									
(a) Signal Type: Human, Animal, Environment																									
(b) Signal: From the country's list of signals																									
(c) Location: Details about the location that can follow the administrative levels																									
(d) Date of start: When did this start																									
(e) Cases: Number of cases																									
(f) Deaths: number of deaths																									
(g) Description: narrative text for any further information, including any response activities (by community or health																									
Follow-up activities																									
(a) Follow-up: Discard, Monitor, Verify Date-Time: DD/MM/YYYY HH:MM	<table border="1"> <thead> <tr> <th colspan="4">DISCARD</th><th colspan="4">MONITOR</th><th colspan="4">VERIFY</th></tr> </thead> <tbody> <tr> <td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td><td>H</td><td>H</td><td>M</td><td>M</td></tr> </tbody> </table>	DISCARD				MONITOR				VERIFY				D	D	M	M	Y	Y	Y	Y	H	H	M	M
DISCARD				MONITOR				VERIFY																	
D	D	M	M	Y	Y	Y	Y	H	H	M	M														
(b) Sent for verification: Yes/No Date-Time: DD/MM/YYYY HH:MM	<table border="1"> <thead> <tr> <th colspan="6">YES</th><th colspan="6">NO</th></tr> </thead> <tbody> <tr> <td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td><td>H</td><td>H</td><td>M</td><td>M</td></tr> </tbody> </table>	YES						NO						D	D	M	M	Y	Y	Y	Y	H	H	M	M
YES						NO																			
D	D	M	M	Y	Y	Y	Y	H	H	M	M														
(c) Risk Assessment: Low/Moderate/High/Very High	<table border="1"> <thead> <tr> <th>Low</th><th>Moderate</th><th>High</th><th>Very High</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td></tr> </tbody> </table>	Low	Moderate	High	Very High																				
Low	Moderate	High	Very High																						
(d) Sent to Response: Yes/No Date-Time: DD/MM/YYYY HH:MM	<table border="1"> <thead> <tr> <th colspan="6">YES</th><th colspan="6">NO</th></tr> </thead> <tbody> <tr> <td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td><td>H</td><td>H</td><td>M</td><td>M</td></tr> </tbody> </table>	YES						NO						D	D	M	M	Y	Y	Y	Y	H	H	M	M
YES						NO																			
D	D	M	M	Y	Y	Y	Y	H	H	M	M														
(e) Response Status: Not Started, Ongoing, Completed Date-Time: DD/MM/YYYY HH:MM	<table border="1"> <thead> <tr> <th colspan="4">NOT STARTED</th><th colspan="4">ONGOING</th><th colspan="4">COMPLETED</th></tr> </thead> <tbody> <tr> <td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td><td>H</td><td>H</td><td>M</td><td>M</td></tr> </tbody> </table>	NOT STARTED				ONGOING				COMPLETED				D	D	M	M	Y	Y	Y	Y	H	H	M	M
NOT STARTED				ONGOING				COMPLETED																	
D	D	M	M	Y	Y	Y	Y	H	H	M	M														

7.2. Annex 2: Verification Tool

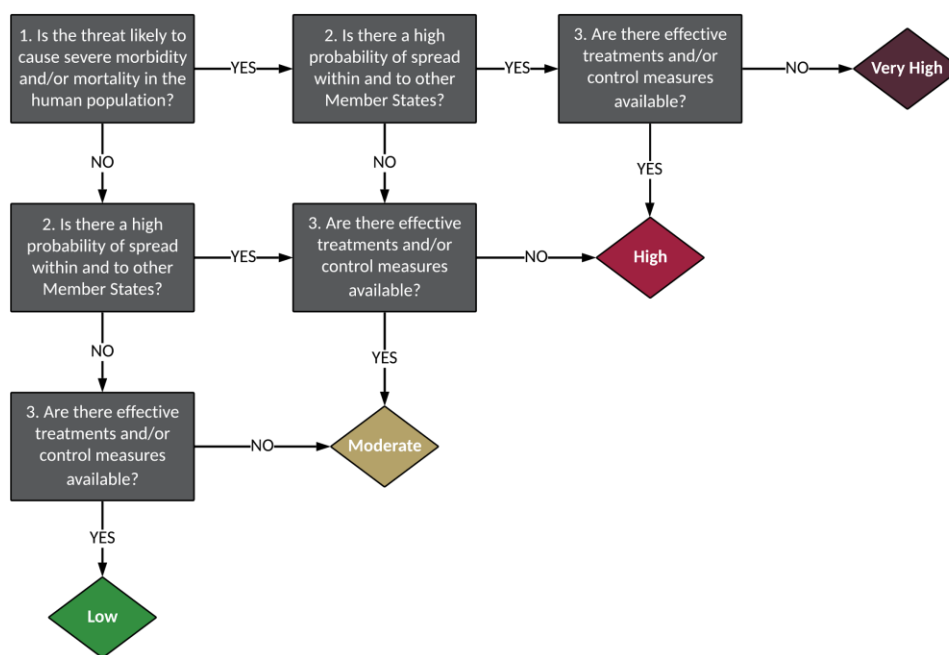
Discard	Confirm as Event
Report is a hoax or a false rumor Report does not meet pre-defined signals	Information is accurate and true, and the signal meets one or more pre-defined signals Information has been reported by an official source or sources

Discard, if	Confirm as an event if
Signal: Two or more persons presenting with similar severe illnesses in the same setting (e.g., household, workplace, school, street) within one week	
There is only one person presenting with illness The persons present with dissimilar signs and symptoms There is no temporal association, and >1 week separates the patients' illness The persons presenting with similar symptoms reside in different settings that are physically well-separated	There are two or more persons presenting with similar signs and symptoms who live or work in the same setting The ill persons had an opportunity for exposure or close contact with one another The persons' illness requires hospitalization One or more persons has died There is a common source of exposure
Signal: Unexpected large number of deaths of poultry, livestock, other domestic <u>animals</u> or wildlife	
The number of animal deaths is what is normally expected There is a reasonable explanation for the animal deaths	The number of animal deaths is not what is usually expected There are multiple clusters/groups of animal deaths There is no explanation for the animal deaths
Signal: Severe illness of a healthcare worker after exposure to patients with similar symptoms	
The ill healthcare worker did not have exposure to patients with similar symptoms The healthcare worker's illness does not require hospitalization The healthcare worker did not have exposure to patients	The ill healthcare worker had exposure to patients with similar symptoms There are multiple clusters/groups of severely ill healthcare workers with exposure to patients with similar symptoms The healthcare workers' illness requires hospitalization One or more patients have died One or more healthcare workers have died
Signal: One or more hospitalized patients with unexplained severe illness, including failure to respond to standard treatment	
The patient is not severely ill (i.e., does not require hospitalization) There is a reasonable explanation for the patient's illness The patient is responding to standard treatment	The patient is severely ill (i.e., requires hospitalization) There are multiple clusters/groups of severely ill patients and/or deaths with similar symptoms There is no explanation for the patient's illness The patient is not responding to standard treatment One or more patients have died

7.3. Annex 3: Event Register

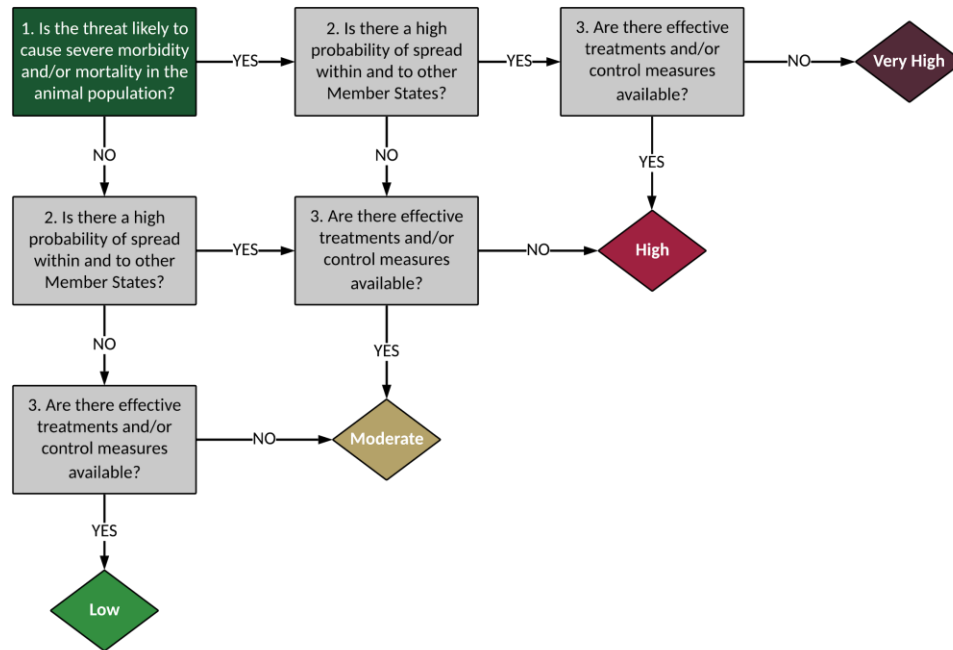
Outbreak/Event Report and Assessment Form	
Information about source of report	
What is your name ?	What is your phone number ?
What is your position ?	
If report is second-hand information, what is the original source of information ? (Name, contact information)	
Location of event	
What is the name of the village (specific location where the event took place)?	
What is the district ?	
What is the province ?	
Description of the event	
What do you want to report (what happened/who is affected/what are the symptoms)?	
Number of cases among children :	Number of deaths among children :
Number of cases among adults :	Number of deaths among adults :
When did the problem begin ?	
Is the problem ongoing ? YES/NO	
What do you think is the cause of this event?	
What are the control measures being implemented?	
What support do you need from us?	
Is there any other information you wish to share?	
Thank you.	
<i>For office use only:</i>	
ASSESSMENT – If any of this conditions are met, a response is required	
Is the disease unusual/unexpected in this community?	YES / NO
Could the disease have an impact on international travel or trade?	YES / NO
Could the suspected disease cause outbreaks with high potential for spread (e.g. cholera, measles)?	YES / NO
Is there a higher than expected mortality or morbidity from the suspected disease?	YES / NO
Is there a cluster of cases or deaths with similar symptoms (e.g. bloody diarrhoea, haemorrhagic signs and symptoms)?	YES / NO
Could the disease be caused by a contaminated, commercially available product (e.g. food item)?	YES / NO
Is there a suspected transmission within a health care setting (i.e. nosocomial transmission)?	YES / NO
If the event is a non-human event (e.g. animal disease or chemical spill), does the event have known or potential consequence for human health?	YES / NO
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Name of person filling out this form: Date: </div>	

7.4. Annex 4: Human Risk Level Algorithm



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.

7.5. Annex 5: Animal Risk Level Algorithm



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**.

7.6. Annex 6: CHW Notebook

General Information	
Name	
Telephone	
Name of CBS Supervisor:	
Telephone	
Instructions	
<p>When you detect one or more signals in your community, please report immediately to your local-level supervisor. Use this notebook to record the following information and communicate it to the local-level supervisor:</p>	
Date the signal began	
Date the signal was detected	
Description of the signal, including number of people/animals affected	
Location of the signal	

Signal to be reported	Insert images
Two or more persons presenting with similar signs/symptoms from the same community, school, or workplace, within one week	
A cluster of unexplained deaths of animals within one week	
Any person presenting with new or rare signs/symptoms	
Any person with fever and rash	

7.7. Annex 7: CEBS Register for Local Supervisor

Date						Name of local-level supervisor								
Health Facility						Name of Administrative level								
#	Date identified	Date reported	Name of person reporting	Source of report	Tel # of reporting person	Location of signal	Code	# of people affected	Recent travel history Y/N	If travelled, where?	Verification		Date verified	Date reported
											True	False		

This Signal Register may be completed by community event-based surveillance (CEBS) supervisors upon receiving reports of signals detected at the community-level.

TABLE INFORMATION KEY

1. 'Date identified' is the date that the person reporting became aware that a person (or persons) showed signs/symptoms of one or more of the signals. Please enter the date in the DD-MM-YYYY format.

2. 'Date reported' is the date that the reporter informed a local-level supervisor about the signal. Please enter the date in the DD-MM-YYYY format.
3. 'Source of report' is the individual reporting to the local-level supervisor. A source may be a community health worker (CHW), school teacher, traditional healer, community resident, healthcare professional, among others.
4. Please state the location of the patient's home, hospital, or place where the incident is occurring, as precisely and exactly as possible. If an address is available, please record it. If an address is not available, please describe the relationship between the patient's location and a landmark. If necessary, please describe the appearance of the setting. For example, a patient's home might be the brown house with a red door that is four buildings away from a specific church.
5. Please use the following codes to show the type of signal that is reported:

Code	Example signals
1	Two or more persons presenting with similar signs/symptoms from the same community, school, or workplace, within one week
2	A cluster of unexplained deaths of animals within one week
3	Any person presenting with new or rare signs/symptoms
4	Any person with fever and rash

6. 'Number of people affected' is the number of individuals who show signs of the signal being reported. Any deaths should be included in this value.

7. 'Reported by multiple sources?' asks the local-level supervisor to state whether the signal has been reported by other individuals at any level of the health system.
8. 'Any recent travel history?' asks the local-level supervisor to state whether or not the person(s) affected by the signal have travelled to another community, sub-national jurisdiction, or country in the 21 days preceding identification of the signal.
9. 'If travel history, where?' asks the local-level supervisor to state the location of travel of the person(s) affected by the reported signal. More than one location may be stated here.
10. 'Signal Verification' asks the local-level supervisor to authenticate the report and record the date of report authentication. If the information has been reported by a credible source in the community (e.g., CHW, village leader, etc.), and/or by multiple sources, and meets one or more pre-defined signals, it is an event. If the report does not meet these criteria, it is false. All events should be communicated immediately (within 24 hours) to the sub-national jurisdiction.
11. 'Date signal verified' is the date that the local-level supervisor verified the signal. Please enter the date in the DD-MM-YYYY format.
12. 'Date event reported' is the date that the local-level supervisor communicated events (i.e., signals verified as true) to the local-level. Please enter the date in the DD-MM-YYYY format.

7.8. Annex 8: CHW Monthly Signals Logbook

Instructions: This form is a line listing of all the diseases/events/signals identified during the month. It is completed by the CEBS focal person and submitted monthly to the nearest health facility/sub-district surveillance focal person every month.

Community Event-based surveillance Suspected Diseases and Public Health Events Monthly Log Sheet						
District				Sub-district		
Community				Date		
Serial Number	Signal	Date	Location	Number affected	Number died	Action Taken

NB: Countries should adopt this form such that it is used to capture and notify/report the country's priority diseases (indicator-based surveillance) and events/signals (event-based surveillance) occurring at the community level. This can be carbonated in the form of a notebook with a copy sent to the nearest health facility and copy kept at community with the CEBS focal person.