ANNEX VI: MODEL NARRATIVE AND FINANCIAL REPORT

NARRATIVE REPORT TEMPLATE

Title of Action	Strengthening surveillance, disease intelligence, and health information exchange
Period covered by the Report	25th November 2019 to 31st December 2021

Technical report
Organization: SACIDS Foundation for One Health (SACIDS) – formerly Southern Africa Centre for Infectious Disease Surveillance

1. OBJECTIVES AND PURPOSE

(i) To strengthen event-based surveillance systems in the African Union Member States
(ii) To implement core activities of Africa Centres for Disease Control and Prevention's strategy to address antimicrobial resistance

Start-up preparations

- The project contract agreement was signed between the Africa Centres for Disease Control and Prevention and Sokoine University of Agriculture for and on behalf of SACIDS Foundation for One Health

- A sub-recipient activity-based agreement was signed between SACIDS Foundation for One Health and the East, Central and Southern Africa Health Community

- A roster of different subject matter experts and service providers from Eastern, Central and Southern Africa was established. They included epidemiologists, event-based surveillance specialists, antimicrobial resistance specialists, training specialists, reviewers, editors, monitoring and evaluation specialist, communication specialists, translators, and interpreters.

- Focal persons were identified and engaged at country level in the Eastern and Central Regional Collaborating Centres of Africa CDC. They were mainly responsible for facilitation of the project implementation at country level including engagement of key stakeholders; facilitation of project introduction and advocacy, event-based surveillance situation analysis, validation and adaptation of the training materials, and training of key stakeholders.

2. MAIN RESULTS

The main results during the period under report are:

- Event-based surveillance (EBS) situation analysis conducted in Eastern and Central Regional Collaborating Centres (RCC) of Africa Centres for Disease Control and Prevention (Africa CDC)
- Four types of EBS training modules, i.e. hotline, media scanning, facility and community, developed
- The developed training modules have been validated by subject matter experts from Eastern and Central RCC
- Power point slides, participants' and facilitators' guide developed as supportive documents to enhance delivery of the training modules
- The training modules and supportive documents translated and repackaged into main Africa Union languages i.e. English, French, Portuguese and Arabic
- A two-day COVID-19 orientation module for Community Health Workers developed
- Technical support provided to establish/strengthen EBS in Uganda, Cameroon, Republic of Congo and Tanzania
- The developed training manual has been adapted in Lesotho, Malawi and Zambia
- Monitoring and Evaluation plan has been developed to help the African countries monitor efficacy and efficiency of their EBS implementation

3. SUMMARY

Objective (i): To strengthen event-based surveillance systems in the African Union Member States

Output 1: Develop training materials, including for training-the-trainer, based on Africa CDC technical guidelines for EBS

Activity 1.1: Develop event-based surveillance (EBS) training modules for different levels of health systems

- We have developed four types of event-based surveillance (EBS) training modules i.e. community, health facility, media scanning and hotline packaged as Africa CDC EBS Training Manual.
    - To facilitate delivery of the training modules to different beneficiaries, we have developed and included participants comfort level check and Power point slides
- To enhance operationalization of the Africa CDC Partnership to Accelerate COVID-19 Testing (PACT) Initiative, we have developed a two-day COVID-19 orientation training module for community-level EBS (including contact tracing).

Activity 1.2: Validation of the developed EBS training materials

- After initial piloting of the modules in few Member States, the training materials were validated by the subject matter experts from Eastern and Central Collaborating Centres of Africa CDC and development partners. The objectives of the exercise were to review and incorporate inputs made by Member States during

piloting phase; to validate the content of the training manual and align key terminologies with those used by partners and Member States; to validate standardized PowerPoint presentations for the modules; and to initiate establishment of a continental subject matter expert Community of Practice for EBS.

Activity 1.3: Translation and repackaging of the training modules to the major Africa Union languages

To enhance their relevance and uptake by the Member States, the developed EBS training modules and supporting documents have been translated and repackaged into the major African Union languages i.e. English, French, Portuguese and Arabic.

Output 2: Conduct training of trainers on EBS in conjunction with the various RCCs.

Activity 2.2: Supporting 2 to 5 countries in the Eastern and Central RCC to establish/strengthen EBS

We have supported Uganda, Cameroon, Republic of Congo and Tanzania.
In Uganda, a total of 44 key stakeholders from the national level were oriented to the 3rd Edition of IDSR, refine the IDSR materials and build a pool of trainers for countrywide roll out of the technical guidelines. In Cameroon, a total of 19 stakeholders from the national and sub-national levels were involved in the adaptation to training materials and trained as a Trainer of Trainers. A total of 15 district surveillance focal points and 55 village health volunteers were trained on EBS. In Republic Congo, adaptation of the training materials involved a total of 18 stakeholders responsible for disease surveillance and response in the country. A total of 29 individuals from the national and sub-national levels were trained as training of trainers. In Tanzania, the adaptation of training modules and training of trainers involved six participants from the national and regional levels. A total of 20 Health Care Workers (who were also the health facility IDSR focal persons) and 60 Community Health Workers were trained on EBS.

Output 3: Provide focused technical support to selected countries to initiate EBS consistent with Africa CDC guidelines.

Activity 3.1: Conduct situation analysis of event-based surveillance in the central and Eastern Regional Collaborating Centres (RCC) of Africa CDC

A situation analysis was conducted to assess the status of implementation of event-based surveillance in Eastern and Central Regional Coordinating Centres (RCC) member states of African Union. The exercise targeted the 23 member states in the Eastern and Central Regional Collaborating Centres (RCC) of Africa CDC. A tool for collecting data in countries was developed to be administered in the official languages (of English, French, and Portuguese) of the targeted countries. Data were filled and submitted electronically. Of the 23 Member States requested to participate in the situation analysis exercise, 14 (64%) responded. The Member States from Central RCC were Central Africa Republic, Republic

of Congo, Cameroon, Sao Tome and Principe and Burundi. Those from Eastern RCC were Comoros, Kenya, Madagascar, Rwanda, Somalia, South Sudan, Tanzania and Uganda.

We found that policy and guidance documents on EBS were available in 12 (80%) and 10 (83%) countries, respectively while focal persons for EBS implementation were in place in 10 (83%). The scope of EBS included use of hotlines (71%); media scanning (43%); standard operating procedures (SOPs) for reporting, triage, verification and risk assessment were available in 36% of countries at intermediate level; 57% at health facility level; and in 64% at community level. There was coordination between ministries responsible for public health with animal health in 93% of countries, with environmental health in 71% and customs and immigration in 36% of the assessed countries. All countries were implementing IDSR; 64% had adopted the 3rd edition of IDSR strategy, and 43% had adopted the Africa CDC framework for EBS implementation.

Training materials for EBS were available in 36% of the countries, EBS curriculum in 43%, data collection tools in 93%. In all, 29% of the countries had received some form of assistance for EBS implementation from Africa CDC through the RCCs. The majority (79%) of the countries had identified potential sources of EBS data, 71% had some system for capturing and reporting data, 29% had SoPs for reporting and feedback and 79% had tools for rapid reporting of data.

We observed further that half (50%) of the countries had operational call centres; 83% had public health emergency operational centres (PHEOC), 80% of PHEOCs could analyse both IBS and EBS data. The countries expressed the need for support in developing the EBS strategy (86% of countries); rolling out EBS (93%); training of national trainers (86%) and developing signals for identification of potential acute health events (79%).

Activity 3.2: COVID-19 and Community Health workers; a two-day orientation module
In collaboration with the UK Public Health Rapid Support Team and the US CDC, we developed a COVID-19 orientation module to empower Community Health Workers (CHWs) in the Member States a rapid orientation to work in the COVID-19 response. The module focuses particularly on CHW tasks in the TRACE component of Partnership to Accelerate COVID-19 Testing (PACT) initiative as well as how they will support the TEST and TREAT components.

Activity 3.3: Development of a Monitoring and Evaluation tool to help countries monitor progress in the implementation of EBS nationwide
After having developed and validated the EBS training modules with inputs from the findings of EBS situation analysis, we developed the EBS monitoring and evaluation (M&E) plan to help the Africa Union Member States implement EBS activities efficiently and in a systematic manner, within the context of the Africa CDC EBS and One Health Frameworks and EBS training modules. The structure of the plan includes performance (verifiable) indicators (output and outcomes) for EBS implementation for different types of EBS i.e. community, health facility, media scanning and hotline, resource mobilization plan, data collections strategies, and analysis plan for M&E. Others include sources of data for each indicator, methodologies for their measurements and who would be responsible for each of them, description of baseline measures and associated time-metrics to serve as

benchmark values for monitoring and evaluation of EBS implementation and monitoring and evaluation strategy.

(ii) To implement core activities of Africa Centres for Disease Control and Prevention's strategy to address antimicrobial resistance

Specific outputs
Output 1: Training for civil society representatives from Eastern and Central RCC

- This meeting took place in Nairobi on 20th and 21st February 2020
- Engaged and supported ReAct Africa, on behalf of Africa CDC, to organise and conduct a three-day virtual workshop for CSO and Media, from 10th to 12th November, 2021. The workshop theme was 'CSOs and media participation in the regional agenda to address AMR, including discussions for an effective World Antimicrobial Awareness Week (WAAW) 2021)

Output 2: Validation of African Union model public health law and legal framework

- Facilitated translation of Africa CDC IPC Legal Framework, Standards, Policy Brief and the Background Document in all the four languages of the AU
- Provided logistic support during the High-Level Advocacy Meeting for the Infection Prevention and Control and Biosafety and Biosecurity of the Africa Centers for Disease Control and Prevention conducted on 28th and 29th October 2021 in Dar es Salaam, Tanzania

Output 3: Systematic review of policies on antimicrobial use in agriculture/food production in Africa

- Developed a policy brief on Antimicrobial Use and Resistance in Agriculture and Food Production Systems in Africa
- Published a paper: Mshana SE, Sindato C, Matee MI, Mboera LEG. Antimicrobial Use and Resistance in Agriculture and Food Production Systems in Africa: A Systematic Review. Antibiotics (Basel). 2021 Aug 13;10(8):976. doi: 10.3390/antibiotics10080976. PMID: 34439026; PMCID: PMC8389036.

4. ACTIVITIES UNDERTAKEN AND PROGRESS MADE DURING THE PERIOD

Objective (i): To strengthen event-based surveillance systems in the African Union Member States

Output 1: Develop training materials, including for training-the-trainer, based on Africa CDC technical guidelines for EBS
Activity 1.1: Develop event-based surveillance (EBS) training modules for different levels of health systems

The International Health Regulations requires the countries to develop capacities on early detection, timely reporting and prompt response to public health emergencies. The traditional Indicator-Based Surveillance (IBS) that is widely implemented by many

countries, does not efficiently enhance early warning and response to public health emergencies as the strategy captures health information predominantly from only the health facilities. To address the challenges and enhance capturing of the signals for disease outbreaks and other public health events, at source, before they could grow up and spread further, the Africa Centres for Disease Control and Prevention (Africa CDC) developed different frameworks including event-based surveillance (EBS) framework and One Health framework. To help the African countries operationalize the frameworks, different types of EBS training modules have been developed and repackaged as an EBS training manual.

The main objectives of the manual are to help countries operationalize EBS at different levels of health system; to impart knowledge, understanding, and application of EBS in identification, notification, and response to health risks; to enhance multisectoral collaboration in public health surveillance; and to act as a reference resource for the countries.

Four types of EBS training modules (English version) included in the manual are community, health facility, media scanning and hotline packaged as Africa CDC EBS Training Manual (Appendix 1). We provide in the manual a brief description about training methodology that can be adapted by the Member States, including use of power point slides, brainstorming, group work and discussions, case studies, teach-back approach, participants' comfort level check and essential supplies to facilitate delivery of the training. We also have included in the training manual annexes for: signal log book, verification tool, event register, risk level matrix, risk level algorithm, Community Health Volunteer (CHV) notebook, Community EBS register for local supervisor, and CHV monthly signal logbook.

The developed training modules were subjected to internal and external review process that involved the subject matter experts from different organizations/institutions from within and beyond Africa.

To facilitate delivery of the training modules to different beneficiaries, we have included the following supportive materials:

- **Participants comfort level check**
    - Pre-and pots-training tests (Appendix 2)
- **Power point slides for:**
    - International Health Regulation, Integrated Disease Surveillance and Response and Africa CDC EBS framework (Appendix 3)
    - Overview of public health surveillance (Appendix 4)
    - Disease transmission and ethics (Appendix 5)
    - EBS concept and methods (Appendix 6)
    - Key stakeholders in EBS (Appendix 7)
    - One health approach in EBS (Appendix 8)
    - Steps of establishing EBS (Appendix 9)
    - EBS technical working group (Appendix 10)
    - Steps of EBS process (Appendix 11)
    - EBS processes-risk assessment (Appendix 12)
    - Monitoring and evaluation for EBS (Appendix 13)
    - EBS Sources (Appendix 14)
    - EBS Training Workshop (Appendix 15)
    - Situation analysis report (Appendix 16)
    - Hotline (Appendix 17)
    - Media scanning (Appendix 18)
    - Health Facility EBS (Appendix 19)
    - Community EBS (Appendix 20)

Prior to the finalization of the training modules, they were validated by the subject matter experts from Eastern and Central Collaborating Centres of Africa CDC (Appendix 21). The objectives of the validation exercise included to review and incorporate inputs made by member states during piloting of the training materials; align key terminologies with those used by partners and member states; review the PowerPoint presentations for the modules; and establish a subject matter expert Community of Practice for EBS. The event was held in Dar es Salaam Tanzania from 7 – 9 June 2021. It brought together 21 subject matter experts from Cameroon, Nigeria, Kenya, Tanzania, Comoros, Republic of Congo, Uganda, and Ethiopia. During the piloting exercise, important recommendations and best practices were gathered from the participating countries to improve the modules and training delivery approaches. Prior to adopting the final version of the training modules, an editor was engaged to improve its presentation and language.

To enhance their relevance and uptake by the Member States, the English version of the training manual and supporting documents have been translated into other major African Union languages i.e. French-Appendix 22, Portuguese-Appendix 23 and Arabic-Appendix 24).

To contribute to ending the Coronavirus disease 2019 (COVID-19) pandemic, we developed a community-level EBS (including contact tracing) training module specific for COVID-19 (Appendix 25). This two-day training module recognizes the central role of Community Health Workers (Village Health Volunteers) to enhance early detection, timely report, feedback and prompt response to public health signals. The module serves as important instrument towards operationalization of the Africa CDC Partnership to Accelerate COVID-

19 Testing (PACT) Initiative, which aims to prevent the spread of COVID-19; prevent deaths from COVID-19; and reduce the social and economic harm linked to with COVID-19 in Africa. It focuses particularly on Community Health Workers (CHW) tasks in the TRACE component of PACT as well as how they will support the TEST and TREAT components.

The COVID-19 orientation module provides the CHWs with a good basic understanding of (COVID-19), know how it is spread (transmitted), about how to prevent its spread, be able to carry out community-based surveillance (CBS), be able to identify suspect cases of the disease, be able to perform contact tracing activities effectively and support community members who are contacts in quarantine. It also empowers the community with skills to support suspect cases who are in home or community facility isolation, to work with the community on measures to reduce COVID-19 transmission and be able to operate safely within a community while doing their work.

Output 2: Conduct training of trainers on EBS in conjunction with the various RCCs.

Activity 2.2: Supporting 2 to 5 countries in the Eastern and Central RCC to establish/strengthen EBS

The countries in the Eastern and Central RCC were sensitized on EBS establishment/strengthening. This was achieved through virtual meetings/consultations with the country-focal persons. Further advocacy was made during the validation of EBS training modules conducted in Dar es Salaam Tanzania that was attended by the key stakeholders responsible for disease surveillance and response from Eastern and Central RCC. The countries that expressed a need were encouraged to submit a request for support and concept note indicating specific technical requirements they needed and associated budget estimates. This was followed by series of virtual meetings with country-level teams to discuss the concept note and priorities to match with available resources. The project implementation technical team in collaboration with the country-level teams, repackaged the training materials to address specific local needs. Collaboratively, the two teams prepared the training programme and worked on specific country logistics to deliver the training materials in the language that was preferred by the country. The aim was to provide tailored training programmes to enhance their efficiency to rapidly detect and timely report signals of public health importance for effective early warning and response.

The countries that submitted requests for immediate technical support and concept note were Uganda (Appendix 26), Cameroon (Appendix 27), Republic of Congo (Appendix 28) and Tanzania (Appendix 29). Other countries that submitted requests and supported directly by the Africa CDC using the developed training modules were Lesotho, Malawi and Zambia.

Consultations were made with the countries that expressed interest to strengthen/establish EBS to agree on stakeholders to be trained and dates of training. Training on EBS was conducted in Uganda from 15th –19th March 2021 (Appendix 30), Cameroon from 19-29 April 2021 (Appendix 31), Republic of Congo from 12-19 October 2021 (Appendix 32) and Tanzania from 1-11 November 2021 (Appendix 33). Delivery of the

training involved adaptation of the EBS training modules that considered customization of the modules to fit with local needs and requirements (2-3 days), training of the trainers from national and sub-national levels to create a cohort of trainers with practical skills to cascade the training to all levels of health system i.e. from national to community levels (2-4 days), and supervision of training delivery to sub-national levels including regional/provincial, district and health facility (1-2 days) and community (1 day) levels. The training was preceded by pre-test to ascertain participants' level of understanding regarding EBS. The post test was done after the training sessions, to account for knowledge gain among participants.

In Uganda, facilitators from the SACIDS Foundation for One Health and the Africa CDC, collaboratively with subject matter experts from the World Health Organization, Baylor Uganda, African Field Epidemiology Network, Infectious Disease Institute, US-CDC and Health Information Systems Programme -Uganda facilitated training of training of trainers workshop from 22-26 March 2021 in Jinja City. A total of 44 key stakeholders from the national level were oriented to the 3rd Edition of IDSR, refine the IDSR materials and build a pool of trainers for countrywide roll out of the technical guidelines.

In Cameroon, EBS validation workshop and district pilot training were held in Yaounde, Cameroon. The national training of trainers took place in Mbankomo, Center Region. All events ran from the 19- 29 April 2021. A two-day workshop involving eight key stakeholders from the national level was conducted to adopt Africa CDC EBS training materials to facilitate the training of trainers at National Level and sub-national levels from 19-20 April 2021. Training of trainers was conducted from 21-23 April 2021. This three-day workshop brought together 19 stakeholders from the national level, centre region, Littoral region and East region, ministry of livestock and ministry of environment. A total of 15 district surveillance focal points and community volunteer supervisors from Djoungolo district were trained 28 April 2021.A total of 55 village health volunteers were trained on 29th April 2021. They were provided with skills on the detection of priority signals and were provided with posters to facilitate signal detection within their respective communities. Facilitators for all events were drawn from the ministry of health, ministry of livestock, Africa CDC and SACIDS.

In the Republic of Congo, adaptation of the training materials took place from 12-14 October 2021 involving a total of 18 stakeholders responsible for disease surveillance and response in the country. Training of trainers was carried out from 15-19 October 2021 and was attended by a total of 29 individuals from the national and provincial levels. All events were facilitated by team of experts from SACIDS (1), Africa CDC (2) and ECSA-HC (1).

In Tanzania, strengthening of EBS was focused on Mwanza region, which, due to its geographical location and interactions with other countries, was considered to be one of the high disease-risk regions for public health threats, including those related to COVID-19 and where EBS had not been reinforced, unlike other high risk regions of the country. The adaptation of training modules and training of trainers involved six participants from the national and regional levels. A total of 20 Health Care Workers (who were also the health facility IDSR focal persons) 60 CHWs from Ilemela Municipal Council in Mwanza region

were trained. The events were facilitated by team of experts from SACIDS (1), Africa CDC (3) and ECSA-HC (1).

Output 3: Provide focused technical support to selected countries to initiate EBS consistent with Africa CDC guidelines.

Activity 3.1: Conduct situation analysis of event-based surveillance in the central and Eastern Regional Collaborating Centres (RCC) of Africa CDC

The main objective of the situation analysis was to assess the status of implementation of EBS in Eastern and Central Regional Coordinating Centres (RCC) member states of African Union. Specifically, the exercise was to describe the governance processes of EBS in Eastern and Central African Union Member States; describe the coverage and scope of EBS implementation in the Member States; assess the processes of information gathering, analysis and reporting in EBS; document the resources the Member States have made available for EBS; and identify the scalable good practices for and gaps of EBS implementation among the Member States.

The situation analysis targeted the 23 Member States in the Eastern and Central RCC. Focal persons in each country were identified by the Africa CDC. The technical team comprising specialists from the Africa CDC, the SACIDS Foundation for One Health, based at Sokoine University, Tanzania; and the East, Central and Southern Africa Health Community (ECSA-HC) based in Arusha, Tanzania coordinated the situation analysis. African Union introduced the technical team to all targeted countries. A tool (Appendix 34) for collecting data in countries was developed and administered in the official languages (English, French, and Portuguese) of the targeted countries. Data were filled and submitted electronically. Validation was also done virtually through Echo-Zoom platform. The plan to have physical meetings was not fulfilled because of limitation of travel due to COVID-19 pandemic. Data were entered and analysed in Excel program. Of the countries invited to participate in the exercise, 14 (61%) responded. Response in the Eastern RCC was 9/14 (64%) and 5/9 (56%) in the Central RCC. Detailed report is presented in Appendix 35.

The major findings included:
Policy and guidelines: Of the 23 Member States invited to participate, 14 (64%) responded. Policy and guidance documents were available in 12 (80%) and 10 (83%) countries, respectively while focal persons for EBS implementation were in place in 10 (83%). National Public Health Institutes (NPHI) were established in 8 (57%) of the countries. NPHIs or departments coordinating public health surveillance were generally understaffed.
EBS scope: The scope of EBS included the use of hotlines (71%); media scanning (43%); standard operating procedures (SOPs) for reporting, triage, verification and risk assessment were available in 36% of countries at intermediate level; 57% at health facility level; and in 64% at community level. There was **coordination** between ministries responsible for public health with those for animal health in 93% of countries, with environmental health in 71% and customs and immigration in 36% of the assessed countries. All countries were implementing IDSR; 64% had adopted the 3rd edition of IDSR strategy, and 43% had adopted the Africa CDC framework for EBS implementation.

Resources: Funding for EBS purposes was inadequate in all assessed countries. Training materials for EBS were available in 36% of the countries, EBS curriculum in 43%, data collection tools in 93%, budget for vehicle use in 20% and information and communication technology (ICT) equipment in 50% of the countries. In all, 29% of the countries had received some form of assistance for EBS implementation from Africa CDC through the RCCs.
Information gathering: The majority (79%) of the countries had identified potential sources of EBS data, 71% had some system for capturing and reporting data, 29% had SoPs for reporting and feedback and 79% had tools for rapid reporting of data.
Data Processing: Half (50%) of the countries had operational call centres; 83% had public health emergency operational centres (PHEOC), 80% of PHEOCs could analyse both IBS and EBS data.
Support requested: Countries expressed the need for support in developing the EBS strategy (86% of countries); rolling out EBS (93%); training of national trainers (86%) and developing signals for identification of potential acute health events (79%).

Activity 3.2: Community Health Workers and COVID-19; a two-day orientation module
Disease outbreaks typically erupt at community level before they could spread further. Thus, initiatives targeting to contain outbreaks at the source to safeguard Community Health Security, would have a progressive impact on the National, Regional and Global Health Security. Recognizing the centric position of Community Health Workers (CHWs) in early detection, timely reporting, and prompt response to signals of disease outbreaks, they were regarded as essential part of the Partnership to Accelerate COVID-19 Testing (PACT) Initiative. Africa CDC set up PACT to drive forward the Africa Union Joint Continental Strategy for COVID-19 which aims to prevent the spread of COVID-19, prevent deaths from COVID-19 and reduce the social and economic harm linked to with COVID-19 in Africa. To contribute to realization of the expected outcome and help the CHW to operate safely during and beyond the period of the pandemic, we developed a two-day rapid orientation module specific for COVID-19. The module contents focus particularly on CHW tasks in the TRACE component of PACT as well as how they will support the TEST and TREAT components.

Activity 3.3: Development of a Monitoring and Evaluation tool to help countries monitor progress in the implementation of EBS nationwide
After having developed and validated the EBS training modules with inputs from the findings of EBS situation analysis, we developed the EBS monitoring and evaluation (M&E) plan (Appendix 36) to help the Africa Union Member States implement EBS activities efficiently and in a systematic manner, within the context of the Africa CDC EBS and One Health Frameworks and EBS training modules. The structure of the plan included performance (verifiable) indicators (output and outcomes) for EBS implementation for different types of EBS i.e. community, health facility, media scanning and hotline, resource mobilization plan, data collections strategies, and analysis plan for M&E. Others included sources of data for each indicator, methodologies for their measurements and who would be responsible for each of them, description of baseline measures and associated time-metrics to serve as benchmark values for monitoring and evaluation of EBS implementation, and monitoring and evaluation strategy.

Activity 3.4: E-Survey Platform

Background

The initial step was to perform a situational analysis of the Member States needs with regards to EBS. At the height of the COVID-19 pandemic, it became clear that physical visitations to Member States would provide huge challenges as many countries had travel restrictions in line with their COVID 19 prevention protocols. Therefore, we developed a digital survey software tool for EBS situation analysis. This survey software, also referred to as online questionnaire, is an application used to collect research data from a target sample through a computer-assisted method.

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Approach

Requirements Gathering

This process began with landscaping and behaviour mapping of key stakeholders to understand the local, social and political context of the proposed solution, through to building a tangible prototype to enable key actors of the platform to have a preview of the actual system. Such prototypes act as catalysts to bring up new ideas, recommend new features and/or new dimension of thinking and know what is possible. Collaboratively with ECSA, we developed functional requirements for an E-survey platform (Appendix 37.1)

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Programming via Prototyping

Prototyping involved programming, database, and interface design. We built a select amount of feature sets (representing an entire user story flow), ??test and demonstrate. During these demonstrations is where we refined our training manual and user documentation. We kept on adding new set number of features every four days until system was complete. In this regards these activities (programming, reviewing, testing) was done in an iteratively and interchangeably, as per user (stakeholders) reviews and comments

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Output:

Appendix 37.2	E-Survey Platform: Entity Relationship (ER) Diagram
Appendix 37.3	E-Survey Platform: Interface (UX) Design
Appendix 37.4	E-Survey Platform: Platform developed (GITHUB)

Server setup and testing

This involved servicing the server, system partitioning, LNPP stack installation (Linux, Nginx, Postgress and Python) and Virtual Private Network (VPN) setup. This was done on the cloud. We liaised with Africa CDC ICT experts, to create an appropriate domain name and linked the domain to the cloud hosting platform and secured the hosting through SSL

Outputs:

Appendix 37.5	E-Survey Platform: Hosted online

Survey, troubleshooting, and publishing

During the period of the project, we published two regional surveys (a) Africa CDC saving lives and livelihoods, member states pre-liminary needs identifications of which we worked with Catarina Mastellaro (McKinsey) Denis Bunyoga (AU), Adelard Kakunze (AU) and (b)

Event Based Surveillance situation analysis which we worked with our partners from ECSA and SACIDS EBS focal point. This activity involved, reviewing survey questionnaires, testing its functionality, data capture and reporting features. The surveys were later published on the e-survey platform

Output:

Appendix 37.6	E-Survey Platform: Situation analysis survey published
Appendix 37.7	E-Survey Platform: Saving Lives and Livelihoods, member states pre-liminary needs identification survey published

Activity 3.5. E-Learning Platform
Background

One of the main outputs of this project was the development of the EBS training manual and corresponding training aids (slides) for EBS at national, district and community levels. As the training material was developed in digital format, as an extension to this output, it remained beneficial to create a hosting environment where this official training material would be hosted, accessed, and distributed efficiently through digital means. An e-learning platform encapsulates such need in addition to other rich features. We refer to an integrated set of interactive online services that will provide trainers, learners and others involved in education with information, tools and resources to support and enhance educational delivery and management. It is a webspace or portal for educational content and resources in one place: lectures, resources, opportunities to meet and chat with other students, and more. It is also an excellent way for the student and the instructor to monitor student progress

Requirements Gathering
We started with reviewing well established e-learning platforms (coursera, udemy etc) mapping with reviews of key stakeholders to understand the local, social and political context of proposed solution, through to building a tangible prototype to enable key actors of the platform to have a preview of the actual system. Such prototypes act as catalysts to bring up new ideas, recommend new features and/or new dimension of thinking and know what is possible. We held brainstorming sessions with the lead SACIDS research and instruction experts over Zoom, and physical workshops by sharing prototypes and reviewing, revising and adding functional requirements

Output:

Appendix 37.8	E-learning Platform: Systems requirements document

Programming via Prototyping

Prototyping involves programming, database, and interface design. We used a 4 (four) day revolving cycle to build a select amount of feature sets (representing an entire user story flow), test and demonstrate. Such demonstrations helped the programmers to identify points for refining the training manual and user documentation. We kept on adding new set number of features every four days until the system was complete. In this regard these

activities (programming, reviewing, testing) were done in an iteratively and interchangeably, as per user (stakeholders) reviews and comments

Output:

Appendix 37.9	E-learning Platform: Entity Relationship (ER) Diagram
Appendix 37.10	E- learning Platform: Interface (UX) Design
Appendix 37.11	E- learning Platform: Platform developed (GITHUB)

Server setup and testing

This involved, servicing server, system partitioning, LNPP stack installation (Linux, Nginx, Postgress and Python) and Virtual Private Network (VPN) setup. This was done on the cloud. SSL

Outputs:

Appendix 37.12	E- learning Platform: Hosted online

Activity 3.6: Other technical supports provided

- Supported Uganda to adapt the third edition of Integrated Disease Surveillance and Response (IDSR) Guidelines
- Provided technical support to Cameroon, Republic of Congo and Tanzania on guidelines and best practices to establish EBS coordination and collaboration mechanism at national level and improved understanding in one health approach in disease surveillance. The countries were supported on establishment of multisectoral technical working groups, adaptation of the training materials to align with country requirements/preferences, development of list of priority diseases, list of priority signals and list of EBS sources for enhanced early warning and response system
- Supported Tanzania to develop standard operating procedures to enhance operationalization of EBS
- Created the country-level cohorts of Trainer of Trainers to accelerate EBS implementation in Eastern and Central RCC
- Coordinated and supervised EBS training to officials from the national and sub-national levels and community health workforce in Eastern and Central RCC
- Developed an online survey to capture primary COVID-19 vaccine preparedness data in the Africa region
- Provided technical support in developing and managing an online survey for EBS data capture tool, and responding to queries from member states (ebs-survey.africacdc.org)

Objective (ii): To implement core activities of Africa CDC's strategy to address antimicrobial resistance

Output 1: Training for civil society representatives from Eastern and Central RCC

Antimicrobial Resistance Civil Society Organizations (CSOs) Training, 20 - 21 February 2020 Nairobi, Kenya

We successfully organised a two-day Africa CDC Capacity Building and Workforce Development workshop for Civil Society Organizations (CSOs) on Antimicrobial Resistance. The training workshop was convened from 20 - 21 February, 2020 in Nairobi, Kenya, and was organized in partnership with the SACIDS Foundation for One Health and ReAct as facilitators. The workshop engaged about 50 participants including Subject Matter Experts (SME), Civil Society Organisations (CSOs) from African Union Member States of Burkina Faso, Cameroon, Chad, Ghana, Kenya, Malawi, Nigeria South Africa, Tanzania, Togo and Zimbabwe; Africa CDC representatives; ReAct Africa representatives; Southern Africa Centre for Infectious Diseases Surveillance Secretariat (SACIDS), Representatives of the global Tripartite Organisations (FAO,OIE, WHO) and technical experts from other partner organizations. The overall objectives of the training were to: (i) provide training on the basics of AMR, infection, prevention and control, one health, and communication and advocacy; (ii) highlight key regional and global developments and initiatives on AMR, including the latest developments regarding the AU's work on AMR and activities of the tripartite organizations; (iii) discuss measures to increase public awareness of the AMR issue and the role of civil society and educational and information-related bodies; and (iv) develop proposals for further action at the national, regional and global levels (actions by governments, CSOs, United Nation as (UN) agencies etc.). The training involved a series of Antimicrobial resistance (AMR) advocacy and awareness to Civil Society Organisations (CSO). Participants learned different aspects of Antimicrobial Resistance: Global scenario, AMR Infection Prevention and Control and Epidemiology of AMR. This training highlighted the key regional and global developments and initiatives on AMR, including the latest developments regarding the African Union's work on AMR and activities of the tripartite organizations and methods to increase awareness of the AMR and the roles of the Civil Society Organisations. It was concluded that a firm partnership with Civil Society Organisation (CSO) is vital in achieving the goals of Africa CDC AMR frame work as alluded by Dr. Jay Varma a senior Advisor of the Africa CDC.

Civil Society Organizations and Media Personnel Workshop

The SACIDS Foundation for One Health supported ReAct Africa, to organise and conduct a three-day virtual workshop for CSO and Media, from 10th to 12th November, 2021. The workshop was a follow up to a similar workshop convened in Nairobi in February 2020. The workshop was conducted in recognition that AMR problem in Africa is made worse by a high infectious disease burden, weak healthcare systems and this has been worsened by COVID-19. The organisers recognised the importance of engaging media as a crucial stakeholder in raising awareness of AMR to the general public in the region. The overall objectives of the training workshop to: i) Highlight key progress and challenges in AMR at the regional and global level, including the latest developments in light of COVID-19, ii)Provide highlights on the basics of AMR including infection, prevention and control; one health approach to mitigate AMR, communication and advocacy, iii) Reflect on progress made by various CSOs since the last workshop held in 2020 and discuss priority actions and measures to increase public awareness of AMR and the role of media in the African region including WAAW 2021 activities, iv) Mobilize innovative ideas for WAAW 2021, in the current

context of COVID-19 restrictions. The workshop ended by developing action plans: priority actions and measures to increase awareness and advocate for AMR prevention and control.

Output 2: Validation of African Union model public health law and legal framework

High-Level Advocacy Meeting for the Legal Frameworks on Infection Prevention and Control and Biosafety and Biosecurity, 28-29 October 2021, in Dar es Salaam, Tanzania

The SACIDS Foundation for One Health provided logistic support during the High-Level Advocacy Meeting for the Infection Prevention and Control and Biosafety and Biosecurity of the Africa Centers for Disease Control and Prevention conducted on 28th and 29th October 2021 in Dar es Salaam, Tanzania. Participants were Ministers of Health, experts (IPC and BSBS) from Member States, representatives from Regional Economic Communities, Civil Society Organizations, and technical partners. The purpose of the advocacy workshop was to promote and create awareness of the developed legal frameworks for biosafety and biosecurity (BSBS) and infection prevention and control (IPC). The objectives of the advocacy workshop were to: (i) increase awareness and understanding among relevant stakeholders (e.g., member state leaders, civil society, or others) of the role of the IPC and BSBS Legal Frameworks in developing national systems; (ii) build national-level political and social will for using the IPC and BSBS Legal Frameworks to develop national legal instruments by communicating the important role of the legal system in supporting IPC and biosafety and biosecurity; (iii) share experiences regarding the challenges, weakness, strength and opportunities regarding IPC or BSBS or other legal frameworks to support member states in advocating and creating awareness of the IPC and BSBS; and (iv) mobilize partnerships, tools, training, and resources to support national review, adaptation, and implementation of the critical domains of the IPC and BSBS Legal Framework. The workshop sensitised stakeholders to the legal frameworks in order to facilitate their use as a tool that Member States may use to draft national laws specific to their individual country context.

The outputs of the workshop were (i) increased awareness and understanding among relevant stakeholders of the role of the IPC and BSBS Legal Frameworks in strengthening national systems; (ii) advocated for implementation of the IPC and BSBS Legal Frameworks to develop national legal instruments by communicating the important role of law in IPC and biosafety and biosecurity; (iii) shared experienced regarding the challenges, weakness, strength and opportunities regarding IPC or BSBS or other legal frameworks to support member states in advocating and creating awareness of the IPC and BSBS; and (iv) increased partnerships, tools, training, and resources to support national review, adaptation, implementation of the critical domains of the IPC and BSBS Legal Framework.

At the end of the workshop, it was urged that each Member State must invest in the promotion and ownership of the legal framework through the adoption and implementation of appropriate strategies. To this end, it was deemed essential to support the authorities in the political, public health and grassroots community sectors. In addition, a number of Recommendations were made including; i) Member States to support the approval process of the two (2) Legal Frameworks during the Africa Union review process through advocacy and communication with policy makers and experts invited to the Africa

Union Specialized Technical Committees (Health and Legal) review meeting, ii) Member States to identify and constitute local teams (Champions) to lead in- country advocacy and communication for the two (2) Legal frameworks among identified stakeholders, civil society and policy makers to improve awareness and mobilize resources in preparation for domestication and implementation of the Legal frameworks after adoption by Heads of States of the African Union Member States, iii) Africa CDC to develop a regional and country specific implementation plans in collaboration with national experts. Process to include mapping of existing policies and legislative structures and developing country specific plans, iv) Member States that have some legal framework in place to use the regionally endorsed Legal Frameworks as benchmarks for reviewing and updating existing legal documents within the first 3 years of adoption by the Heads of States and Governments v) Member States with no legal documents that specifically address BSBS and IPC to adapt/adopt/use/domesticate the regionally endorsed frameworks and vi) Member States to include domestication/implementation of the Legal Frameworks in their national strategic plans for health to secure fiscus support in addition to support from other sources. Finally, the following next steps were suggested; i) The draft legal framework will be submitted to the STC of health, drug control and Population in April 2021 and thereafter STC for Legal and Justice Affairs in November 2021 and thereafter to the Executive Council and the Heads of Governments in February 2022 and ii) The draft Legal Frameworks will be piloted in Four Member States.

Output 3: Systematic review of policies on antimicrobial use in agriculture/food production in Africa

A systematic review of antimicrobial resistance, antimicrobial use and existing policies in agriculture/ food production systems in Africa was carried out between April and May 2021. PubMed, Science Direct, MEDLINE, LISTA, Web of Sciences, Scopus, African Journal Online and Google Scholar were searched for relevant English or French articles published between January 1980 and May 2021. Combinations of search terms used were, 'antibiotic use', 'antimicrobial use', 'antimicrobial usage', 'antimicrobial resistance', 'antibiotic resistance', 'antimicrobial resistant', 'agriculture', 'food-producing animals', 'food animals', animal husbandry', 'animal farming', 'domestic animal farming', 'farmed animals', 'crop protection', 'soil' and 'vegetables'. Others were specific food animal descriptors such as 'poultry', 'chickens', 'pigs', 'swine', 'cattle', 'beef cattle', 'dairy cattle', 'fish', 'bee' specific country by name, and the word 'Africa'. The articles were scrutinized to extract information on the antimicrobial use, prevalence of AMR and availability of a surveillance system. Furthermore, in order to establish the impact of the policies in Africa, we searched information on AMU and AMR covering a period from 2005 to 2020. Full-length research articles and review papers written in English and French were considered. In addition, publications from Food and Agriculture Organization (FAO), World Health Organization (WHO), Office International des Epizooties (OIE) and Africa Centres for Disease Control and Prevention websites were also searched and reviewed. In each document the information regarding antimicrobial uses, resistance and surveillance were extracted. In addition, more information regarding authority and enforcement of the laws were also extracted.

From the review it was apparent that the global problem of antimicrobial resistance (AMR) requires coordinated effort from all sectors to address it effectively. Furthermore, the emerging health threat of antimicrobial resistance requires the strengthened capacity especially in low- and middle-income countries to ensure provision of higher level of health securities. Special effort should target reduction of AMU and AMR in human, animals and agriculture. It was also apparent that there is lack of nation-wide antimicrobial resistance and antimicrobial use data from surveillance programmes in Africa, however from discrete studies increased resistance to WHO priority pathogens such as Campylobacter spp. Salmonella spp., Escherichia coli and Enterococcus spp. has been observed in food production and agriculture systems. Regarding antimicrobial use (AMU) in animals, 4279, 3674 and 3558 tonnes of antimicrobials adjusted to coverage were used in Africa in 2015, 2017 and 2019, these data were from 13, 27 and 20 countries, respectively. Tetracyclines and polypeptides contributed the largest proportion of antimicrobials with bovines contributing to half of the biomass. Ghana, Kenya, South Africa, Tanzania and Zambia have developed guidelines/plans to address the problem of AMU in food production and agriculture systems however, the enforcement of these documents might prove difficulty due to weak of regulations of AMU in human and animal sector. Fourteen African countries namely: Burkina Faso, Ethiopia, Ghana, Kenya, Mauritius, Morocco, Nigeria, Northern Sudan South Africa, Tanzania, Tunisia, Zambia, Zimbabwe and Uganda have adopted the Global Action Plan for antimicrobial resistance and developed the National AMR Action Plan. There is a need for more research to provide Knowledge in the context in which antimicrobials are used in food production and agriculture systems and evidence-based information regarding the reason for poor enforcement of laws regarding AMU in African in order to recommend appropriate strategies to address the AMR and AMU problem in Africa. The African CDC should consider the possibility of adopting international guidelines/plan such as Guidelines on Risk Analysis of Foodborne Antimicrobial Resistance (CAC/GL 77-2011), OIE standards and guidelines related to antimicrobial agents and veterinary public health and Global action plan for AMR and develop the policy guidelines and monitoring protocol to address the AMU in agriculture/ food production systems in Africa.

Policy brief on tackling antimicrobial resistance associated with agriculture and food production systems in Africa

The policy brief was based on the insights from the systematic review of antimicrobial use and resistance in animal production and agriculture. The purpose of the brief was to articulate critical policy issues to be addressed to enable Africa to contribute significantly to the global governance on mitigating and containing the spread of AMR in the agricultural sector. The policy brief analysed the threat of AMR associated with agriculture and food production systems and provides policy actions to address the problem in Africa. Key messages were: (i) In the agriculture and food-production systems, antimicrobials are used to improve crop and animal health, as well as to enhance growth rates and raise productivity; (ii) However, the mis-use and over-use of antimicrobials in agriculture and food-production systems contribute substantially in the increase and spread of antimicrobial resistance (AMR); (iii) The widespread AMR means that infectious diseases of animals and humans that were once easily treatable can become costly and deadly; (iv) The regulations governing the use of antimicrobials for agriculture and food production

systems in Africa are weak. Finally, the policy brief suggests key policies/regulations for addressing AMU and AMR in agriculture and food production in Africa. These include policies on prescription practices, regulations on animal feed, surveillance of AMR and AMU, antimicrobial disposal, and strengthening the national drug regulatory authorities in the animal health sector.

Publication

We published a paper titled: Antimicrobial Use and Resistance in Agriculture and Food Production Systems in Africa: A Systematic Review. *Antibiotics* (Basel). 2021 Aug 13;10(8):976. doi: 10.3390/antibiotics10080976. PMID: 34439026; PMCID: PMC8389036. This publication was extracted from data obtained from the review of antimicrobial resistance, antimicrobial use and existing policies in agriculture/ food production systems in Africa mentioned above. The article included data published between 1980 and 2021 that indicated that 3558–4279 tonnes of antimicrobials were used in animals from 2015 to 2019. Tetracyclines and polypeptides contributed the largest proportion of antimicrobials used. Cattle and poultry production account for the largest consumption of antimicrobials in Africa. Although limited studies have reported AMR in crops, fish and beekeeping, AMR from a variety of farm animals has been substantially documented in Africa. It was observed that some countries in Africa have developed policies/plans to address AMU and AMR in agriculture and food production systems; however, their enforcement is challenged by weak regulations. In conclusion, although there is limited information on the quantities of antimicrobials used in agriculture and food production system, the levels of AMR are high. In conclusion it was clear that there is a need to strengthen regulatory authorities with a capacity to monitor AMU in agriculture and food production systems in Africa. In summary, the paper indicated that in Africa, there is dearth of information on antimicrobial use (AMU) in agriculture and food production systems and its consequential resistance in pathogens that affect animal, human and environmental health.

5. CHANGES INTRODUCED DURING IMPLEMENTATION

The project activities and implementation plan were revised because of the disruption caused by the COVID-19 pandemic. Most of the activities planned for physical meetings were conducted virtually. To contribute to COVID-19 control strategies in the Africa Union Member States, we developed community event-based surveillance (EBS) training module specific for COVID-19 to enhance early detection, contact tracing and management of suspected cases. Initially, the training modules were organized by the levels of health system (national, district/intermediate, health facility and community). Following the initial implementation/piloting of EBS in the Member States, there was a need to repackage the modules into types of EBS (media scanning, hotline, health facility and community) to enhance their relevancy and uptake by the Member States. To help the countries monitor efficacy of EBS implementation, the need to develop monitoring and evaluation plan was introduced as an additional activity.

CHALLENGES

The project deliverables are related and inter-dependent, suggesting that a challenge to implement one could subsequently negatively affect the other. For instance, producing the final version of the training modules largely depended on the findings of the situation

analysis, validation exercise and initial implementation/piloting in the countries. Development of monitoring and evaluation plan depends on the situation analysis findings and final version of the modules. Provision of technical support to the Member States depends on successful engagement process, their interest and submission of the concept note, budget and request letter by the Member State. To a large extent, most of the processes were difficult to manage during the COVID-19 pandemic. Following the delay brought about by the first, second and third waves of the COVID-19 pandemic and inability to conduct some of the activities, we have kept to, periodically and strategically, request Africa CDC for the project no-cost extension to enable completion of project activities. The requests were associated with revised work plans and implementation strategies. The initial plan was to complete implementation of project activities by 26th November 2020. A no-cost-extension request was submitted to extend the project implementation by six months i,e. from 26th November 2020 to 25th May 2021. The request was approved for the period from 15th February 2021 to 30th August 2021. The second no-cost extension request was approved for the period from 1st September to 31st December 2021. Another challenge was associated with delayed and incomplete second funds instalments from Africa CDC. As a result, invoices for some service providers and implementation of some activities including monitoring and evaluation by Africa CDC team were delayed beyond the project lifecycle. Besides the challenges encountered, we were able to successfully implement all the planned project activities.

6. RECOMMENDATIONS

- Further validation of the training manual and monitoring and evaluation plan involving representatives from all the Africa CDC RCC
- Advocacy and sensitization on adaptation of the EBS training manual in the Member States
- Enhance operationalization of EBS using One Health approach at different levels of health systems in the Member States