MINISTERE DE LA santé

Organisation mondiale de la Santé

TECHNICAL REPORT

AFTER-ACTION REVIEW OF THE RESPONSE TO THE 9th, 10th, 11th AND 12th OUTBREAKS OF THE EBOLA VIRUS DISEASE

DEMOCRATIC REPUBLIC OF THE CONGO

June 2021

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Preface

The Democratic Republic of the Congo (DRC) has faced multiple public health emergencies, including infectious disease outbreaks such as Ebola Virus Disease (EVD). The country is indeed known for the emergence and the successive resurgences of EVD epidemics. Only a few months ago, it faced its 12th EVD epidemic. These outbreaks, which pose a national and international threat to health security, are at the interface between human, animal, and environmental health.

At the end of the 9th, 10th, 11th and 12th EVD epidemics, and other concurrent diseases (measles, polio, cholera, yellow fever, anthrax, and the plague, etc.) and natural disasters; the diagnostic and prospective analysis of the response to the last four EVD epidemics show the need to strengthen the coordination and the capacities of the players within the response, both at the central and peripheral levels.

Among the recommended options related to global health security (including the Joint External Evaluation and the National Action Plan for Health Security NAPHS), it is necessary to establish and operationalise an Emergency operations centre with its own standardised procedures, competent human resources, and a dedicated infrastructure to meet the Government's health related priorities and the vision of the President of the Republic, His Excellency **Felix Antoine Tshisekedi Tshilombo**.

In my capacity as Minister of Public Health, Hygiene and Prevention, I would like to take this opportunity to thank all the experts, national and provincial players, partners and the technical secretariat of the multi-sectoral Ebola Response committee for their contribution to the completion of this After Action Review awaited for several months. The various recommendations stemming from this After Action Review will allow the country to strengthen itself, but also to be better prepared for possible emergencies and disasters.

On this day, Thursday, June 10, 2021, I am pleased to solemnly declare the end of the After Action Review workshop on Ebola virus disease epidemics from 2018 to 2021 in the Democratic Republic of the Congo.

Thank you.

Signed:

Dr Jean Jacques Mbungani Mbanda

Acknowledgements

The Department of Health, Hygiene and Prevention, through the General Directorate of Disease Control, would like to thank all the individuals, institutions and partners whose support, participation and commitment contributed to the success of the After Action Review to Ebola virus disease epidemics in the DRC which concluded with a workshop organised in Kinshasa from 7 to 10 June 2021.

We would like to thank:

- The national experts of the Democratic Republic of Congo representing the ministers involved in the response to Ebola virus epidemics in the Democratic Republic of the Congo;
- The Provincial health divisions of Equateur, North Kivu, Ituri and South Kivu for their availability and their participation;
- The World Health Organisation (country and AFRO office, Headquarters) for its technical and financial support for the realisation of this After Action Review;
- National and international partners — *AFENET/FELTP, Africa CDC, Associate Humanitarian Affairs Officer, World Bank, CARITAS, CDC Atlanta, COMED IFRC, JHPIEGO, MSF, IOM, PDSS, First Intermediate Emergency "FIE", RUMPH&ASS/CDC, UNFPA, UNICEF,* PRODS-DUE-ECHO and *USAID* - for their contributions.

ABBREVIATIONS

AAR	:	After Action Review
CDC	:	Centres for Disease Control and Prevention
COVID-19	:	Coronavirus disease 2019
DES	:	Directorate of Epidemiological Surveillance
DHP	:	Provincial Health Division
DRC	:	Democratic Republic of the Congo
ELRBCT	:	Emergency Low Risk Burial Community Team
EPI	:	Expanded Programme of Immunization
ETC	:	Ebola Treatment Centre
EVD	:	Ebola Virus Disease
EWARS	:	WHO's Early Warning, Alert and Response System
GDDC	:	General Directorate for Disease Control
GHSA	:	Global Health Security Agenda
GOARN	:	Global Outbreak Alert and Response Network
HPSD	:	Health and Public Safety Directorate
HT	:	Health Training
HZ	:	Health zone
IFRC		International Federation of Red Cross and Red Crescent Societies
IHR (2005)	:	International Health Regulations 2005
IMS	:	Incident Management System
IPC	:	Infection Prevention and Control
ISDR	:	Integrated Disease Surveillance and Response
JEE	:	Joint External Evaluation
MPH	:	Ministry of Public Health
NAPHS	:	National Action Plan for Health Security
NBHP	:	National Border Hygiene Programme
NCC	:	National Coordination Committee
NHPCP	:	National Health Promotion Communication Programme

NPEHA	:	National Programme for Emergencies and Humanitarian Actions
OCHA		Office for the Coordination of Humanitarian Affairs
PHEIC	:	Public Health Emergency of International Concern
PHEOC	:	Public Health Emergency Operations Centre
RCCE	:	Risk Communication and Community Engagement
PoE/HCP	:	Points of Entry/Health Checkpoints
PPE	:	Personal Protective Equipment
RRT	:	Rapid Response Team
RT-PCR	:	Real-time transcription polymerase chain reaction
SDB	:	Safe and Dignified Burials
SOP	:	Standard Operating Procedures
TFP	:	Technical and Financial Partner
UNDSS		United Nations Department of Safety and Security
UNHAS		United Nations Humanitarian Air Service
UNICEF	:	United Nations Children's Fund
US CDC		United States Centres for Disease Control and Prevention
USAID		United States Agency for International Development
WFP	:	World Food Programme
WHO	:	World Health Organisation

1. EXECUTIVE SUMMARY

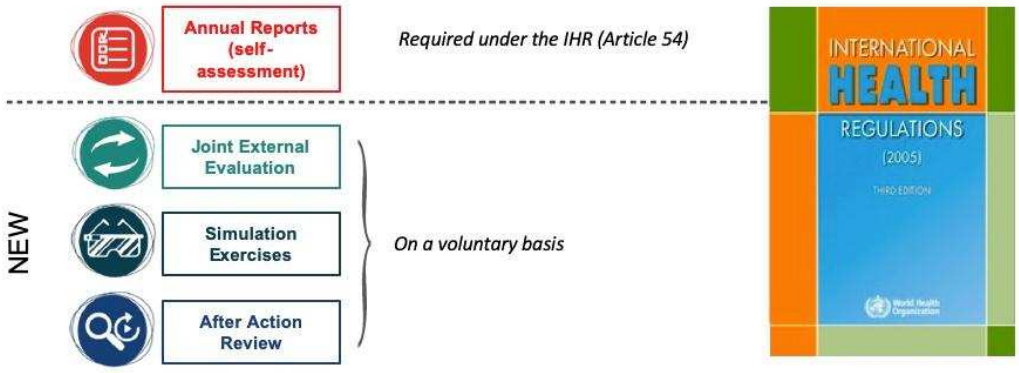
1.1 Context and justification for the After Action Review

The Ebola virus causes an acute, severe disease that is often fatal without treatment, with an average case fatality rate of around 50%. Transmitted to humans from wild animals, the virus spreads through the population via human-to-human transmission[1].

Since the first case of Ebola virus disease (EVD) in 1976, in Yambuku, near the Ebola River - which gave the disease its name - the Democratic Republic of the Congo (DRC) has experienced twelve EVD outbreaks, the last four of which over the 2018-2021 period. More specifically, the twelfth outbreak occurred from 7 February to 3 May 202.

In virtue of the application of the International Health Regulations (IHR 2005), countries are required to determine necessary control measures in order to prevent the spread of diseases nationally and internationally. The after action review (AAR) is a part of the IHR monitoring and evaluation framework[2], as seen below.

The IHR monitoring and evaluation framework: an excerpt from the WHO guide on the After Action Review.



Post-2016 IHR monitoring and evaluation framework:

- The Framework is based on Resolution WHA68.5 of the 68th World Health Assembly
- The 69th World Health Assembly took note of the framework
- The WHO Global Policy Group adopted it

In accordance with the IHR monitoring and evaluation framework (2005), countries are encouraged to conduct an AAR, which consists of a post-event review of preparedness and response activities to a major public health event, in order to identify best practices and challenges encountered during the event, to build capacity for preparedness, detection and response to potential subsequent public health events.

Thus, the Ministry of Public Health, Hygiene and Prevention of the DRC requested the support of the World Health Organisation (WHO) and its partners to carry out an AAR of the response to the last four EVD outbreaks that plagued the country between 2018 and 2021. These are the 9th, 10th, 11th and 12th outbreaks of the disease.

[1] https://apps.who.int/mediacentre/factsheets/fs103/fr/index.html
[2] https://apps.who.int/iris/bitstream/handle/10665/276651/WHO-WHE-CPI-2018.51-eng.pdf?sequence=1&isAllowed=y

Given the current global epidemic and pandemic context marred by the coronavirus disease 2019 (COVID-19), this AAR has adopted a new mixed methods format as proposed in the WHO guide for AARs, which was published in April 2019[3]. The format is based on an in-depth review of relevant documentation, an online survey, interviews with key informants - mainly over the phone - and finally, a preparatory workshop followed by the in-person focus group discussion workshop, which took place, respectively from 2 to 4 June 2021 in Matadi and from 7 to 10 June 2021 in Kinshasa.

On the occasion of the opening speech of the in-person workshop on 7 June 2021, Ms. Veronique Kilumba, deputy Minister of Public Health, Hygiene and Prevention, assessed the situation by specifying that the DRC has been confronted with multiple public health emergencies, including EVD epidemics whose outbreaks constitute a threat to national and international health security. "*Following the declaration of the end of the 11th EVD outbreak, on 17 November 2020"*, she said, *"the DRC has developed a 90-day post-epidemic strategic plan to consolidate the achievements of the response and to better prepare for the occurrence of other outbreaks"*. But even before it was being implemented along with an AAR response to the last three EVD outbreaks, a 12th epidemic was declared on 7 February 2021, causing the suspension of ongoing AAR preparatory activities. *"As the DRC is committed to the implementation of the global health security roadmap, it was essential for the country to carry out this review.",* concluded Ms Veronique Kilumba. The declaration of the end of the 12th outbreak of the disease on 3 May 2021 was the opportunity for the DRC Ministry of Health to carry out this AAR on the response to the last four epidemics in Equateur, Ituri, North Kivu and South Kivu provinces.

During the same workshop opening ceremony, WHO country representative Dr Amédée Prosper Djiguimde also wished to acknowledge the holding of the AAR: "*In the DRC, Ebola outbreaks have followed one another in recent years and have left no time for actors to organise reviews. This is how, despite the COVID-19 pandemic, we have given ourselves the means to organise this AAR. The ideal time to carry it out is as early as possible, preferably within three months of the official declaration of the end of the outbreak by the Ministry of Health, in collaboration with the WHO, when the response stakeholders or actors still have a fresh and accurate memory of what happened*" he explained.

1.2 After Action Review Methodology

According to the WHO definition, an AAR is a: "...*structured review of actions taken in response to an actual public health event. The review process aims to identify and document what worked well and what did not, the reasons why the events occurred, and to identify corrective, immediate and longer-term actions for future responses. An AAR can focus on a single specific function or a broad set of functions, covering one or more sectors involved in the response" (WHO, Guide for After Action Reviews, 2019).*

Although several methods of quantitative and qualitative evaluation may be used, the added value of an AAR is that it focuses on collective learning and experience sharing, and that it pays particular attention to stakeholder knowledge. It aims to transform tacit knowledge into learning, while establishing a climate of trust amongst the various players in the response. Indeed, the AAR offers them a unique opportunity to reflect on the difficulties encountered, the strengths, the new capacities developed and to learn from them in order to strengthen a mutual

[3] https://apps.who.int/iris/bitstream/handle/10665/329387/WHO-WHE-CPI-2019.4-fre.pdf?sequence=1&isAllowed=y

understanding of public health response processes, harmonise coordination and collaboration mechanisms, and to reinforce and institutionalise the capacities needed at different levels of the public health system to better prepare the country for future outbreaks.

To adapt to the context of the current outbreak of the pandemic (COVID-19), which imposes strong public health measures encouraging the organisation of remote activities and meetings, the AAR of the response to the EVD outbreaks in the DRC was rolled out in 5 phases, following an innovative mixed method format based on four components, including the first three being remote and the last in-person:

- **Documentary study of grey and scientific literature** (January to May 2021)
- **Online survey** (27 January to 19 March 2021)
- **Interviews with key informants and resource persons** (12 to 25 April 2021)
- **Preparatory workshop** (2 to 4 June 2021 in Matadi), followed by **AAR workshop** (7 to 10 June 2021 in Kinshasa)

The activities to monitor were grouped around 5 pillars of intervention:

1. Coordination/governance, information management, administration and finance, logistics and security;
2. Surveillance, vaccination, points of entry/health control points (PoE/HCP), laboratory;
3. Medical treatment, therapeutic and clinical trials, Ebola survivor programme;
4. Infection prevention and control (IPC), dignified and safe burials (DSB);
5. Risk Communication and Community Engagement (RCCE), psychological and social care.

The study of grey literature (documents produced by various public bodies and other operational documents, such as WHO internal briefing notes, daily status reports, epidemiological bulletins) **and scientific literature** (PRISMA methodology for documenting and selecting articles published in peer-reviewed journals indexed on PubMed, EMBASE and Web of Science) helped identify a range of information relating to the management of the 9th, 10th, 11th and 12th outbreaks. This information was then assembled for each intervention sector according to three axes: (i) best practices that contributed to the success of interventions, (ii) key challenges to achieve EVD epidemic control objectives, and (iii) lessons learned to be capitalised on.

The online survey, addressed to all actors in the response to the 9th, 10th, 11th and 12th outbreaks (government personnel, national and international members of the WHO and partner organisations) and disseminated *via* the AAR central coordination teams [the Incident Management System (IMS) teams or the WHO's Global Outbreak Alert and Response Network (GOARN)] recorded over 800 actionable responses out of a total of 1985 questionnaires sent. The data thus obtained helped triangulate the common points between the data collected during the document review and the key informant interviews, and identified key themes and points to guide group discussions at the AAR's closing workshop.

Semi-structured interviews by videoconference or telephone with 31 key informants and resource persons collected data on the personal experiences and thoughts of a sampling of the different types of actors who participated in the response to the 9th, 10th and 11th EVD outbreaks. Interviewees included members of the Congolese government and the Ministry of Health, political-administrative authorities, community leaders, WHO staff and staff of other partner organisations.

Interview guides were developed to facilitate these semi-structured interviews, and topics included in the guides were identified based on the results from the online survey and the document review. The following topics were discussed in the interviews: (i) Information on the role of the key informants in the response; (ii) strengths by intervention pillar; (iii) gaps and challenges by intervention pillar; (iv) lessons learned; (v) challenges related to community engagement and ownership in the response; and (vi) system improvement/recommendations. The interview data were then analysed using an inductive iterative approach to qualitative analysis to identify themes and subtopics.
However, while informants were able to give their own perceptions of the gaps and strengths during the interviews, their responses do not allow for an analysis of the root causes. Therefore, it was imperative that this root cause analysis work be carried out during the group discussions workshop finalising the AAR process.

An in-person **preparatory workshop** was organised to train national facilitators in participatory facilitation techniques, present tools to be used, train them to initiate group discussions and pre-fill note-taking sheets with information already gathered from the first three components of the AAR. This preparatory workshop only assembled the persons previously identified by the Ministry of Health to facilitate and serve as resources during the **focus group discussion workshops,** which comprised of the final phase of the AAR**.**

During the in-person AAR workshop, participants were organized into five working groups, one per intervention pillar, These groups were guided by trained facilitators with the aim of broadening discussions and triangulating information provided in the previous phases, seeking consensus on identified gaps and best practices, as well as on individual and collective perceptions of shared experiences, and finally formulating recommendations and priority activities to strengthen the DRC's capacity to prepare and respond to potential new EVD outbreaks.

1.3 After Action Review Results

The AAR was designed according to a comprehensive, four-pronged approach in order to collect information from different sources, which, after triangulating this information, helps minimise memory bias with regard to response detail.

This AAR was successfully carried out thanks to the active participation of all the stakeholders who took the opportunity to discuss their functions and experiences during the response to successive EVD outbreaks.

The results of the literature review, the online survey and the key informant interviews demonstrated that each outbreak had its own unique characteristics in terms of surveillance at points of entry, security, community participation, access to affected areas and capacity, and was affected by the coexistence of other emergencies.

Despite the rapid succession of the last four EVD outbreaks between 2018 and 2021, response actors were able to benefit from innovations and to generalise their application, particularly with the deployment of accessible diagnostic capabilities for patients, as well as the use of

experimental therapeutics and vaccination within the belt and other geographic areas. From the successive epidemics, they were also able to learn to improve and adapt their actions during the response, for example by using local expertise within each health zone throughout the response approach; optimising logistics; coordinating surveillance, vaccination, infection prevention and control activities; and while integrating the traditional practitioners and community leaders into the response activities. Finally, among the strengths retained, it is worth highlighting the importance of the capitalisation of the lessons learned from the 2014-2016 EVD epidemic in West Africa, including the involvement of several players in the care of the sick and the medical, biological and psychosocial follow-up of Ebola survivors.

The AAR results also highlighted challenges, including the following: the lack of field worker training; the large proportion of players from outside the affected provinces (from other provinces and countries) compared to the locals; the delays in disbursing funds; constraints in maintaining the cold chain for immunisation; the difficulties in managing and delivering laboratory kits, sampling and personal protective equipment (PPE); accessibility and security issues in certain health areas, as well as a strong resistance from the population to the response activities.

The AAR also helped to identify and document several innovations, including those developed during the 10th outbreak, which will certainly revolutionise the response to future EVD outbreaks and facilitate their management. Among these innovations: firstly, the use of bio-secured emergency rooms for outbreaks (BSER) (considered useful by 100% of the participants in the online survey); the deployment of the Ebola vaccine (vaccination "in the belt": i.e. vaccination of contacts and contacts of probable and confirmed cases) to prevent the spread of the epidemic as well as its use for the protection of front-line personnel (considered useful by over 30% of the participants in the online questionnaire); the deployment of mobile laboratories and modern diagnostic tools and the use of mobile Ebola treatment centres in the 2020 EVD outbreak in the Equateur province (considered useful and adapted to the specific context of affected areas that have difficult access and limited resources). Other innovations have become part of pilot projects. This includes the implementation of an operational analysis cell dedicated to the analysis of the data produced by the response integrating the epidemiological and social sciences, according to a holistic method enabling the provision of recommendations that are adapted and acceptable to the communities, with the collaboration of all the partners involved in the response. Additional innovations applied at the points of entry include the search for missing contacts (contacts never identified, lost, and displaced), the geolocation of lost contacts and the adaptation of health control strategies for travellers given the mobility of the population, particularly sick patients.

At the end of the AAR, the participants identified 65 best practices and 76 challenges encountered during the response. They analysed the reasons and defined 69 activities requiring strengthening to improve the response, of which 40 were retained as priorities based on their impact and ease of implementation over the short, medium, and long term.
During the in-person workshop, working groups finalised this AAR by discussing the strengths, weaknesses, and challenges, as well as lessons learned from the successive EVD outbreaks. They relied on the information recorded in the reports of the previous components of the AAR, on the sharing of individual experiences and perceptions of participants in the group discussions, as well as on the principle of consensus to establish a collective perception and identify activities to be carried out based on the strengths, weaknesses, challenges and lessons learned and collectively discussed. Participants analysed the reasons through

discussion and concluded with a series of priority activities, i.e., 40 out of the 69 identified activities.

The priority activities retained by pillar and implementation timelines (in the case of a short/medium/long term epidemic) are listed in the table below:

	PRIORITY ACTIVITIES	MATURITY
Coordination/governance, information management, administration and finance, logistics and security		
1	Implementing articles 105 and 106 of the Health Act[4]: Create a Public Health Emergency Operations Centre (PHEOC) and a national institute of public health (NIPH) by institutionalising the training and the deployment of multidisciplinary rapid response teams (RRT) for the response to epidemics.	Short term
2	Decentralise the coordination of response operations at provincial level, with an incident management system based on sustainable organic structures and existing resources at provincial health division (PHD) level.	Short term
3	Deploy emergency kits at least in provinces considered as high-risk for EVD outbreaks (Kinshasa, North Kivu, Upper Katanga and Equateur).	Short term
4	Advocate to the Ministry of Health for the allocation of an emergency fund for the rapid deployment of experts in the event of public health events/emergencies.	Short term
5	Create an accreditation commission for the partners supporting the response to the public health events/emergencies.	Short term
6	Set up a monitoring and evaluation framework for partner funding to ensure accountability and traceability of funds allocated to the response.	In the case of outbreak
7	Set up a human resources management policy clearly defining the scale of premiums, the ratio of international/national/provincial/local experts, a code of conduct and disciplinary measures for those involved in the response, and the awarding of merit medals and diplomas.	Short term
8	Together with the national stakeholders and partners, adopt and implement a code of conduct with a strong monitoring mechanism to combat abuses and major risks (financial, sexual, abuse of authority, etc.).	Short term

[4] https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/109917/136538/F-759347609/COD-109917.pdf

9	Put in place a commission for planning, monitoring and evaluation, including documentation and dissemination of best practices.	Short term
10	Develop strategies and directives to ensure the continuity of services during outbreaks and the contribution to universal health coverage.	In the case of outbreak
Surveillance, vaccination, points of entry/health control points (PoE/HCP), laboratory		
1	Develop guidelines for the mandatory inclusion of traditional healers in community-based monitoring.	Short term
2	Develop guidelines for the involvement of non-governmental health facilities in the active search for suspected cases in emergency situations.	Short term
3	Update the standard operating procedures (SOP) by integrating the therapeutic and community itinerary (or mapping) of each confirmed case, which will enable an exhaustive list of contacts to be drawn up.	Medium term
4	Develop and test a plan to strengthen the epidemiological surveillance at designated points of entry (PoE), with, in particular, a participative mapping of population mobility and large gatherings to identify the main risks of the spread of the disease and implement mitigation measures adapted to the points of departure and arrival, as well as the transit points and PoE in the country.	Medium term
5	Organise cross-border collaboration and coordination meetings with neighbouring countries.	In case of an epidemic if necessary
6	Strengthen the capabilities of provincial laboratories in order to rapidly deploy mobile laboratories into the field with genome sequencing.	Medium term
7	Deploy high-speed sequencers at provincial health division (PHD) level.	In the case of outbreak
8	Provide all provinces with high temperature incinerators (>1000°C).	Long term
9	Appoint technicians for the maintenance of laboratory equipment and other biomedical devices at the level of the provinces and health zones.	Medium term
10	Set up a national vaccine development centre.	Long term
11	Increase the availability of solar refrigerators in at-risk health zones.	Medium term
12	Supply the EPI central warehouse in Kinshasa, the provinces, and the health zones/areas with equipment: vehicles, motorbikes, cold chain equipment (coolers, etc.).	Long term
Medical treatment, therapeutic and clinical trials, Ebola survivor programme		

1	Organise a workshop to update EVD case management protocols and standard operating procedures (SOP), defining the technical platform in the case of Ebola emergency for specialised care (OB/GYN, surgery, etc.).	Short term
2	Deploy inter-agency emergency kits (drugs and equipment), including equipment for the establishment of treatment facilities (ETCs), with protocols for rapid deployment of emergency medical teams during EVD and other infectious disease outbreaks.	Short term
3	With the relevant institutions, restructure clinical trial procedures in the target provinces and provide training to Ministry of Health staff in conducting clinical trials.	Long term
4	Increase the funding allocated to the recruitment of experts for the follow-up of patients who have recovered.	Short term
5	Promote free healthcare via government subsidies for health structures in the event of an outbreak.	In the case of outbreak
Infection prevention and control (IPC), dignified and safe burials (DSB)		
1	Draft a memo/technical note for the mandatory inclusion of isolation and screening units in the minimum package of activities for all health facilities.	Short term
2	Set up local hydro alcoholic solution production units in the 26 provincial hospitals and 6 university clinics.	Medium term
3	Update and implement the national IPC-WASH strategy in the current national context.	Short term
4	Deploy and manage kits (IPC/WASH materials and inputs) in 9 high-risk provincial health divisions (PHD); implement a regular supply plan for inputs and personal protective equipment (PPE) in the PHD's health facilities and in the community.	Short term
5	Put in place a project to increase access to water and waste management in health facilities and communities in high-risk provincial health divisions (PHDs).	Short term
6	Integrate the technical content of the IPC (IPC/Wash Toolkit) into medical training curricula (Faculty of Medicine and Higher Institute of Medical Techniques).	Short term

Risk Communication and Community Engagement (RCCE), psychological and social care		
1	Plan and carry out socio-anthropological studies in the context of outbreaks.	In the case of outbreak
2	Advocate for appropriate funding of new communication strategies (social networks, etc.) and of the Security Commission. Regularly review the communication plans and adapt the latter according to community feedback and the results of socio-anthropological surveys (social sciences analysis unit).	Short term

3	Prioritise the deployment of communicators inside the front-line teams.	Short term
4	Document positive experiences from the management of rumours and infodemics.	Short term
5	Put in place mechanisms for integrating and considering community returns at health zone level.	In the case of outbreak
6	Recruit and assign qualified clinical psychologists at all levels in the provinces with a high risk of outbreaks, and provide a technical training framework for the contribution of the social sciences in the response to outbreaks.	In the case of outbreak
7	Integrate psychological care into primary healthcare.	In the case of outbreak

Short term: completion of activities in the next six months.
Medium term: completion of activities within six to twelve months.
Long term: completion of activities beyond twelve months.

At the end of the in-person component, a questionnaire was submitted to participants to evaluate not only whether the AAR objectives had been achieved, but also to collect their comments and feedback to improve AAR methodology.

Out of the 60 participants present on the last day of the AAR, 37 (62%) had completed this questionnaire. Among them, over 94% felt that the adopted methodology had helped make it possible to collect as much information as possible. And over 87% felt that it had helped: (i) to identify the difficulties and challenges that arose from the response to the successive EVD outbreaks; (ii) to share experiences and exemplary practices; and (iii) to propose measures to improve coordination and collaboration mechanisms and strengthen the preparedness, early detection and the response to public health emergencies in the country.

This AAR ended with a round table with the technical and financial partners based in the DRC. During the meeting, the General Director of Disease Control, Dr Dieudonné Mwamba Kazadi, presented the various recommendations stemming from the review and the roadmap for their implementation. In his closing remarks, Dr Jean Jacques Mbungani Mbanda, Minister of Public Health, Hygiene and Prevention, highlighted among the key recommendations the need to set up a Centre for emergency operations with standard operating procedures, competent human resources, and dedicated infrastructure, with the aim to respond to the Government's priorities in terms of responsiveness to public health emergencies and disasters, as well as the vision of the President of the Republic, His Excellency Felix Antoine Tshisekedi Tshilombo. He also wished to thank all the experts, national and provincial stakeholders, and the partners, as well as the technical secretariat of the Multisectoral Ebola Response Committee, for their contribution to the realisation of this AAR that has been awaited for several months and whose recommendations will allow the country to be better prepared for any possible public health emergencies and disasters. He also invited the partners and all of the participants in this AAR to keep up the enthusiasm shown during this review, to support the country in the implementation of the recommendations resulting from it, and to support it in its fight against the Coronavirus disease 2019 (COVID-19) pandemic and the reinforcement of its health system.

2. CONTEXT AND JUSTIFICATION OF THE AFTER ACTION REVIEW - SUCCESSION OF EVD OUTBREAKS IN THE DRC

Identified in 1976 by Belgian microbiologist Peter Piot and a national team that included Congolese professor Jean-Jacques Muyembe Tamfum, the Ebola virus is transmitted to humans by infected animals. Human-to-human transmission occurs through bodily fluids, with the main symptoms being: fever, joint pain, vomiting, diarrhoea, and bleeding. The Ebola virus disease (EVD) (also known as Ebola haemorrhagic fever) is a severe acute illness, often fatal in humans if not managed early primarily through rehydration and symptomatic treatment. To control the outbreaks, the fight against the disease relies on a set of interventions: surveillance, case management, prevention and the fight against infection, the risk communication and community engagement, and psychosocial care.

Since the outbreak of the first EVD case in 1976 in Yambuku, a town near the Ebola river that gave the disease its name, the DRC has suffered twelve EVD outbreaks (Table 1).

Table 1. Timeline of Ebola virus disease (EVD) outbreaks in DRC from 1976 to 2021

Year	Dates	Main outbreaks	Strain	Case	Deaths (#)	Deadliness	Duration
1st (1976)	August 1976	Yambuku - Equateur	EBOV	318	280	88%	
2nd (1977)	June 1977	Tandala - Equateur	EBOV	1	1	100%	
3rd (1995)	May-June 1995	Kikwit - Bandundu - Kwuilu	EBOV	315	250	79%	
4th (2007)	August-November 2007	Mweka - Western/Central Kasai	EBOV	264	187	71%	
5th (2009)	December 2008 - February 2009	Mweka - Kaluamba - Western Kasai	EBOV	32	15	47%	
6th (2012)	June - November 2012	Isiro - Eastern Province	BDBV	77	36	47%	
7th (2014)	August-November 2014	Djera - Boende - Tshuapa	EBOV	66	49	74%	
8th (2015)	May-July 2015	Likati - Western - Lower Uele	EBOV	8	4	50%	
9th (2018)	May 8 - July 24, 2018	Wangata, Bikoro - Equateur	EBOV	54	33	61%	78 days (2.6 months)
10th (2020)	1 August 2018 - 25 June 2020	North-South, South Kivu and Ituri	EBOV	3470	2280	66%	695 days (23 months)

11th (2020)	1 June - 18 November 2020	Mbandaka - Equateur	EBOV	130	55	42%	172 days (5.7 months)
12th (2021)	7 February - 3 May 2021	Biena, Butembo - North Kivu	EBOV	12	6	50%	86 days (2.8 months)

Source: Ministry of Public Health, Hygiene and Prevention, DRC, 2021

The last four EVD outbreaks covered in this AAR occurred between May 2018 and May 2021:

- On **8 May 2018**, the DRC Government notified WHO of the **ninth EVD outbreak** and declared its **official end** on **24 July 2018**. At the end of this outbreak, which affected the Equateur province and more specifically the health zones of Bikoro, Iboko and Wangata, the National Response Coordination against EVD counted 54 cases, including 33 deaths (fatality rate of 61%) and 21 people healed.

- A few days later, on **1 August 2018,** a **tenth EVD outbreak** was notified to WHO. It would be the longest, most complex and deadliest that the DRC has faced. Its **official end** was indeed declared nearly two years later, on **25 June 2020**. This outbreak was particularly difficult to manage as it occurred in an area of active conflict, namely the provinces of North Kivu, Ituri, and South Kivu. In 20 months, the country recorded 3,470 cases and 2,280 deaths (a fatality rate of 66%). To end the pandemic, the DRC resorted to the vaccination of over 320,000 people in this unstable area, with two vaccines from two different laboratories (Merck and Johnson&Johnson)[5]. In addition, with the support of its partners (including the WHO) and the partners deployed throughout the Global Outbreak Alert and Response Network (GOARN), the Congolese government and the Ministry of Health have ensured the training of thousands of health agents, the follow-up of 250,000 contacts, the analysis of 220,000 samples and equitable access to state-of-the-art therapies for all patients. Efforts to build preparedness capabilities in neighbouring countries have also reduced the risk of the outbreak propagating beyond the national borders.

- But from **1st June 2020**, a **new EVD outbreak, the eleventh**, was declared in Equateur province, two years after having affected the same province. This outbreak, which officially **ended on 18 November 2020**, took place within a particular context, marked by the COVID-19 pandemic. The country recorded 130 EVD cases, including 55 deaths (a fatality rate of 42%).

- Declared on **7 February 2021** in North Kivu, **the twelfth EVD outbreak** was a resurgence of the 2018 outbreak that plagued the same province for nearly two years. This outbreak, which officially **ended on 3 May 2021**, affected 12 people (11 confirmed cases and one probable) out of which 6 died (a mortality rate of 50%).

EVD is a notifiable disease. On 17 July 2019, the WHO declared the tenth outbreak in the DRC, which constituted a Public Health Emergency of International Concern (PHEIC). This statement came following the detection of people infected after a trip to Uganda (mid-June

[5] Merck in the areas with active virus transmission and in border areas as part of the preparedness framework; Johnson&Johnson in the border areas of affected zones as part of the preparedness framework

2019), and of a resident pastor in Bukavu who was infected during a preaching tour in the towns of the North Kivu Province. The latter was detected during his arrival in Goma (case notified on 14 July 2019), a vast urban area and trading hub both nationally and internationally (Rwanda, Burundi, international airport).

Furthermore, due to its diverse fauna, its expanse, its position within the heart of Africa with nine border countries, and its important population, the DRC occupies a significant place on the global health security agenda (GHSA) both at sub-regional level and worldwide. DRC thus has a duty to fulfil its obligations under the International Health Regulations (IHR 2005) that it ratified. In March 2018, the joint external evaluation (JEE) of the implementation of the minimum required national capacities revealed gaps that the DRC has committed to fill. This evaluation examined 48 indicators covering 19 technical field in the aim of identifying the assets, the challenges and the components that require strengthening. It gave way to a series of recommendations and priority actions, notably the development of a National Action Plan for Health Security (NAPHS) that the country has implemented. Implemented in March 2019, this plan serves to strengthen the national capabilities for the efficient and effective implementation of the IHR (2005). It advocates for resource mobilisation and constitutes a reference tool for the consolidation and maintenance of national and international health security. The DRC also followed other recommendations concerning the setup of a Public Health Emergency Operations Center (PHEOC) and rapid response teams (RRT) to improve the fight against the main endemics (tuberculosis, malaria, HIV-AIDS, etc.) and outbreaks (measles, cholera, Ebola, COVID-19, etc.) as part of the government action plan under the aegis of the President of the Republic, Felix Antoine Tshisekedi.

CLICK HERE TO ACCESS THE DETAILS CONCERNING THE CHRONOLOGY OF EVENTS DURING THE FOUR OUTBREAKS SUBJECT OF THIS AAR.

Managing these complex outbreaks has been fraught with difficulty and presented numerous challenges to overcome, but it has also led to the emergence of exemplary practices and lessons learned. Today, it is crucial to examine each pillar of the response to these outbreaks, to analyse them and capitalise on them for the management of future outbreaks to come, through the after action review (AAR) process.

Let us recall here that, due to the rapid succession of the last three outbreaks, it was difficult to organise an AAR for each of the three outbreaks within the ideal time period (being within three months of the official end of the outbreak). The declaration of the end of the 12th outbreak on 3 May 2021 offered the opportunity for the DRC's Ministry of Health to carry out this assessment on the response to the last four outbreaks that affected the provinces of Equateur, Ituri, and North Kivu and South Kivu.

3. ROLL OUT AND RESULTS OF THE AFTER-ACTION REVIEW

3.1 Objectives and scope of application

3.1.1 General objective

In the aftermath of an action, event or emergency, the AAR allows **for the collective analysis of what happened during the response, why it happened this way, the strengths and the weaknesses found, the improvements needed and the lessons to be learned**. The objective is to identify the best practices and new measures to be implemented in a similar context in the future.

To this end, the EVD response AAR in the DRC is aimed at all those who participated in taking part in an open and honest discussion about their experiences and their perceptions of the different response activities undertaken, with the sole objective of strengthening national capabilities in terms of preparedness, detection, and response to public health emergencies to mitigate their impacts.

This AAR also helps promote mutual accountability between all parties involved in the preparation and response to the EVD outbreaks in the DRC (partners, donors, specialised agencies, government entities, etc.).

3.1.2 Specific objectives

- Identify the capabilities in place prior to the intervention;
- Identify any challenges encountered in managing this outbreak, the lessons that were learned, and the best practices observed;
- Find the gaps between the planned activities and those that have been carried out in accordance with the standards and procedures in place;
- Make concrete recommendations to strengthen the capabilities for preparedness, detection and response to potential outbreaks.

3.1.3 Scope of application: activities examined

The scope (or "scope") of the AAR (Figure 1) was defined to respond to the different contexts of the four EVD outbreaks. Indeed, the challenges faced in responding varied from one outbreak to another, as did the lessons learned. It is thus essential to evaluate all the actions taken under the different pillars of public health intervention and of operations support during the four outbreaks in order to evaluate their impact on the response overall and to identify, through causal analysis, the key factors contributing to the best practices and to the challenges encountered.

The AAR process is steered by a list of "key questions" that initiating a reflection process around each response pillar. However, this non-exhaustive list could be completed in accordance with the topics raised during this exercise. Finally, although the AAR process is steered by the countries themselves - preferably by the Ministry of Health - the WHO recommends a comprehensive approach as it recognises the contributions and key roles

played by all the relevant stakeholders (government, national and international), including the population as shown in Figure 1 below.

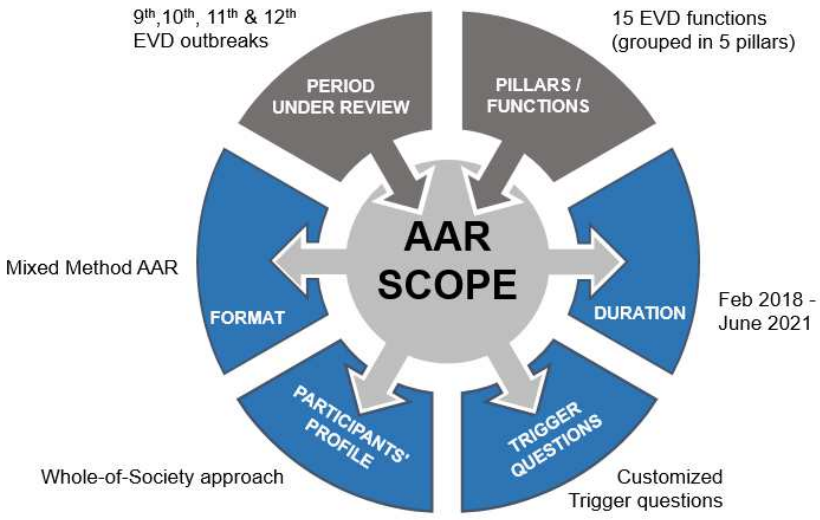


Figure 1. Scope of the AAR of the response to the 9th, 10th, 11th and 12th EVD outbreaks in the DRC

3.2 Methodological approach

The AAR conducted for the response to the last four EVD outbreaks in the DRC follows a mixed method format as defined in the WHO guide to the After Action Reviews, namely: interviews with key informants and working groups preceded by a literature review of grey and scientific literature and an online survey.

This mixed methodology was adopted not only due to the number and diversity of stakeholders - especially front-line stakeholders involved in EVD outbreak preparedness and response activities at the national, provincial and zonal levels - but also due to the long period between the last 3 outbreaks and the organisation of the AAR. As many stakeholders had already left the field, it was logistically difficult to involve them in this evaluation solely in the form of working groups.

The mixed format of this AAR is based on **four components** described in the following paragraphs, with a preparatory workshop held in preparation for the final component (Figure 2):

- **1 – Desk review:** critical review of the **grey literature** [official reports prepared by organisations that have played a major role in the EVD outbreak response, such as the WHO, Atlanta CDC, International Federation of Red Cross and Red Crescent Societies (IFRC) and Doctors Without Borders (DWB); and other documents produced by various public bodies and sources of information (WHO internal briefing reports, daily status reports, epidemiological bulletins, etc.)] and **scientific literature** (articles published in

peer-reviewed scientific journals indexed on PubMed, EMBASE and Web of science) – **January to May 2021.**

This literature review is intended to ensure that information from different sources and different points of view is properly considered during the AAR. This desk review conducted consolidated the information available in the form of lessons learned. The examination of the scientific literature (articles published in peer-reviewed journals available in the public domain) identified best and innovative practices applied in the response to the 9th, 10th and 11th EVD outbreaks in the DRC. These practices were illustrated through several case studies, each presenting the following information: local context, challenges encountered, approach followed, notable results or impact and lessons learned. Although the selected case studies are not sufficiently comprehensive to encompass all the lessons learned from the response to the 9th, 10th and 11th EVD outbreaks, they are, however, a "living" working document, used as a tool during key informant interviews and group discussions conducted within the AAR framework on site in the DRC, in order to revive memories of events that occurred and decisions that were made during EVD outbreak responses between 2018 and 2020, and thus initiate reflection on lessons learned.

This desk review also constitutes an internal documentation for the DRC concerning lessons learned from the response, after triangulation with the data from the online survey, key informant interviews and group discussions within the AAR framework.

It is also a collection of experiences to be shared with other countries, the WHO and other partners, with the agreement of the government of the DRC. Sharing experiences will allow other countries to benefit from the DRC's experience in managing and responding to future EVD outbreaks, particularly in conflict zones or areas with difficult access. It will also improve the visibility of the DRC's progress made in managing EVD outbreaks between 2018 and 2021.

- **2 - Online survey** addressed to all stakeholders in the responses to the 9th, 10th and 11th outbreaks (including the partners) and disseminated *via* central AAR coordination teams: the WHO incident management system (IMS) or the Global Outbreak Alert and Response Network (GOARN) teams – **27 January to 19 March 2021**.

- **3 - Interviews with key informants and resource persons**: 31 people selected according to their affiliation with the Congolese government (Ministry of Public Health, political-administrative authorities and community leaders) and partner organisations (WHO, UNICEF, etc.), and according to their functions, for each pillar of the EVD response – **12 to 25 April 2021**.

It should be noted that the first three components of this AAR (grey and scientific literature review, online survey, key informant and resource person interviews) focused mainly on the 9th, 10th and 11th EVD outbreaks. The focus on the 12th outbreak was incorporated into the AAR on the advice of the Ministry of Public Health, Hygiene and Prevention of the DRC after it was officially declared complete on 3 May 2021.

- **4** - Preparatory workshop, held in Matadi, from 2 to 4 June 2021 to train 20 facilitators with the assistance of WHO facilitators (Geneva/AFRO and Country Office), to facilitate **the AAR workshop which took place in Kinshasa from 7 to 10 June 2021,** alternating working groups, plenary sessions and presentations, bringing together available stakeholders, decision makers, partners, beneficiaries and the DRC government.

Considering the context of the outbreak and the pandemic (COVID-19), the first three components of the AAR were conducted remotely. On the other hand, the preparatory workshop and the focus group discussion workshop were able to be organised in-person with the strict application of measures to prevent and control coronavirus infections (see Annex 5.2). It is at this stage that the response to the 12th EVD outbreak was able to be introduced within the scope of the AAR.

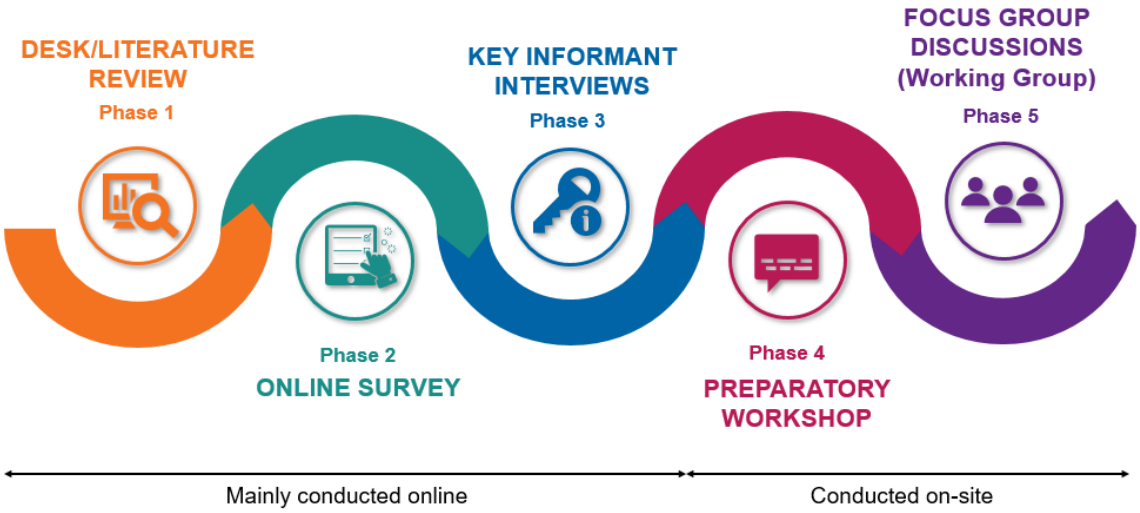


Figure 2. The various AAR components of the response to the 9th, 10th, 11th and 12th EVD outbreaks in the Democratic Republic of the Congo.

During this workshop, five working groups were formed, one for each of the 5 intervention pillars to be analysed, and distributed as follows:

- Coordination/governance, information management, administration and finance, logistics and security;
- Surveillance, vaccination, points of entry and health control points (PoE/HCP), laboratory;
- Medical treatment, therapeutic and clinical trials, Ebola survivor programme;
- Infection prevention and control (IPC), dignified and safe burials (DSB);
- Risk Communication and Community Engagement (RCCE), psychological and social care.

The focus group discussion groups workshop was organised in two parts: a first part on **diagnostic analysis** the response to the four EVD outbreaks (working session 1) and a second part concerning **prospective analysis** (working sessions 2 and 3):

- **Session 1. What went well? What went poorly? Why?**
- **Session 2. What can we do to improve the response to Ebola?**
- **Session 3. Ways to improve preparedness and response to future outbreaks.**

The participants in this workshop were divided into discussion groups according to their expertise and the pillar of the response to which they contributed during one or more of the last four EVD outbreaks examined.

3.3 Results

Given the innovative approach used for this AAR, which was based on four evaluation components or formats, a summary is presented for each component of the evaluation: desk review, online survey, and key informant interviews in a remote setting; and an in-person focus group discussion workshop.

3.3.1 Desk review of grey literature and scientific literature

The desk review covers the response to the 9th, 10th and 11th EVD outbreaks in the DRC and is structured around three axes:

- Best practices that contributed to the success of the interventions;
- Difficulties and key challenges to an effective response;
- Lessons learned from the response to the four EVD outbreaks that need to be capitalised.

The study of scientific literature used the PRISMA method (*Preferred Reporting Item for Systematic Review and Meta Analysis*) and the management tool *Endnote* or *Reference Manager*. The articles were reviewed and classified according to their relevance and according to three categories: (i) title, (ii) abstract (if available) and (iii) complete article.

Although the study focused exclusively on the period 2018-2020, some articles relating to the Ebola outbreak in West Africa were also reviewed to better understand the progress made in general in preparing, detecting, controlling and responding to the latest outbreaks.

This desk review revealed multiple **strengths and best practices** during the outbreaks, namely that good **coordination** through mechanisms, as well as the establishment of a joint epidemiological and social analysis unit within the Surveillance Committee, allowed for regular exchanges of information between the different sectors involved in the response. The **zonal approach** was another best practice/strength, and contributed to the success of the response, including: the recruitment of local staff, the deployment of mobile laboratories, the availability of specific Ebola treatments and vaccines, the use of local social networks, and the establishment of emergency low risk burial community teams (ELRBCT). Additional strengths included the readiness of communication actors to resolve incidents in the population and the free care in public health facilities for certain diseases, mainly for women and children.

Among the **difficulties and main challenges to overcome**, the analysis of the existing documentation highlights the extent to which the political and social context, the **climate of insecurity** in the country — particularly in the Eastern region — and the porosity of the borders

at PoE, hinder the response to EVD outbreaks, particularly with regard to the adherence of the population to the interventions, the evacuation of patients to Ebola treatment centres, the active search for cases and the follow-up of contacts, resulting in high mortality. The desk review also highlights the **lack of funding and human resources**, and insufficient preparation capabilities with stock shortages. Finally, the preventive and control measures against infection remain insufficient in certain health facilities and within the community itself.

The results of this desk review identified a number of **lessons learned from the response to the 9th, 10th and 11th EVD outbreaks,** particularly the need for: (i) **adapting response capabilities to the level of risk** of the health zone and **decentralising them** (diagnosis, on-site care with the creation of Ebola treatment centres and the use of bio-secure emergency rooms); **mobilising resources,** human and financial, and infection prevention and control infrastructures; and (iii) strengthening the establishment of **rapid response teams** (involving local leaders) and **strategic health control points** that are operational 24/7.

CLICK HERE TO ACESS THE DETAILS ON THE GREY LITERATURE REVIEW USED WITHIN THE FRAMEWORK OF THIS AAR

The study of scientific literature has complemented that of the grey literature. It highlights lessons grouped under 11 case studies used during the in-person component of the AAR:

- **Case study n°1**: Using the app Go.Data for real-time monitoring and contact tracing in a context of open conflict and community mistrust
- **Case study n°2**: Standardisation of the definition of cases for surveillance during an EVD outbreak
- **Case study n°3**: Vaccine equity and gender equality - vaccination of pregnant and lactating women and their infants at risk of exposure to the Ebola virus disease
- **Case study n°4**: Adaptation of the immunisation strategy in open conflict areas during an outbreak
- **Case study n°5**: Use of laboratory tools and mobile labs for case identification, contact tracing and the detection of new transmission chains
- **Case study n°6**: Understand community perception and build mutual trust through real-time socio-behavioural data, active listening and psychosocial support
- **Case study n° 7**: Improve the accuracy of the Ebola surveillance system through mass malaria treatment campaigns, case definition adjustment and the use of an effective clinical algorithm
- **Case study n°8**: Management of Ebola survivors and risk management of resurgence through exposure to survivors' biological fluids
- **Case study n°9**: Promoting dignified and safe burials to limit disease transmission - developing community engagement strategies to address community reluctance
- **Case study n°10**: Learn how to use and apply new research tools, innovations and knowledge to manage cases and break chains of transmission

- **Case study n°11**: Reinforcing cross-border collaboration and detection and response capabilities at points of entry to address Ebola virus disease cases in border areas

The proposed case studies illustrate the best and innovative practices in the response to the 9th, 10th and 11th EVD outbreaks in the DRC, selected as part of this AAR to inform the other components. However, it is worth noting the limitations of this approach:

- Not all pillars of the EVD response were the subject of a case study, given the availability of scientific papers on each pillar, human resources, and the time constraints to conduct this literature search.
- The selection of case studies was carried out according to **the positive deviance approach** somewhat depends on the personal perspective of the AAR team members and the availability of published scientific papers in the public domain. It is therefore possible that this selection is somewhat subjective. This is why case studies should be triangulated with information from the other components of the AAR that complement it.
- Although the desk review was conducted by public health intervention pillar, the case studies were not necessarily conducted by pillar, given the cross-cutting nature of many response activities. Thus, the theme of security is a central element of the response to the 10th EVD outbreak.
- This is not a systematic review, but rather a desk review or "narrative summary", aimed at identifying potential topics of interest that the stakeholders and the relevant actors can explore and examine further in the subsequent phases of the AAR, and supplement with additional operational data, issued from the grey literature.
- Since the desk review was carried out at the end of 2020, it did not take into account the manuscripts of the publications submitted for peer review in 2021, with the exception of certain articles specifically brought to the attention of the authors of the desk review.
- The peer-reviewed journal articles included in the desk review do not necessarily contain detailed data on best practices and operational challenges during the multi-faceted EVD response, hence, it is essential that the results of this desk review be complemented by those of the grey literature and triangulated with data from the various phases of the AAR. Certain aspects of the field experiences may not have been considered or published in peer-reviewed journals, although they are widely recognised among the actors involved in EVD responses.
- The 10th EVD outbreak was the largest and the longest, it is possible that there was a publication bias in its favour, especially as most of the available publications focused only on the 10th outbreak. Therefore, the collection of lessons learned inevitably focuses on this 10th EVD outbreak.

CLICK HERE TO ACCESS THE DETAILS OF THE SCIENTIFIC DOCUMENTARY REVIEW CARRIED OUT WITHIN THE FRAMEWORK OF THIS AAR.

Each case study has been written in such a way that it can be used as a stand-alone document containing its own bibliography, in order to make it easier to use it to initiate reflections in group discussions on a specific topic.

3.3.2 Online survey

This survey was made possible thanks to the participation of the many people who took part in the EVD response in the affected provinces, but also thanks to the involvement of the General Directorate for Disease Control (GDDC) and the provision of material resources by the WHO.

The survey questionnaire was designed by the AAR Technical Team, and more specifically by the members of the Congolese Ministry of Health and the WHO, who formed an "Online Survey" sub-working group to collect from actors within the response to the 9th, 10th and 11th EVD outbreaks, information surrounding their functions, the difficulties encountered, their strengths and the lessons learned from their actions. This questionnaire was posted online on the WHO DataForm platform in English and in French.

The survey adopted a qualitative approach, focusing on open-ended questions with Congolese government staff, and national and international staff from partner organisations and the WHO.

Given the large number of stakeholders in the response to the three outbreaks, the AAR technical team relied on contact lists from the Ministry of Health, the WHO incident management system, the GOARN network and the DRC Health Cluster. WhatsApp groups were also used to contact a number of stakeholders. The survey was available online to all concerned, from 27 January to 19 March 2021.

To limit biases related to geographic and institutional origin, the tools used to analyse the data were developed in close collaboration with members of the "Online Survey" sub-working group who have in-depth knowledge of the context of the responses under review.

An iterative inductive process allowed the questionnaire responses to be grouped under 5 public health intervention pillars:

- Coordination/governance, information management, administration and finance, logistics and security;
- Surveillance, vaccination, points of entry and health control points (PoE/HCP), laboratory;
- Medical treatment, therapeutic and clinical trials, Ebola survivor programme;
- Infection prevention and control (IPC), dignified and safe burials (DSB);
- Risk Communication and Community Engagement (RCCE), psychological and social care.

Once the data was categorised, the inductive analysis focused on identifying the links and interactions between the information and the different intervention pillars, as well as highlighting the specific experiences felt and categorising them into subgroups.

For the sake of quality control, the analysis of the data collected was carried out in parallel by an analyst from the Ministry of Health and a consultant from the WHO. The results were then compared to ensure consistency and inter-coder reliability.

In the end, the online survey retained 854 fully completed questionnaires for analysis. Among the survey participants, 27% were women and 73% were men, including 38% of all genders in the 35-44 age group (Figure 3).

Regarding their participation in the various responses, 0.8% (7) participated only in the response against the 9th outbreak (Equateur 2018), 70% (599) only against the 10th outbreak (Kivu 2018-2020), 2% (20) only against the 11th outbreak (Equateur 2020), 21% (182) against at least 2 outbreaks and 6% (53) against 3 outbreaks (Figure 4).

Regarding stakeholder affiliation, there are 42 % (362) Congolese government personnel, 10 per cent (84) national staff from partner organisations, 9 per cent (74) international staff from partner organisations, 19% (166) national WHO personnel and 20% (168) international WHO personnel (Figure 5).

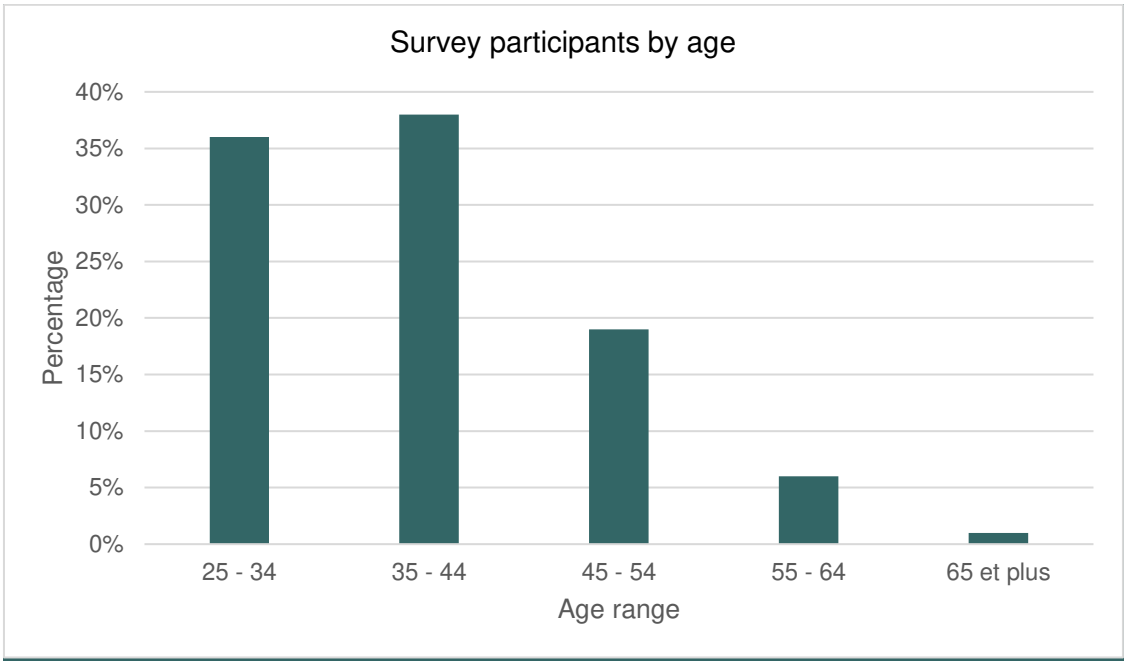


Figure 3. The distribution by age group of participants in the online survey carried out as part of the AAR of the response to the 9th, 10th, 11th and 12th EVD outbreaks in the Democratic Republic of the Congo.

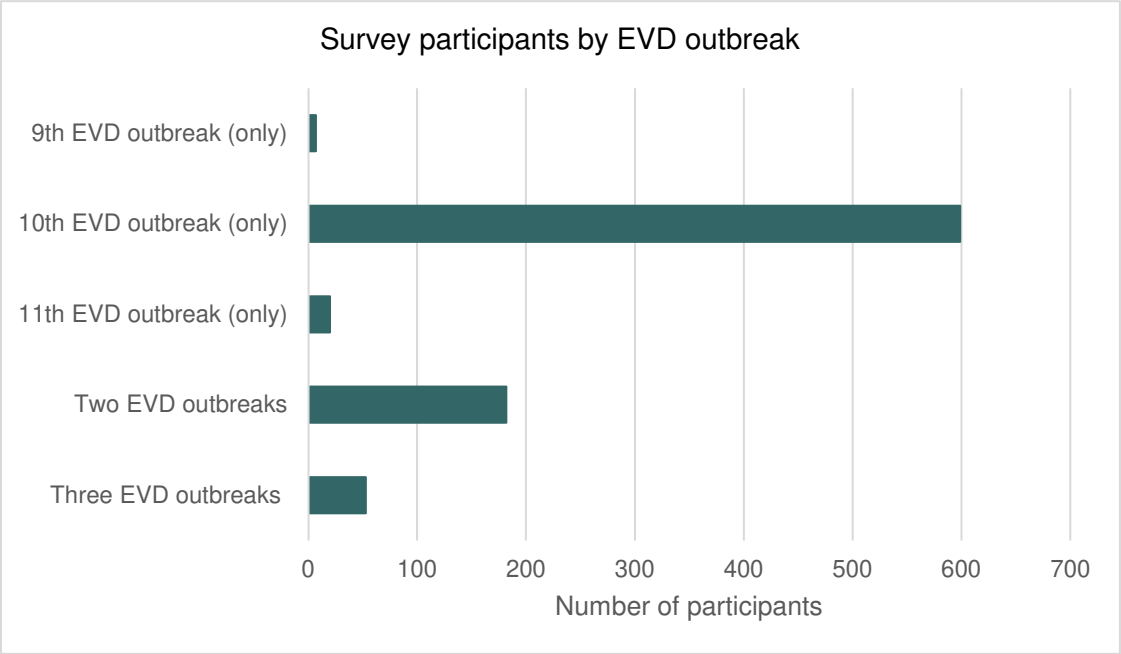


Figure 4. The distribution of participants in the online survey according to the different EVD outbreaks, carried out as part of the AAR of the response to the 9th, 10th, 11th and 12th EVD outbreaks in the Democratic Republic of the Congo.

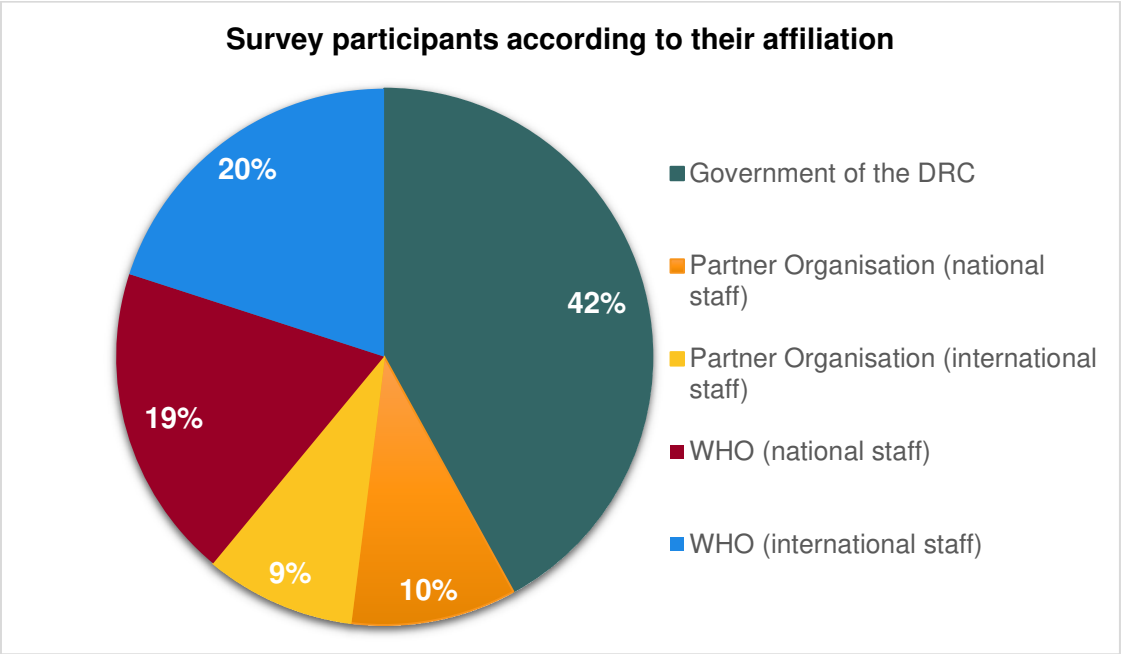


Figure 5. The distribution by affiliation of participants in the online survey carried out as part of the AAR of the response to the 9th, 10th, 11th and 12th EVD outbreaks in the Democratic Republic of the Congo.

Overall, participants noted that each outbreak had unique features in terms of community participation, access to affected areas, security issues and limited response capacities that were complicated by other co-occurring local and/or national emergencies.

A detailed analysis of the responses was carried out for the different areas grouped under the 5 intervention pillars.

We will present here a list of strengths/best practices and difficulties/challenges across all actions.

Strengths/best practices

- Psycho-social care and the use of people who were cured of EVD to testify to the treatments and support they received during their stays in an Ebola treatment centre (considered useful by 70% of participants), and rapid implementation of a programme to follow up on Ebola survivors
- Hygiene brigades (mentioned by 60% of participants), training of local providers for dignified and safe burials
- Zonal approach: decentralisation of on-site screening and case management services, revitalisation of community-based units in health zones, field teams for the search for suspected cases and their evacuation to Ebola treatment centres, involvement of all socio-cultural groups to break community resistance (according to 50% of survey participants)
- Involvement/support from government, the WHO and the financial and technical partners
- Delegation of tasks to local supervisors, implementation of a joint validation and investigation tool for nosocomial infections (IPC/WASH and surveillance), regular training of healthcare providers on IPC/WASH in the health facilities (according to 40% of survey participants)
- Supervision and continuous training of the providers involved
- Functioning of the alert and information exchange circuit between the various stakeholders (actors in the field, communities, sectors) (according to 20% of the stakeholders who participated in the response to the 10th outbreak)
- Existence of a distribution plan including a rigorous estimation of supply durations in order to avoid stock shortages and good coordination between laboratories despite logistical constraints (according to 20% of survey participants)
- Good level of security provided by the national police and the armed forces of the DRC (according to 20% of participants, international and national agents); SAFE training provided by the UNDSS (United Nations Department of Safety and Security) for field agents
- Deployment of innovations: the use of bio-secured emergency rooms for outbreaks (BSER) (deemed useful by 100% of the participants in the online survey); the deployment of the Ebola vaccine ("ring" vaccination: i.e. vaccination of contacts and contacts of probable and confirmed cases) to prevent the propagation of the outbreak and to protect the front-line personnel (deemed useful by over 30% of the participants of the online questionnaire); the deployment of mobile laboratories and modern diagnostic tools and the use of mobile Ebola treatment centres during the EVD outbreak of 2020 in the Equateur Province (considered useful and adapted to the specific context of affected areas with difficult access and limited resources). Other innovations have become part of pilot projects. This includes the establishment of an operational unit, dedicated to the analysis of the data produced by the response integrating epidemiology and social sciences, according to a holistic method to allow for issuing

recommendations adapted for and acceptable by the communities, and with the collaboration of all partners involved in the response.

Statements taken from the investigation:

A WHO member (international personnel) mentioned the following strengths: *"the establishment of multidisciplinary intervention teams, the implication of several international partners, the establishment of circumstantial intervention teams, and the introduction of the VSV-ZEBOV vaccination"*.

A member of a partner organisation (national staff) mentioned among the innovations: *"the implementation of the BSERs (individual patient room), and the patient circuit adapted to minimise the risk of contamination"*.

A DRC government personnel said*: "The monitoring of EVD survivors enabled us to avoid a possible resurgence of the outbreak"*.

A senior official from the Ministry of Health (government department) said: *"Our main strengths were community dialogue with the leaders and awareness through radio broadcasts, by the leaders themselves and in local languages. The use of local resources and practices in the response (manufacture of hand washers with barrels sold on the local market), the determination and motivation of the entire team to cut the transmission chain, as well as the transfer of skills are forces to which I am proud to have contributed"*.

Difficulties/challenges to overcome

- Absence of an SOP in the first days of an outbreak: major problem in medical care (mentioned by 100% of participants)
- Political interference in certain practices, in particular in the recruitment and the payment of service providers (16% of the responses, including 60% for Congolese government personnel) and problems with the organisation of state services at the various points of entry to major agglomerations
- Climate of insecurity (mentioned by 95% of survey participants, 40% of whom said they had received threats or had been assaulted, especially during the response to the 10th outbreak)
- Community resistance (reported by 90% of participants) to preventive measures against infection and vaccination (reported by 80% of participants); sociocultural and linguistic barriers
- Uneven distribution of means of travel, lack of coverage by the telephone network leading to delays in the alarm calls within the community surveillance framework (in the province of Equateur in particular) and for the supply of laboratories (according to 15% of participants) and care structures with equipment for infection prevention and control (insecurity is also a contributor here)
- Insufficient surveillance at Points of Entry (PoE) due to a lack of surveillance personnel, materials, equipment and tools.

Statements from the investigation:

A member of a partner organisation (national personnel) said: ***"The politicisation of the outbreak has generated fierce resistance from the community".***

A WHO member (national staff) said: ***"In South Kivu, service providers have risen up over late payment of their bills".***

A staff member of the Congolese government said: ***"The biggest difficulty we had to face was the difficulty of accessing communities, due to the lack of road infrastructure".***

Staff from a partner organisation (international personnel) said: ***"Safety was a daily headache when it came to sending teams into the field or tracking their movements".***

A Congolese government official said: ***"There was a strong hesitation around the EVD vaccine and a reluctance of the population to accept this vaccine trial".***

The analysis of the online survey also looked at how participants felt when responding to EVD outbreaks. For 50% of them, their greatest satisfaction was that they managed to stop the spread of the outbreak in a few months (for the 9th and 11th outbreaks) and for helping to save human lives. The vast majority enjoyed the multicultural working environment with the international personnel from the WHO and other partner organisations.

The WHO staff, both international and national, also particularly appreciated the excellent collaboration and solidarity between all the actors in the response, which contributed to the smooth running of the activities (surveillance, prevention, medical care, laboratory and research, logistics, vaccination, security and psychosocial care). They also expressed their satisfaction with the organisation of the logistics in the field.

However, 50% of the WHO field workers and partner organisations reported their frustration with the insufficient telephone coverage (landline and mobile), community resistance, and the inaccessibility of some localities to ensure integrated monitoring and management of all cases and their contacts.

Furthermore, 50% of the survey participants also spoke of their frustration with the management of the outbreaks, which they said was too centralised. They additonally spoke of their fear of contamination and attacks by armed groups in North Kivu, South Kivu and Ituri.

The personnel from the WHO and partner organisations mentioned the low number of notified alerts, in particular for deceased persons. Furthermore, over 50% of confirmed cases were not identified as known contact cases at the time of their detection (particularly during the 10th outbreak).

CLICK HERE TO ACCESS THE DETAILED REPORT OF THE ONLINE SURVEY CONDUCTED UNDER THIS AAR.

3.3.3 Key informant interviews

In total, 31 key informants were selected for these interviews, of which 11 responded for the response to the 9th outbreak, 29 for the response to the 10th outbreak, and 11 for the response to the 11th outbreak.
Certain informants participated in more than one response, as well as in more than one response area, as shown in the figure below.

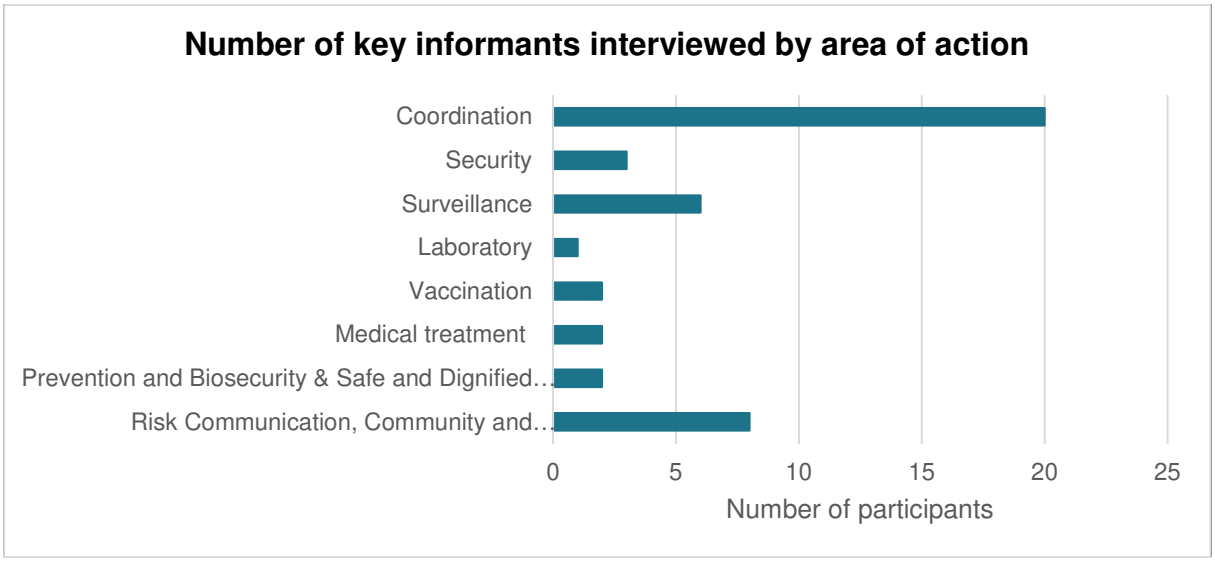


Figure 6. The distribution by area of action of the participants in key informant interviews conducted as part of the AAR of the response to the 9th, 10th, 11th and 12th EVD outbreaks in the Democratic Republic of the Congo.

Following the desk review and the results of the online survey, 5 intervention pillars were defined as follows:

- Coordination/governance, information management, administration and finance, logistics and security;
- Surveillance, vaccination, points of entry and health control points (PoE/HCP), laboratory;
- Medical treatment, therapeutic and clinical trials, Ebola survivor programme;
- Infection prevention and control (IPC), dignified and safe burials (DSB);
- Risk Communication and Community Engagement (RCCE), psychological and social care.

The results of the key informant interviews are presented under each of the 5 pillars for each area/commission specifying the strengths, difficulties/challenges to overcome and the lessons learned.

3.3.3.1 Pillar 1: Coordination/governance, information management, administration and finance, logistics and security

Coordination/governance

Strengths:

- Engagement of national and local health authorities;
- Mobilisation of resources and technical and financial partners;
- Coordination structure modelled on the WHO emergency management system;
- Adaptation of the coordination mechanism according to the context, thanks to the zonal approach (in particular during the 12th outbreak) and the establishment of sub-coordination units (provincial sub-coordination during the 9th and 10th outbreaks) and the IMS system (*Incident Management System*);
- Establishment of a technical secretariat for monitoring health emergencies;
- Good organisation of the surveillance and the monitoring of contacts for a rapid response from the response teams;
- Integration of pygmies in the DSB teams during the 9th and 11th outbreak.

Difficulties/challenges:

- Insufficient skills of some staff members recruited and deployed by the government department and by the partners;
- Great proportion of international actors affecting community engagement/participation in the response.

A Ministry of Health personnel said: ***"The involvement of the government through the visits of the Ministry of Health to supervise and encourage providers, community engagement, logistical support and the construction of a living base to bring together the actors allowed a good coordination of the operations in the field".***

Information management

Strengths:

- Logistical support from the partners;
- Creation of systematic databases in each commission;
- Transmission of data by notification sites;
- Implementation of a regular data analysis unit to guide surveillance (alert, contact monitoring) and response activities.

Administration and finances

Strengths:

- Funding by the government and the technical and financial partners.

Difficulties/challenges to overcome:

- Late payments by nationals and unequal pay between national and international stakeholders.

Logistics

Strengths:

- Good logistical organisation in terms of deployment of vaccination teams and medical care, despite access difficulties in certain areas.
- The response to the 11th outbreak benefited from the lessons learned from the 10th outbreak in terms of management, diagnosis and vaccination strategies.

Security

Strengths:

- Presence of security personnel and structures;
- Provision of means of travel and the security of response teams;
- Daily meeting of the Security Commission to ensure information sharing and collaboration with the various stakeholders (base leaders, police, national intelligence agency, and the WHO);
- Partnership with local and indigenous people to enhance team safety.

Difficulties/challenges:

- Insecure environment, especially during the 10th epidemic;
- Numerous victims among the population, healthcare workers and those in the response unit;
- Two Ebola treatment centres destroyed.

3.3.3.2 Pillar 2: Surveillance, vaccination, points of entry and health control points (PoE/HCP), laboratory

Surveillance, entry points and health control points

Strengths:

- Contact monitoring and vaccination;
- Setting up PoE/HCP;
- Decentralisation and adaptation of the surveillance.

Difficulties/challenges:

- Population mobility;
- Failure to report cases in some communities.

A member of the WHO (international staff) cited the following as strong points: *"the management of alerts coupled with the management of ambulances, dignified and safe burials, the implementation of dashboards on a case-by-case basis, the introduction of compulsory mapping and the compilation of case summaries, the follow-up of community contacts (family, close friends), the immobilisation of contacts (blocking), the formation of a team to monitor travellers and those who have been lost to follow-up by geo-location, and weekly global analyses involving all the commissions in Butembo."*

Vaccination

Strengths:

- Rapid vaccination of contact cases, their contacts and the front-line personnel;
- Rapid deployment of experts in the field;
- Good acceptance of vaccine by frontline health care staff;
- Integration of the local community in the delivery of immunisation services.

Difficulties/challenges:

- Insufficient cold chain maintenance.

Laboratory

Strengths:

- New rapid diagnostic tests;
- Deployment of mobile laboratories.

Difficulties/challenges:

- Non-optimal supply management;
- Non-optimal inventory management leading to input supply delays.

3.3.3.3 Pillar 3: Medical treatment, therapeutic and clinical trials, Ebola survivor programme

Medical management, clinical and therapeutic trials

Strengths:

- Capitalising on the lessons learned from the outbreak in West Africa;
- Involvement of several actors;
- Development of new drugs.

Difficulties/challenges:

- Verticalization of medical care against Ebola.

Ebola survivor care programme

Strengths:

- Multidisciplinary follow-up programme (medical, biological, and psychological) by the Ministry of Health with support from the technical and financial partners;
- Psychosocial help (places for discussion, etc.).

3.3.3.4 Pillar 4: Infection prevention and control (IPC), dignified and safe burials (DSB)

Strengths:

- Integration of traditional healers and community leaders in response activities;
- Improved waste management.
- Burials according to local customs and DSB kit supplies.

Difficulties/challenges:

- Lack of dedicated waste management spaces in certain health facilities;
- Shortage of DSB kits and IPC equipment in certain areas.

A staff member from a partner organisation said: *"With regard to the IPC, there is a need for greater involvement of provincial and local authorities in all areas of the response to better address population reticence and participate in the coordination of activities at the local level. It is imperative to ensure a continuous supply of ICP inputs and to provide waste management zones in all health facilities"*.

3.3.3.5 Pillar 5: Risk Communication and Community Engagement (RCCE), psychological and social care

Strengths:

- Integration of community leaders into population sensitisation activities;
- Training of volunteers on response interventions;
- Recruitment of staff speaking the local language;
- Adaptation of messages based on collection and consideration of community feedback;
- Integration of the minority groups into DSB;

- Support for bereaved families even after the end of the outbreak.

Difficulties/challenges:

- Community resistance.

CLICK HERE TO ACCESS THE DETAILED REPORT OF THE KEY INFORMANT INTERVIEWS CONDUCTED UNDER THIS AAR.

3.3.4 Results of the AAR response to the 9th, 10th, 11th and 12th EVD outbreaks in the Democratic Republic of the Congo from the focus group discussions (final component)

Over 92 national and international experts (including partners) have participated in the final component of the AAR. Due to the strengthening of health restrictions related to the SARS-CoV 2 pandemic (COVID-19), a strict protocol for the prevention and control of coronavirus infections was observed throughout the workshop (see Annex 5.2).

This component is the most crucial phase of the AAR. The aim is to carry out a diagnostic analysis of the four outbreaks by identifying the challenges and the best practices, their impacts on the response, the barriers and facilitators that respectively give rise to good practices and the difficulties/challenges that are yet to be overcome. Following the diagnostic analysis, a prospective analysis was used to identify priority actions to improve the preparedness and the response to future EVD outbreaks and/or other public health events in the DRC.

Information collected during the preliminary phases of the desk review, the online survey and the key informant interviews was used to initiate discussions with focus group participants. The participants of each focus group triangulated the results from the previous AAR components with the other available information, including the sharing the experiences of those who did not participate in the preliminary phases. The latter were able to contribute to the diagnostic and prospective analysis, followed by a validation of the results by group and in plenary sessions, during which each group could receive feedback and contribute to the results from the other groups. The analysis of the 12th EVD outbreak was carried out in full during this last component of the AAR.

The workshop provided the participants with an opportunity to discuss their individual perceptions of the response in order to obtain a comprehensive and collective perception.

Finally, the facilitators of each discussion group applied the facilitation tips and advice offered to them during the preparatory workshop. Indeed, it should be noted that, in addition to training facilitators to conduct discussion groups, the preparatory workshop provided an opportunity to anticipate potential misunderstanding/conflict points and to propose mitigation and conflict management strategies. It also served to simulate the group discussions, to review the reports of the preliminary phases of the AAR, and to initiate an inventory of the challenges and best practices to be considered in the final components of the AAR.

Important definitions

Difficulty/challenge: a task, duty or difficult situation encountered during the response to the outbreak, which required considerable effort, determination, and skill on the part of stakeholders in order to succeed.

Best practice: an action taken in response to the EVD outbreak that has improved the performance or had a positive impact.

The participants in all 5 working groups took an active part in the discussions. Through diagnostic analysis, the groups identified 65 best practices and 76 challenges encountered in the response to the successive outbreaks and analysed the causes (facilitating and limiting factors). The groups then utilized prospective analysis to identify 70 activities to improve the preparedness and the response to future outbreaks. Finally, during the final session, groups retained 40 of these 69 activities as priorities based on their impact and ease of implementation in the short, medium and long term.

Following the consensus in the discussion groups and in the plenary sessions, the best practices, key recommendations, or ways forward for each group or pillar were compiled in the following tables and paragraphs.

Table 2: Coordination/governance, information management, administration and finance, logistics and security (Pillar 1).

Coordination/governance

DIFFICULTIES/CHALLENGES		IMPACT	LIMITING FACTORS
1	Disruption in the implementation of response activities to the 9th, 10th, 11th and 12th outbreaks	Spread of the disease, aggression toward providers in the field, destruction of infrastructure (ETC Katwa, Beni, Lolwa, Biakato CS, etc.) and equipment	Climate of insecurity in the three eastern provinces North Kivu, South Kivu and Ituri Activism from armed groups Team attacks in the field "Dead city" days Mistrust of stakeholders outside of the community Politicisation of the response (election period for the 10th outbreak) Absence of recruitment of local staff Late payment of providers and frustration with regard to the salary scale
2	Insufficient coordination between the partners, lack of consultation	Planning of the response interventions is not adapted (does not take into account the reality in the field)	Weak leadership from the Ministry of Health Lack of memoranda of understanding defining the partner interventions Non-alignment of the partners Lack of accountability Poor application of the stakeholder accreditation Subcontracting with the NGOs without consultation from the government

3	Response dependent on non-flexible external financing	Poor reactivity from national coordination in new outbreak centres No reinforcement of the health system	Absence of emergency health funds Cumbersome procedures for the disbursing of stakeholder funds Not taking into account the sustainability of the response activities Lack of audit concerning the management of funds
4	Poor documentation and lack of socialization/dissemination concerning the best practices applied in certain outbreak areas	Variable-speed response	Absence of a team in charge for the documentation and communication of the best practices
5	Centralised management of the coordination (outside of the outbreak) in the response to the 10th outbreak (initial outbreak in Mangina, coordination based in Beni)	Initial focus of the outbreak not controlled, dissemination of cases and total loss of control of the outbreak. *(Nuance: This is an isolated case as, generally speaking, coordination has always been decentralised with over 20 sub-coordinations)*	Non-implementation of lessons learned from previous responses (Djera/Boende outbreaks) Safety and comfort requirements for responders
6	Failure to comply with the health system hierarchy and decision-making framework	Weakening of the health system Poor involvement of local authorities and local providers	Non-compliance with the health pyramid in the response activities Insufficient collaboration between provinces and health zones, complicating logistical and/or technical support Lack of inventory of human resources and skills.

BEST PRACTICES	IMPACT(S)	FACILITATING FACTORS

1	Area-based approach in the response to the 11th and 12th EVD outbreaks: coordination at the level of each health zone/area to ensure on the one hand, the implementation of the response activities around alerts and confirmed cases, and on the other hand, the follow-up of contacts and travellers within the community	Prompt and adequate local response by local providers Rapid extinction of outbreak concentrations Transfer of skills to local actors	Involvement and ownership of response activities by the health zone intervention team and within the community. Availability of competent human resources at the level of large agglomerations Involvement of political and administrative authorities in the response activities
2	Planning of the coordination support in "hot spot" health zones	Rapid problem resolution Rapid and effective outbreak management	Shift of general coordination to "hot spot" areas (Mambasa; Beni, Mwenga, Biakoto, Bikoro, Bolomba) Availability of government funding
3	Community involvement: participation of community leaders in the planning response activities	Breaking down resistances Better collaboration from the community with the response teams	Existence of sub-coordination Involvement of the local workforce in the implementation of community activities (DSB, IPC) Local speakers mastering the local language and culture Financial incentives Enforcing good practices, SOPs, and lessons learned Anthropological and psychosocial investigations
4	Use of new communication technologies	Improvement of the coordination at all levels of the response system Real-time sharing of information Speed in decision-making	Availability of new communication technologies Availability of the information managers Training of the stakeholders in the use of new technologies

Information management

DIFFICULTIES/CHALLENGES		IMPACT	LIMITING FACTORS
1	Poor quality and comprehensiveness of data	Incorrect analysis of the situation Inadequate or late action	Lack of basic training and capability building Lack of qualified personnel Poor mastery of IT tools by local service providers during the 9th, 10th and 11th outbreaks Missing or aberrant data; lack of unique identifier to characterise the alerts, cases and contacts
2	Poor communication network coverage for the 9th, 10th and 11th outbreaks	Late transmission of data for analysis	Telephone operator; late installation of radio (VHF, HF)
BEST PRACTICES		**IMPACT(S)**	**FACILITATING FACTORS**
1	Implementation of systematic databases in all sectors of the response during the 10th and 11th outbreaks	Improved information management at all levels of the response	Designation of database managers by sector Transfer of skills relating to the use of data entry and analysis tools
2	Establishment of a regular data analysis unit to guide response actions, in particular the surveillance (alert, contact monitoring) during the 10th and 11th outbreaks	Immediate identification of gaps in the response Timely and appropriate decision-making; monitoring of the actions taken	Training of a team in database management Presence of social science experts Allocation of IT equipment
3	Implementation of a WhatsApp group per commission to transmit the data, including the laboratory results, to the team leaders of each commission.	Reactivity and feedback in real time	Availability of telephone credits Updated lists of response actors.

Logistics/Security

DIFFICULTIES/CHALLENGES		IMPACT(S)	LIMITING FACTORS
1	Inaccessibility of certain health zones due to their isolation (9th and 11th outbreaks) and insecurity (10th outbreak)	Difficulties of intervention in certain affected health areas and exorbitant cost of response means: establishment of air bridges (helicopters, airplanes), use of armoured vehicles to escort teams into insecure zones Slow response, delayed supply of entrants into the affected areas, resulting in stock shortages and the disruption of operations Delay in the deployment of the response teams	Closed and inaccessible roads (for all the outbreaks) Armed groups (10th outbreak - e.g. need to install an airlift between Luemba - Biakato, Beni – Butembo with daily round-trip rotation of field teams) Lack of means of transport during the 9th, 11th and 12th EVD outbreaks
2	Inappropriate and inadequate movement of field intervention teams	Poor perception of response activities (Ebola Business) by the community (resistance and stigmatisation of patients) Delay in the implementation of response activities (9th outbreak) Loss of response gains for the health system (all outbreaks)	Non-optimal use of response vehicles (9th and 11th outbreak) Abusive or excessive use of vehicles for the decontamination activities in homes around cases and for vaccination (10th outbreak) Abuse of vehicle rental to cover needs, which does not contribute to strengthening the system once the outbreak is over (10th outbreak)
3	Lack of resources and emergency stocks in the Ministry of Health for the rapid deployment of teams and equipment in the case of emergency	Delay in interventions contributing to the propagation of the disease	Insufficient emergency preparedness Lack of an organised, well-equipped emergency logistics platform in order to respond to outbreaks and other disasters Lack of trained logisticians to respond quickly to emergencies

			Cumbersome procedures for the provision of human and material resources in the case of emergency
4	Lack of maintenance of response materials, equipment, and infrastructure	Immobilisation of the rolling stock and deterioration of the infrastructure (living bases, warehouses) Ex.: Butembo ambulances immobilised due to lack of maintenance	No budget allocated for maintenance
5	Fuel supply difficulties	Disruption of field activities Delayed deployment of response actors and inputs	Fuel shortage in the response areas (9th and 10th outbreaks) Insufficient funds allocated for fuel
6	Late delivery/transfer of patients to care facilities (Ebola Treatment Centre)	Late care of patients at the treatment centre: complications and risk of patients dying during transfer Resistance from the community due to deaths linked to the delay in transfer Discontent leading to attacks on the ambulances and the response teams	Lack of ambulances to transport patients on time Use of non-adapted vehicles to transport the sick to care facilities Resistance of patients and families to the transfer to transit centres/Ebola treatment centres Insufficient investigations and contact listing problems; lack of awareness of the contacts to the importance of monitoring
7	Poor inventory management for most inputs, materials and equipment critical to the response: fuel for the 9th and 11th outbreaks, GeneXpert cartridges and vaccine for all outbreaks	Delay in the management of cases Increase in the morbidity and mortality rate	Limited cold chain equipment capacity for vaccine storage and deployment Supply chain ensured by national and international levels lengthening delivery/procurement times in the field Absence of common stock level management policy between all partners (each partner manages

			their own stock according to their activities) Lack of storage infrastructure for specific stock, such as a vaccine that requires an ultra-cold chain
8	Logistics data management difficulty: materials and equipment deployed in the field by the stakeholders (who brought what, where and when)	Lack of coordination of the interventions Lack of traceability of inputs, materials and equipment deployed by each stakeholder Disproportionate (inefficient) allocation of resources in the field by the different partners	Lack of emergency logistics training at all levels of the response system Lack of computer hardware Lack of standardised management tools for the collection and reporting of logistics data Insufficient sharing of logistics data relating to materials and equipment acquired by partners as part of the response, making it difficult to reallocate them fairly after the response
9	Housing problems for field teams	Difficulty in accessing housing for response teams in the zone of intervention Increase in the cost of basic necessities in these zones Delay in the management of cases	Reduced accommodation capacity in the most remote zones Poor exploitation of local human resources
10	Late data transmission and communication difficulties for response teams in remote areas	Poor alert escalation and data transmission disruption for fast decision making	Poor telephone and internet coverage, no internet connection in certain health zones
11	Lack of workspaces for field teams	Loss of response gains for the health system (all outbreaks) Extremely expensive recourse to renting private buildings (Hotel Okapi and Hotel Karibu)	Lack or total absence of infrastructure to receive the significant number of actors in the response Delay in the deployment of tents

BEST PRACTICES		IMPACT(S)	FACILITATING FACTORS
1	At the 10th outbreak, use of substantial means of transport to solve accessibility problems: installation of air bridges (2 planes, 2 helicopters), several speedboats) and over 500 vehicles for the response activities, armoured vehicles for escorts in insecure areas (Beni - Oicha, Beni - Kasindi, Beni – Butembo)	Rapid deployment of the response teams Rapid delivery of samples, vaccines and other inputs	Partner availability (UNHAS, MONUSCO) Availability of financial resources allocated to logistical support (mobilisation of aircraft, helicopters, boats and armoured vehicles, outboards dedicated to the deployment of teams and inputs)
2	Installation of living bases equipped with latrines, an internet connection, and water and food supplies, etc. in the difficult access zones (Bikoro, Itipo, Iboko, Mambassa, Mangina, Mwenga, Komanda, etc.)	Reduced implementation times for response activities Reduced logistics costs related to service providers' round trips Reduced expenses related to accommodation in the zones where living bases are established Reduced risk of team aggression when travelling in certain insecure areas	Availability of the partners and financial resources allocated to the construction of living bases
3	Installation/rehabilitation of response infrastructure in coordination offices with internet connection	Bringing decision centres closer to the operational areas and saving time for the implementation of the actions to be taken Improving the working conditions of the service providers Regular coordination meetings	Mobilisation of substantial financial resources to cover these needs Presence of partners available for the implementation of response activities

4	Training on emergency logistics and skills transfer to local experts at the end of the response	Preparation for new emergencies and improving benefits	Resource mobilisation for emergency logistics training for logisticians in the North Kivu, South Kivu and Ituri provinces
5	Bringing Ebola care facilities closer together	Improving medical case management and reducing mortality in Ebola treatment centres	Availability of financial resources Presence of technical and financial partners
6	Transforming vehicles into ambulances to transfer sick patients and resolving the ambulance shortage issue	Rapid transfer of patients and improvement of their care. Fewer deaths due for late transfer of patients	Availability of resources for the rental and adaptation of vehicles Vehicle adaptation expertise
7	Progressive purchase of ambulances in affected zones	Strengthening the health system during and after the response	Availability of financial resources Availability of the partners

Administration and finance

DIFFICULTIES/CHALLENGES		IMPACT(S)	LIMITING FACTORS
1	Late deployment of providers	Delay in response activities (during the 11th and 12th outbreaks, central level experts were deployed late) Delay in making funds available Delay in the supervision of local teams at the central level	Lack of financial resources available for the personnel (Emergency Fund) Lack of a multi-sector and multi-disciplinary base of providers Lack of a deployment plan Cumbersome administrative procedures for producing service orders No salary structure and scale that is approved by the authorities
2	Non-optimal management of human resources and their deployment (not taking into account skills and needs)	Poor quality services Surge in staff costs	Lack of personnel management SOPs during the response (cases from the 9th, 10th and 11th outbreaks)

			No deployment plans Interference of certain administrative politico authorities in the recruitment processes Clientelism Lack of rationalisation of human resources in zones that are no longer at high risk
3	Late payment of service providers	Repeated strikes by providers resulting in a slowdown in response activities as was the case during the 9th, 10th and 11th outbreaks Community resistance Departure of government staff to work for partners Poorer quality of care.	Insufficient alignment of providers' remuneration Lack of emergency procedures for the disbursement of funds during response Poor commitment from the government Lack of rational scale
4	Poor security of response teams guaranteed by political-administrative authorities (9th, 10th and 11th outbreaks)	Slowdown of activities Legal claims, time wasted in courts, at the police station, etc.	Poor commitment from the government alongside the response actors
5	Dissatisfaction of local and provincial actors	Blocking of response activities Resistance from the community	Absence of a fixed income scale Lack of transparency on the recruitment/selection of providers
6	Multiplicity of premiums for certain providers	Conflicts between providers Overspending Resistance from the community	Non-regulation of pay inequalities by General Coordination Lack of transparency in the financial management of some partners Lack of transparency in the selection of providers and no list communicated to partners by the national coordination

7	Opportunists involved in the response for the sole purpose of enriching themselves	Blocking of response activities Resistance from the community	Poverty Abuse of power and influence peddling
8	Imbalance in the between local, national (central level), and international recruitment	Frustration of local providers Lack of control of the workforce in relation to the real needs in the field	Too many international providers compared to national ones, and central providers compared to provincial ones. Same for between provincial and local level (peripheral)
9	Dysfunction of the operational coordination	Total dependence of the coordination toward the support of the partners Delay and/or absence of implementation of certain interventions due to the lack of financial resources	No budget allocated to the coordination and sub-coordination for the recurrent expenditure
10	Difficulty in producing financial justification reports from the government and partners	Ebola Business (mismatch between the funds received and the result in the field) Mitigated results (very high costs of interventions in relation to impact) Lack of traceability of stakeholder interventions	Lack of transparency in the management of funding received for the response Weak, rigorous government mechanism for monitoring and evaluating funds allocated for the implementation of response activities
11	Failure to systematically and rigorously apply codes of conduct and ethics (especially during the 10th outbreak)	Allegations of sexual abuse and abuse of power by local, national and international providers Allegation of violence towards and the exploitation of women	Multiplicity of actors deployed, not informed as to the codes of good conduct and ethics Divergence of the requirements between actors from the national party and those from partner organisations Several briefings by the actors on the United Nations system and the signing of the code of good conduct, but weak or no application of the latter by certain actors

			Weakly applied disciplinary measures
BEST PRACTICES		**IMPACT(S)**	**FACILITATING FACTORS**
1	Establishing dialogue with the protesters	Appeasement of disputes	Willingness of actors to participate in the dialogue
2	Setting standards in terms of the recruitment of providers	Streamlining the workforce Compliance with competency profiles	Adherence from political-administrative authorities with regard to compliance with standards Application of the standards by the local and provincial health authorities

WAYS FORWARD - NEXT STEPS

- Enforce sections 105 and 106 of the Health Act: create a Public Health Emergency Operations Centre (PHEOC) or a National Institute of Public Health (NIPH) by institutionalising the training and deployment of multidisciplinary rapid response teams (RRT) for the response to outbreaks.
- Decentralise the coordination of response activities at provincial level with an incident management system based on lasting organisational structures and existing resources at the provincial health division (PHD) level.
- Deploy emergency kits at least in provinces considered as high-risk zones (Kinshasa, North Kivu, Upper Katanga).
- Advocate for the budgetary allocation of a health emergency fund to the Ministry of Health to enable the rapid deployment of experts in the event of public health events/emergencies, and set up auditing and accountability mechanisms by and with the donors.
- Make operational the accreditation commission for partners supporting the response to public health events/emergencies and apply the procedures set out in the practical guide for the constitution of the NGOs in the DRC[6].
- Put in place a framework for monitoring and evaluating partner finance in order to ensure the accountability and traceability of funds dedicated to the response.
- Implement a human resources management policy clearly defining the award scale, the international/national/provincial/local expert ratio, a code of conduct and disciplinary measures for all actors involved in the response - both national and international - and the awarding of medals and diplomas of merit.

[6]https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/Guide%20pratique%20pour%20la%20constitution%20des%20ONG%20en%20RDC.pdf

- Adopt, with participation of the national party and the partners, a code of conduct with a robust monitoring mechanism to combat the occurrences of abuse and main risks in the field (financial risk, sexual abuse, abuse of authority, etc.).
- Put in place a commission for planning, monitoring and evaluation, including documentation and dissemination of best practices.
- Propose the implementation of a multidisciplinary team in charge of integrated analyses allowing the production of adapted operational recommendations based on data and objective analyses.
- Strengthen coordination between pillars of the response and ensure data sharing between the different pillars of the response.
- Activate PHEOC (public health emergency operation centres) at the national and provincial levels.
- Conduct simulation exercises in each province.

Table 3: Surveillance, vaccination, points of entry and health control points (PoE/HCP), and laboratory (Pillar 2).

	DIFFICULTIES/CHALLENGES	IMPACT(S)	LIMITING FACTORS
1	Insufficient implementation of community actions to actively search for cases, to detect, to raise alerts, to isolate, to monitor and to vaccinate contacts E.g.: opposition of a group of young "delinquents" to the response in Ipéko (epicentre of the 11th outbreak) and Mbandaka HZ	Propagation of the outbreak Refusal of confirmed and suspected cases to travel to transit centres/Ebola treatment centres Threats made to actors of the response in the field	Political exploitation Poor ownership of the response by the community Influence from pressure groups Economic interests Over exposure of the response (vehicles) Lack of consideration of the socio-economic level of the population (Ebola Business perception) Lack of consideration for customs and traditions
2	Poor coordination between the actors working at the PoE/HCP and insufficient functionality Poor data quality: Kambuli EP case, border HZ Katwa	Difficulty in initiating EP detection, prevention, and response interventions (9th and 10th EVD outbreaks) Spread of the disease beyond the affected zones	Lack of public health emergency preparedness and response plans at air, land, river and lake PoE Permanent rotation of security officers at the PoE/HCP level and

	with Kyondo HZ in NK (10th EVD outbreak) Difficult search for lost and never seen contacts at checkpoints and points of entry		recruitment of untrained officers Volatile security environment, multiple attacks by armed groups targeting HCP (limited work hours) Mobility of populations Problem identifying contacts who use several different names or people with the same name Lack of human, material and infrastructure resources at designated PoE
3	Delayed transmission of contact lists to vaccination teams E.g.: Mabalako Health Zone case (10th outbreak) which caused the spread of the virus to the zones of Beni, Butembo, Katwa and Masereka from a traditional healer	Late decision-making for belt vaccination Exceeding the vaccination deadline Community reluctance to vaccinate Unvaccinated targets Increased risk of contamination (unprotected contacts)	Unorganised community consent Lack of collaboration between surveillance, communication and immunisation teams No recruitment of local providers for vaccination
4	Insufficient cold chain capacity for vaccines	Less effective vaccines Delay in the initiation of the vaccination operation	Very demanding vaccine storage conditions Lack of equipment: poor coverage of solar refrigerators in 64% of health zones/North Kivu; limited number of Arktek *(Passive Vaccine Storage Device)* compared to demand Delivery times in the field (difficulty of access to certain zones within a 7-day period)

5	Poor quality of data collected at the PoE	Incomplete, outdated databases Inappropriate decision-making	Subjective recruitment and late training of providers at PoE Frequent change of data collection tools Unreliable sources of case information (change of identity) Insecurity (10th outbreak)
6	Limited functionality of laboratories	Delays in case confirmation and treatment	Ruptures in reagents and consumables due to lack of proper inventory management by the Ministry of Health and partners Limited equipment (shortage of GeneXpert during the 10th and 11th outbreaks) Long transport routes for samples Insecurity (armed groups and pressure groups) Lack of resources allocated to the laboratory commission
7	Issues in managing and disposing of used cartridges	Risk of exposure to people and the environment	Lack of incinerator at 1000°C Lack of resources to transport cartridges to Goma
8	Under-use of rapid diagnostic tests for community deaths	Missed opportunity to reduce challenges related to community death management in certain affected areas.	Difficulty in agreeing on an effective strategy between the various pillars concerned Lack of information to the population on the use of RDTs Distrust of political-administrative authorities

9	Calibration and annual maintenance issue for the GeneXpert system	Work overload and functional degradation of equipment	Non-planning of financial resources for maintenance No warranty or maintenance contract
BEST PRACTICES		**IMPACT(S)**	**FACILITATING FACTORS**
1	Designation of PoE/HCP based on population mobility mapping 24/7 operation (10th and 11th outbreaks)	Geographic grid of affected areas according to risk level Relocation of certain PoE/HCP and setup of temporary satellite HCPs Detection of moving positive EVD cases outside the opening hours of the HCPs	Community contribution to population mobility mapping Improved staff training at strategic HCPs Presence of law enforcement officers Risk analysis linked to population mobility: high risk (sphere1: Affected and neighbouring HZs), medium risk (sphere 2: all other HZ in affected provinces), low risk (sphere 3: the rest of the country)
2	Deployment and creation of mobile laboratories with a GeneXpert platform in affected areas (10th, 11th and 12th outbreaks)	Fast result rendering improved contact tracking and limits sample transport	Available and committed laboratory actors
3	Deployment of high-speed sequencers during the 10th outbreak	Monitoring of the circulation of different variants and epidemiological investigations	Collaboration between the National Institute for Biomedical Research and partners Logistics support
4	Biochemical and haematological analyses performed to treat confirmed cases	Improved management of confirmed cases	Collaboration between the National Institute for Biomedical Research and partners Commitment of laboratory actors
5	Training of local laboratory staff	Improving the continuity of laboratory activities	Financial support from partners

		Running laboratories even after the epidemic	Availability of local actors Availability of qualified trainers
6	Construction of buildings and facilities for laboratories in Goma, Butembo, and Beni	Anchorage of laboratory activity in the health zone	Partner support

WAYS FORWARD - NEXT STEPS

Epidemiological surveillance

- Formalise the criteria for the designation of providers at the service and programme level and approval of the list of providers by the Directorate-General for Disease Control.
- Prepare a directive for the mandatory integration of traditional practitioners in community-based monitoring.
- Prepare a directive for the participation of non-state health facilities in the active search for cases during health emergency situations.
- -Avoid samples if the patient has not been evaluated by a medical team.
- Integrate alert monitoring into alert management SOP.
- Strengthen health zones and their central offices in monitoring tools, analysis and communication capacity (radio, especially in places without mobile coverage).
- Ensure the financing of mobile structures during health emergencies.
- Organise a workshop to review the collection of tools and databases used in health emergencies.

Vaccination

- Provide the provinces and health zones with equipment (vehicles, motorcycles, cold chain equipment, etc.).
- Formalise the criteria for appointing service providers at the service and programme level and have them approved by the EPI Director.

Points of Entry

- Organise a workshop to update the guidelines and SOPs integrating the innovations: the search for lost contacts and those uncovered who were not found", 24/7 strategic control points, monitoring of international contacts.
- Organise strategic joint assessments integrating population mobility mapping and large gatherings with other services and commissions to establish public health risks in order to implement mitigation measures at departure and arrival points, transit zones, and points of entry.

- Carry out an inventory, a classification and an update of the capacities required in the event of a health emergency (human, material and infrastructural resources) at the points of entry.
- Develop and test public health emergency preparedness and response plans at designated points of entry (air, land, rivers and lakes).
- Organise a cross-border collaboration meeting between the DRC, Uganda, Rwanda and other neighbouring countries to consolidate gains and sustain best practices in the EVD outbreak response.

Laboratory

- Provide all provinces with high temperature incinerators (>1000°C).
- Provide each province with laboratory capabilities that can be deployed near patients (mobile laboratories).
- Provide the national, provincial and area-based levels with laboratory staff and offer continuous training.
- Deploy the diagnostic inputs (GeneXpert and reagents cartridges).
- Train technicians in the maintenance of laboratory equipment at the provincial and area-based level.

Table 4: Medical treatment, therapeutic and clinical trials, Ebola Survivors programme (Pillar 3).

	DIFFICULTIES/CHALLENGES	IMPACT(S)	LIMITING FACTORS
1	Insufficient support from the Ministry of Health for management activities (mainly carried out by the partners) E.g.: during the 11th outbreak, after the departure of the MSF following the attacks in BUTEMBO and KATWA, the Ministry of Health teams managed the two largest Ebola treatment centres, but this experience could not be sustained and the country called on partners once more for the 11th and 12th outbreaks	Impossible institutional anchoring Lack of durability of achievements Reset to zero in the event of a new outbreak Circuit of reference hospitals and care centres not adapted to the management of EVD cases	No protocol for the direct collaboration between the technical and financial partners and the Ministry of Health in public health emergencies Lack of a dedicated national fund for public health emergency management No medical centres in health zones with a capacity to care for patients showing a high infectious risk

2	Selection of providers without taking skills into account E.g.: dispatch a central level expert at the direct request of the incident management service without the advice of the "Management" commission and without taking the competence profile into account or the option of recruiting a local agent	Constant reliance on additional technical support related to the following: orders, financial management of transit/processing centres, supply management, etc. Delay in starting medical treatments in the event of an outbreak Poor quality of holistic case management	Technicians not consulted during the signing of the memoranda of understanding between the partners and Ministry of Health Lack of collaboration with field actors during medical management decisions by the response sub-coordinators
3	Problem in treating anaemic Ebola patients: organised care in transit centres/treatment centres far from blood transfusion centres; lack of national blood donation policy during EVD outbreaks or other viral haemorrhagic fevers.	Worsening of patient condition Use of contaminated blood Deaths Resistance against treatment and responders from non-contaminated individuals	No blood bank in the treatment centres
4	Poor management of EVD cases in pregnant women	Worsening of patient condition Use of methods that could expose newborns to tetanus Deaths of pregnant women affected by EVD Resistance against treatment and responders from people who have not contracted EVD Nosocomial transmission of EVD in maternal and reproductive health facilities	Poor technical facilities, especially for gynaeco-obstetric treatment
5	Admission of patients at an advanced stage of the disease (all outbreaks combined)	Complications and death within 48 hours of admission	Denial of the disease Late detection and confirmation of cases Insecurity and inaccessibility of certain zones

6	Worsening of the health status of some patients with or without co-morbidity	Death while in or out of the Ebola treatment centre Increased resistance against treatment and mitigation by responders in the community from people who have not contracted EVD	Insufficiency of the technical facilities limiting the scope of care (e.g. surgery) Delay in the deployment of specific treatments Difficulties in the supply of essential drugs Poor quality of investigations and contact listing; insufficient awareness of contacts; lack of community engagement
7	Insecurity around Ebola transit/treatment centres (attacks, fires, killings of healthcare providers (10th outbreak) E.g.: burning of Ebola treatment centres in Katwa, Butembo, Vuhovi health areas; two attacks on KATWA General hospital; killing of providers in Vuhovi, Lwemba, and Oicha	Disruption of medical care activities Job abandonment Uncontrolled release of confirmed cases Propagation of the disease	Continued insecurity in certain health zones
8	Non-compliance with patient transfer SOP to transit centres/Ebola treatment centres	Worsening of patient condition Death within 48 hours of admission	Poor road conditions Insecurity Lack of ambulances Community resistance
9	Logistical difficulties in some sub-coordinations. E.g.: delay in responding to requests from healthcare teams	Lack of motivation of response workers Negligence of response workers Job abandonment	Absence of SOPs for the supply of blood products in cases of emergencies, in water, etc. Lack of support with regard to communication, transportation, etc. Lack of financial resources

10	Poor motivation of treatment centre managers	Poor quality of care Lack of motivation of managers Negligence of managers Job abandonment	Lack of a scale in the Ministry of Health taking account of responsibilities
11	Failure to prepare for the management of EVD relapse and recurrence cases, when the Ebola treatment centre is decommissioned E.g.: case of relapse in Aloya.	Delay in the correct handling of the case Community exposure Resumption of the transmission chain Community resistance and reluctance	Lack of procedures allowing to quickly make the decommissioned healthcare structures operational to respond to the recurrence of confirmed cases in a health zone Lack of isolation capacity in secondary healthcare facilities Non-sustainability of the achievements put in place during the EVD response phase
12	High rate of contamination in health facilities not dedicated to Ebola	Contamination of a high number of providers during the 10th outbreak	Lack of human resource training Non-operational training plan Lack of SOPs for screening Lack of personal protective equipment (PPE) and inputs
13	High mortality rate in Ebola treatment centres within 48 hours of admission Sequestration of patients in private health facilities (10th outbreak)	Worsening of patient condition Community resistance towards response activities Propagation of misinformation Overload of work for response staff Deaths	Late admission of suspected cases Late identification of alerts Refusal to transfer confirmed cases Lack of effective free care in healthcare facilities not dedicated to Ebola Inadequate awareness (message and method); lack of community engagement

14	High proportion of EVD negative patients admitted to transit/treatment centres (10th outbreak)	Bed occupancy Overload of work Increased expenditure on transit/treatment centres	Poor quality of investigations Frequent changes to SOPs for case definition Unsystematic differential diagnosis
15	Poor collaboration between integrated and non-integrated public private structures (10th outbreak)	Disruptions in treatment	Lack of memoranda of understanding
16	Lack of SOP validated by the Ministry of Health regarding the application of decentralised care (11th and 12th outbreaks)	Overload of work Risk of contamination of front-line healthcare personnel while reinstating decommissioned treatment sites Care given to suspected Ebola patients at the same time as other patients Non-compliance with infection prevention and control measures	Lack of personnel in health facilities not dedicated to Ebola Decentralised management structure less suitable for patients with unstable health
17	Geographical inaccessibility and lack of telephone (and radio) coverage in certain health areas (9th and 11th outbreaks)	Delay in the delivery of samples from remote areas Delay in decision-making Long waiting time Worsening of the condition Late treatment	Lack of communication and travel means
18	Non-harmonised data collection (10th and 11th outbreaks)	Delay in decision-making Worsening of the condition Late initiation of specific treatment	Difficulty in collecting and centralising support data Absence of a unique identifier
19	Insufficient involvement of the Ministry of Health in the follow-up of people cured of EVD (9th outbreak)	Consultation appointments not respected	

		Poor case management of post-traumatic stress and other psychological trauma Stigmatisation of cured patients	
20	Poor experimental research on care activities	Slowdown in improving care	Lack of streamlined procedures for obtaining ethical authorisations
BEST PRACTICES		**IMPACT(S)**	**FACILITATING FACTORS**
1	Continuity of case management in treatment centres by Ministry of Health staff after the departure of support workers (10th outbreak)	Accountability of Ministry of Health staff	Existence of national care competences Commitment of healthcare actors
2	Organisation of mixed room tours involving people other than caregivers (family, etc.)	Reduction of hospitalisation time Better understanding of the patient's condition and evolution of the disease Anticipation of possible complications	Better management of suspected and confirmed cases (10th, 11th and 12th outbreaks) Faster start of treatment upon admission of confirmed cases
3	Standardisation of the management of suspected and confirmed cases	Permanent standard treatment centre Adapted care into highly populated urban environments	Provider training Permanent presence and support of all the response actors
4	Deployment of care specialists (10th outbreak)	Higher quality treatment Less hospitalisation time Early detection and management of co-morbidities	Lessons learned from previous outbreaks Availability of healthcare specialists
5	Confirmation of diagnostic results Biological monitoring capacity (biochemistry and haematology) set up from the 10th outbreak	Higher quality treatment	Availability of materials and equipment following the 10th and 11th outbreaks

6	Wide range of medical procedures in transit/treatment centres: caesarean section, transfusions, deliveries, etc. (10th and 11th outbreaks)	Higher quality treatment	Transfer of skills from the national to the local level Involvement of specialists
7	Construction of transit centres/treatment centres equipped with single rooms and bio-secured emergency rooms (BSER)	Improvement of the patient/caregiver circuit minimising the risk of cross-contamination	Collaboration with the partners who developed the BSER technology
8	Randomised clinical trial success and application of the specific treatment protocol during the 10th, 11th and 12th outbreaks	Higher quality treatment Reduction of hospitalisation time Faster initiation of treatment at case admission	
9	Presence of a mobile team for the administration of the specific treatment (in Mwenga)		
10	Availability of site-specific treatments in the provincial capital		
11	Trial protocols, randomised controlled trials, and experimental drug evaluations		
12	Formation of a national EVD association and associated research programme	Greater compliance with monitoring	
13	Strengthening of support for those cured of EVD: reimbursement of transportation costs, food aid, free care, specialised care (Butembo ophthalmic centre)		

14	Training staff to follow up with Ebola survivors	Limit the risk of virus resurgence	

WAYS FORWARD - NEXT STEPS

- Mobilise funds to increase the budget dedicated to the deployment of experts of the Ministry of Health in the management of health emergencies (outbreak cases of Likati and Butembo after the departure of the partners).
- Develop and implement national guidelines for medical care.
- Establish safe blood transfusion services during and outside EVD outbreaks.
- Review and set up SOPs for technical facilities in the event of an Ebola emergency.
- Develop a national training plan for medical management actors in health areas at risk of EVD.
- Integrate innovative strategies (nutrition, randomised controlled trials, use and evaluation of experimental drugs).
- Develop procedures for managing national emergency funds.
- Form a national pool of Ministry of Health personnel to sustain the medical care of the cases in Ebola transit/treatment centres.
- Put in place national guidelines for free care in the event of a health emergency.
- Implement a scale that takes into account the responsibilities of the personnel providing the care in an Ebola transit/treatment centre.
- Define a national strategy for the construction of confinement areas.
- Mobilise funds to improve care and monitoring for those who have recovered from EVD.

Table 5: Infection prevention and control (IPC), dignified and safe burials (DSB) (Pillar 4).

	DIFFICULTIES/CHALLENGES	IMPACT(S)	LIMITING FACTORS
1	Community resistance and reluctance to dignified and safe burial activities (oral swab test and decontamination if positive test) during the 9th, 10th and 11th outbreaks E.g.: during the 10th outbreak, DSB teams were vandalised in the health zones of Beni (in Kasanga), Butembo, Katwa and Aloya	Poor proportion of safe burials	Limited involvement of political-administrative authorities in the management of bodies Lack of DSB focal point formation in affected health areas (9th and 11th outbreaks) Lack of synergy with the other committees (laboratory, monitoring, communication) especially during the 9th, 10th and 11th outbreaks, refusal to set up a DSB commission which could

			have interacted more easily with the other commissions. Poor perception from the community regarding the DSB (PPE) teams' conduct Lack of consideration of socio-cultural realities (9th and 11th outbreaks) Lack of clear strategy on community deaths to seek a DSB creating confusion in the communities
2	Delay in communicating laboratory results (all outbreaks combined) to communities E.g.: during the 10th outbreak, while waiting for laboratory results, a family became impatient and took the body away to bury it unsafely.	Community resistance Propagation of infection	Poor management of information (laboratory result not communicated to the DSB commission) contributing to reinforcing community reluctance, insecurity and a lack of means of transport for the delivery of samples (e.g. during the 9th outbreak, no laboratory in Itipo or Bikoro)
3	Majority of health facilities not meeting IPC-WASH standards E.g.: cramped residential home with dirt floors transformed into sanitary training room	Increased care-associated infections Difficulty with decontamination and implementing all IPC/WASH measures	Lack of waste management protocols
4	Lack of relevant skills of healthcare providers in certain health facilities (provider training was initiated, or providers were self-trained, during all outbreaks)	High frequency of contamination of healthcare providers	Lack of awareness of the SOPs for infection prevention and control Lack of healthcare personnel in rural health zones Poor regulation of the functioning of sanitary training
5	Poor alignment of some partners with the guidelines of the Prevention and Biosafety Commission,		

	according to the Ministry of Health E.g.: partners use the tools, but the SOPs are not validated by the Ministry of Health (9th and 11th outbreaks)		
6	Lack of human and material resources to sort and isolate cases		
7	Irregular allocations of IPC/WASH kits in health facilities supported by certain partners		

WAYS FORWARD - NEXT STEPS

Infection prevention and control (IPC)/WASH

- Develop an official memo for the mandatory integration of standardised screening and isolation units into the minimum package of activities for all health facilities.
- Deploy use of IPC/WASH kits in 9 high-risk provincial health divisions and implement a plan for the regular supply of inputs and PPE to health facilities and communities in high-risk health zones.
- Implement an emergency plan to strengthen water access and waste management in priority health facilities and communities in high-risk provincial health divisions.
- Conduct IPC/WASH (Toolkit) training in high-risk provinces.
- Develop and implement a national IPC/WASH strategy (IPC-WASH Programme) adapted to the different contexts within the DRC.
- Revitalise and strengthen the capacity of the hygiene brigades and the hygiene and biosafety committees for the health facilities in high-risk provinces; and the supervision and evaluation of their operational action plans by the health zones' chief medical officers.
- Organise workshops to update and validate IPC-WASH and DSB SOPs/tools.
- Integrate the technical content of the IPC (IPC/Wash toolkit) into medical education programs (faculty of medicine and Higher Institute of Medical Techniques).
- Establish a pool of national trainers who have graduated in IPC/WASH, in collaboration with the School of Public Health of Kinshasa.
- Setup local production units for hydro alcoholic solutions in provincial hospitals (26) and university clinics (6).
- Integrate hygiene and prevention messages into advice sheets, image boxes and posters for routine prevention activities.

Dignified and Safe Burials (DSB)

- Develop an official memo regulating the training, the installation and the operation of the LREBCT in each health zone in high-risk provinces
- Develop an official memo to regulate the movement of bodies during EVD outbreaks.
- Define a concerted strategy (including communities, religious and spiritual authorities) to determine the best approach to managing the deceased during an EVD outbreak.

Table 6: Risk Communication and Community Engagement (RCCE), psychological and social care (Pillar 5).

Risk Communication and Community Engagement (RCCE)

DIFFICULTIES/CHALLENGES		IMPACT(S)	LIMITING FACTORS
1	Low capacity of local actors assigned to the response (10th EVD)	Poor performance in the field Amateurism Data bias Lack of accountability	Absence of standards, guidelines or relating to the deployment of RCCE experts in the event of an outbreak Poor level of involvement of the RCCE coordination in the recruitment process; Bargaining and back-commission of certain actors who do not belong to the Ministry of Health or the system Politicisation during the deployment of the response actors (pressure from politicians on the choice of actors in the field, tendency to inflate the lists of speakers according to affinities/relationships) Existence of pressure groups with divergent tendencies, of which certain actors involved in the response are themselves at the origin of the incidents in North Kivu and Ituri
2	Weak coordination of RCCE interventions at the operational level (10th outbreak)	A tendency for some actors to ignore existing local initiatives	Weak managerial leadership of RCCE officials at the operational level Limited technical capacity of operational teams in certain

		Blurring of roles between local government partners and providers Imposed unofficial operational approaches by some partners Often contradictory messages in the field, according to actors and partners Multiplicity of tools in the field (modules, IEC tools, etc.) Duplication of actors and initiatives in the field Poor level of monitoring and evaluation of RCCE activities at the operational level Non-alignment of certain partners on the principle of "speaking with one voice"	provincial health divisions and zonal sub-coordination Planned but unfunded interventions Delayed deployment of national level experts to technically support the operational level and streamline communication interventions Low awareness of the importance of the RCCE by other actors during interventions when it should be leading the way in preparing the ground Lack of a global deployment plan setting the priorities of the various actors deployed in the event of outbreaks
3	Insufficient acceptance of prevention measures by communities (all epidemics combined) with the persistence of high-risk practices (funeral rites, assistance/contact with a sick/dead relative and non-washing of hands)	Increased morbidity and mortality Propagation of the outbreak	Environmental and behavioural factors (eating habits: consumption of game found dead) Lack of use of modern medicine due to low levels of trust between communities and healthcare providers. Persistence of misinformation due to political factors (political messages, election issues, security...), socio-cultural (beliefs, mortuary rites, identity construction, etc.), economic (job search, pay inequalities) and structural (binding decisions, divergences of approaches

			among actors, recruitment method)
4	Persistence of community resistance (9th and 10th outbreaks)	Disruption of field activities Resurgence of cases Delayed and poor feedback from community members	Lack of collaboration in launching response interventions between the RCCE and other commissions Poor involvement/participation of indigenous people in the response (early 10th outbreaks) Communicators not aware of local customs and not speaking local languages Some actors paid above local rates Persistent insecurity and massacres Difficulty in accepting response interventions from communities due to the "Ebola Business" trend, divergent political discourses on EVD, conspiracy theories, etc.
BEST PRACTICES		**IMPACT(S)**	**FACILITATING FACTORS**
1	Involvement of community leaders at every level (political and administrative authorities, civil society organisations, community-based organisations, religious and opinion leaders, citizen movements, indigenous peoples, direct and indirect influencers) at all stages of the response (all epidemics)	Trust building Community incident resolution Co-delivery of some interventions with local structures Ownership/amplification of communication interventions by local actors	Existence of state, non-state operational structures, community-based networks/platforms Flexibility of the teams Ability of the central actors (national coordination) to mobilise the local actors Cooperation between different stakeholders Community dialogue

			Institutionalisation of community approach units (from 10th outbreak)
2	Introduction of community feedback systems	Integration of local perceptions to steer the actions of the RCCE and adjust the response interventions Actualisation of supports and messages (Information Education Communication)	The RCCE workshop in Goma reoriented the strategy and interventions of the RCCE, including stronger coordination Stakeholder availability and engagement: analysis of community feedback from the rapid response teams for the different pillars of the response
3	KAP (Knowledge Attitudes Practices) surveys (professional skill capabilities) and socio-anthropological research to collect community perceptions and concerns regarding the implementation of the Ebola response (social sciences analysis unit)	Adjustment of interventions according to survey results Updating of materials and messages (Information Education Communication) Better understanding of the level of knowledge, social norms, customs and perceptions of communities around EVD	Availability of funds for KAP surveys Implication of the actors Community participation Presence of social science experts and participation of community members in health zones The terms of reference for the social science analysis unit developed in collaboration with the national, provincial, and zonal health authorities
4	Implementation of a community incident management unit and rapid response teams in the field	Fewer community incidents Fewer attacks on field staff	Support from technical and financial partners Commitment of RCCE actors
5	Creation of a media working group (for all epidemics)	Regular refresher courses for journalists on the EVD response Harmonisation of messages in the media Co-planning of radio broadcasts: same content specific to the response	Existence of local media platforms Good collaboration between health authorities and the media

		Coordination of products (choice of topics, reporting angles, drivers, media plans, etc.)	
6	Use of new technologies for the collection and management of information (U-Report, Kobo collect, tablets...)	Delivery of targeted messages to mobile phones Reduction of misinformation Using social media to fight misinformation	Good collaboration and lobbying with mobile operators (need to institutionalise collaboration with these operators in the case of emergencies)
7	Designation of Communication Focal Points attached to the other pillars	Integrated actions improve effectiveness Case intervention facilitated	Good collaboration between the different pillars of the response Existence of mechanisms for exchange of activities and sharing of difficulties encountered between the pillars
8	Implementation of the RCCE capacity building plan at all levels	Mutual capacity building of teams Strengthening local skills/expertise	Existence of a framework for collaboration between the pillars of the response
9	Integrating Ebola survivors as awareness-raisers/communicators	Mitigation of misinformation around the non-existence of the disease Building trust with the response team members Better community involvement Destigmatisation of the survivors/healed and their relatives (family and friends)	KAP surveys that helped understand community perceptions of the disease Ebola survivors ready to testify at community dialogues, popular expression forums, radio broadcasts, etc.

10	Regular guided tours of Ebola treatment centres by community leaders and influencers.	Decrease in refusals to transfer suspected cases to transit and treatment centres Reduction of misinformation related to care in transit centres and treatment centres	Availability of experts in transit and processing centres to explain and answer visitors' questions Close collaboration with the pillars involved

Psychological and social care

DIFFICULTIES/CHALLENGES		IMPACT(S)	LIMITING FACTORS
1	No clinical psychologists at the Ebola treatment centre during the 9th outbreak	Lack of regular psychological support for suspected and confirmed cases Psychological disorders and difficulties in reintegrating unconfirmed cases and recovered persons	Poor availability of clinical psychologists Too few psychologists at sites equipped with Ebola treatment centres
2	No psychologists in health areas and care facilities, during the four outbreaks	No continuity of psychological support and accompaniment of those affected once the outbreak is over Mental, psychosomatic and psychiatric disorders develop in some people	Non-integration of psychological care with primary healthcare
3	Incomplete psychological workup during screening (10th and 11th outbreaks).	Patients not psychologically prepared for their arrival at the Ebola treatment centre. Reluctance to care on the part of patients upon arrival at the treatment centre	Lack of clinical psychologists during screening Certain members of the medical profession do not make the difference between a psychological consultation and a medical consultation

4	Not integrating psychological support activities with community engagement activities (10th outbreak)	Poor community engagement Intervention of the commission for psychosocial care by the coordination team whenever there is resistance in the community	Cumbersome coordination for the organisation of response activities Non-compliance by the coordination of psychosocial care SOPs
5	Delay in implementing essential psychosocial support activities (training of psychologists and psychosocial facilitators) in the 10th and 11th epidemics	Late deployment of psychosocial support teams in the field	Long and cumbersome procedures for funding psychosocial activities by the support partners
6	Lack of psychological support for providers of care facilities (e.g. in Butembo)	Low participation of health care providers in response activities (incomplete records, patients hidden in health care facilities, etc.)	Difference in working methods between the Commission for psychosocial care and the coordination (e.g. in Butembo)

BEST PRACTICES		IMPACT(S)	FACILITATING FACTORS
1	Regular psychological support provided to healthcare workers at the Ebola treatment centre during the 9th outbreak	Alleviating the anxiety of caregivers facing death Improved patient care and a sharp drop in the fatality rate at the Ebola treatment centre	Regular presence of a national clinical psychologist on site Good collaboration between the psychologist and the medical team for the treatment centre
2	Integration of psycho-social facilitators and psychologists at transit centres and Ebola treatment centres (10th and 11th outbreaks)	Better collaboration between patients and caregivers	Availability of trained psychologists and psycho-social facilitators in health areas with an Ebola treatment centre
3	Deployment of psycho-social facilitators and psychologists within	Involvement of patient's families in response activities, thus facilitating	Recruitment and training of psycho-social facilitators for all health areas

	communities in health zones, during the 10th and 11th outbreaks	epidemiological surveillance	
4	Psychological debriefing sessions generalised to all actors (10th and 11th outbreaks)	Higher quality services by healthcare providers Better stress management of healthcare providers	Regular presence of national level psychologists on all sites
5	Food assistance to contacts (9th, 10th and 11th outbreaks)	Improved contact tracking Less resistance to response activities in the community	Presence of psychologists and psycho-social facilitators on site to assess the basic needs of communities during the outbreak
6	Provision of burial kits	Improving bereavement process in affected families Less community resistance to DSB	Presence of local psychologists and psycho-social facilitators to assess the basic burial needs of the communities
7	Introduction of nurseries in the Ebola treatment centres	Less psychological pain for sick parents Better monitoring of child contacts Involvement of cured people in childcare.	Clinical psychologist tenure in Ebola treatment centres Regular presence of psychologists and local psycho-social facilitators in nurseries
8	Management of confinement (contact location)	Better contact monitoring	Presence of local psychologists and psycho-social facilitators on site
9	Psychosocial support for people cured of EVD	Good psychological development of those who have been cured and adherence to medical and biological monitoring	Regular presence of local psychologists and psycho-social facilitators at the follow-up sites of recovered patients. Regular supervision by psychologists at national level
10	Creation of WhatsApp groups on all sites during the 10th outbreak	Real-time information sharing	Supply of communication credits for psychologists and psychosocial facilitators

11	Creation of a framework for consultation with partners supporting psychosocial care	Better monitoring of field activities	Regular presence of psychologists at the national level
12	Implementation of a framework for discussion on the cases during the 10th, 11th and 12th outbreaks	Improving the psychological care of people affected by the outbreaks (infected and affected)	Regular presence of psychologists at the national level
13	Recruitment and training of psycho-social facilitators in the health zones during the 9th, 10th and 11th outbreaks	Facilitation of community activities	Regular supervision by national psychologists present on site
14	Launch of couples therapy for cured patients	Improved family atmosphere	Training of local clinical psychologists
15	Supervision of psychosocial activities on all sites	Better monitoring of field activities	Availability of clinical psychologists at the national level and on-site deployment
16	Elaboration of data collection tools 1. AAR EVD DRC Report Final_June 2021_ENG_AM_Finalt	Comprehensive database	Regular supervision by psychologists at the national level
17	Setting up of mobile psychological support teams in the affected zones (10th outbreak)	Rapidity of psychosocial interventions	Presence of qualified local psychologists and psycho-social facilitators
18	Distribution of school kits (10th, 11th and 12th outbreaks)	Schooling for children orphaned by EVD	Creation of an identification service for orphaned children in each health zone Collaboration between the Psychological and social care commission and the social affairs divisions
19	Facilitation of support groups with those cured of EVD in the health zones	Identification of the psychosocial problems of those cured of EVD	Regular presence of psychologists and psycho-social facilitators in the health zones

		Better stress management for people cured of EVD	

WAYS FORWARD - NEXT STEPS

Risk Communication and Community Engagement (RCCE)

- Establish a database of human resources qualified in the field of RCCE.
- Update and disseminate RCCE response SOPs during emergency responses.
- Revitalise/set up community facilitation units, especially in high-risk health areas, to strengthen community engagement.
- Deploy adapted communication materials and media in local languages in the areas of recurrent outbreaks.
- Establish coordination structures for the RCCE at all levels.

Psychological and social care

- Integrate psychological treatment to primary healthcare.
- Assign clinical psychologists at the central, intermediate and operational levels in North Kivu, Ituri, South Kivu and Equateur.
- Organise a workshop to update the SOP for psychosocial care.
- Train psychologists assigned to provincial health divisions.
- Organise a joint workshop "Psychosocial management and RCCE" to develop communication strategies during periods of outbreak.

3.3.5 Roadmap for the implementation of recommendations

At the end of the workshop, a roadmap was drawn up in consultation with the participants to facilitate the implementation of the AAR recommendations.

This roadmap includes the following steps:

- Set up a post-AAR-EVD-DRC technical secretariat to finalise the report.
- Share the draft of the final report for validation by the General Directorate of Disease Control.
- Present the summary of the AAR's final report to the advisory board, the ACSB, and during the various partner meetings.
- Set up an *ad hoc* committee post- AAR-EVD-DRC to follow-up recommendations. This committee will meet regularly to review the implementation of the recommendations.

For each recommendation made, the working group has drawn up an operational plan for its implementation, indicating a deadline for its enforcement, the persons in charge and key points concerned, the support required and performance indicators.

4. CONCLUSIONS - RECOMMENDATIONS

During this AAR, the inventory of strengths, difficulties encountered, progress made and lessons learned from the response to the last four EVD outbreaks in the DRC was based on factual evidence relating to the status and impact of the response activities implemented, including behavioural change and the development of new capacities for the preparedness and response to health emergencies.

During the various components of this AAR, qualitative and quantitative information was gathered from several sources: desk review, online survey from the response participants, interviews with key informants and finally the focus group discussion workshop with staff, government officials, and key partners involved in response activities.

At the end of this workshop, a questionnaire was submitted to the participants to assess not only whether the objectives of the AAR had been achieved, but also to collect their comments and suggestions.

Of the 60 participants, 37 completed this questionnaire, or 62%. Among them, over 94% felt that the adopted methodology had helped make it possible to collect as much information as possible. More than 87% felt that the AAR had allowed: (i) to identify the difficulties and challenges in responding to successive EVD outbreaks; (ii) to share experiences and best practices; and (iii) to propose measures to improve the coordination and collaboration mechanisms to strengthen preparedness, early detection, and response to public health emergencies in the country.

Some of the main strengths of the response to the EVD outbreaks in the DRC include: the support of the government and the partners, the involvement of all social groups in the fight against the outbreak, the acquisition of new knowledge in the prevention and control of outbreaks, the zonal approach, community-based surveillance, the strengthening of local surveillance capabilities, detection and management, as well as the many innovations mentioned by the participants, including the use of new communication technologies, the deployment of bio-secured emergency rooms for outbreaks (BSER), and the development of an Ebola vaccine. However, the greatest challenges concern the isolation of certain areas, the climate of insecurity in the east of the country which too often hinders the organisation and effectiveness of the response to the outbreaks, and the community resistance driven by socio-cultural factors.

The analysis of the factors underlying the difficulties and achievements produced a series of recommendations. Of all the measures proposed, there was a general consensus on 40 recommendations. They are presented below as a list of recommendations for all activities:

1. Enforce sections 105 and 106 of the Health Act: create a Public Health Emergency Operations Centre (PHEOC) or a National Institute of Public Health (NIPH) by institutionalising the training and deployment of multidisciplinary rapid response teams (RRT) for the response to outbreaks.
2. Decentralise the coordination of response operations at provincial level, with an incident management system based on sustainable organic structures and existing resources at provincial health division (PHD) level.

3. Deploy emergency kits at least in provinces considered at high risk for EVD outbreaks (Kinshasa, North Kivu, Upper Katanga);
4. Advocate the Ministry of Health for the allocation of an emergency fund for the rapid deployment of experts in the event of public health events/emergencies.
5. Create an accreditation commission for the partners supporting the response to the public health events/emergencies.
6. Implement a monitoring and evaluation framework for funding granted by partners to ensure the admissibility and traceability of funds dedicated to the response;
7. Set up a human resources management policy clearly defining the scale of compensation premiums, the ratio of international/national/provincial/local experts, a code of conduct and disciplinary measures for those involved in the response, and the awarding of merit medals and diplomas.
8. Adopt a code of conduct with the national party and the partners that boasts a robust monitoring mechanism to combat the abuses and main risks (financial risk, sexual abuse, and abuse of authority, etc.);
9. Put in place a commission for planning, monitoring and evaluation, including documentation and dissemination of best practices.
10. Develop strategies and guidelines to ensure the continuity of services during outbreaks and the contribution to a universal health coverage;
11. Develop guidelines for the mandatory inclusion of traditional healers in community-based monitoring.
12. Develop guidelines for the involvement of non-governmental health facilities in the active search for suspected cases in emergency situations.
13. Update the standard operating procedures (SOP) by integrating the therapeutic and community itinerary (or mapping) of each confirmed case, which will enable an exhaustive list of contacts to be drawn up.
14. Develop and test a plan to strengthen epidemiological surveillance at designated points of entry, including participatory mapping of population mobility and large gatherings to identify the main risks of disease propagation and to implement appropriate mitigation measures at the points of departure, the points of arrival, the transit points and the points of entry;
15. Organise a cross-border collaboration and coordination meeting with the neighbouring countries in the event of an outbreak depending on the context.
16. Strengthen the capacity of the provincial laboratories in order to rapidly deploy mobile analysis teams with genomic sequencing capability to the field.
17. Deploy high-speed sequencers at targeted provincial health divisions (PHDs).
18. Provide all provinces with high temperature incinerators (Above 1000°C).
19. Appoint technicians for the maintenance of laboratory equipment and other biomedical devices at the level of the provinces and health zones.
20. Set up a national vaccine development centre.
21. Improve the availability of solar refrigerators at antenna level and at-risk health zones.
22. Equip the central EPI warehouse in Kinshasa, the provinces, the zones and the health zones with equipment: vehicles, motorcycles, equipment for the cold chain (coolers, etc.)

23. Organise a workshop to update EVD case management protocols and standard operating procedures (SOPs), defining the Ebola emergency technical facility for specialised care (OB/GYN, surgery, etc.)
24. Deploy inter-agency emergency kits (drugs and equipment), including equipment for the establishment of treatment facilities (ETCs), with protocols for rapid deployment of emergency medical teams during EVD and other infectious disease outbreaks.
25. With the relevant institutions, restructure clinical trial procedures in the target provinces and provide training to Ministry of Health staff in conducting clinical trials.
26. Increase the funding allocated to the recruitment of experts for the follow-up of patients who have recovered.
27. Promote free healthcare via government subsidies for health structures in the event of an outbreak.
28. Develop a memo/technical note for the mandatory integration of screening units in the minimum package of activities for all health facilities
29. Set up local hydro alcoholic solution production units in the 26 provincial hospitals and 6 university clinics.
30. Update and implement the national IPC-WASH strategy in the current national context.
31. Deploy kits (IPC/WASH materials and inputs) in 9 high-risk provincial health divisions (PHDs); implement a plan for the regular supply of inputs and personal protective equipment (PPE) in the health facilities of these PHDs, as well as at the community level.
32. Implement a water access and waste management project in health facilities and communities in high-risk provincial health divisions.
33. Integrate the technical content of the IPC (IPC/Wash Toolkit) into medical training curricula (Faculty of Medicine and Higher Institute of Medical Techniques).
34. Plan and carry out socio-anthropological studies in the context of outbreaks.
35. Advocate for appropriate funding of new communication strategies (social networks, etc.) and of the Security Commission. Regularly review communication plans and adapt the latter based on feedback from the community and socio-anthropological studies (social science analysis unit).
36. Prioritise the deployment of communication experts inside the front-line teams.
37. Document positive experiences from the management of misinformation and infodemics.
38. Implement community-based feedback mechanisms at the health zone level.
39. Recruit and assign qualified clinical psychologists at all levels in provinces at high risk of outbreaks and provide a technical training framework for the contribution of social sciences in the response to outbreaks.
40. Integrate psychological care into primary healthcare.

The AAR response to the EVD outbreak in the DRC concluded with a round table discussion with the technical and financial partners based in the DRC. During the encounter, the General Director of the General Directorate for Disease Control, Dr Dieudonné Mwamba Kazadi, presented the various recommendations resulting from the AAR and the roadmap for their

implementation. In his closing remarks, Dr Jean Jacques Mbungani Mbanda - Minister of Public Health, Hygiene and Prevention of the DRC - thanked all the experts, national and provincial actors, partners and the technical secretariat of the multi-sectoral committee of the Ebola Response, for their contribution to the completion of this AAR, which had been awaited eagerly for several months and whose recommendations will allow the country to be better prepared for possible future health emergencies and disasters.

5. ANNEXES

5.1 Agenda of the focus group discussion workshop

DAY ONE (D1)

Date: 07/06/2021 **Place: BEATRICE HOTEL**

TIME	SESSION	In-charge
08:30-08:55	Registration of the participants	Admin (protocol)
08:55-09:00	Reminder of COVID-19 barrier measures in force	MPH **(IPC)**
09:00-09:45	Official opening ceremony: - Presentation of participants, - A word from the partner representative, - Opening words	MPH (State Protocol) MPH (SG or GDDC Director)
09:45-10: 30	- Introduction to the AAR process - The global health regulations After Action Review (IHR-2005) and AAR objectives (CEVAR phases)	WHO/MPH Lead Facilitator
10:30-11:00	Presentation of the EVD health response overview	DES
11:00-11:30	Coffee break	
11:30-12:30	Presentation of the chronologies of the 9th, 10th, 11th and 12th EVD outbreaks in the DRC	MPH AND WHO
12:30-13:30	**DIAGNOSTIC ANALYSIS** *Constitution of working groups.* *Group discussion:* • What happened during the response? • What worked well? What did not work so well? And why? *Note: Please use, but do not limit yourself to, the results of the desk/literature review, the online survey, the key informant interviews as a reference.*	Group facilitators and CoLead
13:30-14:30	Refreshments	
14:30-15:30	**DIAGNOSTIC ANALYSIS** *Group Discussion (Continued)*	Group facilitators and CoLead
15:30-17:00	**Plenary and consolidation session**	Lead Facilitator and CoLead
17:00-17:15	End of D1	Lead Facilitator and CoLead

DAY TWO (D2)

Date: 08/06/2021

TIME	SESSION	MANAGER
09:00-09:15	**Summary of D1**	MPH
09:15-11:00	**Plenary and consolidation session (Continued)**	
11:00-11:30	Coffee break	
11:30-13:30	**Plenary and consolidation session (Continued and end)**	Group facilitators and CoLead
13:30-14:30	Refreshments	
14:30-15:30	**PROSPECTIVE ANALYSIS** *Group discussion:* • Formulation of the recommendations	Group facilitators and CoLead
15:30-17:00	**PROSPECTIVE ANALYSIS** - Group discussion work: • Formulation of the recommendations • Prioritisation of recommendations	Group facilitators and CoLead
17:00 – 17 :15	End of Day 2	Lead Facilitator and CoLead

DAY THREE (D3)

Date: 9/06/2021

TIME	SESSION	MANAGER
09:00-10:00	**PROSPECTIVE ANALYSIS** *Group discussion:* • Prioritisation of recommendations (continued)	Group facilitators and CoLead
10:00-10:30	**PROSPECTIVE ANALYSIS** *Group discussion:* • Operational plan to implement the recommendations	Group facilitators and CoLead
10:30-11:00	Coffee break	Facilitators
11:00-11:30	**PROSPECTIVE ANALYSIS** *Group discussion:* • Operational plan to implement the recommendations (continued)	Group facilitators and CoLead
11:30-12:30	**PROSPECTIVE ANALYSIS** *Group discussion:* • Operational plan to implement the recommendations (plenary)	Group facilitators and CoLead
12:30-13:30	Refreshments	Administration
13:30-15:30	**PROSPECTIVE ANALYSIS** *Group discussion:* • Organisation of the monitoring of the recommendations	Group facilitators and CoLead
15:30-16:00	**Individual workshop evaluation and AAR closing**	

DAY FOUR (D4) - ROUND TABLE WITH TECHNICAL AND FINANCIAL PARTNERS

Date: 10/06/2021

TIME	SESSION	MANAGER
09:00-10:00	• *Implementation*	MPH
10:00-10:30	• *Opening remarks by the Prime Minister*	PM
10:30-11:00	• *Presentation of recommendations to PTFs by His Excellency the Minister of Health*	MPH
11:00-12:00	• *Exchange with the PTFs*	MPH
12:00-12:10	• *Closing of the AAR*	MPH
12:00	Refreshments	

5.2 IPC COVID-19 protocol used during the focus group discussion workshop

Les mesures de santé publique et sociales pour l'atelier RAA de la 9ième, 10ième, 11ième et 12ième Epidémie de la MVE en République Démocratique du Congo.

Kinshasa du 07 au 10 Juin 2021.

Pour la bonne santé de tous et suivant la situation sanitaire due à la Pandémie du COVID 19, nous rappelons certaines mesures importantes à suivre :

- Au cours de l'atelier :
  - Maintenons la distance minimale d'un mètre entre nous.
  - Gardons nos masques bien ajustés tout le temps. Les masques sont disponibles à l'accueil.
  - Evitons de trop se déplacer dans la salle.
  - Désinfectons nos mains régulièrement avec du gel ou la solution hydro alcoolique.
  - Désinfectons nos mains avant et après l'utilisation du microphone.
  - Désinfectons le microphone après chaque utilisation à l'aide de la solution hydro alcoolique en spray.
  - Les toilettes sont situées au fond de salle principale de la réunion. Il y a du savon et de l'eau pour se laver les mains à chaque fois que nous y allons.
- Pendant la pause-café et le repas :
  - Maintenons la distance minimale d'un mètre pendant le service et à table.
  - Pendant le service permettons aux agents de remplir nos plats afin de limiter les contacts avec les louches et autres outils de service.
- Pendant les travaux de groupe:
  - Restons tant soit peu dans nos groupes respectifs.

Merci pour votre contribution à la bonne santé de tous !

5.3 Composition of the teams for the preparation of the AAR (steering committee and thematic groups)

The following individuals participated in at least one of the 25 AAR preparatory meetings and actively contributed to the preparatory work including: the desk review, the online survey, key informant interviews, and the preparation and facilitation of focus group work.

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