Lessons for the Future

What East African experts learned from fighting the Ebola epidemic in West Africa

A regional conference with international participation held in Nairobi, Kenya from 6th to 8th November 2017

East African Community

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Conference Report

Implemented by:

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List of Abbreviations

AU	African Union
EAC	East African Community
ECOWAS	Economic Community of West African States
EVD	Ebola Virus Disease
ETC	Ebola Treatment Centre
FAO	Food and Agriculture Organization
FLI	Friedrich-Loeffler-Institute
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GOARN	WHO's Global Outbreak Alert and Response Network
icipe	The International Centre of Insect Physiology and Ecology
IPC	Infection Prevention Control
KAP	Knowledge, Attitude and Practices
KfW	Kreditanstalt für Wiederaufbau
MSF	Médecins Sans Frontières/Doctors Without Borders
OHCEA	One Health Central and Eastern Africa
OIE	Office International des Epizooties/World Organisation for Animal Health
PPE	Personal Protective Equipment
RPPP	Regional Project Support for Pandemic Prevention in the ECOWAS Region
SEEG	Schnell einsetzbare Expertengruppe bei Gesundheitsgefährdungen/German Epidemic Preparedness Team
UNFPA	United Nations Population Fund
WAHO	West African Health Organization
WHO	World Health Organization
WHO AFRO	World Health Organization's Regional Office for Africa

Foreword

In October 2014, The East African Community's Sectoral Council of Ministers of Health sent out a call for volunteers to join hands with our brethren in West Africa to fight the deadly scourge of Ebola, and some 500 experts responded from across the region. On behalf of the EAC Secretary General, Ambassador Liberat Mfumukeko, I would like to take this opportunity to thank wholeheartedly and warmly applaud these volunteers for their heroic self-sacrifice and courage, and the contributions they made to containing and stopping the Ebola epidemic in West Africa.

I wish also to applaud and congratulate the EAC Partner States for the timely support and leadership they provided to the teams of volunteers and deployed experts in support of the response that was so badly needed.

This conference on 'Lessons for the future – What East African Experts learned from fighting the Ebola epidemic in West Africa' brings together over 50 of these East African volunteers and deployed experts for the first time to share their experiences from West Africa, learn lessons and draw up recommendations for future responses to epidemics.

It is my belief and conviction that the documentation of these lessons learned during the conference discussions will permanently influence the way we plan for, implement and respond to epidemics in East Africa. The recommendations derived from these lessons learned will become the foundation for improved health polices, for guidelines, strategies and frameworks. The documented experiences will be shared widely and will go a long way towards shaping epidemic preparedness and response in our region, Africa and the world as a whole.

The EAC has adopted a One-Health contingency plan for epidemics which will be implemented in the region. But we need to strengthen these efforts by listening to the experiences of deployed East African experts who fought Ebola in West Africa and by implementing their recommendations for the future, including the setting up of a rapid deployment mechanism that the EAC Sectoral Council on Health is now seeking to put in place.

I extend very sincere gratitude and appreciation to the Government and People of the Republic of Kenya for hosting this important event and to the Federal Government of Germany through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH for their support and facilitating the conference.

Hon. Jesca Eriyo
Deputy Secretary General Finance and Administration,
East African Community (EAC) Secretariat

November 2017

Summary

According to the World Health Organization (WHO), in the Ebola Virus Disease (EVD) outbreak in West Africa between 2014 and 2016 a total of 28,616 Ebola cases were reported in Guinea, Liberia and Sierra Leone, with 11,310 deaths.

Drawing on experience they had gained from much smaller Ebola outbreaks in their own region, some 500 courageous East African doctors, nurses, epidemiologists, laboratory technicians and other health professionals risked their own lives by volunteering to help their West African colleagues in the battle to contain and control the largest Ebola epidemic the world has ever experienced.

The lessons learned by these East African experts from their deployment in West Africa have not yet been systematically collected and documented. For this reason, the East African Community Secretariat, in collaboration with the Federal Government of Germany through the GIZ-coordinated Support to Pandemic Preparedness in the EAC Region project, hosted a conference in the Kenyan capital Nairobi from 6th to 8th November 2017 to exchange and document these first-hand experiences to be better prepared for future potential outbreaks of infectious diseases.

This report documents the conference discussions and lessons learned from the personal experiences of over 50 East African deployed experts who attended the meeting in Nairobi, along with representatives of regional and international institutions and organisations. The participants formulated recommendations which will inform future policies and actions taken at local, national and regional levels aimed at preventing, combating and mitigating future outbreaks of Ebola and other infectious diseases in the EAC region and beyond.

The five key messages for future preparedness that emerged from the participants' discussions about lessons learned from their experiences in West Africa are:

Political will is very important for timely declaration and management of epidemics.

Regional and national contingency plans need to be developed and implemented, with adequate resources to prevent and react to future epidemics.

There is a need to establish national and regional teams of experts that can be rapidly deployed in an emergency.

(Public) Health systems need to be strengthened and work effectively with other sectors and areas of expertise to ensure a holistic and effective response.

Community engagement is crucial if disease outbreaks are to be effectively contained.

Introduction

According to the World Health Organization (WHO), the Ebola epidemic that occurred in West Africa between 2014 and 2016 killed over 11,000 people out of almost 30,000 that were infected. Although the epidemic is now over, the health systems, economies and peoples of the countries affected are still reeling from its impact: The human and economic costs are enormous and will probably never be fully understood.

From one initial case believed to have originated in Guinea, the Ebola Virus Disease (EVD) spread like a bushfire through the country and spread quickly to neighbouring Sierra Leone, Liberia and other countries in the region. There were real fears that the epidemic could rapidly escalate into a global pandemic, fuelled by the speed of ground and air transportation and free movement of people. Indeed a few cases were reported, mostly amongst returning health workers, in Europe and the USA.

> *"The world is now a small village – you can have breakfast in Africa, lunch in Europe and supper in the USA. If you are incubating a disease, it will follow you all the way through from breakfast to supper. So with people and goods moving faster, with environmental changes and climate change we need to be better prepared to make the world safer." (Dr Zabulon Yoti, Technical Coordinator for WHO's Health Emergency Programme for Africa at the Regional Office in Brazzaville.)*

Although no cases of Ebola were registered in East Africa during this epidemic, the East African Community (EAC) Partner States of Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda and their neighbouring countries have experienced several fatal outbreaks of the Ebola virus disease in the past, including the first recorded outbreaks in 1976 in what is now South Sudan and in the Democratic Republic of Congo near the Ebola River, from which the disease takes its name. At the time of writing countries in the East African region are on high alert after an estimated 165 people have died and over 2,000 people have been infected in an outbreak of pneumonic plague in Madagascar. At the same time, according to WHO, three people died in Uganda from an outbreak of the deadly Marburg virus, a haemorrhagic fever closely related to Ebola, and another two people died from an outbreak of Rift Valley fever, also in Uganda.

Such outbreaks are a stark reminder of the crucial importance of pandemic preparedness and the need for early warning mechanisms and trained experts who can respond rapidly to them.

The Ebola epidemic affected Guinea, Sierra Leone and Liberia in West Africa

What is Ebola?

Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever, is a severe, often fatal illness in humans. The virus is transmitted to people from bats and spreads in the human population through human-to-human transmission. The average EVD case fatality is around 50%, although fatality rates have varied from 25 to 90% in previous outbreaks.

Ebola spreads via direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated by these fluids. Burial ceremonies involving direct contact with the body of the deceased can also contribute in the transmission of Ebola. Health-care workers have frequently been infected while treating patients with suspected or firmed EVD where infection control precautions have not been adhered to. People remain infectious as long as their blood contains the virus.

East joins West in the fight against Ebola

During the Ebola crisis in West Africa, some 500 courageous East African doctors, nurses, epidemiologists, laboratory technicians and other health professionals risked their own lives by volunteering to help their West African colleagues in the battle to contain and control the epidemic.

These East African health experts were deployed by a variety of organisations, including the African Union (AU), the World Health Organization (WHO) and other bodies. Some of these experts already had experience of fighting smaller outbreaks of Ebola in their home countries, such as Uganda or the Democratic Republic of Congo, and they felt that their knowledge and skills would be useful in West Africa. Others, seeing scenes of death and devastation on their television screens, just felt compelled to do whatever they could to help. Given that so many West African health workers, initially unaware of what they were facing and how to react, had already died in the epidemic, all of the volunteers from East Africa knew that they were taking huge personal risks and there was a real possibility that they could get infected and die too. Their immense courage and self-sacrifice cannot be valued highly enough.

A helping hand from East to West Africa during the Ebola crisis

> *"It was the sixth time I was going to fight Ebola. In Uganda I had fought Ebola five times, and the sixth time was in Monrovia. My experience in Uganda helped me a lot: During the first outbreak in Gulu in northern Uganda, we did not know what we were dealing with. I survived by luck of God. By the time we had the second, third, fourth and then fifth outbreak, I kept gaining knowledge about how to deal with Ebola." (Tony Walter Onena is a retired registered nurse from northern Uganda. He was deployed by WHO to work in Liberia as a case management consultant.)*

> *"I responded to a call for volunteers. No one pushed me to go there. It was my decision. I feared that the epidemic could reach my country, and that is why I committed to help our brothers and sisters in West Africa: I wanted to help." (Dr Apollinaire Manirafasha, a Rwandan emergency medicine and medical care specialist, volunteered to be deployed to Liberia's capital Monrovia between September 2014 and March 2015.)*

> *"When the African Union called for volunteers, I didn't even bother thinking about it. If somebody's trained as a soldier they will go to war. I am trained as a field epidemiologist and this is what I'm supposed to do. The only thing I didn't do was to let my parents know because they would probably have been afraid. I only told my dad on my way to the airport and I told my mother when I was already in Freetown." (Rebecca Apolot from Uganda volunteered for deployment to Sierra Leone between October 2014 and April 2015, where she worked as a field epidemiologist and public health officer.)*

During the months - and sometimes even years - they spent on the Ebola frontline in West Africa, these East African health professionals consolidated the skills they already had and gained unique new experience and knowledge about preventing, combating and mitigating future outbreaks of infectious diseases. Indeed, many of these dedicated doctors, nurses, epidemiologists, disease contact tracers, laboratory technicians and others involved must now surely be considered global experts in their fields.

A wealth of experience

Despite this, the lessons learned from their deployment in West Africa have not yet been systematically collected and documented. For this reason, the East African Community Secretariat, in collaboration with the Federal Government of Germany through the GIZ-coordinated Support to Pandemic Preparedness in the EAC Region project, hosted a conference in the Kenyan capital Nairobi from 6th to 8th November 2017 so that these first-hand experiences could be discussed, documented and developed and so that we can all learn from this invaluable experience and be better prepared for future potential outbreaks of infectious diseases. The conference was also held in cooperation with GIZ's Epidemic Preparedness Team (Schnell einsetzbare Expertengruppe bei Gesundheitsgefährdungen, SEEG) and the German Development Bank (Kreditanstalt für Wiederaufbau, KfW)-supported EAC Regional Network of Reference Laboratories for Communicable Diseases. (Conference details are provided as Annex 1 to this report).

Ninety two participants attended the conference, which was held at the International Centre of Insect Physiology and Ecology (icipe) in Nairobi. The participants included 50 of the 500 or so East African doctors, nurses, epidemiologists, laboratory technicians and many other health specialists who were deployed to West Africa to fight the Ebola epidemic between 2014 and 2016.

The other participants represented the East African Partner States, the African Union (AU) and the Economic Community of West African States (ECOWAS) as well as regional health and development organisations. Among the participants were also delegates from United Nations organisations and other international development partners and from German Federal and Federal Research Institutes, civil society organisations, GIZ, KfW, the EAC Secretariat and the East African Health Research Commission. A full list of participants is provided as Annex 2 to this report.

Objectives of the conference

- To create a common understanding among the participants of the conference of pandemic preparedness and recognise the importance of networking and culturally adapted and efficient risk and crisis communication;
- To offer a platform for sharing and discussing the experiences and knowledge which deployed experts gathered and learned from their successes and challenges;
- Facilitate the development of best practices and lessons learned that will serve as valuable tools to prevent or contain the spread of infectious diseases beyond EVD in the future;
- Strengthen south-to-south collaboration in pandemic preparedness between EAC and ECOWAS and the East Central and Southern Africa Health Community (ECSA);
- Offer an opportunity to strengthen the network of infectious diseases specialists in the region and to agree on the establishment of early warning mechanisms;
- To take the first steps towards establishing an urgently needed pool of experts that can be rapidly deployed in response to epidemic and pandemic threats in the region and beyond.

Conference methodology and brief programme overview

The three-day conference was designed to allow for maximum participation and sharing of experience. It comprised of plenary sessions and eight facilitated breakout sessions that allowed for in-depth discussions and deeper and more technical analyses and dialogue. The sessions stimulated creative approaches for developing lessons learned and defining recommendations for the future.

On 6 November 2017, the conference started with words of welcome followed by an opening speech by Dr Monica Musenero Masanza, a first sharing of experiences in 10 small groups, an introduction to the first four working group topics and a presentation on Germany's experiences of setting up a database for rapidly deployable experts.

On day two and part of day three, the conference participants worked in a total of eight working groups, each exploring different themes. These group discussions were facilitated by conference facilitator Ruben van der Laan and working group facilitators Dr Sybille Rehmet, Dr John Hillary and Julia Gering. In each of these group discussions the participants were asked to start by sharing their relevant personal experiences relating to these eight themes. Based on these experiences they developed lessons learned and subsequently drew up recommendations for the future – for local, national or regional action –which they felt would strengthen preparedness and responses for future outbreaks. These lessons learned and recommendations for future response preparedness were presented to the conference plenary. Some of these recommendations related to policies at regional and national level, and others were very pragmatic, on-the-job suggestions for dealing with future Ebola and other infectious disease outbreaks.

> *"I would recommend installing a hot water boiler on each Ebola ward because patients suffering from Ebola get diarrhoea, and to clean them using room temperature water is unfortunate when they feel the cold tremendously. I'd also suggest using warm water treated with dilute chlorine (such as in a swimming pool or in hand wash) for giving patients a bed bath. Most health workers are afraid of giving bed baths to critically ill patients, though good hygiene is very important for protecting lives. The use of cotton wool pads to absorb diarrhoea would also help." (Tony Walter Onena a retired registered nurse from northern Uganda, who was deployed to Liberia as a case management consultant.)*

On 8 November 2017, the conference concluded in plenary with an award session for the formerly deployed experts, facilitated by the Hon. Jesca Eriyo, Deputy Secretary General Finance and Administration at the East African Community.

Conference language was English with simultaneous translation into French.

This report, drafted by Lessons Learned writer Ruth Evans, documents the three day conference, the experiences, the lessons learned and the recommendations that were developed by the participants. It follows the format of the conference programme, which can be found in full in Annex 3.

Voices from the Ebola frontline: Documenting a treasure trove of experience

During the three-day conference, the author interviewed as many delegates as time allowed. The quotes used to illustrate this report reflect their personal views expressed in those interviews or their written testimonies. The views expressed here do not necessarily represent the views of the EAC Secretariat or GIZ. All the delegates were keen to share their experiences, but as it was not possible to interview everyone during the time available, the author selected interviewees with a view to reflecting the different professions, countries (both of origin and where they worked in West Africa) and gender of the experts attending. A few of their personal experiences are quoted below. Many more are published in more detail in a separate report 'Fighting Ebola: Voices from the Frontline', which should be read in conjunction with this conference report for fuller accounts of East African expert's deployments to West Africa.

Loveness Daniel Isojick

is a Registered Nurse from Tanzania who was deployed in Sierra Leone for four months from November 2014 to March 2015 and to Liberia for three months from May to August 2015.

"I was working as reproductive and child health nurse in Korogwe District hospital in Tanzania. I was closely following the daily news about the Ebola outbreak in West Africa and I had a calling inside me to go and volunteer. One day I came across an advert from the Liverpool School of Tropical Medicine asking for volunteers to work in the emergency response, and I applied immediately. I started receiving calls from different organisations and had to go through some online written tests and interviews. I was ready to go.

Photo © Loveness Daniel Isojick

My husband, who is also a nurse, supported my dream and reassured me that our children, especially our 17 month-old daughter Helga would be safe in my absence if that's what I wanted to do. I knew that our children really needed their mother, but I thought of the children in West African who had already lost their parents. My biggest motivation for volunteering was fear – fear that if Ebola had already reached Europe and the USA, it would be so easy for it to cross Africa and reach Tanzania.

I felt I had a moral obligation to help our fellow Africans who were suffering from the Ebola haemorrhagic fever which was spreading like a wild fire. I also thought there was a need for someone from my country to go and learn and possibly teach others how to prevent, identify and manage any kind of haemorrhagic fever.

I knew that as a nurse I would be working on the wards, looking after, washing and feeding infected patients. The organisation deploying me gave me information about how frightening the situation was, but I was still determined to go. For me, if I could save one patient's life, it would make my own life worthwhile, even if it meant that I might die in the process.

On the wards, more than half of patients admitted each day would die, sometimes all alone because getting our personal protective clothing on and off took a very long time and limited the hours we could spend with patients. It was heart breaking but there was no time to be sad. The most important thing we had to focus on was protecting ourselves and our colleagues.

We walked to the wards in pairs, each silently trying to deal with our fears. The nights were the worse – I was haunted by nightmares that I could end up in the position of our patients, dying of Ebola. News that health care workers had contracted the disease was very scary, but no one gave up and we were motivated to continue our work.

My happiest moments were when patients who survived Ebola were discharged: everybody was exited to help them with a "happy shower" before they were sent home. The discharge tent was often crowded with medical and non-medical staff for a Creole dance - I remember us singing the famous Creole song 'Tell papa God thenki for ting he has done'.

By the time I left Sierra Leone the number of Ebola cases had gone down and there were hopes – it was my dream - that the country would soon be declared Ebola-free. I was later able to celebrate Liberia becoming Ebola free during my deployment there (although a month later there were three more cases).

In my opinion African countries did not respond well to the Ebola crisis and should have sent more health workers: It's our responsibility, as Africans, to help each other, before we can expect other countries to come to our assistance.

Photo © Loveness Daniel Isojick

I believe that East African Ministries of Health should include diagnosis of symptoms and management of haemorrhagic fever in our nursing curricula and ensure that standard precautions are taken in our hospitals. Since the first symptoms of Ebola can often be confused with Malaria, it can often be misdiagnosed and mismanaged, enabling rapid spread of the disease: No one knows when they could come into contact with Ebola patients."

Dr James Mugume

from Uganda worked in Sierra Leone on disease surveillance, emergency preparedness and response. He coordinated contact tracing in Sierra Leone when the epidemic was at its peak.

"I went to Sierra Leone voluntarily and was responding to an invitation by a former colleague who was then working as the United Nations Population Fund (UNFPA) Country Representative, and who knew about my specialty in disease surveillance and contract tracing. UNFPA hired me as a consultant to establish and coordinate contact tracing at national and district levels in Sierra Leone. I started work on 1st October 2014, around the time when the epidemic was at its peak, and stayed long after the epidemic was declared over on 7th November 2015.

I was motivated to go to West Africa because I wanted to be part of the global effort to stop the Ebola epidemic. I had experience of working for WHO as a national surveillance officer in Uganda and, again for WHO, had spearheaded writing national Acute Flaccid Paralysis Surveillance Guidelines for Nigeria, so I was confident that I had the experience required to help establish and coordinate a national surveillance system in Sierra Leone. From a humanitarian point of view I wanted to help stop deaths resulting from uncontrolled transmission and the spread of the deadly Ebola virus.

I worked with the Sierra Leone UNFPA Country office and was based in Freetown, but I coordinated contact tracing in all the 14 districts of the country. I helped to establish a national contact tracing structure that worked through district-based tracing monitors. This involved many challenges of identifying and training the right people in each district, procuring the transport and equipment needed and managing and disseminating vital data and situation reports to partners at national and district levels.

The three key lessons I took away from this experience were firstly that a comprehensive database of contacts is critical to any meaningful analysis or surveillance of an epidemic. Secondly, successful surveillance and contact tracing must involve local traditional and religious leaders, as well as women and youth groups. Thirdly, cross-border surveillance is effective when all stakeholders invest resources in joint activities, such as when the governments of Guinea and Sierra Leone, donors and international development partners signed a Memorandum of Understanding and established a working group on both sides of the border, to share surveillance and contact information.

There were other things that did not work so well. In particular, the delayed response resulted in the continued spread of Ebola and many preventable deaths. This was due to many factors including a shortage of trained staff capable of responding to such a massive outbreak, uninformed local health workers who had no knowledge of how to manage the virus, inadequate financial support from government and delayed engagement of affected communities and local leadership in fighting the epidemic. The late arrival of vehicles from outside of the country due to strict United Nations procurement rules also hindered the response.

The happiest day for me was 7th November 2015 when the Ebola outbreak was declared over in Sierra Leone! I was very relieved that I was still alive and healthy, and was able to return safely to my home country and family. I felt happy that I had survived Ebola and proud that I had made a contribution towards saving of lives."

Liliane Luwaga

from Uganda worked as a community engagement and risk and crisis communication expert in Montserrado County, Liberia. She spent almost three years in Liberia working as a community engagement and risk and crisis communication expert.

"In August 2014, I was deployed in Liberia through WHO as a consultant from the Ministry of Health in Uganda. Liberia was one of the three worst affected countries in West Africa and I was deployed in Montserrado County, where the capital city Monrovia is located. Montserrado is the most populous of Liberia's 15 counties, with an estimated population of 1.5 million, and it accounted for over half of all reported Ebola cases in the country.

Although initially deployed for 30 days, I spent close to three years in Liberia. My main motivation was to save lives by fostering behaviour change and addressing the underlying drivers of resistance.

I shared an apartment with different members of the response team, including clinicians who worked in the Ebola treatment centres. One of the most difficult moments for me was when one of these colleagues developed signs of Ebola. We had all been following strict infection prevention and control measures, so this incident really scared us and brought home the fact that we could get infected.

My job involved working with local communities to try to make them understand the disease, how it was transmitted and how they could protect themselves. We encountered a great deal of resistance from communities, especially when it came to the practice of dead body swabbing. We tried to overcome this resistance by working with targeted community leaders to reach a consensus and to help them come up with owned solutions and action plans.

Community mobilisation and engagement was one of the pillars of the Ebola response in Liberia and proved to be a valuable and cost-effective intervention. Through such engagement, communities set up monitoring systems which resulted in an increase in safe burials, prompt notification of suspected cases, early health care seeking behaviours and eventually contributed to the control of the epidemic.

Later on, I helped to prepare communities for the reintegration of Ebola survivors back to their homes, and witnessed the joy and celebrations of discharged EVD survivors.

I helped with the introduction of a new sector approach in Montserrado, which decentralised the Ebola response in late December 2014 and divided the county into four independently managed geographical areas. Through this innovative management method we worked with smaller groupings, replicating the strategies being used at county level. This enabled local teams to respond quickly, and empowered local staff to engage with communities. This also contributed to a new performance-based management system, which enhanced the accountability of staff members and partners involved in their respective work areas.

On a personal level, I feel that these experiences, which could benefit others in future outbreaks, have not yet been properly documented.

I found the period of quarantine very hard after leaving Liberia. Initially we were not allowed to return home, so it felt like being between life and death. I was not sure that I would ever see my family again if the worst had happened and I had contracted Ebola, so I was full of both fear and excitement: Fear because I imagined I would be quarantined on landing at Entebbe airport; but excited because I was finally coming home to see my family. In the end, my worst fear did not come to pass - I was still alive and had not contracted Ebola."

Day one: Welcoming delegates to Kenya

The conference opened with words of welcome from **Dr Segenet Kelemu**, the Director General of the International Centre of Insect Physiology and Ecology (icipe), on whose Duduville campus in Nairobi, Kenya, the conference was purposefully held, since there is a strong link between many infectious diseases and insects. According to WHO, vector-borne diseases - many carried by bloodsucking insects such as mosquitoes and ticks - account for more than 17% of all infectious diseases worldwide, causing more than 700,000 deaths annually.

Dr Micheal Katende, Principal HIV and AIDS Officer and Coordinator for the East African Community's Integrated Health Programme, welcomed delegates to the conference on behalf of the EAC's Deputy Secretary General, the Honourable Christophe Bazivamo. Dr Katende thanked the Government of Kenya for hosting the conference, which in the words of the Deputy Secretary General would "significantly influence the way we protect our people in the region and beyond from future health security threats of an infectious nature."

"Your experiences present a unique treasure of knowledge for preventing, combating and mitigating future outbreaks of infectious diseases of public health concern in the region and beyond. This is especially important as the risk of human exposure to pathogens from animals is growing, not least because high population density leads to ever closer contact between humans and animals, and because of increased cross-border trade, travel, globalisation and climate change."

In his speech the Hon. Christophe Bazivamo reminded delegates both about the devastating effects of the Spanish flu epidemic of 1918 to 1919, which had caused an estimated 20 to 50 million deaths, and the fact that today Africa continues to register unacceptably high rates of HIV/AIDS related mortality and morbidity: "This clearly shows us the importance of continuous pandemic preparedness so as to better prevent the spread of diseases and minimise effects on public health, economic stability and livelihoods."

The Hon. Christophe Bazivamo said that the EAC region and Africa as a whole needed to develop effective and efficient surveillance, early warning, detection and diagnostic capabilities if they are to be adequately prepared. "In addition, the region needs a pool of experts from various professions that can be rapidly deployed in future emergencies, in line with a One Health approach."

He concluded by congratulating all of the deployed experts present, as well as those unable to attend the conference, "for your bravery and sacrifice while contributing to the fight against the Ebola epidemic in West Africa. In you, we have the best capabilities to buttress the EAC, Africa and indeed the world from future threats."

On behalf of the EAC Deputy Secretary General, Dr Micheal Katende wished the delegates successful deliberations.

Dr Philip Muthoka, representing Kenya's Ministry of Health, welcomed delegates to the conference on behalf of the host country. He also stressed the importance of general pandemic preparedness, not only for the Ebola Virus Disease, but for other infectious diseases such as the Marburg fever, which he reminded delegates was currently a worrying threat on the Uganda-Kenya border. Free movement of peoples between countries in the region meant that such outbreaks could escalate rapidly if not quickly contained.

Kenya benefits from being the major air hub for the region and beyond, but Dr Muthoka said that the Kenyan government is also acutely aware of the potential risks and committed to improve pandemic preparedness: When Ebola broke out in West Africa, Kenya not only was the driving force behind the deployment of East African experts, it also sent the most volunteers to West Africa along with Uganda.

Dr Muthoka (photo above) said that the deployed experts' experiences of fighting Ebola in West Africa and their lessons learned would help to improve preparedness not only for EVD, but for other infectious diseases such as Rift Valley Fever and Malaria as well.

Dr Jackson Amone then gave words of welcome as the Chair of the Delegation of the East African Community Partner States. He briefly described his own experiences of working for the United Nations Mission for Ebola Response in Sierra Leone and welcomed the opportunity to be reunited with colleagues who had worked with him there and to meet new colleagues and share experiences with others who had worked elsewhere in West Africa. He thanked the EAC and GIZ for organising what he described as a very important meeting.

Working in West Africa during the Ebola epidemic had been, he said, "painful at the time, but we need to commemorate that time." A One Health multi-sectoral and multilateral approach to tackling such outbreaks was very important, said Dr Amone, but above all political will and support was crucial. He wished that more politicians had been able to attend the conference to hear what the delegates had to say: "We need to appeal to our governments to prepare themselves: Infectious diseases are still a big threat and we really need a concentrated effort across different capacities. Sharing experiences is key as we need to plan for the future."

Dr Jackson Amone then formally declared the meeting open.

Opening speech by Dr Monica Musenero

Dr Musenero is currently WHO's Field Coordinator in Bombali, Sierra Leone, working with the WHO Recovery Team to rebuild the health systems post-Ebola. She trained as a veterinarian, worked as an academic for 10 years and then trained as an epidemiologist, so her own background is an example of the One Health multi-sectoral approach that Dr Amone advocated in his speech. Previously, she also coordinated the response to Uganda's 2007 Ebola epidemic outside the immediate epicentre, and has experience of working with many different agencies.

Dr Musenero said that all this experience, however, had not prepared her for the shock she felt when she arrived in Sierra Leone seven weeks into the outbreak. "There are some things you can't learn in a classroom – you only learn from experience. Never in my life did I imagine such an epidemic. It dwarfed everything that had gone

before." She knew that the response needed to be very rapid but what she found was a situation that was spiralling out of control. After years of bitter civil war Sierra Leone's already-weak health systems had been battered and destroyed and were unable to cope. Ebola quickly spread from rural to urban areas, where it spread like wild fire. Many local health workers, unaware of what they were dealing with, had already been infected and died. When the first outbreak occurred in Kenema city, Dr Musenero described the panic and confusion as being very frightening. Thirty local nurses had already been infected and the only doctor died shortly after she arrived: "It was very, very scary."

She said a key event in the spread of Ebola had been the burial of a traditional healer and the practice of mourners "blessing themselves" by bathing in the water used to wash the dead body. Over 300 cases had subsequently been traced to this one funeral.

She compared the experience of fighting Ebola to being at the frontline of a war – "except you can't see the enemy – it's everywhere. You cannot trust the person sitting next to you; you cannot trust the person selling you food in the market." She described the devastating

effects of Ebola on one street in Kenema. Of the 68 people living there, only 15 people survived and seven were not infected. An entire family of 18 people died. "It was the scariest place I have ever been – you felt Ebola was in the air."

Dr Musenero said that there were many lessons to be learned from her experiences during deployments in West Africa and she summarised a few of them in her key note speech to the conference:

- Case management and infection control is critical – but it is very important not to lose trained staff.
- Surveillance and laboratory systems need to be established with trained people. Seven weeks into the outbreak in Kenema, there was still no such system.
- Social mobilisation and communication are vitally important. Dr Musenero described a "near disaster" when what she described as a mentally disturbed woman convinced people that nurses in the isolation units were killing patients and angry people stormed the health centre.
- Logistics and security are critical in any response: "We lost quite a few security men because they had not been trained – when patients tried to escape the security people sometimes got infected when trying to restrain them."
- Dr Musenero said that almost three months into the crisis, there was no money to pay the responders, and strikes called by local health care workers had been a major problem.
- Effective communication is crucial, especially in a situation where patients and their families are distressed and ill-informed and local health workers also know little about the disease.
- Leadership and management are absolutely vital, especially in fast-moving epidemics. Dr Musenero said she no longer took good management and leadership for granted after her experiences in West Africa.
- For three years in Sierra Leone there was no economic activity going on – the schools and markets were shut. "We need to end epidemics as quickly as possible so we don't get such chaos in the future." said Dr Musenero.

After detailing the lessons that she herself had learned in West Africa, Dr Musenero concluded her remarks by saying that love is a crucial component of care - love for the patients and their families, but also love for the medical staff working in such crises: "You need to know when to stop and rest. A dead Monica is no good to anyone."

"You put on a front that you are Ok, but there's a lot of stress. Each day you're not sure if you've been exposed. There was a lot of 'psychological Ebola' where people were constantly taking their temperature or struggling to deal with the stresses of daily life."

She said that many of the deployed experts had a hard time adjusting to life back home once the epidemic was over. Many reported feeling very isolated and even stigmatised when they returned to their own countries from West Africa because their families and colleagues feared that they had brought the disease back with them and did not understand the trauma they had been through after witnessing such death and devastation. Many suffered post-traumatic stress disorders on their return - "just like soldiers." Dr Musenero described how, after five months on the "front line" without a break, she still had nightmares about dead bodies. She said that in any future outbreaks "care for the carers" needs to be organised so that they are given opportunities for counselling and greater understanding of what they have gone through.

She appreciated the opportunity given to the health experts by the East African Community Secretariat and GIZ to talk about these experiences. Above all, she said, they were keen that the experiences they had gained in West Africa should be put to good use so that the East African region and the world as a whole is better prepared to prevent, mitigate and control any future epidemics.

Dr Musenero concluded her very moving speech by saying that although no East African deployed experts had died as a result of Ebola, some colleagues and compatriots who had fought alongside them in West Africa had subsequently passed away and she asked delegates to take a moment to remember them. She hoped that they would rest in peace.

One of the many Ebola burial grounds in Sierra Leone. Photo © Monica Musenero

"The scariest place I have ever been" said Dr Monica Musenero. Photo © Monica Musenero

Every single person living in this house died of Ebola. Photo © Monica Musenero

Germany's experiences of establishing a database of rapidly deployable experts

Julia Gering, Project Coordinator for GIZ's Epidemic Preparedness Team (SEEG), wrapped up proceedings on the first day of the conference by giving a brief presentation about Germany's - and especially her team's - experiences of setting up a database of rapidly deployable experts to tackle disease outbreaks. SEEG is a cooperation of the Robert Koch Institute, the Bernhard Nocht Institute for Tropical Medicine and GIZ, combining German expertise in the field of development cooperation, infectious and emerging diseases, outbreak response and prevention of disease, as well as surveillance and monitoring. GIZ coordinates the deployments, drawing on its long-established mechanisms within more than 130 partner countries.

The subject was of special interest and importance to the participants as they felt that the need to set up such a database for the East African Community and even beyond is one of the many lessons learned from the Ebola response and almost all of them had already signaled their willingness to provide their CVs and be available for future deployments.

Julia Gering said that drawing on the lessons learned from the Ebola crisis, the German Federal Ministry for Economic Cooperation and Development (BMZ) had decided to set up a multi-disciplinary team of experts that could rapidly be deployed to support partner countries in the event of a health emergency. This rapid deployment team is part of the German Chancellor's 'Lessons Learned Initiative' for improved health crisis management and corresponds with G7 commitments made in 2015 and the objectives of the BMZ special programme 'Health in Africa'.

The purpose of this German database of experts, said Julia Gering, was not to duplicate other similar international initiatives that already exist – such as WHO's Global Outbreak Alert and Response Network (GOARN). The experts on the German database are available to provide support if partner countries or GOARN specifically request assistance with managing an outbreak at an early stage.

The response teams are formed on an interdisciplinary basis, depending on the immediate and specific needs of the situation. Experts from various fields assess the situation on the ground and strengthen affected countries' resilience to the outbreak of disease. This might for example involve developing laboratory resources, training personnel, raising awareness and devising contingency plans. If the disease continues to spread, the team of experts assists with preparations for launching international aid. These activities are closely coordinated with and complement those of other organisations and institutions, including WHO. The teams can also assist with capacity building of local staff to improve epidemic preparedness.

Julia Gering also described how a core team at SEEG tracks reports of the outbreak of diseases worldwide, paying particular attention to unusual events such as the first-time occurrence of a disease with epidemic potential in a country. In consultation with its cooperation partners – the Bernhard Nocht Institute for Tropical Medicine and the Robert Koch Institute – the team assesses the situation and produces recommendations for action for BMZ.

The German database is open to all organisations and experts with relevant skillsets and currently consists of about 80 experts who have agreed to share their CVs and personal data - contact information, areas of expertise, current employment status etc. The database also stores detailed information about their experience, relevant training and language skills, as well as information about fitness for travel in the tropics, immunisations and medical insurance. All this personal information in the database must be kept in accordance with Germany's strict data protection laws and only with the permission of the experts themselves.

Germany's experiences, said Julia Gering, demonstrate that if such a database is to be an effective tool for improving epidemic preparedness and response capacities, there are a number of crucial challenges that must be addressed: Above all, there must be political commitment, secure funding and sufficient personnel available to ensure that the database is kept up to date and adapted over time. There must also be clear terms and guidelines to ensure that deployed personnel are properly looked after.

In Germany, these challenges were addressed by technical and political stakeholders working together to highlight the added and complementary value of combining the existing expertise of the German institutes with development cooperation. Putting health and health security on the political agenda of the German G7 and G20 presidencies was a firm political signal from the German government, which helped to implement the cooperation and development of the rapid deployment mechanism.

Despite such organisational challenges, Germany's pool of experts available for assignment is growing and, in principle, said Julia Gering, the German database model could be used in other countries and regions, as long as it adhered to local data protection laws and addressed the challenges mentioned above.

First sharing of experiences

By sharing her strong experiences in her keynote speech, Dr Musenero had paved the way for a broader sharing between the deployed experts. Now, the participants were invited to join small groups. Twelve experts selected from all EAC Partner States, covering different professions and genders had been asked to introduce their own personal experiences during the Ebola crisis to get the discussions going. Unfortunately, two of these experts had been deployed to fight the Marburg fever outbreak in Uganda just before the conference and could therefore not participate. The experts who had not been selected to initiate the group work had been asked ahead of the conference if they wanted to share their personal experiences with the audience in writing and many did. Their contributions were made available to all participants in the conference folders.
In plenary, common conclusions from the groups were shared:

- Deployed experts were overwhelmed by the dire situation they encountered once they arrived. It took them a while to get adjusted.
- Their exposure to the response mission helped experts gain much experience and expertise on Ebola management. Although it was a very tough experience, this knowledge and expertise resulted in many successful outcomes.
- Deployed experts faced a great deal of stigma when they returned to their home countries. Many lost friends and work because people feared they might be 'infected' coming back from the Ebola affected zone.

These discussions set the stage for the group work on the lessons learned.

Exploring eight themes

After this introductory exchange of experiences, participants formed eight working groups, each with a different topic. The first four themes had been pre-set by the organisers, whilst the remaining four themes were selected in a participatory manner by all participants, using the 'World Café methodology'. For this, they were asked to group around 10 tables and discuss what other themes needed to be explored for an effective regional epidemic preparedness. To gather, share and debate as many ideas as possible between participants, tables were rearranged twice. In each new setting, the table host (who remained at his/her table) summarised the work of the previous group so the new group would be

able to build upon this. Subsequently, participants could decide on the working group they wanted to join. The only prerequisite was that each working group should comprise a number of previously deployed experts. The other participants, many of whom were also involved in fighting the Ebola epidemic in West Africa, were assigned the tasks of contributing their own experience as national, regional and international experts and to cross-check the developed recommendations according to national, regional and international guidelines, rules and regulations and best practices.

The first four pre-set themes

1. Being ready at short notice (establishing a pool of rapidly deployable experts).
2. Taking informed decisions (effective communication to mitigate risks and crises).
3. Working together (interdisciplinary teams working across silos an implementing the One Health approach).
4. Organising effective logistics (what, when, where, how).

The four themes subsequently chosen by the participants

5. Taking care of the responders and affected populations.
6. Education and research.
7. Strengthening health systems and building resilient communities.
8. Coordination and leadership during an epidemic response.

In each of these group discussions the participants were asked to start by sharing their relevant personal **experiences** relating to these eight themes and to consider what had worked well and what had not worked so well and what had been the main challenges they had faced during their deployments in West Africa.

From these experiences they derived a series of significant, valid and applicable **lessons learned**. What, in retrospect, were the things they would have done differently – and what should others do differently in the future?

Based on these lessons learned the participants developed **recommendations** which they felt would strengthen preparedness and responses for future outbreaks. These lessons learned and recommendations for future response preparedness were presented to the conference plenary.

All of the experts were keen to share their experiences and the discussions in the working groups were lively, constructive, task-orientated and respectful. Whilst each of the eight working groups had a similar task, the facilitators deliberately allowed them to work independently and organically, rather than to a prescribed format or template, so that the discussions and outcomes would be a true reflection of the deployed experts' personal experiences. Consequently, some groups worked as whole, whilst some divided into smaller groupings to discuss different aspects of a theme.

The brief summaries of their discussions that follow here reflect these differences of approach, and the fact that discussions about one theme sometimes overlapped with discussions about another. The description of the individual working groups' results are followed by a summary overview on all recommendations grouped according to the regional, national and district levels responsible for implementation.

Theme 1: Being ready at short notice – establishing a pool of deployable experts

Facilitator: Julia Gering

> *"Before you deploy people, you have to make sure that they understand what is waiting for them and what they're being deployed for. They must have at least some training and they must be mentally prepared through psychological counselling and so on. Before I was deployed I only had two days' training at the Pan African hotel in Nairobi, when we were shown how to wear the protective gear, just two days prior to our departure." (Dr Madina Hussein from Kenya was deployed to work on emergency medicine, and infection prevention and control in Sierra Leone in 2015.)*

What worked well?

Many of the experts in this working group praised the immediate and prompt response from different organisations in East Africa and generally felt that – despite many challenges - their deployments had been reasonably well organised. Most felt that the rapid deployment had received sufficient political support, from both deploying and receiving countries.

Since the emergency response included volunteers from across the East African region and beyond, the deployed experts said they greatly valued the experience of working alongside health workers from a variety of countries. The war against Ebola, said delegates had been a common fight irrespective of race, culture or religion, and despite many different backgrounds and perspectives, multi-national teams had worked effectively at national, district and operational levels. This multi-culture and multi-disciplinary teamwork in West Africa had, they said, brought the concept of One Health to life. Pre-deployment training helped with the integration of different health workers from different countries and backgrounds. Crucially, it also helped to save health workers' lives - the fact that no East African experts had died during such a severe epidemic was testimony to this, especially given the speed of the response.

The East African volunteers and deployed experts said that they felt immensely proud of what had been achieved during the **first successful African Union mission** to manage an epidemic - especially given the hasty circumstances of their deployment. They felt their interventions had really had an impact: Not only had deaths from Ebola been reduced; there had been a high survival rate too.

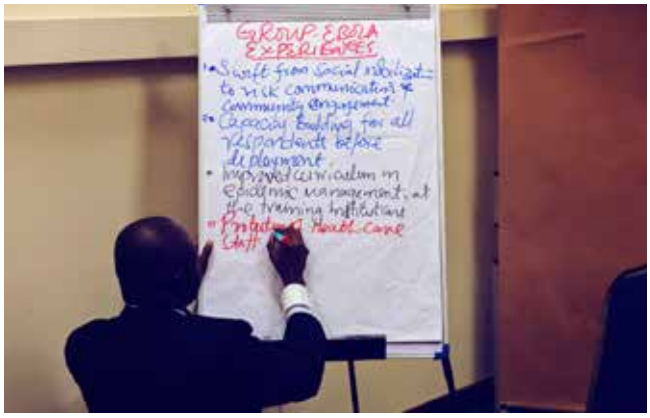
Despite these achievements, however, they said that there was also much that had not gone well as a result of the way their rapid deployment had been organised and managed. They felt strongly that these lessons must be taken into account if an East African (or any other) pool of experts for rapid deployment is to be set up successfully to respond without delay in future emergencies.

What did not work well?

The experts said that their rapid deployment to West Africa had often been severely affected by a lack of coordination and poor logistics, especially at the beginning of the response. (Many of these concerns echoed those expressed by the parallel group discussions on logistics.) Sometimes there had been no clear guidelines for how or where the international volunteers should be deployed. Some described their frustrations that precious time – sometimes over a month - had been wasted waiting for deployment instructions when they first arrived in West Africa, whilst all around them people were dying.

Some of the experts felt that many of the deployed volunteers they found themselves working with did not have sufficient skills and training to deal with the difficult situations they encountered. Others thought that the skills and expertise they had acquired from dealing with smaller Ebola outbreaks in East Africa had not been properly used or recognised during their deployment in West Africa.

The experts complained that, especially at the beginning of their deployments, there had been a lack of overall planning and no standard operating procedures or poli-



cies for the management of Ebola had been put in place. They found themselves at Ground Zero: Local health services had collapsed and many of the major hospitals had closed, so they had to set up Ebola isolation units from scratch. These were quickly overwhelmed by the numbers of infected patients. Poor or inadequate systems led to newly admitted patients waiting confirmed diagnosis being mixed with those dying from Ebola, resulting in unnecessary cross-infections. In the beginning there were no quarantine arrangements in place before returning survivors to their families and there were severe delays in providing emergency care in affected communities.

Severe logistical problems and delays also hindered the response. Field epidemiologists, case management and risk communications teams often could not get to affected communities due to lack of transport and poor road conditions. It also meant that there was insufficient follow-up. Inadequate information and communications technology made monitoring and surveillance of the epidemic and communications between areas or teams difficult.

Insufficient funds and delayed or non-payment of the deployed experts' allowances were another common problem. These delays in paying local health workers resulted in frequent strikes and bad feeling, with severe knock-on effects for already overburdened and overwhelmed staff. Other deployed experts complained of a lack of personal insurance and basic equipment.

> *"The health workers from Liberia kept on striking, and when they did, we were the ones to suffer because we had to continue with the work with fewer staff. The number of patients was too many for us to handle." (Teddy Kusemererwa, Ugandan nurse who worked as a case manager in isolation units in Liberia and helped to train health workers.)*

Language barriers were another issue; both between local and international staff and patients, and these were compounded by the need to wear personal protecting clothing that completely covered their faces.

Many of the deployed East African experts felt that the speed of their deployment had left them inadequately prepared for dealing with the alien and complex – sometimes hostile - social and cultural situations they found themselves working in, especially at community level. There was much discussion about the problem of community resistance to and misunderstandings about measures needed to contain the epidemic. Cultural and religious beliefs (such as smearing themselves with the water that had been used to wash a dead body) often undermined vital risk and crisis communication strategies. Ignorance of the facts led to many preventable infections and widespread stigma meant that people were often reluctant to seek timely medical assistance. Curfews were seen as draconian and, to begin with, there were no suitable places available in the communities where people could be placed in 21-day quarantine.

The experts said the speed of their deployment had also not prepared them for the difficult ethical choices they had to face on a day to day basis – such as what to do with a breast-feeding mother admitted to an Ebola treatment centre with her baby, and the heart-breaking enforced separation of children from their parents, or wives from their husbands.

From this exchange of experiences and broad discussion on what had worked well and what had not worked so well, the group participants agreed a series of lessons learned.

Lessons learned

- For a rapid response to be effective, **strong political will and support** is needed from both the deploying and receiving countries.
- Efficient and effective rapid deployment in an emergency requires efficient organisation and regulations that allow for **faster procurement** of the 'right' human resources.
- Excellent logistics and **highly-skilled coordination** between all the different partners and players involved in a rapid deployment are crucial to avoid confusion and chaos.
- Effective rapid deployment also depends on thorough **pre-deployment training**, especially on infection prevention controls and basic hygiene which are needed, not only to contain an outbreak, but to protect staff.
- Social and cultural factors have to be properly understood and taken into consideration before deployment takes place. **Effective communication strategies** for involving local communities – and in particular influential local leaders - need to be put in place.
- Any rapid response to an emergency should not focus on one specific disease threat to the exclusion of all other diseases (such as malaria) and other more easily

treatable conditions, as this can lead to an increase in preventable deaths as routine health services collapse.

- Participants agreed that **rapid emergency deployment** had been crucial given the systemic weakness in the health systems of Sierra Leone, Liberia and Guinea which meant that they were quickly overwhelmed by Ebola – indeed these weak health systems themselves rapidly became a driving force in the epidemic.

"One of the main lessons from our deployment is that the response was too slow. We only got there when the epidemic it was at its height. When your brother is in trouble, you could be next in line. So I hope that this rapid response unit that is currently under deliberation will make it possible for the response to be much faster in any future outbreak. I would personally be willing to sign up to be part of a rapid response team because my experience puts me in a unique position for any future intervention. Personally I also feel it's a responsibility and hopefully I can at least make my small contribution. Let's not have another Ebola outbreak." (Dr Mwaniki Collins from Kenya was deployed to Sierra Leone.)

From these lessons learned, the group derived the following recommendations for being ready at short notice and improving epidemic preparedness.

Recommendations

- Properly funded **district, national and regional contingency plans** should be drawn up to ensure rapid response and effective planning for outbreaks of infectious diseases.

- An **EAC emergency fund** and clear terms on contribution amounts and payment mechanisms should be established.

- Teams of **national and regional rapidly deployable experts** need to be established to respond quickly to an emergency outbreak. These teams need to be backed up by **better deployment mechanisms**, for example by setting up a database of experts willing and able to respond at short notice that allows a search according to professions and establishing an **EAC command centre** to manage and mobilise rapid responses to epidemic emergencies.

- Governments across Africa need to strengthen health and especially public health systems under a **One Health approach** to ensure that they are better equipped to respond rapidly and efficiently to all disease outbreaks at their source – not just those high profile diseases with epidemic potential. This requires policies and resources as well as building human resource capacities, infrastructure, logistics, health management information systems, surveillance, monitoring and evaluation.

"When they say rapid deployment, you must have a team that's well trained, that's ready to take off. We were not that team. But now, we are ready to face anything. We can wake up and pack our bags and leave. So preparedness is the key, organisation is the key." (Dr Madina Hussein from Kenya.)

Theme 2: Taking informed decisions – effective communication to mitigate risks and crises

Facilitator: Dr Sybille Rehmet

The participants shared their personal experiences of the importance of taking informed decisions and the challenges they had faced when trying to ensure effective communication to mitigate risks and crises. While the aim of risk communication is to prevent a crisis, crisis communication tries to mitigate the impacts.

> *"There were many myths about the disease. At one time they believed it was something foreign and people were using that to make money, so convincing people that what they were doing was contributing to the transmission of Ebola was a big challenge. We really had to do a lot to help people to understand that Ebola was real." (Liliane Luwaga, risk and crisis communication specialist from Uganda who worked in Liberia during the Ebola epidemic.)*

What worked well?

The participants felt that, despite many challenges, risk and crisis communication had played an important role in bringing the epidemic under control and mitigating risks. Good communication had been vital in reducing misinformation and stopping the many rumours that circulated - including one that doctors and nurses were killing patients, not caring for them, which led to attacks on treatment centres.

Overall, participants believed that crisis communication strategies developed on-site and in response to local circumstances had successfully engaged patients and survivors who, in turn, after their discharge from treatment centres, became effective advocates for hygiene and quarantine measures in their communities.

Despite considerable initial challenges, participants felt that they had been effective at winning the trust of communities and bringing about behaviour change needed to bring the epidemic under control. Crisis communication strategies relied on identifying key leaders to work within communities, understanding how communities responded to messages, winning their trust and finding a balance between engagement and enforcement.

Coordination and leadership also played a vitally important role in effective crisis communication. Participants felt there had generally been good collaboration between politicians and stakeholders, and that governments had taken the lead in communication campaigns, with effective support from international organisations and social mobilisation experts.

At an operational level, what had worked very well was the development of a decentralised system to track cases, using local focal points and setting up proper alert systems with clear channels of communication. These local focal points could explain to the community why, for example, it was necessary for an Ebola victim's belongings to be destroyed or disinfected, and remind local health workers about the importance of adhering to treatment and isolation protocols. One of the participants said that a month after these local focal points had been introduced in the area he worked in, Ebola had been brought under control.

> *"Community mobilisation and engagement was one of the pillars of the Ebola response in Liberia and proved to be a valuable and cost-effective intervention. Through such engagement, communities set up monitoring systems which resulted in an increase in safe burials, prompt notification of suspected cases, early health care seeking behaviours and eventually contributed to the control of the epidemic." (Liliane Luwaga, Ugandan risk and crisis communication expert who worked in Liberia.)*

What did not work well?

The discussion focused on the challenges of building effective communication strategies in an emergency situation with many fast-moving, competing demands and priorities. All experts recognised the importance of good communications with communities, but also described often-frustrating experiences of inappropriate risk communication messages, and the lack of clear strategies, coordination and governance structures for communication. They described some of the many difficulties they had faced trying to communicate with patients, their families and communities. They felt that they had not been properly prepared for this, as they struggled with both the local language and culture.

"In the isolation unit we had 15 cases from one village where they had contracted the disease from a Sheik that had died and they smeared themselves with the water he had been washed in for blessings. That's how they contracted Ebola." (Teddy Kusemererwa, Ugandan Case Manager who helped to set up isolation units in Liberia and trained local health workers.)

"When we went into the communities we did not wear protective clothing so we had to make sure we didn't touch anybody. If you went to a homestead, you had to stand outside and not sit on any seats or accept any drinks or food. We had to disinfect ourselves as soon as we left the communities. When you got into the car you had to be sprayed, your feet, shoes, the car itself had to be sprayed." (Liliane Luwaga, Ugandan risk and crisis communication expert who worked in Liberia.)

The problems they experienced included mistrust from the communities and the patients. One expert described the open aggression some teams had to face – some were threatened and at times feared for their own safety. They said that they had been left to face these problems alone, with little support, and that the lack of psycho-social support for responders had been a big problem. Some said this had had a substantial effect on their well-being and ability to do their jobs.

"We faced a lot of resistance in the communities. I remember a couple of times when I was threatened by the communities when we were trying to take suspected patients to isolated units. The communities didn't like that and were saying that we were the ones who had brought Ebola to their village. They actually wanted to kill us, to burn our car and us inside of the car. We were saved by our drivers, who could hear them plotting in their local language, and they reacted very quickly to get us out fast. It was really, really scary and very challenging: You have come to help people fight Ebola, and you have to be very careful make sure that you stay safe so that you yourself are not infected with Ebola, and then on top of that, you also have to protect yourself against the angry communities who don't want you to save them - so it was a really, really complex situation we were dealing with in some parts of Guinea at the beginning of the response." (Dr Landry Mayigane, a medical epidemiologist who worked as the AU's operations coordinator in Guinea.)

It seemed, however, that over time the situation improved. The participants gave many examples of how they had managed to get around these difficulties, such as engaging survivors to communicate risks to communities and systematically approaching families of patients in quarantine. They also included local leaders and chiefs in communication strategies, and used rallies, ceremonies and other events where food and drinks were offered to gain access to and the trust of communities.

"If a paramount chief or village chief says something, people listen. If the Queen of England is saying 'We shouldn't eat chocolate,' it has more impact than me Rebecca, a Ugandan, saying 'Let's not eat chocolate.' So if a paramount chief says 'For now, we're not washing the dead bodies, but later we shall go back to our culture' they listen to him and believe in him because he is the custodian of their culture. Using the chiefs as a channel worked really well. Prior to that I think there were a lot of foreign messages and people didn't feel their culture was being respected. (Rebecca Apolot from Uganda was deployed by the African Union to Sierra Leone between October 2014 and April 2015 where she worked as a field epidemiologist and public health officer.)

Field Epidemiologist Rebecca Apolot meeting the paramount chief and council of Sanda Loko Chiefdom in Kamalu, Sierra Leone.
Photo © Rebecca Apolot

The participants stressed repeatedly that risk and crisis communication messages need to be appropriate and adapted not only to the cultural background but also to the reality in the field: They said that on occasion they had been tasked with distributing flyers to an illiterate population or producing TV spots when there was no electricity in the villages. There were also concerns that mainstream media had sometimes been "over the top", putting out damaging or factually incorrect stories, and had not been properly briefed or included in risk communication strategies.

Some participants felt that risk communication had focused too much on purely medical and treatment related issues, neglecting the public health and prevention perspective, and had not adequately reflected the problems faced by communities and patients.

After sharing these general experiences, participants divided into three smaller groups to discuss specific areas of concern and between them came up with the following lessons learned:

Lessons learned

- Appropriate **risk and crisis communication strategies** need to be put in place.

- There needs to be more training on **culturally sensitive risk and crisis communication**, especially with regard to community engagement and better provision of appropriate communication tools (such as equipment, standard operating procedures and guidelines etc.) so that deployed individuals can be more competent, efficient and effective right from the start of an emergency.

- Responders that work on risk and crisis communication on the frontline in communities are themselves exposed to considerable risks, and this puts them under tremendous pressure. Psycho-social counselling and support before during and after deployment, together with information on stress management techniques, helps them to do their jobs better and with greater confidence.

> *"We should have had psycho-social support from the beginning and throughout our missions. You need to know that if you see dead bodies today and more tomorrow, it's ok to cry." (Liliane Luwaga, Ugandan risk and crisis communication expert who worked in Liberia.)*

- **Community engagement** is one of the most important tools of risk and crisis communication. Influential members of the community need to be identified and engaged early in the response for risk and crisis communication to be efficient. Understanding community structures and context through dialogue with key leaders, healers and opinion leaders enables communities and responders alike to take more informed decisions.

- Systematic guidelines, **standard operating procedures** and tools for monitoring and evaluating interventions improve the effectiveness of communications aimed at encouraging communities to change their behaviour in a way that mitigates the impact of a crisis.

- Effective **government-led coordination** strengthens the sustainability of risk and crisis communication interventions at all levels, both during and after an outbreak.

- All risk and crisis communication needs to be **appropriate to the context** for it to be effective.

- Risk and crisis communication has to be highly coordinated for consistency (**'speaking with one voice'**) and effectiveness and campaigns should be conducted by risk and crisis communication experts.

- Crisis communication needs to remain relevant and adaptable according to the different phases of an outbreak.

- **Non-verbal communication** is very important in the care of patients in the treatment centres, especially when patients cannot see who is caring for them because of the all-encompassing protective equipment carers have to wear. When patients are frightened and isolated, may not speak the same language or be able to read, non-verbal communication skills become very important.

- Good **communication within and between teams** is also crucial for taking informed decisions and better coordination of prevention and control interventions.

> *"This is a good opportunity to share and to learn. The main lesson is that we need to be prepared. We don't need to wait for outbreaks. Need to have risk and crisis communication strategies in place and constantly reviewed." (Liliane Luwaga, Ugandan risk communication expert who worked in Liberia.)*

From these lessons learned, the group defined the following recommendations for improving future risk and crisis communication in an epidemic and ensuring informed decision-making at all levels of society.

Recommendations

- Adequate **risk and crisis communication strategies and standard operating procedures** to implement them need to be in place at the regional, national and district/community levels at all times. They need to cover different phases of an outbreak and adaptable to specific circumstances. Risk and crisis communication experts need regular training.
- These strategies need to **focus on health messages in general**, rather than a specific medical emergency.
- **Risk communication is a continuous process** that belongs into the hands of **risk and crisis communication experts**; they need to be considered in a future database for rapidly deployable experts.
- There needs to be **proper training and briefing** of communication experts before they are deployed in an emergency, especially if they have limited experience in risk and crisis communication. In this case training should include building capacity on all aspect of internal, external and risk and crisis communication before and during deployment.
- Communication experts should receive specific briefings (for example from anthropologists) about cultural sensitivities and practices in the countries they are being deployed to. Training should also focus on improving **non-verbal communication skills** and working with groups with special needs.
- Systematic guidelines, **standard operating procedures** and tools for **monitoring and evaluating communication** interventions need to be developed for effective community engagement. Targeted messages for specific groups need to be developed.
- Governments need to provide **effective coordination of risk and crisis communication** at all levels during and after an epidemic to ensure that it is consistent, effective and sustainable.
- Governments must recognise the importance of continuous risk communication and make sure the **necessary human and financial resources** are available for implementing communication strategies.

Theme 3: Working together - One Health

Facilitator: Dr John Hillary

The deployed experts said that the West African Ebola epidemic had given them a unique and valuable opportunity to implement the inter-disciplinary One Health approach in an emergency situation for the first time.

What worked well?

The participants recognised that this multi-sectoral approach and close collaboration and coordination with partners and across disciplines, together with links with national government authorities had contributed to the success of the emergency response. They observed that country "ownership" was also a very important element for the implementation of the One Health approach because it required governments to have in place preparedness and readiness plans.

They felt that good multi-sectoral coordination and collaborative mechanisms had generally been established during the response, and that organisations working on the ground had shared information freely. They also felt that there had been good capacity-building for deployed experts on preparedness in a One Health approach and inter-disciplinary teams.

One Health

is the collaborative effort of multiple disciplines – working locally, nationally and globally – to attain optimal health for people, animals and the environment. One Health recognises that the health of humans, animals and ecosystems is interconnected. It involves applying a coordinated, collaborative, multidisciplinary and cross-sectoral approach to address potential or existing risks that originate at the animal-human-ecosystems interface.

They said that the construction and running of Ebola treatment centres, involving multi-sectoral engagement in some districts, together with the training of local health workers and setting up of safe burial teams and mobile laboratory services had all been good examples of a collaborative One Health approach in action. Similarly, they said there had been good cross-border collaboration across national and district boundaries.

A recurring theme discussed by the delegates was the military-like approach to managing the epidemic with its command and implementation structures, but generally they felt that this had been necessary at the time and had facilitated the response. The military analogies continued when many deployed experts described bringing the epidemic to an end as like "winning a war", and compared their own experiences to being soldiers on the frontline."

"I have learnt that an epidemic cannot be handled by one person. It has to be handled as a team. Different categories of health and other personnel need to work closely together to combat the situation otherwise we cannot manage alone." (Sarah Awilo from Uganda was sent by WHO to Monrovia, Liberia in August 2014 where she worked as a case manager in Ebola treatment centres.)

What did not work well?

The deployed experts said that a lack of contingency plans had contributed to a general lack of preparedness and lack of resources for implementing a One Health approach. Some felt that they had been inadequately trained or empowered to work collaboratively and across disciplines before deployment, and that in the field there had often been communication breakdowns between health facilities and the authorities. They referred to incidences of political interference and of essential funds being diverted or disappearing and said that this had undermined the One Health approach and been demoralising for health workers.

Competing priorities and demands in an emergency situation had sometimes hindered a truly collaborative One Health approach and poor coordination had had negative consequences for the response efforts. **Specifically, there was poor data collection and reporting or under-reporting of cases and, crucially, teams involved with animal health had not been included in surveillance efforts**.

Rather than working together under a One Health approach, there was often a sense of "us versus them" – especially where there was poor community engagement, awareness and education, or where interactions were limited by cultural or language differences. These factors all had negative effects on disease surveillance, response preparedness activities and efforts to contain the epidemic.

"The locals were resistant to change. You would work with a local doctor and they would just look at you and say 'you're just here to make money' - but we were just trying to help. But then later they understood that we are all Africans together and that we are all here to help each other. We tried to explain to them why we were there and that anything could happen to Kenya, to Uganda – that's why we were all deployed there. Some understood, but others – we could still feel the tension between us. But the work had to be done and we had to move on to the next step". (Dr Madina Hussein from Kenya volunteered to work in West Africa during the Ebola crisis and is still in Sierra Leone working on health systems restoration.)

Lessons learned

- The One Health approach depends on a **well-defined coordination system** and sharing of essential information.
- Defining a **clear chain of command** is crucial for an effective One Health approach in an emergency epidemic response and control situation.
- **One Health response plans** need to be drawn up and tested in simulated situations before being put into practice.
- Timely **availability of funds** at all levels is essential.
- The One Health approach needs to be strengthened and used in future responses.
- **Capacity building of experts** and institutions is of paramount importance in any One Health response

to epidemics, and there is a need for training in specific skills and preparedness for epidemic surveillance across sectors.

- **Political will and strong governance** is imperative for a timely, coordinated One Health response to an epidemic.

- Investing in **strong (public) health systems** is key so that they become part of emergency preparedness and response.

- The **media** should be involved in the One Health approach from the start and at all levels.

From these lessons learned, the participants drew up the following recommendations for future One Health responses:

Recommendations

The participants agreed that there is a need to engage political leaders and policy makers at both regional and national levels as well as to engage with communities to facilitate and prioritise emergency preparedness and strengthen One Health responses. Specifically, they recommended that:

- A structural framework with **clear terms of references for improved coordination and joint responses** to threats to public health should be created through a **memorandum of understanding (MoU) between EAC Partner States**. This MoU should be extended to include **ECOWAS states** and the **African Union** as well as the **WHO AFRO** Office in Brazzaville, the **Food and Agriculture Organization (FAO)** and the **World Organisation for Animal Health (OIE)**.

- The EAC Partner States should support the development and implementation of **regional and national preparedness and response plans**, which should be coordinated and implemented through setting up a permanent institution or technical body similar to the West African Health Organisation (WAHO) in East Africa.

- The EAC Partner States should formally establish, train, equip and manage **multi-disciplinary teams of experts** which can be deployed rapidly in any future emergency outbreaks.

- EAC Partner States should **institutionalise the One Health approach** by focusing on public health.

- The EAC region should facilitate future One Health emergency responses by establishing mechanisms for **speedy access to emergency contingency funds**.

- The EAC secretariat needs to promote and invest more in **research related to the One Health approach** and other related cross-cutting issues.

- When implementing a One Health approach, governments need to **strengthen and equip their health systems**, laboratory services and disease surveillance mechanisms so that these are better prepared in a public health emergency.

- Individual EAC Partner States should purposefully institutionalise the One Health approach with **inclusion of other key professionals** from environmental and animal health as well as from public health.

- For a One Health approach to be effective, a **clear communication strategy** between sectors needs to be drawn up (with clear chains of command) in relation to epidemic prevention and control and at all levels.

> *"Teamwork is key. You can't do anything unless you work as a team." (Emmanuel Ejoku, a laboratory technician from Uganda volunteered through the African Union to be deployed to Guinea.)*

Theme 4: Effective logistics – what, where, when and how?

Facilitator: Ruben van der Laan

> *"A successful outcome depends on good logistics for human resources, materials and so forth. There should be proper management from top to bottom, bottom to top." (Emmanuel Ejoku, a laboratory technician from Uganda volunteered through the African Union to be deployed to Guinea.)*

The participants of this working group all agreed that logistics are vital in any emergency response and affect every aspect from transportation to accommodation, supply chains and communications.

What worked well?

Many of the deployed experts felt that there had generally been fairly good collaboration between partners in the field and that resources had been shared when necessary. However, they also identified many areas where logistics had not worked so well.

What did not work well?

Many of their concerns about logistics related to their initial deployment, so in this regard echoed discussions about being ready at short notice detailed under theme one above. Like their colleagues in this first group, many experts complained of pre-deployment logistical problems with the organisations that were sending them to West Africa and said that their departure from their home country had often been poorly organised. They said that there had been no clear command structure and the logistical chaos they had experienced had contributed a great deal to the stresses and fears they experienced prior to deployment, especially given the haste with which they were dispatched to West Africa: Some said they did not even have time to say goodbye to their families. On arrival, they often found that basic logistical arrangements such as transport from the airport, accommodation and food had not been arranged. They had to fend for themselves in disorganised and chaotic cities that were struggling to respond to the Ebola crisis.

This chaotic start resulted long and frustrating waits before they could start any meaningful work, even though people were dying all around them. It led them to question why they had been deployed so hastily, and whether there had been enough political consideration and planning for pre-deployment, especially given the fact that there was often a mismatch between the competences needed and those deployed.

Once operational, they faced a series of additional logistical challenges – the biggest one being the near total collapse of existing health systems. Many local doctors and nurses had been infected and died, and many other terrified and traumatised health workers had deserted their posts. As a result, military personnel had taken control, and many of the deployed experts said that they had found it difficult to work with them. One expert reported attending a meeting where the military would not allow the purchase of essential health equipment.

> *"One of the biggest challenges I faced in my work was getting to the healthcare facilities, as they were quite a distance and the road was terrible, sometimes impassable. Logistics and supplies were also a challenge and very unevenly distributed – you'd find one health care facility had soap, whilst another had none." (Doreen Nabawanuka, a Ugandan infection prevention and control specialist was deployed to Sierra Leone in 2014 for six months by African Union, and then for a further year by WHO.)*

They described serious logistical difficulties with procurement of supplies and essential equipment. One Kenyan doctor described how the Freetown maternity hospital she worked in had no essential equipment, so she ended up paying for weighing machines, blood pressure machines and other equipment out of her own pocket and getting relatives in the UK to send them to Sierra Leone: "I had no other option because I could not just go to the ward and do nothing."

> *We sometimes ran out of body bags for burying the dead victims of Ebola. Sometimes we ran out of protective equipment or gloves and had to wait for other people to donate some to us. In theatre we had some protective gear but it was not what we were supposed to use. So we had to improvise, risking our lives, even though we took as many precautions as we could." (Dr Madina Hussein from Kenya was deployed to work on emergency medicine, and infection prevention and control in Sierra Leone in 2015.)*

Many of the experts said that they had noticed very poor financial management and accountability for resources, and reported having witnessed many instances of misappropriation or mismanagement at various levels in supply chains.

A big initial logistical issue of concern for the health experts were the long delays they experienced getting laboratory tests back, which meant that diagnoses were also slow. They said that in the time it took to ascertain whether a patient was Ebola-positive or not, many had been inadvertently infected by other patients in the terminal stages of the diseases.

> *One big challenge was that mothers they would come to the isolation unit with their babies because they had nowhere to leave them because there was so much stigma and relatives refused to look after them. If the mother became unconscious, the baby would be crawling in the blood and the diarrhea, so managing them was a problem. We tried our level best, but there was little we could do. We'd bathe the baby, put him or her back on the bed after a feed – and by the time you came back, the baby would be out the bed and crawling again. Sometimes we asked other patients to help, but that was obviously a problem because they were confirmed Ebola cases, and many of the babies were negative." (Teddy Kusemerewa is a Ugandan nursing officer who worked in Ebola isolation units in Liberia.)*

Participants also described the enormous logistical difficulties they faced in moving around the country to do their jobs due to poor roads and infrastructure.

> *There was only one vehicle. It used to come pick me up, and then go to pick up others from different destination, so we'd get to the field late. We used to do group therapy in the evenings around 6 pm when people have come from work, so by the time we got back to our accommodation it was very late and we were ready to drop." (Teresia Wairimu Thuku, a Kenyan mental health nurse specialising in counselling and psychology was deployed to Liberia.)*

> *Many of the cars we used for getting to the communities were rented, because there was a shortage of vehicles. In the evening the driver went away with the car, and we weren't sure what had happening to that car in the evening, whether the driver had given a lift to a sick friend or relative. So that was a worry."(Liliane Luwaga from Uganda worked as a community engagement and risk communication expert in Montserrado County, Liberia.)*

These transport and logistical difficulties made the job of receiving, compiling and harmonising essential data across districts, countries and the region as a whole extremely challenging.

Finally, the deployed experts expressed concern that all their payments had been distributed at a central location at a given time during the week: Given that Ebola is highly infectious, gathering essential staff in one location seemed like a very bad idea.

From this exchange of first-hand experiences, the participants compiled the following of lessons learned about logistics in an emergency situation.

Photo © EC/ECHO/Jean-Louis Mosser

Lessons learned

- Logistics affect everything from deployment to procurement. A **sound logistical operation** at all levels is essential.
- Proper **management of resources** during and after the crisis is also crucial. Failure to do so prolongs the outbreak and in this case, resulted in loss of vital funds. A long-term approach on resource management is needed.
- Governments need to be better prepared for future outbreaks.
- **Transport and security** are essential for effective deployment of responders.
- The state of national infrastructure affects the response in an emergency situation.
- Cooperation with the military can lead to problems in the field, because of different perspectives about what needs to be done. The **military needs to be involved in preparedness planning**.
- The **use of technology** can make it easier to fight an epidemic. For example, mobile payments would solve the problem of key personnel gathering at a central location for payments, thereby exposing them to possible infection.
- **Regional and stakeholder coordination** is very important for deployed experts to be able to do their work. The sharing of information and resources between partners helped in the response.
- Receiving countries and regional organisations were not prepared for massive scale-up. Here, international partners can help.
- It is necessary to ensure that the **right competences** are deployed: Too often there was a mismatch between the skills and experiences of the expert and the competence required in the field.

From these lessons learned, the group came up with the following recommendations for improving logistics for epidemic preparedness.

Recommendations

- Logistics affect every aspect of a response and consequently there needs to be an **articulated and coordinated plan** for before (preparedness and prevention), during (response) and after (recovery and feeding back into preparedness) the epidemic. This plan should be **adaptable and appropriate**.
- A **governance structure** that is responsible **for logistics** (including an **accountability framework**) should be set up to decide who does what when and where. This governance structure should have a structural and ad-hoc component and should operate at both national and regional levels.
- **Logistical contingency plans** should be **simulated and reviewed** on a regular basis. Checklists should be adopted and regularly reviewed.
- **Stock-piles of emergency materials** should be built up at national and regional levels.
- **Logistical experts need to be comprehensively trained** in the proper management of resources. They should comprise many areas of expertise, including medical personnel, communication experts, accountants, sociologists, etc.
- We can **learn from other contingency** plans, such as the one for avian influenza.

Theme 5: Taking care of the responders and affected populations

Facilitator: Dr Sybille Rehmet

> *"So many patients died – many were only brought from the community to the Emergency Treatment Centre (ETC) when they were already unconscious. They could not talk and just came to die on the ward. Others are brought when they are already dead. So there was a lot of death. That had a very bad impact on me when I came back to Uganda: I could not sleep. Eventually I had to consult a psychiatrist, who put me on some medication, then slowly, slowly I regained my senses." (Sarah Awilo, is a registered nurse from Uganda, who was sent by WHO to Monrovia, Liberia in August 2014.)*

The participants felt that taking care of the responders (including psycho-social support) and psycho-social support for local staff and affected populations are equally important.

What worked well?

On a positive note, some experts said that although there had been no psycho-social support available for either patients and their families or the deployed experts at the beginning of the epidemic, things improved considerably over time as the emergency slowly moved into a more routine response and initial problems were addressed.

Many of the deployed experts were proud to have their work subsequently publicly recognised, by receptions with head of states, receiving medals and awards and felt that these gestures had helped them feel that the considerable personal risks that they had taken had been worthwhile.

What did not work well?

Most of the experts in this group reported having experienced psycho-social difficulties either leaving their families and friends behind, during deployment or afterwards when they went home. All said that nobody else could really understand what they had been through during the time they had spent in West Africa. Many suffered from post-traumatic stress or had constant nightmares about the scenes of death and devastation they had seen. They said they had often faced stigma from family, friends, neighbours and colleagues when they returned home: People were afraid that they might have been infected by Ebola and would not touch or approach them.

> *"It was traumatising, because after dealing with people who have lost their loved ones and were showing signs and symptoms of stress and post-traumatic stress disorders, we had nowhere to go and get also counselled, so it was very draining emotionally, as we tried to cope with it. When we came back home I expected the Ministry of Health to provide counselling and psychologists to help us deal with the trauma. But we were just quarantined in our homes. There was a lot of stigma and ignorance." (Teresia Wairimu Thuku, a Kenyan mental health nurse who specialises in counselling and psychology, was deployed to Montserrado County, Liberia.)*

> *"No words can describe or do justice to the horrendous and breathtaking journey we took through the slums of Freetown during the three-day lock down. The AU 'detectives' were coming face to face with the worst disease that man has ever known in every sense of the word. We walked in the alleys of the slums, through filthy river beds, and on top of the many hills and mountains that surround Freetown, to check up on cases." (Dr Abdulrahman Kassim from Kenya was deployed in Sierra Leone.)*

Settling back to their old places of work had often been difficult – they found the non-emergency pace of work frustratingly slow, and they were given few opportuni-

ties to use their newly obtained experiences and competencies to improve things in their old work environments. One participant described how, in the beginning he had tried to introduce new ideas he had brought back from his mission into his department, but he encountered so much resistance that in the end he gave up and things carried on as normal.

After working and living so closely with their teams in West Africa, all said they really missed having a network of supportive colleagues to share their experiences with. Families and friends were generally ill-equipped to cope with the trauma many experienced after working in such painful and terrifying conditions. Others decided to remain silent and keep their thoughts and feelings to themselves to protect their families, and to make it easier to be reintegrated into "normal life".

In the field itself, working conditions during deployment were described as often being below standard for staff protection and equity. Two or three of the experts complained bitterly about financial exploitation and lack of protection for volunteers and deployed experts. Some said that they had not been paid for their work, even though they had been promised a decent salary, or had been paid only after a very long time – sometimes after their return and after a lot of interventions.

Language barriers hampered communication with the wider local community and with the patients they were caring for, and these contributed to the deployed experts' feeling of isolation, fear and stigma. Segregated accommodation compounds also contributed to some of the stigmatisation and isolation the experts experienced in their host countries.

One, a nurse, made the point that pre-deployment training should include effective use of body language: This was often the only way, she said, to show patients affection and compassion when carers and patients did not speak the same language, and in any case, working in full PPE made oral communication and facial recognition almost impossible. The group found her description very moving and agreed that this was an important point to be noted.

> *"We received two weeks' training on how to wear personal protective equipment, but when we went into the field to meet the survivors, there was no way you could put on protective clothing when you were going to counsel a client. So we were the most exposed people. We met people who had lost their loved ones to Ebola and we just mingled with them, without gloves, without any protection because basically we were trying to reduce stigma, and we were trying to educate people that this is a disease that can be contained." (Teresia Wairimu Thuku, a Kenyan mental health nurse who specialises in counselling and psychology, was deployed to Montserrado County, Liberia.)*

One of the biggest challenges mentioned by the experts were personal security issues in working environments that were often totally out of control and so dangerous that teams were sometimes even physically attacked.

Many deployed experts, but in particular those who had been given the newly developed Ebola vaccine, described the psychological anxiety and insecurities of taking their temperatures every couple of hours, and the real fears they felt about possibly getting infected. Some of the experts had seen colleagues fall ill or even die, and felt they had been given insufficient access to quality medical care, medical evacuation, or simply treatment and in-patient care. One story, horrifying for most, was when a colleague of an expert working in an Ebola treatment unit developed a fever and was himself admitted to the Ebola ward. The fact that he could not have contact with his colleagues, and that they could not care for him or treat him, but could only observe, and share his fear and anxiety about whether or not he had contracted Ebola, was immensely stressful for everyone concerned.

> *"One of the most difficult moments for me was when one of the colleagues I shared accommodation with developed signs of Ebola. We had all been following strict infection prevention and control measures, so this incident really scared us and brought home the fact that we could get infected." (Liliane Luwaga from Uganda worked as a community engagement and risk and crisis communication expert in Montserrado County, Liberia.)*

The issue of lack of proper medical insurance and medical care for the responders came up repeatedly. One expert mentioned that British staff had their own medical centre, and that it felt very unfair that Europeans and Americans were medically evacuated as soon as they showed any symptoms, but there was no such service available for African health workers. These shared experiences generated strong demands for better care

and treatment of deployed experts, including adequate insurance provisions and proper psycho-social care.

In the broader context, the health experts said they had observed a lack of care and support for affected individuals, families and communities, and stressed the importance of providing psycho-social care and long-term community approaches, involving local leaders and adapted to local conditions and cultures.

It was suggested that caring responses for communities affected by Ebola could follow or adapt existing community-based volunteer systems used by other programmes, such as reproductive health, HIV, TB or Polio. Participants felt that these approaches could lead to greater long-term sustainably within communities and also be used to address the post-Ebola syndrome (vision complications, joint and muscle pain and psychiatric and neurological problems) or other long- term effects of the epidemic that are likely to occur or become known with increasing knowledge and observation time.

> *"The medical emergency was over, but the work of treating the psychological and emotional fall out was only just beginning. As a counselling psychologist, I felt I had left my clients hanging when we left West Africa. There is this post-Ebola syndrome, which can be bad. I had already started to see clients exhibiting neurological disorders such as blindness, fatigue, weakness of the lower limbs and psychiatric problems such as post-traumatic disorder anxieties as well. I expected to carry on working with them as we were helping them to heal. All of a sudden we go and tell them, 'We are taking a flight on the 28th of June.' So it just felt like I'd walked away and that was personally traumatising for me. I really felt it. I thought the psycho-social team should have stayed there for another six months, if not a year. In that time we could have trained local counsellors to take over and to deal with the problems." (Teresia Wairimu Thuku, a Kenyan mental health nurse who specialises in counselling and psychology, was deployed to Montserrado County, Liberia.)*

From these generally observed positive and negative experiences three smaller working groups identified lessons learned for caring for both responders and affected communities.

Lessons learned

- Responders and their families need **psycho-social support** before, during and after deployment.
- Comprehensive human resources plans, finances and employment terms need to be put in place and implemented to ensure that responders are properly cared for. A proper and transparent way of **managing recruitment and employment** is essential so that responders are not exploited.
- Responders should have **insurance provision** and specific care and referral centres available for their health requirements.
- These measures need to be part and parcel of preparedness plans, and put in place well before an emergency situation. Planning and on-going training is needed.
- **Job security** for the responders on returning to their home countries is very important: Some found they had lost their jobs when they went back.
- Some experts were forgotten after coming back and there was little care for them and few attempts made to tap into their knowledge and experiences.
- There needs to be a clear package of **psycho-social care for survivors and for families of non-survivors in the affected communities**.

- It is important to scale up the availability of social services provisions to the affected community as a whole.
- There needs to be better **community engagement** through involvement of local leaders and social mobilisation, to ensure that communities receive and understand information that is crucial for behaviour change.

> *It has been good to share my experiences at the conference, because I was not the only one who went through all this. Some colleagues also went through what I went through. Sharing our experiences motivates us and makes me realise that I am not the only one suffering." (Sarah Awilo, a registered nurse from Uganda, volunteered for deployment and was sent by WHO to Monrovia, Liberia in August 2014.)*

ment of responders, including human resource management issues, transparent payment methods, working conditions (including accommodation and health care), security, timeliness etc. These recruiting organisations need to be accountable.

- There is a need to build and institutionalise a **network of responders for peer support**, advocacy etc.

From these lessons learned, the group defined the following lessons for the future for improving care for both responders and communities:

Recommendations

- There should be a **comprehensive package of psycho-social support** provided by trained personnel before, during and after deployment for international and national staff. Psycho-social support structures need to be an integral part of any response framework from the very beginning.

- **Centres of excellence** should be established to care for international responders if they become infected and a **repatriation protocol** for deployed experts needs to be put in place.

- **Standardised procedures** and requirements need to be put in place for the recruitment and employ-

- Psycho-social support structures also need to be an integral part of any response framework for affected populations from the very beginning of an outbreak.

- **Community-based counselling structures** need to be established and strengthened in non-emergency times, so that they can be used effectively during an emergency.

> *Please, if there is a future outbreak somewhere, even if you make arrangements for people to go for three months, make sure the psycho-social team will go for at least six months or a year, because it is what follows later that really pulls people down". (Teresia Wairimu Thuku, a Kenyan mental health nurse who specialises in counselling and psychology, was deployed to Montserrado County, Liberia.)*

Theme 6: Education and research

Facilitator: Julia Gering

All of the experts were motivated to share their experiences and would have liked more time to discuss this topic. Two sub-themes of research and training generated a lot of debate, as did the lack of important scientific research, which is often neglected during an outbreak.

What worked well?

Despite many challenges, participants felt that a lot of research – including on vaccines – had been conducted during the epidemic and that this had generated useful knowledge for future outbreaks.

They also felt that community knowledge about how to respond before, during and after an Ebola outbreak had improved as a result of intensive education and training using local materials and resources. This has built institutional capacity and memory for epidemic response.

> *"We introduced the use of mobile phone apps for data collection because it involves less paperwork and eliminates a lot of risk that comes with moving from place to place. People collecting data about deaths and infections may get infected themselves. Using mobile phones to collect data proved very handy because you can pinpoint locations remotely instead of having to send people to dangerous places. It all helped to collect valuable information on the epidemic in the field from every county and district." (George Acire, a data manager and geographical information analyst, who worked in Liberia from August 2015 to March 31st 2016 supporting the WHO national team with data collection.)*

What did not work well?

Participants spoke about the difficulties they had experienced trying to collect and analyse daily data with limited resources and in a fast changing situation. They said that there had been little data sharing between partners and that it had been very difficult to obtain samples and tissue from communities.

They said that in the early days of the epidemic, understanding chains of transmission posed a challenge and delays in research cost lives. There were also gaps between patient needs and the availability of new drugs and poor documentation of new research and data.

> *"Contact tracing without community engagement is bound to fail completely. It was not easy because we were very, very afraid, not only of Ebola, but also of the population hurting us as we were trying to help them." (Dr Landry Mayigane is a Rwandan medical epidemiologist who was deployed as the AU's operations coordinator in Guinea.)*

At community level, effective research and epidemiology was dependent on identifying the right leader or healer to work with and it was difficult to conduct knowledge, attitude and practices (KAP) studies in uncooperative and sometimes hostile communities.

> *"Out of the thirteen paramount chiefs I only had a problem with one who was initially not very cooperative. I had to travel to his area by canoe after a journey of about 56 miles of bad road, and he said: 'Don't worry, we will do it.' When I returned two or three days later, several people had been infected after a burial. I was very disappointed and hurt because I had invested time and effort and risked my own life on the river getting to them. But I then spoke to the political leadership who advised me to talk to a neighbouring chief, and together we crossed the river again to talk to that paramount chief. After that he became one of the best performing paramount chiefs, and he enforced the rules very strictly to make sure that the sick were referred quickly and that people avoided risky behaviours." (Field Epidemiologist Rebecca Apolot.)*

On the question of training in education and research, participants said that much of the training they had received was too theoretical rather than practical. Although AU training efforts had been visible in the field, especially when it came to conducting training in contact tracing, case management and working in multi-disciplinary teams, other organisations appeared to be able to work at a faster pace.

Overall, the participants felt that although training of non-health support staff is crucial in an emergency response, education and social mobilisation efforts in West Africa were hampered by a lack of experience. Protocols changed often, especially when health workers got exposed, so it was hard to keep up with what was required. There were also sometimes contradictions in the protocols used by different agencies (e.g. between Doctors without Borders (MSF) and WHO) and some agencies even conducted research without official protocols in place.

Participants felt that research on preparedness, response and resilience lagged behind in the wake of the fast-moving epidemic due to limited human and financial resources, and this in turn led to further delays in research outcomes. Case managers were not involved in research and few national personnel had any training on research methodologies – sometimes there was even sabotage or resistance from local health workers.

There were many problems with data collection and dissemination, which meant that essential information was frequently unavailable to make informed decisions. Sometimes there were parallel or conflicting systems for data collection. There were also conflicting guidelines and protocols between organisations.

The results of research on the effects of interventions were not documented and disseminated at the peak of the epidemic and some of the participants expressed personal frustration over the challenges – even plagiarism - they had faced in publishing their research in journals.

Lessons learned

- Quality and timely **training of deployed experts to conduct research** and education campaigns is essential for effective and efficient outbreak response.

- Poor data management and documentation results in inadequate use of that data, conflicts between organisations and communication breakdowns. Poor documentation also means that useful information and data cannot help formulate better responses to future outbreaks.

- The **lack of research on preparedness** resulted in delays in issuing guidelines for interventions, and this in turn slowed down appropriate research being conducted and the identification of gaps for further research.

- **Lack of harmonisation** of training of health workers led to increased risk of infection and delayed and substandard responses as well as conflicting messages being given to the community.

- Capacity building of local institutions and responders to take part in research and education strategies leads to **community ownership** and greater acceptance of response interventions during an outbreak. Training using locally available resources and adapted to cultural conditions helps to solve the problems of sustainability.

- Despite many challenges, **field research generated knowledge** that helped to implement informed response interventions.

Recommendations

- A permanent, fully–funded East African **regional research and training centre** should be set up to focus on emerging diseases and epidemic preparedness and responses. This centre should collaborate with existing research institutions, academia and other relevant stakeholders at both national and regional levels.

- A **regional data management strategy** and systems should be developed to harmonise and align existing data policies, guidelines and tools.

- All **materials used to train** people and communities on the ground should be **appropriate, locally available, adaptable** and acceptable and local researchers and experts need to be involved in researching and writing them.

Theme 7: Strengthening health systems and building resilient communities

Facilitator: Ruben van der Laan

> *"When we went the health system had really collapsed and many of the health workers had quit. So we came in as the front liners and had to build capacity and encourage others to work with us." (Liliane Luwaga, Ugandan health promotion, risk and crisis communication and community engagement expert who worked in Montserrado County, Liberia.)*

What worked well?

With regard to strengthening health systems and building resilient communities, the balance sheet, at least in the early stages of the epidemic was fairly negative, and participants found few positive things to say about the health systems and communities they encountered when they were first deployed to the affected countries.

What did not work well?

Participants in this group echoed what had already been said in the discussions on deployment and logistics detailed above: At the most basic level, deployed experts often arrived in a country to find no functioning health infrastructure in place, or said that the facilities that did exist were often inappropriate or inadequate for handling the number of suspected and confirmed cases. There was an acute shortage of beds at all facilities and no possibility of transferring patients from one place to another. One participant said that he had been horrified to find at one point that an Ebola treatment centre was even situated right next to a child welfare clinic.

> *"Patients were flooding like water in the streets. We started by constructing an isolation unit of about 100 beds – but within two days, all the beds were full. So we built another isolation unit with another 100 beds - but within a week, that was also full and patients were sleeping on the floor, on the veranda and in the compound. It was difficult to find a place to step because it was so packed - here there is a dead body, there an unconscious person, there is a mother with a baby – there is vomit and blood on the floor, they are following you, they are touching you, they are crying. That was the situation." (Teddy Kusemererwa, Ugandan nurse who worked as a case manager in isolation units in Liberia and helped to train health workers.)*

Many of the health centres had already lost key personnel in the epidemic and others had fled in fear, leaving deserted facilities. Some of the participants observed that the local health care workers that remained in post did not have enough awareness and knowledge about managing infectious epidemics such as Ebola. Poorly trained health workers often did not observe standards, protocols and guidelines and did not know enough about essential infection prevention or waste segregation measures, or how to deal appropriately with dead bodies. Some infected health care workers had even continued treating patients and hidden their own symptoms.

> *"Once Ebola hit the health system, it was very difficult to implement infection control. Health care workers didn't know what they were dealing with, so we had to train them on the job about the standards required for infection prevention and control. The health services were very weak after years of conflict in Sierra Leone, and since many of their friends and their colleagues had died already in the Ebola epidemic, health care workers were very demoralized. So in the beginning there was resistance to our intervention, but after we explained why we were there, people's attitudes changed, and they listened." (Doreen Nabawanuka, a Ugandan infection prevention and control specialist was deployed to Sierra Leone in 2014 for six months by African Union, and then for a further year by WHO.)*

Participants also described problems of coordination, communication and management of health information systems. In particular they experienced long delays between sending samples to the laboratory and getting the results back, so they did not know whether a patient was EVD-positive or not.

With regard to the communities in which they had to work, participants said that they had experienced great difficulties in getting people to understand the risks: The first reaction of many communities was often to hide the sick and dead and try to keep Ebola a secret.

Local inhabitants also often reverted to traditional medicine, and these cultural practices put communities at risk. This meant that the deployed experts had an uphill battle getting communities to take the epidemic seriously, and they often had to deal with local skepticism and sometimes outright hostility.

> *"Sometimes patients ran out the isolation unit and said there was no Ebola, that the doctors and nurses were witches, that they were killing people." (Teddy Kusemererwa, Ugandan nurse who worked as a case manager in isolation units in Liberia and helped to train health workers.)*

Lessons learned

Participants noted that health care systems can at best stop functioning and in the worst case scenario collapse completely during an outbreak. They drew up the following lessons learned:

Strengthening health systems

- Health systems need **strong coordination and management structures**, with clearly defined roles and responsibilities, that function well in 'normal times' and enable them to withstand the shocks of emergency situations.
- Without an adequately trained, competent and supervised **workforce** and sufficient numbers of health workers, it is not possible to respond to an emergency outbreak effectively.
- All outbreak responses require a **combined effort** from many different partners including response teams, government partners, communities, international partners, security forces and so on.
- The collapse of health systems and closure of facilities contributed to the spread of the disease.
- Well set up Ebola treatment centres ensure better management of suspects and patients.
- Having a functioning community engagement strategy and **linkages between communities and the health facilities at all times** (in 'normal times' and during outbreaks) will allow a fast and effective outbreak response.
- Early **social mobilisation and community engagement** is essential in reducing the spread of disease: The community needs to be involved right from the beginning of a response.
- In 'normal times' capacity needs to be built through **training of local health care workers** and other relevant community members for better management of emergency responses.

> *"I think the biggest lesson from what happened in Sierra Leone is that the power to control an outbreak is in the hands of the local people. That's the key. Without the people in that country, the people in that community, the people in that village or district, you can't do anything. The reason the West African outbreak went out of control is because the people who owned the problem at the time didn't do much about it. All they needed was a push to know what to do, and they could then control the outbreak." (Rebecca Apolot from Uganda was deployed to Sierra Leone between October 2014 and April 2015 where she worked as a field epidemiologist and public health officer.)*

Recommendations

From these lessons learned, the group defined the following recommendations for strengthening health systems and building more resilient communities:

- An **early warning system** with surveillance and laboratories should be set up for timely, accurate, adequate channeling of information to local, national and regional levels.
- **(Public) Health facilities should be better resourced** in terms of trained health staff and equipment to ensure that normal health care delivery does not collapse during an outbreak.
- **Coordinating bodies** should be established at both regional and national levels with responsibilities for ensuring maximum preparedness and for early response.
- A **multi-disciplinary pool of fully-trained, rapidly deployable experts** should be set up at regional and national levels to respond to outbreaks of infectious diseases. The EAC could manage the database.
- This pool of experts should hold **regular simulation exercises** so people are fully trained in the case of an outbreak and also know each other and are used to working together.

- **Fully-functioning supply systems** should be set up and prepared for impeding outbreaks, to ensure adequate supplies of equipment and medicines.

- **Communities should be engaged** in planning, setting-up and maintaining health services for developing preparedness and response strategies. This includes first and foremost, local health care workers present in communities.

- Strategies need to be drawn up to **provide psycho-social support for survivors and those affected**. They can then become ambassadors for a better response in future outbreaks.

Theme 8: Coordination and leadership during an epidemic response

Facilitator: Dr John Hillary

> *"Leadership and management are absolutely vital, especially in fast-moving epidemics. I no longer take good management and leadership for granted after my experiences in West Africa." (Dr Monica Musenero.)*

Participants of this working group began by agreeing a common definition of the terms 'coordination and leadership' as: 'The act of guiding a motivated and structured process among partners towards a common specific goal of responding to an emergency response.'

What worked well?

The experts agreed that committed leadership at all levels had been crucial for effective coordination of the Ebola response. As the mission progressed, proper functional organisation structures – including regular meetings at district and community level – had been put in place and this helped with coordination and leadership, team work and resilience. Once these leadership and coordination systems had been established at national and district levels the distribution of medical personnel, supplies and logistics, generally worked in a coordinated, timely manner.

Once implemented, adherence to standard operating procedures led to more coordinated activities and better infection prevention among health workers and communities. Participants also felt that further on the job training to meet the specific and changing needs of the situation had generally been well coordinated and effective.

At local level, district Ebola management coordination committees played a crucial role in reporting to the central authorities, especially in areas badly affected by Ebola. Once systems had been put in place, there was proper management of dead bodies and burials.

What did not work well?

The deployed experts described several instances of failures in coordination or inadequate leadership and guidance both before deployment and on arrival in West Africa. Like their counterparts in other discussion groups, most volunteers and deployed experts in this group reported long, frustrating waits in hotels or hostels before being able to start work in Ebola treatment centres or communities.

> *"When we arrived in Freetown, Sierra Leone, we stayed for two weeks at home waiting to be trained - just sleeping, waking up, eating and doing nothing. We had two weeks' training, and five days later we were deployed - so it took us literally a month and five days before we were deployed to the ground, so I feel like we wasted a lot of time doing nothing before we started to fight Ebola." (Dr Madina Hussein from Kenya was deployed to work in emergency medicine and infection prevention and control in Sierra Leone in 2015.)*

Some participants observed that most humanitarian organisations operating in West Africa during the crisis were still working in their own 'silos', each vying for visibility and recognition, and it would have been better if there had been more coordination between them. Poor coordination between some big international organisations resulted in duplication or contradictory efforts (of mapping and profiling results for example) and some implementing partners lacked guidance on priority activities at district level. Poor inter-agency communication and the absence of lack of proper feedback mechanisms resulted in weak coordination and poor execution of activities.

They also observed that poor coordination at district levels restricted work in the early stages of the epidemic. This lack of coordination between agencies also

resulted in some communities "picking and choosing" certain organisations and dismissing others. Since most district level authorities were at this stage still in a state of panic and denial about the epidemic and uncertain about how to respond, this lack of coordination further added to the resistance, confusion and lack of leadership. A culture of denial in some instances meant that mistakes were repeated.

Lessons learned

All of the participants agreed the following lessons learned about coordination and leadership in the Ebola response missions in West Africa:

- Missions need to have **good leadership and clear, focused objectives**. When there is no proper leadership and coordination in place, this can lead to unnecessary chaos, inefficiencies and duplication of efforts.
- **Responsible leadership and effective coordination** from governments and organisations can inspire and motivate the available human resources. When government is committed to do so, it can harmonise all key activities from national to district levels and vice versa. Conversely, lack of coordination and effective leadership is demotivating and demoralising and impacts negatively on response efforts.
- A coordinated response needs to be **holistic, multi-sectoral and systematic.**
- The **roles and responsibilities** of each partner need to be clarified and coordinated based on the strengths of each.
- **Regular structured meetings** are needed to coordinate activities.

- Effective use of an **Incidence Command System** (a standardised approach to the command, control, and coordination of emergency response providing a common hierarchy within which responders from multiple agencies can be effective) can strengthen response activities.
- **Good inter-agency communications** are crucial for effective coordination.
- Coordination can be jeopardised if **funds** are not forthcoming on time.
- **Community leadership** has a crucial role to play in the managing outbreak responses.
- **Team work** is vital in any epidemic response – different players need to work together with mutual respect and honesty. Proper coordination and communication can help unify diverse, multi-disciplinary and multi-cultural teams, many of whom don't even speak the same language. Flexibility is key, as is listening to responders' experiences.

"We can succeed in the management of Ebola when we're working together as a team." (Teddy Kusemererwa, Ugandan nurse who worked as a case manager in isolation units in Monrovia, Liberia and helped to train health workers.)

Recommendations

- The EAC Partner States should develop regional policies for coordinating emergency epidemic responses from regional to national level, and establish mandated coordination and leadership structures at both regional and national levels. These mechanisms should be activated immediately when there is an outbreak and have adaptive plans in place to cover all eventualities.
- The EAC should create and adopt the necessary policy frameworks for establishing a **regional centre for disease control**.
- Partner States and other health partners should develop **emergency response protocols, procedures and policies** to coordinate epidemic preparedness activities using a **multi-disciplinary One Health response**.

- All EAC Partner States need to work together and form **epidemic response** teams of experienced and trained health experts who can be deployed rapidly in future epidemics.

- Partner States should ensure that they have **budgets for coordination and response activities**. This could be developed through 'zero'-budget arrangements – money may not necessarily be in the bank, but can be drawn upon when a disaster strikes.

- EAC Partner States should consider **establishing a body or unit that is responsible for all pre- and post-deployment matters**, including training of experts, managing the expert roster and providing post-deployment psycho-social care.

- Sound **pre-deployment orientation and training/ simulation** and background briefs on social, cultural and religious beliefs should be made available to all deployed staff as these are fundamental for effective emergency response coordination.

"All the health experts' experiences, positive and negative, suggest that we should have done better: It was a systems failure, everybody failed. Now is the time to learn from that. Can it happen again? Yes. Are we better prepared for that? I'm not sure. So that's why such meetings are important really to make sure that we don't have this again." (Dr Zabulon Yoti, Technical Coordinator for WHO's Regional Office for Africa.)

Presentation of recommendations to the plenary session

When the conference reconvened for the final plenary session, there was much appreciation and enthusiasm for the work achieved in the eight themed-working groups..

> *"I have attended other conferences, but I never had this one-on-one interaction with the facilitators or even the groups that I took part in. Working as a team is something great, something amazing - that's the main thing I've learnt from this conference." (Dr Madina Hussein from Kenya was deployed to work on emergency medicine, and infection prevention and control in Sierra Leone in 2015.)*

Reflecting on the recommendations from the eight groups, the participants all agreed that:

- **Political leaders and policy makers** at both regional and national levels, as well as in local communities, must be engaged for an emergency response to be successful.
- Many of the working groups concluded that **there is an urgent need to establish regional coordination structures to strengthen preparedness for emergencies**.
- They felt that the **EAC Partner States should and could play an important role in achieving this** and that an **emergency fund** should be established to pay for it.
- They suggested that a **structural framework with clear terms of references** for **improved coordination and joint responses** to threats to public health should be created through a memorandum of understanding between EAC Partner States.
- The EAC should support the development and implementation of **regional and national preparedness and response policies and plans that would coordinate emergency epidemic responses** and establish **mandated leadership structures** at both regional and national levels. These mechanisms should be activated immediately when there is an outbreak and have adaptive plans in place to cover all eventualities.
- They suggested that this could be achieved by **setting up a permanent institution or technical body similar to the West African Health Organisation (WAHO) in East Africa**. The EAC should also create and adopt the necessary policy frameworks for establishing a regional centre for disease control.

In addition, participants strongly supported the proposal that EAC Partner States should establish, train, equip and manage **multi-disciplinary teams of experts ready for rapid deployment** in future emergencies. All the participants said they would be willing to sign up for future rapid responses, but noted that teams needed to be backed up by **better deployment mechanisms** than existed for the West African operation. They felt that **setting up a database of experts** willing and able to respond at short notice, which allows searches according to professions would be very helpful. The participants felt that such a database should be managed and mobilised by a **centralised EAC command centre** which would be responsible for coordinating rapid responses to emergencies. They also suggested that this pool of experts should hold **regular simulation exercises** so people are fully trained in the case of an outbreak and also know each other and are used to working together.

> *"If a pool of rapidly deployable experts is established as a result of the conference, I would sign up definitely. If they need me I would be there. I would be ready to go because to serve people, it's the highest level of humanity." (Dr Bella Nihorimbere, from Burundi was deployed to Sierra Leone between November 2015 and April 2016):*

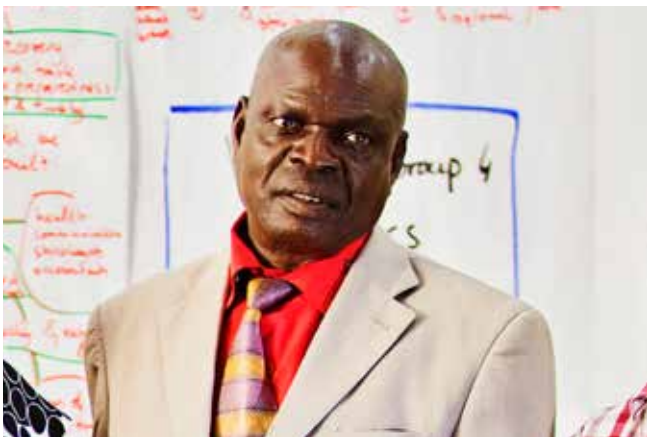
Another key theme to emerge from the discussions of several of the working groups is that it is essential to strengthen health systems to withstand shocks: Ebola spread so quickly in West Africa precisely because health services in Sierra Leone and Liberia, and to a lesser extent Guinea, had been decimated by years of conflict and lack of investment. Participants agreed that governments across Africa needed to **strengthen health and especially public health systems under a One Health approach** so that they are better equipped to respond rapidly and efficiently to all disease outbreaks at their source - not just to high profile diseases with epidemic potential.

> *"We have one hundred emergencies on average per year, which translates into four to five new emergencies every five days. About 80% of health emergencies are related to epidemics and some of these have demonstrated ability to spread globally. That means there are communities in our region who are always dealing with these emergencies. And behind emergencies there are people. Global health security means we need to address the emergencies as quickly as possible at the point where they occur. The key to protecting the whole world is local action." (Dr Zabulon Yoti, Technical Coordinator for WHO's Health Emergency Programme for Africa at the regional office in Brazzaville.)*

Implementing a **One Health approach** requires new policies and resources as well as strengthening human resource capacities, infrastructure, logistics, health management information systems, surveillance and monitoring and evaluation systems. It will also involve **strengthening and equipping health systems, laboratory services and disease surveillance mechanisms** so that these are better prepared in a public health emergency. Delegates recommended that, as part of this process of strengthening health systems, individual EAC Partner States should purposefully adopt and institutionalise the One Health approach and include other key professionals from environmental and animal health as well as from public health.

Many of the recommendations from the working groups stressed the importance of **engaging local communities** in any emergency response through local leaders. This engagement also depends on the **implementation of proper risk and crisis communication strategies** and standard operating procedures at all levels. These need to cover different phases of an outbreak as well as focus on health messages in general, rather than a specific medical emergency. There needs to be proper training and briefing of risk and crisis communication experts before they are deployed in an emergency and they should be briefed about **cultural sensitivities and practices** in the countries they are being deployed to.

Training should also focus on improving **non-verbal communication skills** and targeted messages for specific groups. A great many of the recommendations and lessons learned concerned the **importance of logistics**, which participants agreed, underpin every aspect of a response. They agreed that there should be an articulated and coordinated logistics plan for before (preparedness and prevention), during (response) and after (recovery and feeding back into preparedness) the epidemic. This plan should be adaptable and appropriate to circumstances, and a **governance structure responsible for logistics (and accountability)** should be set up to decide who does what when and where. They also suggested that logistical contingency plans should be simulated and reviewed on a regular basis and **stockpiles of emergency materials** should be built up at national and regional levels. Logistical experts need to be comprehensively trained - in particular on the proper management of resources. In their work they should consider the on-site experiences of the deployed experts.



> *"It can take up to 15 minutes to give a patient suffering from Ebola just 200ml of water or fluid – so if you have 50 or 100 patients, you just don't have the time. When you are working in a hot environment in PPE you cannot stay in the isolation unit for more than two hours - two hours is just too much. When you get out it's as though somebody has poured water on you because you sweat so much. So you have to drink plenty of water to avoid getting dehydrated – but then you can't urinate once you're in PPE, so everything is a fine balance. I think a lot could be done to improve personal protective equipment in future outbreaks. I have an idea that PPE could be designed better so that you can breathe more easily by converting the carbon dioxide you breathe out into oxygen, like in a submarine. That would enable health workers to stay longer on the ward." (Tony Walter Onena a retired registered nurse from northern Uganda, who was deployed to Liberia as a case management consultant.)*

Recommendations at a glance

All the topics that were discussed resulted in recommendations on different levels. As not all recommendations are relevant for all stakeholders, they have been rearranged below for four different levels in an attempt to give some guidance to the different stakeholders: political stakeholders on regional level, national level, local level and last but not least, institutions and international organisations.

A couple of recommendations are valid for all levels. These are addressed as 'recommendations for the future'. Some topics, such as risk and crisis communication and resource management need an all-level strategic approach.

Recommendations for the future

On risk and crisis communication

- At all levels there should be a risk and crisis communication strategy in place that covers different phases of an outbreak and can be adapted to other diseases and conditions. All materials used to communicate with and to train people and communities on the ground should be appropriate, locally available, adaptable and acceptable.
- There should be a comprehensive (One) Health approach in which communication on outbreaks should not be overly medicalised. Containing outbreaks means a focus on health instead of medicalisation.
- All risk and crisis communication should be contextualised in order to be effective. By this is meant that risk and crisis communication should be adapted to the recipient of the message. Local health care workers will need a different level of detail than, for example, people living in the communities.

On logistics

- As logistics are crucial at every step, there needs to be an articulated and coordinated plan for before (preparedness and prevention), during (response) and after (recovery and feeding back into preparedness) the epidemic. This plan should establish a functioning supply chain and should be adaptable and timely.
- This logistics plan should be reviewed and simulated on a regular basis. Checklists should be adopted and regularly reviewed.
- Proper management of resources during and after the crisis is crucial. Failing to do so prolongs the outbreak (Ebola in this case) and results in loss of funds. This is a lesson that should be taken into consideration by all levels, as only an integrated and coordinated approach will make proper resource management possible. The supply of quality equipment should be assured, meaning that most likely a stock of back-up materials is needed at the different levels.

On human resources

- A comprehensive set of skills should be prepared and capacity built in order to respond adequately to an outbreak. In this many different skills and disciplines should be included (health professions, communication experts, accountants, sociologists, etc.)

On learning from others

- Learn from other contingency plans, such as the one for avian influenza. This should be done at all levels.
- Actively involve the highly valuable experiences and knowledge of (Ebola) survivors at all levels and for different tasks within an outbreak response, especially for case management, communication, social mobilisation and psychological support. This would entail building and institutionalising a network of responders for peer support, advocacy etc.

Recommendations for the future for the regional level

Since the East African Community is the main body at the regional level, these recommendations mainly apply to the EAC, which has the role of advising and coordinating the EAC Partner States on regional and national preparedness. The EAC could support the implementation of these recommendations on the political, policy and research level.

On political engagement

- The EAC Secretariat is well positioned to ensure and strengthen good political will and support from the deploying as well as from receiving countries. The EAC Secretariat should engage high-level government leaders to facilitate and prioritise preparedness and response on both the regional and national levels.

On preparedness and response contingency plans

- The EAC Secretariat should support the development and implementation of regional and national preparedness and response plans. These contingency plans should be equipped with adequate funds and materials to ensure maximum preparedness and early response during outbreaks of infectious diseases of high endemic potential and other diseases of public health concern. A regional technical body or institution should coordinate and manage the contingency plans.
- Psycho-social support structures need to be an integral part of any response framework from the very beginning. In addition, a regional data management strategy and systems need to be developed to harmonise and align existing data policies, guidelines and tools.

On regional coordination

- The EAC should establish and develop mandated coordination and leadership structures at regional and national levels and establish a clear communication strategy between sectors with clear chain of command with regard to epidemic prevention and control and at all levels. This should be done at a high level in order to ensure a comprehensive approach.

Recommendations for the future for the national level

The national level consists of the individual EAC Partner States, namely Burundi, Kenya, Rwanda, South-Sudan, Tanzania and Uganda. The recommendations below are intended for their governments.

On political engagement, coordination and leadership

- Political engagement is crucial at the national level and further strengthening of and assuring good political will and support from the deploying as well as from the receiving countries is needed.
- Partner States and other partners should make sure that they have line item budgets for coordination and response activities. This can be developed through a so-called 'zero' budget arrangement – money may not necessarily be in the bank, but can be called upon when a disaster strikes.
- Governments should lead the effective coordination of communication during and after an outbreak for consistency, effectiveness and sustainability at all levels.

On establishing a national rapidly deployable expert team – a multi-disciplinary approach

- The EAC Partner States are to support the establishment of a team of deployable experts that can respond rapidly to requests from the regional structure (e.g. the above-mentioned Centre of Command). This pool of multi-disciplinary experts should be trained and equipped so that they can respond immediately once a deployment is requested. Also, for clarity and improved coordination, Partner States should create a structural framework between them with clear terms of reference and standard operating procedures. It is suggested that the EAC should manage the database for this pool of experts.

On strengthening health systems

- The EAC Partner States should strengthen, support and equip the public health systems within their countries so that they are better able to detect and respond to all disease outbreaks, not just targeting high profile diseases with epidemic potential.
- This strengthening of public health systems should be interlinked with national capacity development in human resources, infrastructure, logistics, health management information systems (HMIS), laboratory services, surveillance, monitoring and evaluations systems , community engagement and policy formulation (leadership and governance).
- All partner national public health systems should consider establishing a body or unit responsible for pre- and post-deployment matters including training of experts and managing the expert roster. Individual EAC Partner States should purposefully institutionalise the One Health approach with inclusion of other key professions, such as human health, environmental health and animal health focusing on public health.
- Partner States are asked to establish a mechanism for quick access to Public Health Emergency (PHE) funds.

Recommendations for the future for the local level

The local level mainly refers to the community level. Communities play an important role because the quality of preparedness and response hugely depends on the knowledge and ability of the communities to respond effectively.

On community engagement

- Engage communities in planning, setting-up and maintaining health services for developing preparedness and response strategies. This includes first and foremost, local health care workers present in communities. Include also socio-cultural support into the preparedness and response, i.e. to avoid stigmatisation, ensure psychological support to the community, patients and families and guarantee communication between the actors and with the communities.
- Draw up strategies for psycho-social support for survivors and those affected. They can become the ambassadors for a better response to future outbreaks.
- On a more technical level, develop systematic guidelines, standard operating procedures and tools for monitoring and evaluation of communication interventions for effective community engagement.
- Equip health facilities (with both equipment and human resources).
- Community-based counselling structures have to be strengthened in "peace" times in order to be operational and used during emergencies. Make sure the normal service delivery of health does not break down during an outbreak.

On building capacity

- Build capacity for all aspects of internal, external and risk and crisis communication before and during deployment including non-verbal communication, groups with special needs, cultural sensitivity etc.
- Build capacity of local health care workers and communities to enable them to detect and respond to all disease outbreaks, not just high profile diseases with epidemic potential.

On preparing and supporting deployed experts

- There should be a comprehensive package for psycho-social support provided by trained personnel before, during and after deployment for international and national staff.
- Standardised procedures and requirements for the recruitment and employment of responders regarding human resources management issues, transparent payment methods, working conditions (including accommodation and health care), security, timeliness etc. are to be established, and recruiting organisations need to be accountable.
- Sound pre-deployment/pre-mission orientation training and simulation should take place for deployed staff and providing relevant briefings on social, cultural and religious beliefs is fundamental for effective emergency response programmes.

It was noted that many of the recommendations discussed are still general ideas at this stage and these now need to be turned into reality by reframing them in policies and actions. Participants warmly welcomed the opportunity the conference had afforded them to come together for the first time to share their experiences and have constructive discussions about the lessons learned from these experiences and what should be done better or differently in future responses. However, it was noted that **these conference recommendations need formal structures to be established if these important lessons for future preparedness are to be properly implemented**. A formal top-down process from the EAC secretariat to advocate for and implement these recommendations should be considered as a way of driving forward the agenda and momentum of the conference at national level in individual member states. National partners would then be able to develop their own action plans for implementation.

> *"It's about the way we package these recommendations and lessons learnt: We can package them as training curriculum for high school students; we can package them as messages for communities that can be disseminated through local radios, local televisions and local communications media; we can package them through policy briefs that we can share with our ministers and our parliamentarians; we can package them as research papers, so that academia can also use them for further research and further publications. This is what I really recommend from this conference; otherwise it will be like every other conference that has happened in Africa, where recommendations are made and finish up in a drawer in an office somewhere." (Landry Mayigane, a Rwandan medical epidemiologist who worked as the AU's operations coordinator in Guinea, He is currently WHO's Health Emergencies Coordinator in Mali.)*

The participants hoped that follow-up or regular conferences of deployed and non-deployed exerts from each partner state could be held in the future to consolidate and drive forward preparedness for future epidemics.

Although Ministries of Health in each EAC Partner State should obviously be key players, the participants also agreed that, in the spirit of the One Health approach, many other sectors and ministries – such as those responsible for wildlife, agriculture, food safety, tourism, trade and education should be involved.

Deployed experts could offer their services and experience as consultants to advise these new structures and processes, and to ensure that their wealth of experience is included. This would raise the awareness and recognition on a political level for the work done by the deployed experts. To this effect, it was suggested that the list of experts created for this conference should be distributed to regional and national leaders.

Involving the World Health Organization

Representatives of WHO have a special role to play, as they are in a position to disseminate the results of the conference to Partner States. Many countries are involved in WHO Joint External Evaluations to assess implementation of the international health regulations. It was suggested that the conference lessons for the future could be included in this process.

Dr Zabulon Yoti, head of the WHO AFRO Office in Brazzaville, Democratic Republic of Congo, also welcomed the meeting as an opportunity for deployed exerts to come together and be 'debriefed' and talk freely about their experiences. He said WHO's AFRO Office currently deals with an average of 100 health emergencies a year, and that in our increasingly interconnected, fast moving world, and with climate change and environmental degradation, new challenges are emerging all the time. He reminded the conference that behind the statistics there are human beings – mothers, fathers and children, whose lives are devastated by disease outbreaks. "It may not be possible to prevent disease outbreaks," said Dr Yoti, "but it is possible to prevent epidemics."

Dr Yoti said he was going to take five key messages away from the meeting:

- Nobody can tackle infectious diseases such as Ebola alone. It needs to be a team effort.
- Working together – especially through South-South cooperation between fellow African countries - leads to better coordination and synergistic actions.
- Better local action and early reporting is crucial: The Ebola outbreak in West Africa started with just one case but quickly crossed boundaries and continents.
- Ebola is a disease that crossed from animals to humans, so animal and human health and the effects of the environment degradation and climate change are all closely related and need a multi-sectoral 'One Health' response.
- The key lesson, said Dr Yoti, is that containing future outbreaks will need community engagement, and that will require better understanding of culture and traditions and more effective risk communication.

Dr Yoti concluded by reminding delegates that epidemic preparedness needs to be put in a bigger global perspective: "Remember the outbreak in West Africa started with one case in a forest in Guinea – one case, in one household in one village, but it spread to all those countries and even beyond Africa. So our local actions contribute to global health security. The big agenda of making the world safe begins with us and the local actions we take."

South-South cooperation between EAC and ECOWAS

Participants expressed the hope that the conference recommendations and documentation should also be made available to ECOWAS leaders and decision makers in West Africa, so they can also address the lessons for the future preparedness on a political level within their region.

Dr Babatunde Jegede from the Nigerian Federal Ministry of Health in Lagos spoke on behalf of the West African experts who fought Ebola in the affected countries. He stressed the importance of continuous exchange and close cooperation between and among the African regions for better future preparedness. He and his colleagues present at the conference contributed their experiences from fighting the epidemic and said they would take home many important lessons learned from their East African colleagues. He said the conference had helped to foster South-South collaboration and might even pave the ground for a formalised future cooperation.

"For me the key lesson is that as Africans we can find solutions of African problems. We must be the first responders to epidemics in Africa, even if the international community can come to support us afterwards. This conference is an opportunity to learn lessons and to document them for future generations. The next step will be to disseminate those lessons so that they touch our ministers and touch our community leaders, so that they understand that, as Africans, we must be prepared to address future outbreaks." (Dr Landry Mayigane, a Rwandan medical epidemiologist who worked as the AU's operations coordinator in Guinea. He is currently WHO's Health Emergencies Coordinator in Mali.)

Dr Landry Mayigane

Germany's continued support to pandemic preparedness in the EAC region

The Nairobi conference was hosted by the East African Community Secretariat, in collaboration with the Federal Government of Germany through the GIZ-coordinated *Support to Pandemic Preparedness in the EAC Region project*. Dr Irene Lukassowitz, the project's manager, thanked all the participants for their contributions and hoped that they felt it had been well-invested time. "The degree of active involvement of all participants in the conference far exceeded our expectations", she said. "The conference met our intended objectives – namely, providing a platform for networking and for sharing and discussing personal experiences as well as the knowledge gathered during the fight against Ebola in West Africa. It had also played a valuable role in fostering south - south cooperation in pandemic preparedness with colleagues from the ECOWAS region." She was delighted that participants had unanimously agreed on the importance of early warning mechanisms, especially on the establishment of a database of rapidly deployable experts from various professions in the region: "That almost all formerly deployed experts agreed without hesitation to becoming part of such a group and to forward their CVs once such a database is established is an impressive result and shows the ongoing dedication of the deployed experts."

Dr Irene Lukassowitz (left), Project Manager of GIZ's Support to Pandemic Preparedness in the EAC Region project, with the Hon. Jesca Eriyo, Deputy Secretary General of Administration and Finance at the EAC Secretariat, addressing the closing session of the conference.

Irene Lukassowitz said she hoped that there would be an opportunity for a follow up meeting in a year or two, depending on the availability of funds. The GIZ project would, she said, continue to support the EAC Secretariat's efforts both to strengthen pandemic preparedness in the East African region following a One Health approach and to improve risk and crisis communication capacities.

Closing speech by the Hon. Jesca Eriyo

The Hon. Jesca Eriyo, Deputy Secretary General of Administration and Finance at the EAC Secretariat said that the lessons learned from the deployed experts' first-hand experiences would help to shape and strengthen the continents' future responses to outbreaks.

She told delegates that their recommendations would be presented to the forthcoming East African Head of States summit and used to inform the East African Community's commitment to strengthening health systems and improving epidemic preparedness. She also reaffirmed the EAC's commitment to a One Health approach, saying "it goes beyond responding to diseases and brings the different actors together, to give all round support."

Jesca Eriyo particularly welcomed the participants' enthusiasm for establishing a pool of experienced experts for rapid deployment in the event of a future emergency, which she said would be a major step towards regional preparedness. At the same time, she said, it was vital that psycho-social support services were put in place, both during and after outbreaks not only for victims but for the response teams too: "When they come back, how do we help them recover quickly? They are rejected by their families, by their work place and by their communities, but they sacrificed everything."

The Hon. Jesca Eriyo concluded the meeting by thanking all formerly deployed East African experts present who had risked their lives in the fight against Ebola. She presented each of them with an award in appreciation of their work and the personal risks they had taken: 'From deep down in my heart I thank you and applaud your sacrifice. You will always be celebrated as heroes.'

"What I loved most about the work was seeing recovered patients walking out the Ebola centres and going home. When people in Monrovia saw that it was possible to recover from Ebola and walk out alive, most patients wanted to be treated at Island clinic where we worked." (Tony Walter Onena is a retired registered nurse from northern Uganda. He was deployed by WHO to work in Liberia as a case management consultant.)

"The Ebola outbreak in West Africa was the beginning of the story, but not the end. The experiences of the East African deployed experts will help their own and other countries to respond better in the future." (Dr Zabulon Yoti, Technical Coordinator for WHO's Health Emergency Programme for Africa at the Regional Office in Brazzaville.)

Annex 1: Details of the conference

Where	Nairobi, Kenya
Venue	International Centre of Insect Physiology and Ecology (icipe) Duduville Campus P.O. Box 30772 00100 Nairobi, Kenya Tel: +254-20-8632000 Email: icipe@icipe.org
When	6-8 November 2017
Who	Participants from (the) ▪ East African Community region ▪ ECOWAS region ▪ National, regional and international governmental and non-governmental institutions and organizations and regional networks
Organiser	**East African Community (EAC)** in collaboration with the Government of Germany through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH coordinated 'Support to Pandemic Preparedness in the EAC Region' project and in cooperation with the GIZ's Epidemic Preparedness Team and the German Development Bank (KfW)
Conference organization	**Dr Irene Lukassowitz** Project Manager Pandemic Preparedness (PanPrep) project and team with support from GIZ Country Office Kenya
Conference facilitation	**Ruben van der Laan**, Consultant, Netherlands
Working group facilitation	**Dr Sybille Rehmet**, Consultant, Sweden **Julia Gering**, Project Manager GIZ Epidemic Preparedness Team **Dr John Hillary**, Consultant, Tanzania **Ruben van der Laan**
Lessons Learned writer	**Ruth Evans**, Consultant, United Kingdom

Annex 2: Full list of participants attending the conference

List of deployed experts

BURUNDI			
Nr	**Name**	**Email**	**Area of Expertise**
1	Marie Goreth Bamusonere	bamusoneremariegoreth@gmail.com	Nurse
2	Dr Bella Nihorimbere	Nibella2001@yahoo.fr	Medical Officer
3	Thaddee Niyoyitungira	niyothade@gmail.com	Nurse
4	Dr Stany Nduwimana	nduwimanastany769@yahoo.fr	Epidemiologist
KENYA			
Nr	**Name**	**Email**	**Area of Expertise**
5	Dr Abdulrahman Said Kassim	askassim2@gmail.com	Epidemiologist, public health expert
6	Francis Kioko Mutisya	mutisya72@yahoo.com	Medical Laboratory Technologist
7	Galm Guyo Ollo	galmaa1975@yahoo.com	Field Epidemiologist
8	Dr Madina Hussein	minahussein99@gmail.com	Medical Doctor, expert in emergencies, pandemics and infectious diseases
9	Ishmael Mwaniki Mwangi	ishmaelmwangi1@gmail.com	Midwife, maternal and child health, maternity services
10	Mohamed Noor Badel	assma900@yahoo.com	Epidemiologist, disease control
11	Nellie Njambi Mukiri	mukirinelly2002@gmail.com	Laboratory Technician
12	Joshua Nyarang'o	jnyarango@gmail.com	Nurse, emergency medical and humanitarian service
13	Dr Collins Mwaniki Mwangi	kinynki@gmail.com	Medical Officer, specialist in field epidemiology and laboratory training
14	Hassan Mohamud Mohamed	oriahassan@yahoo.co.uk	Epidemiologist; public health expert
15	Juliana Muthoki Juma	jullianandoh@yahoo.com	Public health hxpert
16	Nancy Atieno Obora	nancyobora@gmail.com	Nurse specialising in infection prevention and control
17	Robert Mariita Ondara	robertmariita.rm@gmail.com	Laboratory Scientist
18	Osman Ibrahim Gonjobe	gonjobeo@yahoo.com	Expert in surveillance and infection prevention
19	Grace Amai Wasike	grewasike@gmail.com	Communication Officer
20	Teresia Jane Wairimu Thuku	terryhealthcare@gmail.com	Nurse specializing in mental health issues and counselling
21	Josephat Nzangi Mbwika	josembwika@gmail.com	Clinician and public health specialist
22	Dr Elizabeth Mgamb	elizabethmgamb@gmail.com	Epidemiologist

RWANDA			
Nr	**Name**	**Email**	**Area of Expertise**
23	Dr Appolinaire Manirafasha	maniappo@gmail.com	Doctor specialising in emergency medicine and critical care
24	David Niyongabo	davidtessa8@gmail.com; davidson2020@yahoo.com	Nurse
25	Donatien Ryezembere	ryezemberekhi@yahoo.com	Medical Laboratory Technician
26	Jean Marie Vianney Namahoro	namahoro80@gmail.com uwanamahoro@yahoo.fr	Consultant and WHO expert specialising in infection prevention and control
27	Dr Andrew Rwema	andrewrwema2012@gmail.com	Medical Doctor
28	Dr Landry Ndriko Mayigane	landry.mayigane@gmail.com	Epidemiologist, public health expert
29	Beatha Numukobwa	bettydejes@yahoo.fr; beatharobert1@gmail.com	Nurse
TANZANIA			
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30	Loveness Daniel Isojick	isoshidende@yahoo.com	Nurse, public health expert
31	Dr Grace Elizabeth Bai Saguti	sagutig@who.int	Epidemiologist, expert in disease prevention and control
32	Emmanuel Mwaifunga	emwaifunga@yahoo.com	Nurse specialising in case management
UGANDA			
Nr	**Name**	**Email**	**Area of Expertise**
33	Dr Jackson Amone	amonekaka@yahoo.co.uk	Case Manager, Coordinator
34	Rebecca Racheal Apolot	apobecca@gmail.com	Field Epidemiologist
35	Doreen Arison Nabawanuka	allison.doreen2000@gmail.com	Nurse and midwife, expert in infection prevention and control training and case management
36	Tony Walter Onena	tony.onena@gmail.com	Nurse
37	George Martin Acire	acireg@gmail.com	Data Manager, expert in strategic information and geographical information systems
38	Kefa Madira	kefamadira@gmail.com	Case Manager, expert in infection prevention and training of health workers
39	James Mugume	j.mugume57@gmail.com	Expert in disease surveillance, emergency preparedness and response
40	Dr Monica M Musenero	mmusenero@gmail.com	Epidemiologist and Case Manager

41	Teddy Kusemererwa	kusemererwateddy@gmail.com	Case Manager, expert in infection prevention and training of health workers
42	Dr Kweyunga Peter Kiiza	kiizaptr@gmail.com	Medical Officer specialising in training of health workers in ETUs
43	Charles Draleku	cdraleku@hotmail.com	Medical Laboratory Technician
44	Liliane Christine Luwaga	luwagal@who.int	Expert in health promotion, risk communication and community engagement
45	Dr Daniel Kisawuzi Bulwadda	dbulwadda@gmail.com	Expert in infection prevention and control
46	Sarah Layo Awilo	awilosarah@gmail.com	Case Manager and trainer
47	Richard Candiga	rchandiga@yahoo.com	Nurse, expert in health promotion, social Mobilisation and critical care
48	Emmanuel Ejoku	ejokuhe@gmail.com	Laboratory Scientist
49	Kyondo Jackson	jacksonkyondo@gmail.com	Laboratory Scientist, Field Epidemiologist
SOUTH SUDAN			
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List of other experts

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3	Justin Williams	ayq8@cdc.gov	CDC (Centres for Disease Control and Prevention) Kenya
4	Dr Philip Muthoka	epmmuthoka@gmail.com	Ministry of Health Kenya
5	Magdalene K. Mutie	mmutie@eachq.org	EAC Health Department
6	Dr Micheal Katende	MKatende@eachq.org	EAC Health Department
7	Neema Omari	nomari@eachq.org	EAC Health Department
8	Prof. Gibson Kibiki	gkibiki@eachq.org	East African Health Research Commission (EAHRC)
9	Hon. Jesca Eriyo	jeriyo@eachq.org	EAC Secretariat, DSG Finance and Administration
10	Dr Babatunde Jegede	jegede_t@yahoo.co.uk	ECOWAS / West African Health Organization (WAHO)
11	Larissa Noussoi Gbedji-Sokpa	nolarissag@gmail.com	ECOWAS / OOAS
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37	Dr Iris Hunger	HungerI@rki.de	Robert Koch Institute (RKI)
38	Julia Gering	Julia.Gering@giz.de	German Epidemic Preparedness Team SEEG (GIZ) / Facilitator
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40	Dr Zabulon Yoti	yotiza@who.int	WHO Regional Office Brazzaville
41	Segenet Kelemu	dg@icipe.org	icipe
42	Ruth Evans	ruth@ruthgevans.com	Writer

Annex 3: Conference programme

Day 1

12:00 – 14:00	Registration & lunch
Session 1 14:00 – 15:30	**Welcome & Opening** – Words of welcome • *Dr Segenet Kelemu* Director General icipe (Host) • *Dr Micheal Katende* Principal HIV and AIDS Officer / Coordinator EAC Integrated Health Programme, East African Community Secretariat • *Dr Jackson Amone* Chair of Head of Delegation of Partner States • *Dr Philip Muthoka* Representative Ministry of Health Kenya – Introduction of agenda and the workshop by facilitator – Opening Speech **Principles of Effective Ebola Response: Evidence from Experiences in West Africa** *Dr Monica Musenero Masanza*, WHO Field Coordinator, Bombali, Sierra Leone – Interactive Q&A
15:30 – 16:00	Break
Session 2 16:00 – 17:00	**Delving into the topic: first sharing of ideas** Participants share their experiences in 10 small groups
Session 3 17:00 – 18:00	**Introduction of the first 4 themes** ***The four themes*** 1. *Being ready at short notice (establishing a pool of rapidly deployable experts)* 2. *Taking informed decisions (effective communication to mitigate risks and crises)* 3. *Working together (interdisciplinary teams working across silos and implementing the One Health approach)* 4. *Organising effective logistics (what, when, where, how?)* Introduction of the four themes for the working groups of day 2 Setting up a database for rapidly deployable experts – Experiences from Germany *Julia Gering* Coordinator of GIZ's Epidemic Preparedness Team Participants decide on the working group they want to join
18:00– 18:30	Group photo

Day 2

Session 4 08:30 – 10:00	Exchange & Lessons Learned (facilitated in 4 different groups) – Participants combine in the groups that were made in session 3 – Each working group works on its own theme **Main question** for each group would be: 'What are the Lessons Learned with your topic on how to fight future epidemics?'
10:00 – 10:30	Break
Session 5 10:30 – 12:00	Continued: Exchange & Lessons Learned (facilitated in 4 different groups)
12:00 – 13:30	Lunch
Session 6 13:30 – 14:30	Recommendations from Lessons Learned (facilitated in 4 different groups) – From the Lessons Learned participants come up with recommendations that will facilitate a more effective response in the future **Main question** for each group would be: 'What needs to be done to improve epidemic preparedness?'
Session 7 14:30 – 15:30	Choosing 4 new topics Around the question: *'What other themes need to be discussed for an effective regional epidemic preparedness?'*
15:30 – 16:00	Break
Session 8 16:00 – 17:30	Exchange & Lessons Learned (facilitated in 4 different groups) – Participants combine in the groups that were made in session 3 – Each working group works on its own theme **Main question** for each group would be: 'What are the Lessons Learned with your topic on how to fight an future epidemics?'
Session 9 17:30 – 18:30	Summary of day 2 and discussing input of press briefing
18:30 – 19:00	Closing

Day 3

Session 10 08:30 – 09:00	Review day 2 & networking activity
Session 11 09:00 – 10:30	Continued: Exchange & Lessons Learned (facilitated in 4 different groups)
10:30 – 11:00	Break

Day 3

Session 12 11:00 – 12:00	Recommendations from Lessons Learned (facilitated in 4 different groups) – From the Lessons Learned participants come up with recommendations that will facilitate a more effective response in the future **Main question** for each group would be: 'What needs to be done at the different levels to improve epidemic preparedness?'
12:00 – 13:30	Lunch
13:30 – 14:30	**Press briefing (parallel session)**
Session 13 13:30 – 15:00	Discussing results & the way forward (plenary) – Reviewing recommendations
15:00 – 15:30	Break
Session 14 15:30 – 16:00	Award ceremony (plenary) • *Hon. Jesca Eriyo,* Deputy Secretary General Finance & Administration, East African Community
Session 15 16:00 – 16:45	Wrapping up - reflecting what has been achieved (plenary)
16:45 – 17:00	Formal closing

Acknowledgements

First and foremost we would like to thank all the participants for sharing their unique experiences and extensive knowledge during the conference and in the individual interviews recorded. Without their enthusiastic participation and cooperation, this report would not have been possible, and their invaluable insights and experience would not be available to inform future emergencies.

Thanks must also go to the **Hon. Jesca Eriyo**, EAC Deputy Secretary General Administration and Finance, and the **EAC Secretariat** for hosting the conference, as well as to **icipe** for providing the venue. The **GIZ Pandemic Preparedness team** is to be congratulated on the conference organisation, which involved gathering and coordinating delegates from many different countries and continents.

The conference convener and facilitators, including simultaneous translators from **Ken & Associates**, Kenya, should also be thanked for enabling such lively and illuminating discussions, both in plenary and in the group discussions.

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Video interviews with some of the conference participants recorded by **PixelsKenya** (www.pixelskenya.com) can also be viewed at https://drive.google.com/drive/folders/1PJxujVrJeAUs36yxGH_HhkKAWFtOl1dI. These videos are also free to use as long as credited to GIZ/PixelsKenya.

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