



Fighting Ebola: Voices from the Frontline

Documenting the experiences of East African deployed experts who volunteered to fight Ebola in West Africa



Implemented by:



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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 the almost 30,000 that were infected. From one initial case believed to have originated in Guinea, the Ebola Virus Disease (EVD) spread like a bushfire through the country and then 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, fueled 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.

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. 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.

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 too could get infected and die too. Their immense courage and self-sacrifice cannot be valued highly enough.



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.

For this reason it is vitally important that their experiences be documented so that lessons can be learned from them for the future.

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 outbreaks of infectious diseases. The conference was also held in cooperation with GIZ's Epidemic Preparedness Team (*Schnell einsetzbare Expertengruppe Gesundheit, SEEG*) and the German Development Bank (*Kreditanstalt für Wiederaufbau, KfW*)-supported *EAC Regional Network of Reference Laboratories for Communicable Diseases*.

Ninety two participants attended the conference which was held at the International Centre of Insect Physiology and Ecology (icipe) in Nairobi. The participants included over 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 remaining participants were representatives of regional and international (UN) organisations and institutions and experts from the ECOWAS region and many of them were also involved in the fight against Ebola.

During the three-day conference, the author interviewed as many deployed delegates as time allowed. They spoke freely and frankly about their experiences. The views expressed here are their own and do not necessarily represent the views of the EAC Secretariat or GIZ.

All the delegates were keen to share their experiences – and all had inspirational stories of immense personal courage and self-sacrifice in the face of enormous challenges. As it was not possible to interview everyone in the limited time available, the author has selected interviewees with a view to reflecting a range of different professions, countries (both



of origin and where they worked in West Africa) and gender of the experts attending.

These first-hand accounts should be read in conjunction with the conference report 'Lessons for the Future - What East African experts learned from fighting the Ebola epidemic in West Africa', which gives a much more detailed account of the discussions and deliberations, as well as a summary of the agreed lessons learned and recommendations for the future.

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.
- Community engagement is crucial if disease outbreaks are to be effectively contained.
- Health systems need to be strengthened and work effectively with other sectors and areas of expertise to ensure a holistic and effective response.

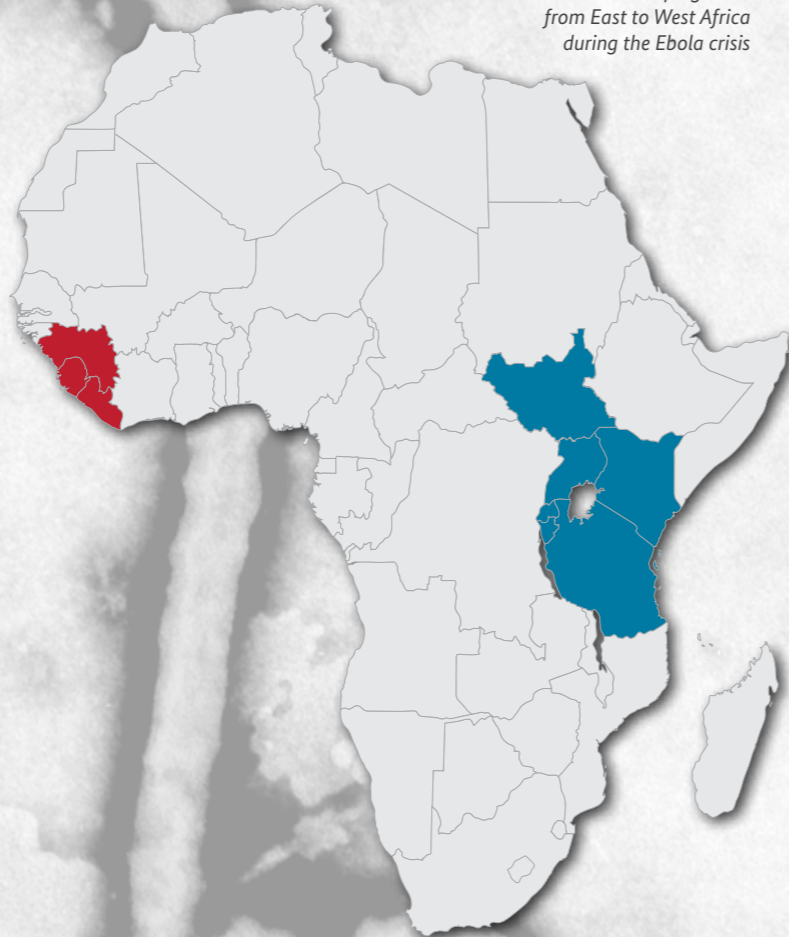
Ruth Evans, Editor

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.

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



Foreword from the Hon. Jesca Eriyo

Deputy Secretary General Finance and Administration,
East African Community (EAC) Secretariat

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 our region. On behalf of the EAC Secretary General, Ambassador Liberat Mfumukeko, and on my own behalf 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.

It is my belief and conviction that documenting these experiences will permanently influence the way we plan for, implement and respond to epidemics in East Africa. The recommendations derived from these experiences and lessons learned will become the foundation for improved health policies, 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. 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 of Ministers of Health is seeking to put in place.

As I conclude, I wish to call upon all Development and Implementing Partners to join the EAC in strengthening health systems at the regional level and in the Partner States in particular; because it is only strong Health systems that can support and sustain a proper response to epidemics like Ebola. Let me once again extend my very sincere gratitude and appreciation to the deployed experts who risked their lives in West Africa, and in particular to those who have agreed to share their very moving personal experiences with us for this report:

You will always be remembered in the Public Health struggles as our Heroes.

A handwritten signature in black ink, appearing to read 'Jesca Eriyo'.

Hon. Jesca Eriyo



Foreword from Dr Zabulon Yoti

Technical Coordinator for the WHO Regional Office in Brazzaville,
Republic of Congo

The African region experiences so many emergencies. In fact we have a 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 could easily spread globally. And behind these emergencies there are people.

Remember the West African Ebola outbreak started with one case in a small child in a forest in Guinea.

All these big outbreaks, emergencies start with one case and then they spread. We need to strengthen preparedness and build capacity so that one case doesn't become two cases, two don't become ten, a hundred, or even thousands, as it rapidly did in West Africa.

We need to make sure that such outbreaks don't spread geographically and become pandemics.

Global health security means we need to address these emergencies as quickly as possible at the point where they occur. The key to protecting the whole world is local action. Some 500 East African health experts volunteered to go to help in West Africa, and for that, we cannot thank them enough. There were many risks involved, for them, their families and their countries. These people are very special and we don't have enough words to thank them.

We will always have outbreaks - it is very difficult to prevent them, because of the socioeconomic conditions people live in, and because of our interactions with the environment and with animals. As the populations grow, people need more land and so they're going to encroach where they're not supposed to be and that way they're going to encounter a lot of viruses and other hazards as well. Also in this global world, movement is now easier: The other day I had breakfast here in Africa, I had supper in Brazil, and then two days later I had lunch in Europe. So within three days you can move round the globe and that's a vehicle for diseases to spread. We should have capacity to detect threats early and respond fast.



In West Africa this capacity was very limited because several countries had been devastated by war. When we think about epidemics, we need to address the context in which they occur. Our efforts to address them also need to be multi-sectoral. We need all sectors to be involved – finance, good governance, people's health, animal health, environmental health, trade and tourism because these days everything is so closely inter-related. Underpinning all this must be good governance and financial and human resources.

The health experts' experiences in West Africa, both positive and negative, suggest that we should have done better: It was a systems failure, everybody failed. Now is the time to learn from those experiences. Could it happen again? Yes (but it need not be on such a scale). Are we better prepared for that? I'm not sure. That's why documenting these experiences is important – to make sure we don't make the same mistakes again in the future.

We need to listen to the people who already have the experience to help us be better prepared and better able to deal with outbreaks in the future. Some of the East African health professionals who volunteered to work in West Africa have already expressed their willingness to volunteer again, as rapid responders in the event of future emergencies. The Ebola outbreak in West Africa was the beginning of the story, but not the end. Their personal stories and experiences documented here will help their own and other countries to respond better in the future.

A handwritten signature in black ink, appearing to read 'Zabulon Yoti'.

Dr Zabulon Yoti

Foreword from Dr Jackson Amone

Ugandan Doctor and current Chair of Head of Delegation of EAC Partner States

I was seconded by Uganda's Ministry of Health to go and work for WHO in Sierra Leone in August 2014, when Ebola had just broken out in two districts. It was a very fast moving situation with many challenges. When we first arrived we were very few people, and that was a time when there were a lot of deaths and little by way of human resources. The local people were still not accepting that this was an Ebola epidemic and the health workers were very frightened because many of their colleagues had already died. Because they didn't have any experience of Ebola, they were terrified of even getting involved.

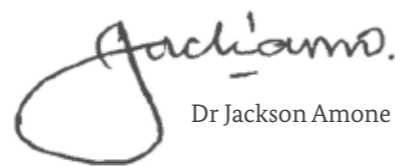
At the beginning of an emergency situation you need to gather the human and financial resources, the equipment and medicine. In Sierra Leone, once we had set up the National Ebola Response Committee, everything came together and the different partners were able to play their roles. There were committees for surveillance, for case management, for social mobilisation and for psycho-social support. These committees operated at national level, but they were also mirrored at district level, and it was a system that worked very well.

I think it is a very good initiative to gather and document whatever experience we gained in West Africa, even though it should have happened earlier already. These are experiences which will not come again because I don't think or at least I don't hope that we will experience such a devastating epidemic again. People like me had some experience of dealing with small outbreaks of Ebola in Uganda, but when we went to Sierra Leone, we found that this epidemic was covering the whole country – and worse still, very populated cities. Even doing surveillance and contact tracing proved very difficult. We learned from our experiences and this learning must be documented and shared with the political leadership of our countries and with our partners who have the financial resources to help us face whatever challenges may come in the future.

The key lesson for me from my experiences in West Africa is that in an epidemic there should be multilateral and multi-sectoral participation. Health is not just a matter for the ministries of health: It should involve all other ministries, like education, animal welfare, tourism – in other words we are talking about 'One Health'.

I believe a pan-African response will emerge from our experiences in West Africa. As Africans we are looking for an Africa for Africans. We may not have much by way of financial resources, but we do have human resources, and that's why we went to support West Africa. We went to support in the African way.




Dr Jackson Amone

Foreword from Dr Irene Lukassowitz

Project Manager 'Support to Pandemic Preparedness in the EAC Region', implemented by GIZ on behalf of the German Government

During the appraisal mission for the Support to Pandemic Preparedness in the EAC Region project in November 2015 we learned about the deployment of the East African experts to West Africa. As their experiences seemed highly valuable and significant for our project, we asked for related reports, only to learn that systematic documentation was still pending. That was the idea for the Nairobi Conference and the EAC Secretariat supported it from the start.

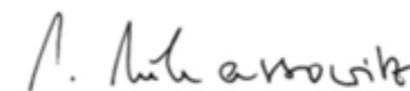
Two years later we had identified a considerable number of these experts with support from the EAC Partner States' Health Ministries and especially from Dr Monica Musenero, who seemed to know almost every former fellow. At this point, I would like to thank her from my heart.

When we contacted the first experts it quickly became clear that they had been waiting for such an opportunity since the end of the Ebola epidemic. They had experienced so much and wanted to share their experiences, but nobody seemed interested. In the end, it was difficult to make a choice out of the 500 experts, so we tried to cover each EAC Partner State, different professional backgrounds and gender and locations of deployment.

Together with the EAC Secretariat we had chosen a highly interactive format for the conference and it was just a pleasure to watch the experts exchanging their experiences and their commitment when developing lessons learned and finally deriving recommendations for better future preparedness in the EAC region and beyond. The participation of experts from the West African ECOWAS region in the conference added further value and strengthened intra-African ties.

To relate their personal stories to the conference report and to this booklet was for many of the deployed experts more than just sharing valuable experiences – it was also the start of an overdue healing process.

I would like to thank each and everybody who participated in this conference and contributed to making it a success or got in contact with our project and expressed the willingness to collaborate in the future. I sincerely hope that your voices will be heard at the political levels!



Dr Irene Lukassowitz





George Acire

is an Ugandan data manager and geographical information analyst who was deployed in Monrovia on a WHO assignment from August 2015 to March 2016. He worked on data collection in Liberia.

I was deployed in Monrovia, not as a volunteer but on a WHO assignment. Initially we went for three months to do on-the-ground support for data collection in Liberia, but in the end I was there for nine months from August 2015 to March 2016, supporting the WHO national team with data. Liberia was just emerging from the civil war and after the war they were hit with Ebola, so the health system was very weak.

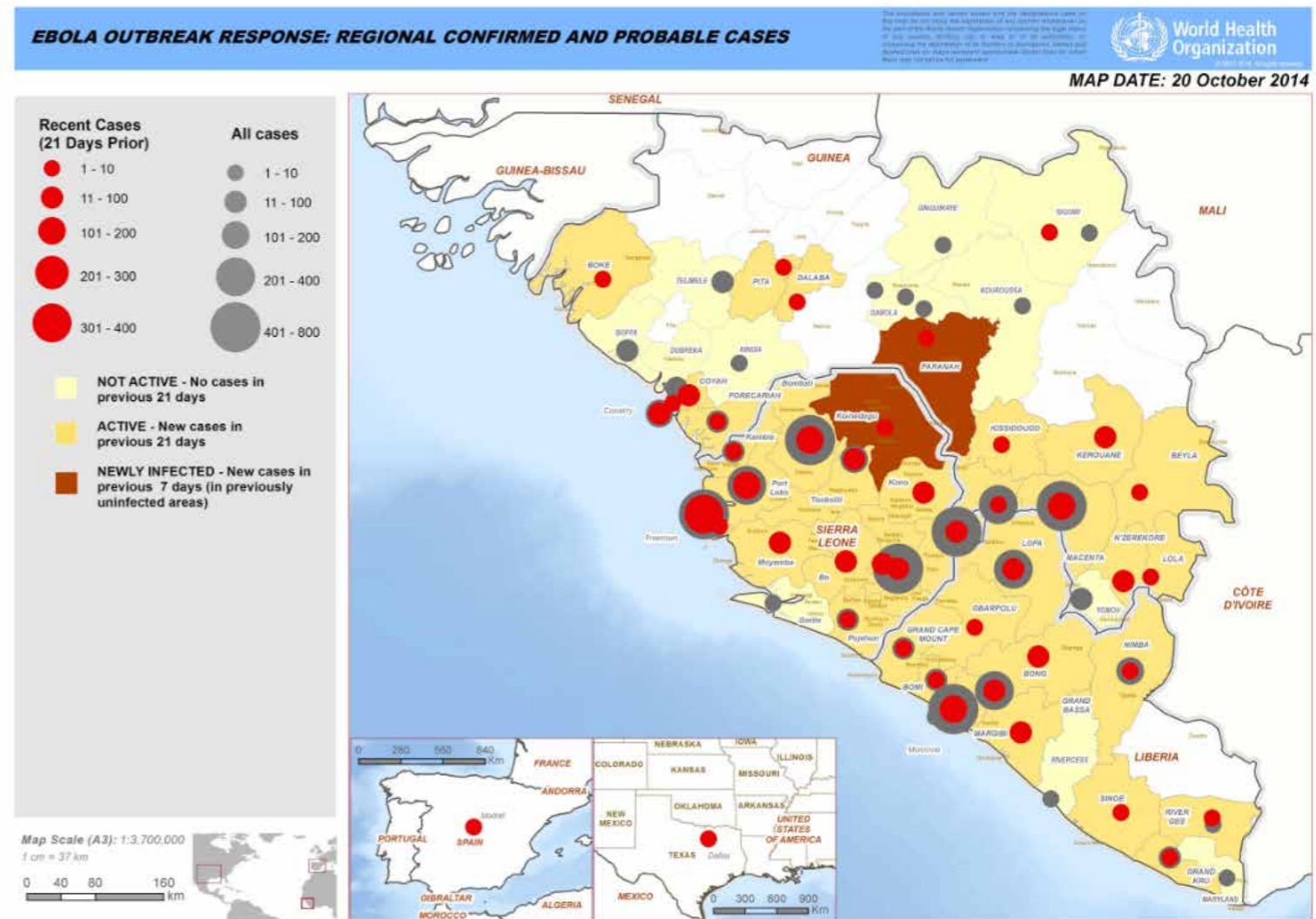
I was a lead on infection prevention and control and also supported integrated disease surveillance system monitoring. Most of my work dealt with data analysis for public health surveillance, and public health graphic information systems. I produced a lot of maps showing disease locations, so we could build up a picture of what was happening where in the field. We also built some mobile applications and tools for collecting data and then we conducted a national survey in Liberia that took effort and time.

We introduced the use of mobile phone apps for data collection. It took time to develop them and to train people to use them but it involved less paperwork and eliminated a lot of risk that comes with a data trail dependent on people moving from place to place.

The people collecting data may get infected themselves, so mobile collection of data and GPS proved very handy because you could pinpoint locations remotely instead of having to send people to dangerous places.

This all helped to collect valuable information on the epidemic in the field from every county and district.

We had to do a lot of training and capacity building of local staff. We worked with a team of WHO national staff, and trained staff from the Ministry of Health and national partners such as non-governmental organisations who were part of the Emergency Control Centre where the Ebola response activity was coordinated. The Ministry of Health



Mapping an epidemic (Copyright: WHO)

team would put forward a team of eligible national staff for training at national level. They would then become the trainers who trained other colleagues in the counties and at district level so that there was national coverage and this grew at a rapid scale.

We used technology, including mobile phones to gather data, but first we had to build the systems. Procurement delays in obtaining equipment were some of the hiccups, but we tried to overcome these by planning. If you knew that an activity was to take place at a certain time you'd need to plan to submit procurement documents at least two or three weeks earlier to be sure you could get the equipment on the ground in time. Fortunately, partners such as WHO and CDC [Centers for Disease Control and Prevention] in Liberia were very supportive. CDC had a lot of smartphones for data collection and WHO also had procured some handheld devices for other projects, so these were now used for a much bigger project.

After programming the handheld devices, the first thing we had to do was train staff on how to use them - how to manipulate and move through the questionnaires whilst collecting the data, scroll through, handle errors, do trouble-shooting, and collect accurate data. We put in place check constraints and skip buttons. We did what's known as "on the fly" data quality assurance - using a programme designed to solve errors and difficulties immediately whilst the team was still out in the field, with the national team coordinating results over the 'phone.

One of the biggest challenges was poor infrastructure - there was sometimes no cell phone connectivity in remote areas. One way to overcome this was to stock batteries and back-up drives so that when an enumerator - the person collecting data - was out in the field and encountered a connectivity problem he could store the data on to the devices until he got to a location where there was a network connection and the data could be transferred at a later stage.

The other challenge was to meet deadlines within the shortest period of time. In the emergency coordination meetings between WHO and other partners, everyone always wanted information by "the end of today". The information had to be ready for the national team and the Ministry of Health, who had to send it to WHO in Geneva and to CDC.

So there was a lot of pressure to deliver all this data on time, and we had to work very long hours. But it was a good feeling to know that the work you were doing was helping people and was worthwhile.

I also learned new skills - in particular I became an expert in using WHO's Integrated Disease Surveillance tool, which was new to me.

I think the main lesson for any future deployment is around coordination. When we got on the ground everyone was panicking. Administration people need information systems in order to make some decisions, and the data room is the engine of an emergency response. Decision makers would sit in a board room and look at a map to compare different areas and decide which areas were perhaps lagging behind or getting duplicate medical supplies. Initially things were not very streamlined and a lot of data was missing because the people collecting it had not been properly trained. So we had to do a lot of "cleaning up" and harmonising of data systems in Liberia to ensure proper coordination. For instance, a lot of data, such as patient identification, was not standardised so it was difficult to collate data about suspected and confirmed cases, deaths and so on. There were similar problems between the countries affected. You might have to compare results from three countries, so there needs to be more standardisation at national and regional levels.



Rebecca Racheal Apolot

is a research fellow at the School of Public Health, Makerere University in Uganda. She was deployed by the African Union as a volunteer to Sierra Leone for six months between October 2014 and April 2015 where she worked as a field epidemiologist and public health officer. She worked as a field epidemiologist in Sierra Leone.

When the African Union called for volunteers, it wasn't a difficult decision for me to go to West Africa.

I am trained as a field epidemiologist and this is what I'm supposed to do: If somebody's trained as a soldier they will go to war.

The only thing I didn't do was to let my parents know because they would have been fearful and would have tried to persuade me not to go. I only told my dad on my way to the airport and I told my mother when I was already in Freetown. At that time I wasn't married but I had a fiancée. When I told him I wanted to go he said: 'That's OK Princess. If you really want to do it, go for it. That's your job.' I really appreciated his support and when I returned a year later we got married.

I was deployed to Sierra Leone's northern district of Bombali. That was one of the worst hit areas at that time and had the highest number of Ebola cases in October 2014. So that was the best place for the African Union and the Sierra Leone government to deploy us as experts. I worked mostly in Bombali, but also worked in all the five districts in the northern region.

Field epidemiologists are like the CID [Criminal Investigation Department] in the police, investigating where the problem is coming from. You do a lot of investigation to pinpoint the cause of the problem so that the virus can be contained and so that the chain of transmission can be broken. We go into the communities to talk to the people and find out where the source of infection is. For example, if a grandmother fell sick, we need to find out who she's had contact with - has she looked after a grandchild, has she been to a burial somewhere, has she been to the market? This information is necessary so that people responsible for case management and surveillance know where to target their efforts. So a field epidemiologist is right on the frontline, like a detective, working in the community to trace the disease.



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

For the first few weeks after I arrived in Bombali, we didn't have very good systems in place. There was no community mobilisation, no logistical or financial systems in place and very limited surveillance and laboratory testing, so things were a bit messy. It took us about two weeks of work with the district-level to try and set up these systems. Of course, this was a place where very little was really working anyway after the war, and the health system was badly broken. So we had to start virtually from scratch to get people moving.

We began by training and mentoring local people to go into the field to conduct investigations because they knew the local Creole language. But it soon became apparent that was not working and I would have to go myself. It was very challenging because I had to depend on others to translate. But I'm pretty good with languages, so in a few weeks I was able to speak some Creole and a bit of other local languages like Limba - enough to grab people's attention.

I didn't really meet resistance from the local communities, perhaps because I am black, and everybody there is black. By the time they realised I was Ugandan we'd already interacted a lot through my broken Creole. In field epidemiology you must know who to fly with because otherwise you're not going to make headway. I didn't face much resistance because I worked with the local political

leadership of the districts and the District Medical Officer. He wrote letters of introduction to all 13 paramount chiefs in Bombali. If you went to Bombali now and asked about Rebecca, almost everyone in leadership positions at village level will probably know who I am!

We had meetings with the paramount chiefs in each of the 13 chiefdoms. A paramount chief is like a small king - they don't control a very big area but they are influential. So we arranged meetings with them and then they introduced me to the different section and village chiefs and I was just welcomed.

That all takes time, but of course if you're driving a car and someone's chasing after you because they are after your life you drive a bit faster. In a day I probably met about three paramount chiefs - I had one meeting in the morning, another meeting mid- morning and another in the afternoon. So I managed to meet all the relevant leaders in the 13 chiefdoms in about a week. I talked to them about what I thought was going to help, what was going to work for us in the district. After that it was a question of reinforcing, reinforcing and reinforcing... and in just one month the outbreak was brought under control in Bombali. We got the people on board, so the numbers of infections quickly came down.

We can never control an outbreak without the people. We can have ambulances to move them, we can have isolation centres for them - but without the support of the community they will not use them, they will not tell us where the cases are, they will not support us.

They will keep burying their people according to their traditional beliefs and as a result people will still keep on dying and dying. What our intervention did was to win people over and convince them: 'Hey, we are part of you, and you are part of us, and we can't control this outbreak without you, and you're very, very important in this situation, and this is what you can do locally.'

We had to talk to people face-to-face because most of the districts were really remote. I remember trekking eight miles, that's four miles to a village and four miles back. You can't drive there. There is no electricity, so that means people rarely have radios and many of them won't be able to read. We would talk to the chief, and the section and the village chiefs and train them: 'This is what you should tell the people: We should not follow traditional burial rites of washing a dead body. We should not shake hands. Every time you feel a fever, you should call for help immediately. You will be saved, you will not die.'



Rebecca Apolot meeting the Paramount Chief of Gbendemby Ngowahun. Photo © Rebecca Apolot



As a field epidemiologist, Rebecca Apolot had to cross rivers by canoe to reach remote communities. Photo © Rebecca Apolot

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 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.

Out of the 13 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 on bad roads, and he said: 'Yeah, yeah, yeah, we're doing this thing, 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 because I had invested time and effort and risked my own life on the river getting to them. But I then spoke to the district 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.

We set up Village Health Teams to help us, composed of two, four or even ten people because some of the villages are very large. These teams knew everybody in the village and therefore helped us a lot with surveillance, by checking up on people - standing at least three metres away and calling people out of their houses - to ask them how they were feeling. If somebody was ill they had to call their paramount chief and he called the district health people to come in and investigate, and of course the field epidemiologist or case investigator would run really quickly to the scene to see what was happening.

Every day I resolved to beat this virus, but I had to be very careful not to touch my face or my mouth, or wipe away the sweat even when it was pouring off me as I was standing in the heat of the sun. I was moving around to people's homes and going to big meetings. It was very hectic, but when I fell into my bed exhausted, I was so grateful that I was able to save lives and help control the outbreak. That made me so happy. I have never had such a satisfying job.

What motivated me were the people of Sierra Leone: They gave me the momentum I needed. Every time you did something, no matter how small, they thanked me for doing a good job. In Sierra Leone right now I have 'family'. I was actually crowned a queen in two chiefdoms, because of what I did!

I really wouldn't want anyone to have to go through such an outbreak again, but if one does occur I wouldn't hesitate to volunteer once more: That's my cup of tea and I was very blessed to participate in this response.

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. It is not about how expert the experts are - without the people in that country, the people in that community, 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. The power is with the people: All you need to do is tell them how to do it - not do it for them.



"Without the people you can't do anything". Photo © WHO



Sarah Awilo

is a registered nurse from Uganda, working at Mulago Regional Referral Hospital. She volunteered for deployment and was sent by WHO to Monrovia, Liberia in August 2014. She was deployed to Liberia in 2014.

Before I went to West Africa, I had worked in all the epidemics that Uganda had so I was already well versed in the management of haemorrhagic fevers. That experience made me strong enough to withstand the workload in West Africa.

From August to September 2014 I initially worked in a small Ebola Treatment Unit [ETU], which only had a bed capacity of 35 patients. Then as the numbers of patients increased in the community we needed more capacity. So WHO, in conjunction with the Ministry of Health Liberia, opened a new ETU in September - the biggest in Monrovia with 150 beds. It was full in less than a day - at one point we had 250 patients. You'd find patients lying on the floor because there were not enough beds.

Despite the fact that they had protective clothing, the Liberian health workers were frightened of touching the patients, because they didn't have any experience of dealing with Ebola. As much as we tried to convince them, they still had that fear, but slowly, slowly they coped with the situation.

The ETU I worked in was divided into four sections: triage, confirmed cases, children and convalescent patients. I was heading the triage section, which received all the new patients. We would first screen them, take blood samples, resuscitate them, and then when the results come back, if they were positive, we would transfer them to the confirmed cases area. We didn't know the status of the patients we were dealing with until the results come back from the lab, but we were well protected by our personal protective equipment, so we felt confident.

In the beginning, lab results used to take two or three days, but after the mobile laboratory was set up it would just take a day, and that made our work easier and helped to keep numbers more manageable on our ward.

There was still a lot of congestion, with patients even lying on the floor, some with severe diarrhoea and vomiting, but we had to nurse them - there was no way we could just leave them.

We used to write our names on the protective clothing, and patients could call out; 'Sarah, Sarah, come and help me. Come and help me.' In one corner a patient was crying, and in the opposite corner another patient was crying. In theory, the maximum time we could stay in the ETU was two hours due to the protective clothing and the heat, but because of the overwhelming workload we often found ourselves working for three or four hours. Many of the local health workers who were supposed to clean the wards were frightened of touching the vomit, diarrhoea and blood, so I sometimes ended up cleaning the wards myself before I could do my own work.

We had three shifts in 24 hours, morning, evening and night. On each shift, we had the clinician and the nurses; we had the psycho-social team, cleaners, the burial team and the sprayer. The nurses were the ones doing everything for the patients - feeding them, cleaning them, changing the drip, giving medications. If patients had diarrhoea and vomiting we had to resuscitate them, and do continuous supervision. On top of that we had to keep the patient's records up to date and brief those coming on shift afterwards.

So many patients died - many were only brought from the community to the ETU when they were already unconscious and they just died on the ward. Others were brought when they were already dead.



"We were well protected by our personal protective equipment" says Ugandan nurse Sarah Awilo. Photo © Loveness Daniel Isajick

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, but slowly, slowly I regained my senses.

It felt good to share my experiences at the conference with colleagues who also went through what I went through. Sharing our experiences motivated us and made me realise that I am not the only one suffering.

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 disease.

That is what I really loved about this conference - along with meeting people who were working in different places - it has united us, and given us a chance to get to know one another.



Dr Mwaniki Collins

is from Kenya and was deployed as a doctor working in Sierra Leone. He was deployed to Sierra Leone.

When I trained to become a medical doctor, I knew that one day something might be asked of me that I might not be really comfortable doing. It was always at the back of my mind that I might be faced with a difficult situation, so it was a personal test for me.

It was difficult to break the news [that I had volunteered to go to West Africa] to my family. I actually broke the news one evening when we were having a family dinner. My father was quite calm - he was the calmest of them all - but my mother was taken aback. In 2014 the Ebola epidemic was at its height and it was everywhere in the media and seemed to be out of control. It wasn't easy for them to understand what I wanted to do.

I was deployed to Sierra Leone and volunteered with a friend of mine, another doctor. It was only when we had been shortlisted for deployment that the reality hit home. We were very frightened, and talked about our personal fears.

Once we got our letters of deployment, we had a week's training, during which we were told how to protect ourselves and how to deal with the whole situation. Shortly afterwards we were deployed. There were no direct flights to Sierra Leone, so we had to go through Ghana, before embarking on the last leg of the journey to Freetown. When we arrived at the airport there it was around 10 or 11 at night, and it was very dark. Ours was the only 'plane around: When you walked out of the 'plane you could hear a pin dropping, it was so silent.

We were met by a few migration officials who said 'Jambo, karibu.' They seemed happy to see us and smiled. I remember one of them approached me and greeted me in Kiswahili, and he extended his hand to shake mine. In our culture it's customary to shake hands when you meet someone, so I reached out to shake his hand, but he said 'No, no'. He was just joking! He said, we weren't allowed to shake hands or touch anyone. It felt very strange to

me, and was my first experience of many. Later I learnt that if you wanted to eat fruit you had to wash it in chlorine, and even mobile phones had to be washed with chlorine.

When we first arrived we were given another two weeks' training involving actual simulations of what happened in the treatment units. We used dummies for hands-on-training.

I was deployed to Ola During Hospital in Freetown, the children's referral hospital in Sierra Leone. One of the great things about children, and one thing that really makes any health practitioner happy is when you see your patient recover.

There's something unique about children's response to treatment. The experience is magical, they just recover so quickly. So dealing with children at the treatment unit was one of my most fulfilling experiences.

One of the biggest challenges, I would say, was communication. I really didn't have a good understanding of pidgin, but I had to learn to speak it. We were also deployed with some Cuban doctors, so it was a little bit difficult to communicate with them.

During our deployment, some of the local national staff went on strike, so that was a problem. The other challenge was the difficult decisions that had to be made when admitting patients to the treatment centre. For example,



Ebola prevention messages painted on a wall. Photo © WHO

a breastfeeding mother might be symptomatic, but not the baby. Since she was breastfeeding, they both had to be admitted. These were some of the difficult challenges that were unique to the situation.

One of the main lessons from our deployment is that the response was too slow. We only got there when the epidemic 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 I will have to bear, and hopefully I can at least make my small contribution.

I think that one of the things that I realised during my time in West Africa is how important family is. After I'd been in Sierra Leone for about a month, there was a house in the same street as the hotel I was staying where the occupants had just been released from 21 days' of quarantine. I met a father, with a small child, who had lost his wife, his mother and his in-laws to Ebola. All in all, he had lost nine people from his family and he was left all alone with his kid. His story, and many others like him, made me realise the importance of my own family in a way I had never felt before. I really deeply missed them. When I eventually got home, all I could do was thank God for giving me the opportunity not only to serve, but also to come back safely.



Charles Draleku

is a Ugandan medical laboratory technologist who volunteered to be deployed by the AU to work in Bombali District in Sierra Leone in October 2014, when the outbreak was at its peak. He was deployed to Sierra Leone.

The affected countries desperately needed experts and professionals like me and this was the right time to volunteer to help people infected and affected by the deadly viral haemorrhagic fever in West Africa. But it was the most difficult and scary decision I have ever made in my life. My wife had just given birth to my first male child and he was just two months old.

Even though I was highly motivated to volunteer, the unfolding events - especially the rising death toll and infections among health workers - were so terrifying they made me question my decision. But instead of backing out, with a sense of foreboding and fatalism about the high risks involved I decided to surrender myself to go. The very week that I was going to go, I heard the news that a Ugandan medical doctor had contracted the disease and passed away. This was a big blow to me and I was convinced I would not come out of this alive. The report was unconfirmed, so I decided to stop following the news about unfolding events and I stopped telling friends and relatives about my decision to go to West Africa, since the few I informed were completely opposed to the idea. Instead of reassurances from family and friends, I got negative reactions. I remember that when I was at the airport waiting to board the plane, I called one of my best friends to inform her that I was going, but she was so disappointed with me and said 'Charles what is it that makes you take this decision? I feel I am talking to a dead body right now. Please don't get on the plane - we still need you.' I just laughed and told her to pray for me and said I was not changing my mind.

Once deployed in Bombali, before the AU had constructed the Ebola Treatment Unit there, I worked with an expert from CDC on contact tracing the health workers who had dealt with probable, suspected and confirmed Ebola patients in Bombali government hospital. In the hospital, it was impossible to forget the way patients were dying, and the way corpses were dealt with by the burial teams. This traumatised me for the first two weeks and, despite all

the infection and prevention control measures employed, I would always feel psychologically sick. Thank God, however, when we took our temperatures every morning and evening there were no signs that we had developed Ebola symptoms.

My happiest moment was when we started discharging survivors from the Ebola Treatment Unit.

The AU-built and manned treatment centre at Magbenteh, which was opened at the peak of the epidemic, made a significant contribution to slowing down the epidemic. The unit was in operation for 12 weeks and we were able to discharge 106 survivors out of the 166 patients admitted. This was the highest survival rate registered in any Ebola treatment unit in this outbreak.



"We took our temperatures every morning and evening". Photo © WHO



Emmanuel Ejoku

is a laboratory technician from Western Uganda working in Bundibugiyi Hospital where the strain of Ebola known as Bundibugiyi was discovered. He volunteered through the African Union to be deployed to Guinea. He was deployed to Sierra Leone.

Having heard of the problems in West Africa, and watched it on Al Jazeera and the BBC, I felt it was my duty to go and help my brothers and sisters in West Africa. I went online and found the contacts for the African Union. I wrote to them, and they welcomed me as a volunteer.

First we had a briefing at the African Union headquarters in Ethiopia, and then we went to Liberia where we had three weeks' theoretical and practical training with American medics. From there we were sent to Coyah in Guinea Conakry where a new emergency treatment unit had been built.

In Guinea the epidemic was very rough and in general the community was not participating in the management of the epidemic. That's why it actually took so long to bring it under control. I believe if there had been proper community sensitisation, participation and government involvement, we would have been able to control the epidemic much quicker.

When we arrived at the Coyah ETU there were no lab facilities and there were only four laboratory technicians. We were sampling blood and other samples (such as post-mortem tissue) and transporting them to Abdel University in Guinea Conakry where there was a testing lab. Two weeks later the European Union constructed a mobile lab at the ETU and then we were able to test samples on the spot. That improved the turnaround time for results – it was cut to less than 10 hours - and in turn, that improved the diagnosis and the prognosis.

Although our main duty was in the lab, our work was not just limited to sampling and testing. Because human resources were scarce, we would enter the wards to take samples, and help the nurses, the clinicians, the doctors, to wash the patients, help them in whatever way possible. So we were touching the patients.

My experiences there were both terrifying and also good. It was terrifying to be inside the ward sampling blood. Seeing patients dying left me feeling helpless and powerless, but I also felt good when I saw patients we had cared for get better. When they were discharged, you'd hug them, and you really felt that you'd contributed to human life, to human history.

We were very vulnerable: I remember one time when a patient vomited on my hand as I was taking samples, but of course I was wearing personal protective equipment. Another time, when I was taking off the PPE, I found that the gloves were torn and that water had got in. It was a huge worry, but thankfully I never got infected. Only one person in our group of around 500 staff and international volunteers got infected, but didn't die. So the protective equipment was very important. Training and proper use of protective gear was key in the management of Ebola in Guinea.

In the lab, the main challenge was that we never had enough supplies to enable us to take samples and so on. For me personally the biggest challenge was stress. My family would call me and say: 'Are you alive?' I would just tell them: 'If I am talking, that means I am alive!' Actually I never worried too much because I had dedicated myself to saving lives, and if I died having saved one life it would have been worth it. But of course the stress was always there. Also, the AU team leader used to counsel us and that gave us courage and kept us motivated.



"We were very vulnerable". Photo © Emmanuel Ejoku

When I went back to my country, I found it very difficult to fit in at my old workplace.

I felt that people were not doing things in the right way and that we should be working at the speed that we'd been working at during the Ebola crisis. The place looked very lazy, and I felt I could teach them something, but I didn't have the authority to do that.

My main recommendation for the future is that teamwork is key. You can't do anything unless you work as a team. Secondly, there should be proper management from top to bottom, bottom to top. When you are planning, involve everybody in what you are doing – because that will help with implementation. Finally, a successful outcome depends on good logistics for human resources, materials and so forth.

Health is not simply about injecting people with needles, giving drugs and so forth – it is a complete cycle. There should be a holistic package of human resources and administration, psycho-social support, training and education. Doctors and nurses are not just people who give drugs and injections: They too need psycho-social support. This is very important.

The One Health approach should be taught in the training institutions: When we are training a nurse or doctor, let's not just train them in how to give drugs and injections – we should give them comprehensive training in



We should always have a group of skilled people ready to respond in an emergency. Photo © Loveness Daniel Isojick

managing human resources, logistics and administration. In Guinea I was able to help with counselling and so forth, because I have an additional qualification in psychology and counselling. So I think the government of Uganda should adopt a comprehensive approach in the training institutions.

You cannot rely on previous experience alone when dealing with emerging diseases. I had experience of working with Ebola in Uganda but when I went to West Africa, things were completely different and I still had to undergo complete training. There should be continuous mentoring and training, and training needs to be adapted to circumstances, because environments change, cultures

change and emerging diseases change. So let's not rely on the past experiences only: We should have resources ready to train people for whatever the situation is.

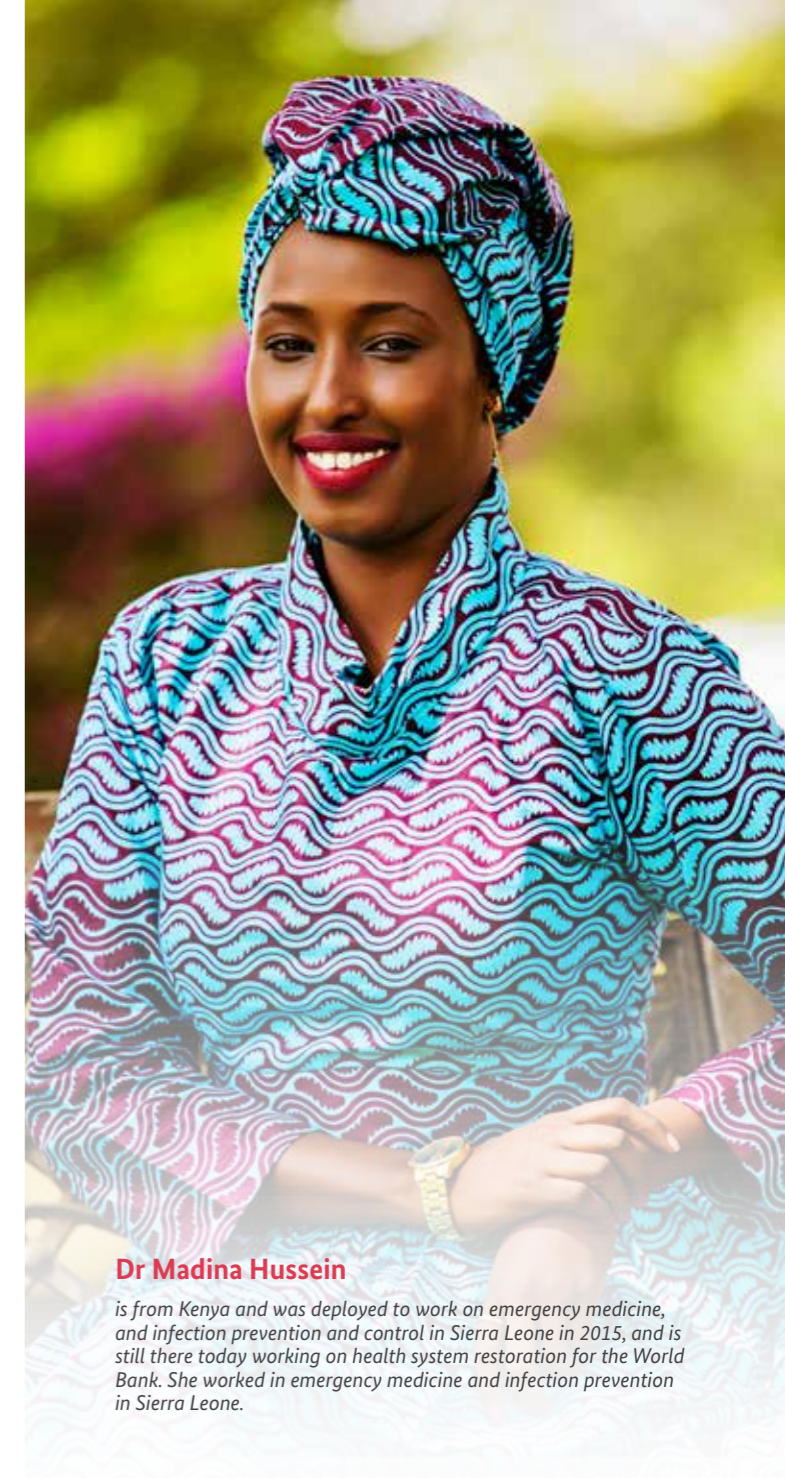
We know there are very many demands when it comes to health resources, but you have to prioritise, especially when lives are at risk. We should always have a group of skilled people who are ready to respond in an emergency, but we also need resources to implement research and training, and constantly add to the pool of expertise so we don't always rely on three or four people. I may be an expert, but what happens if I change jobs or die? So we should always have plans ready, and prioritise.

Was I deployed or did I volunteer? My answer is both. I was deployed because there was an emergency and my employer, the Ministry of Health in Kenya, needed to send someone to join the troops. I volunteered because I was a bright eyed young doctor looking to gain experience, and I was curious about what it would be like. The call for interviews came in on the 5th of January 2015 and we were off to Sierra Leone on the 9th. I was both excited and horrified at the same time - how bad could it be?

Even the media reports and a graphic imagination could not prepare you for the human suffering (neither does medical school). Ebola is a special kind of human suffering: It is brutal, gory and a horrible way for people to die. When we got to Sierra Leone we saw dead bodies on the street, mothers crying after losing their only babies. That was very scary. I had only seen such things in horror movies, so it was shocking to see it in real life.

I was deployed to the Princess Christian Maternity Hospital, the biggest referral hospital in Freetown. There I did ward rounds, worked in the outpatient department, and also sometimes performed caesarean sections where possible. But since there was shortage of staff at the paediatric section of the small Ebola treatment centre at the hospital, I also worked there. I was treating Ebola patients, both suspects and confirmed cases. Amidst the horror of death we had to be everything we could be: Doctor, comforter and psychologist!

We were both, heroes and cowering heroes. Heroes because we were saving lives, but even the simplest of symptoms like sneezes or a bit of a raised temperature brought on the darkest thoughts. We were cowering because we were unprepared for the human tragedy before us. However, we did not have the luxury of feeling our feelings, we had to get to work or more lives would be lost. We had a crisis to avert.



Dr Madina Hussein

is from Kenya and was deployed to work on emergency medicine, and infection prevention and control in Sierra Leone in 2015, and is still there today working on health system restoration for the World Bank. She worked in emergency medicine and infection prevention in Sierra Leone.



Nothing could prepare you for the human suffering
Photo © Dr Madina Hussein

for the babies and blood pressure machines for the mothers. I had no other option because I could not just go to the ward and do nothing, when I didn't even know whether this patient's blood pressure was well controlled or not. So I had to use my own money and talk to relatives in the UK to send some equipment for me.

Our employers had some hiccups when it came to organisation and communication. That's where the main problems arose.

Before you deploy people, you have to make sure that they understand what they are going to do and what they're being deployed for. They must have at least some training and they must be mentally prepared through psychological counselling.

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.

When we arrived in Freetown, Sierra Leone, we spent two weeks waiting to be trained: Sleep, eat, wake up, do nothing. We then had two weeks' training and only five days later were we deployed – so it took us literally a month and five days before we could start work on the ground. I feel like we wasted a lot of time doing nothing rather than fighting Ebola. It was very frustrating knowing that there were things we could do, but we couldn't start our work.

Another issue is that when we arrived at the hotel, we didn't even have anything to eat for about three days. We were waiting for the AU to communicate with us, but we had so many issues, we just had to make do and manage. I had taken some chocolates so I had to eat my chocolates and share them with my colleagues. That's all we had for three days until we managed to get some food.

In past outbreaks, Ebola had largely been confined to remote rural areas, with just a few scattered cases detected in cities. In West Africa, cities - including the capital cities of Sierra Leone, Guinea and Liberia – were the epicentres of intense virus transmission. Ebola was an old disease in a new context, and the West African outbreak demonstrated how swiftly the virus could move once it reached urban areas and densely populated slums.

The biggest challenge we faced was the lack of resources. We sometimes ran out of body bags for burying the dead victims of Ebola. Sometimes we ran out of personal protective equipment such as gloves and had to wait for other people to donate some to us.

When it came to theatre we had some protective gear but it was not what we were supposed to use. We had to improvise, risking our lives, even though we took as many precautions as we could.

Where I was working in the maternity hospital doing deliveries or caesarian sections, we could not weigh the babies, so I used my own money to buy weighing machines

When we arrived we had some small cultural conflicts, of course - it happens everywhere you go. We were a group of Rwandans, Ethiopians, Kenyans, Ugandans who had been deployed to Liberia, Sierra Leone, and Guinea. We tried to explain to people that the main reason why we were there was to help, not just to make money. Some understood of course, but we could still feel the tension between us. But the work had to be done. Later we made them understand that we are all Africans together, we are all here to help each other. Anything can happen to Kenya or Uganda. That's why we were all deployed to West Africa.

We need better preparedness for future emergencies. 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 right now, in case of anything, we are ready.

We can wake up and just pack our bags and leave, but before we were not ready, so preparedness is the number one thing together with good organisation and communications.

All of us deployed staff went back home uninfected. Every single one of us survived! We went, we saw and we conquered. That said, I have had time to reflect and look back since then. I have had nightmares.

Seeing so many people die in such a savagely violent manner changes you and how you think about pandemic responses. I gained the experience that I craved and we did the best we could in an emergency situation - but 11,000 lives lost? I would like us to speak for them by taking the lessons learned forward and coming up with a programme that prepares us to respond better next time, rather than just react to circumstances.

How can we do this? All the participating organisations, governments and NGOs alike should continue to work

together and pool knowledge and resources in preparation for any future crises by investing in facilities and tools that will reduce exposure for case workers, and share valuable information. As the saying goes:

In times of peace, prepare for war.

I'm now back in Sierra Leone working with WHO to restore the health system, among other things. It's a bit challenging, but we're trying to train the locals how to do surgery and conducting training on infection prevention and control, in case, God forbid, another crisis happens, related to Ebola or any other infectious disease.



We are trying to train the locals in infection prevention and control.
Photo © Dr Landry Mayigane



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. She worked as a nurse in Sierra Leone and Liberia.

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.

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 wildfire.

I also thought there was a need for someone from my country to go and learn about it 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 it worthwhile, even if it meant that I might die in the process. My mother, however, couldn't accept that I had decided to go to Sierra Leone, and was convinced I would die there, and she worried that my body would not be brought home

and that she'd never see me again. But when she later heard that five Tanzanian doctors were also being deployed with me, she agreed on condition that I went to see her to say goodbye before leaving.

Before going, I received online training and safety and security briefings from the organisation that was deploying me. We eventually arrived in Sierra

Leone after a very long journey via Europe as there were no direct flights – I had never even been on a long-haul flight before, so it was all very strange. There were 13 of us that arrived that day, but I was the only African and the only nurse in the new arrivals. This alone was scary and depressing - I had expected more Africans and was really hoping to meet up with my fellow Tanzanians.

On the wards, more than half of the patients admitted each day would die, sometimes all alone. Getting our personal protective clothing on and off took such a long time and limited the hours we could spend with patients. It was heartbreaking 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 healthcare workers had contracted the disease was very scary, but no one gave up and we were motivated to continue our work.



Many of the patients admitted each day would die. Photo © Loveness Isojick

My happiest moments were when patients who survived Ebola were discharged: Everybody was excited 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.

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.

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 Abdulrahman Said Kassim

an epidemiologist and public health specialist from Kenya, was deployed in Sierra Leone, where he initially worked at the Connaught hospital, the main referral hospital in Freetown. He was deployed to Freetown, Sierra Leone.

For the first two weeks I was in Freetown my daily routine revolved around running between the Public Health and Records departments to put together the baseline data that could help me to find an entry point for deciding where and how to start health system strengthening. This was an enormous task considering that the whole nation's health system had been paralysed and hijacked by 'Professor Ebola and his army'.

What this invasion had done to the health system and healthcare in Sierra Leone was far greater in both magnitude and scope than the damage inflicted by the 10-year civil war: All the gains made over the years were wiped out in just one year. No data had been collected, no records kept and no monitoring and evaluation activity had been carried for the 12 months since the outbreak had occurred. Everything was on hold, health care was on hold – life itself was literally on hold.

First we needed to get the epidemic under control, and to do that we had to go out and cut the transmission chain. An opportunity presented itself when I received a call from the lead AU Epidemiologist in the Freetown area who asked me to get him the contact lists of three walk-in patients to Connaught hospital who had Ebola symptoms. These walk-in patients posed a great danger to health care workers. Since there were over 30 AU healthcare workers, including myself, working at the hospital, I was extremely frightened and worried that they might have been infected, but the AU epidemiologist later called back to say that the three patients had been negative and our staff were safe. What a sigh of relief!

A day later a new walk-in case reported to the main paediatric hospital where many of our AU colleagues were working. This case was missed during triage because the patient's guardian concealed the facts from the nurses. As a result, the hospital administration had to close the ward where the case occurred and send all the staff working there home.

This time, as soon as I received the news I called the lead AU epidemiologist to enquire what he knew about the case. He said he knew nothing and asked me to accompany him the next day to the District Ebola Response Centre [DERC] to ask whether any of our staff had been listed as high risk contacts. The information we got shocked me beyond words: A case that had occurred almost five days ago, in the main and only paediatric hospital had not been brought to the attention of the DERC, the nerve centre of the Ebola response in the district. After I insisted that this case was of enormous significance to us because of the AU staff working in the facility, the DERC coordinator directed that the AU team should investigate the case with immediate effect and report back to DERC as soon as possible.

The real detective work had begun, and with two other colleagues, I set off immediately for the Ola During Children's Hospital, about four kilometers from the city centre. When we arrived at the hospital we met the hospital administrator. He informed us about a six year-old boy who had been brought to the children's hospital by a woman who claimed that the child was hers, but she had given a false address to the triage nurses. The child had been in the Children's Hospital for two days with symptoms of fever and vomiting but no one suspected that he had the Ebola virus because he was very active on the ward: His cannula had become loose and was leaking, smearing the floor and the beds with blood. On the third day the father arrived at the hospital and shocked staff by saying that the child's mother had Ebola and that the child had actually been sneaked out of a quarantine home by the aunt. Soon afterwards the child was transferred to an isolation unit, where he tested positive for Ebola and later died.

The hospital administrator closed down the ward and sent all the patients and nursing staff home so that the ward could be decontaminated. When we asked why they had sent everybody home rather than putting them in quarantine, we were informed that he thought that the infection control procedures in place were adequate and



Members of the AU 'detectives' and WHO in a planning session before the three-day lock down. Photo © Dr A.S Kassim

that the risk to staff and other patients was not high. This would later be proved wrong, since a second child from the same ward turned positive and died a week later generating another cluster.

After thorough investigation we came up with a contact list of 78 people - this was one of the highest contact lists ever generated because the national average at that time was around 16 people. The AU 'detectives' followed these cases for 21 days and by the grace of God all our staff and the hospital health workers were safe, although both died from Ebola. The child's father was also put into quarantine with his second family, and this way the disaster that could have caused an outbreak amongst the AU contingent of deployed experts was averted.

The biggest day in the work of the AU Ebola 'detectives' came when the country declared a three-day national 'lock down' from 6 am on 27th March to 6pm on 29th March 2015. During these three days, nobody was allowed to leave their homes, but five AU 'detectives' were given special passes to travel across the city.

No words can describe or do justice to the horrendous and breathtaking journey we took through the slums of Freetown during those three days. 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 picked by the active case searches or from the national alert centres.

During the three-day lock down the AU 'detectives' took 15 suspects to the isolation units, but fortunately none turned out to be positive. It was very successful and memorable work and a new breed of AU detectives or Ebola FBI agents had been born.

The most shocking encounter was when we were called to an alert at a house on the top of a mountain. When we arrived we met a couple who were outside their house under a mango tree. The patient was lying in the lap of his wife and a 10-year old girl was seated at the feet of her parents while a three-year old was playing beside them. Fortunately the AU investigators found that the man did not have Ebola: Imagine the chain of transmission that could have occurred if he had the disease. The whole family, as well as other relatives and neighbours, could have been wiped out by Ebola because of the way they were handling their sick patient.

One of the main reasons why Ebola took so long to be eradicated was due to the low levels of education and strong attachment to cultural practices. There were many stories about relatives still carrying out unsafe burials, or of corpses being stolen from morgues or dead bodies just dumped in cemeteries. All these practices were immensely worrying given all the efforts the government and partners were putting into the fight against the Ebola virus.



The AU Ebola detectives on their mission in Freetown. Photo © Dr A.S Kassim

One very interesting case was when a wife of a survivor was infected. The survivor, who was an ambulance driver, had been discharged over three months previously and his wife said she had had no contact with anyone but her husband. On discharge men are advised to stay away from sex for 90 days and women are advised not to breast feed. The husband told us that as the 90 days prescribed by WHO for safe sex with a survivor had passed, he had stopped using protection some weeks back. The AU 'detectives' took up the case with the technical team at the DERC and it was agreed that the survivor's sperm should be retested for Ebola, and

it tested positive. This case made WHO revise its guidelines and request that all survivors should continue to practice safe sex even after the mandatory 90-day abstinence until further notice.

Along the way we meet survivors of the disease: Halimatu (not her real name) is a 25-year old survivor. She contracted the disease from the mother who got the virus from the pharmacist when she went to buy medicine for toothache. The pharmacist and the mother later died. Halimatu had taken care of her mother for a week at home and

when the ambulance did not arrive after 24 hours she took the mother to the hospital using a taxi. The mother was admitted on Monday, tested positive for EVD and died on the Saturday. The following Tuesday her father, brother, nephew and Halimatu all fell sick and were taken to the hospital by public transport on Thursday after the ambulance again failed to turn up. Two days later their results came in. They were all positive and were taken to the Ebola Treatment Centre (ETC).

Her experience at the ETC was like something from a fiction horror movie. There were dead bodies everywhere, vomiting and diarrhoea and some women were in so much psychological pain that they walk around naked without realising or caring who was around. After 21 days of anguish and pain Halimatu tested negative but she had to stay for another three days without symptoms before she could be discharged.

After discharge – D-Day - she took a 'happy shower' (with 0.05% Chlorine) and burnt all her belongings, including money and her phone, before she was given new clothes and was received by Ministry of Health officials. She was given food rations and money for transport home, but she was not celebrating because she wanted to know what had happened to her father and the rest of the family members. She was told at the ETC that they were all fine and therefore was absolutely shocked to learn that they were all dead when she got home. Halimatu is now living in Freetown with other relatives and helping survivors to cope with stigma from the community.



Teddy Kusemererwa

is a Ugandan nurse who worked in case management in Ebola isolation units in Liberia.

I was among the people who were deployed to West Africa in order to help our brothers and sisters who were dying at a terrible rate. I worked in Liberia, Monrovia at the John Frederick Kennedy Hospital for a month, and then my contract was renewed for another three months, during which time I was sent to go and open another isolation unit called Island Clinic.

I trained Liberians to manage infectious conditions, and by the time we left we had pretty much cleared all the Ebola cases. But some of the health workers we had trained did not listen. They continued to treat Ebola patients in their homes, in the clinics and chemist shops. In fact we lost one nurse who had been admitted with Ebola symptoms. She was so depressed she couldn't even take the drugs and could not eat. When you are a health worker, you know what it means and you know what will happen next. That upset us very much.

As a case manager my job involved dealing with confirmed infected patients and their families. We provided nursing care in the isolation units: Some patients were bleeding through different orifices; others had diarrhoea or were vomiting; some were conscious, others unconscious; some were hungry and could feed themselves, but most could not feed themselves so we had to feed them. The numbers were overwhelming. Some of our fellow workers who had no experience of dealing with Ebola could be asked to give a patient food, and by the time you went to that room, you would find food was being served to a dead body, or that food had been placed on the table for an unconscious patient or for a patient who could not feed himself. We also had to do complex procedures such as washing and giving bed baths to patients, and many health workers were very afraid of getting infected.

I remember that I was very frightened too when I first encountered Ebola when an outbreak occurred in my country, Uganda. I was working on a paediatric ward when a whole family with seven kids was admitted. Initially we didn't know that we were dealing with Ebola until most of

them had died. Only one of the children survived, after the mother, father and all the other relatives had died. In the process of treating the children one of our clinical officers got infected, and she was referred to Mulago Hospital in Kampala, and that's where they diagnosed that it was Ebola. She left behind a six month old baby, and I looked after her baby.

I was frightened but I had no other option, so I gained courage and continued to nurse that baby until the baby also died.

Because I was then a contact I also had to go into the isolation unit myself. However, I just carried on working there with patients who had symptoms. Thankfully I never developed symptoms myself, because I strictly apply infection prevention.

When I volunteered to go to West Africa, like many others, I left my own children behind. Before leaving Uganda we had to write a will, because we didn't know what would happen to us, and the documents were left with WHO Uganda. Then we went to fight Ebola.

I had left home unaware that I was pregnant with my fourth child. It was only after I had started working in Liberia that I realised I was pregnant. So it was a double risk for me, but I carried on working and observed infection prevention procedures, and I never contracted the virus. Infection prevention is very important.



Conditions were challenging in the isolation units. Photo © WHO

We faced many challenges in the work in Liberia. First of all, when we got there, most of the hospitals were closed and many Liberian health workers had already been infected or had run away because they were frightened of the disease. So the main JFK hospital where they deployed us was partly closed. That's where we opened our first isolation unit in the first month, and we tried to counsel and encourage

the other health workers to come and work with us. Some ran away, others came. We began by training them – but that was a challenge with so many patients to look after. We were flooded with patients. They were in the floors and the corridors, you had to climb over them, stepping in the faeces, blood and vomit, even stepping on dead bodies.

Mothers would come to the isolation unit with their babies because they had nowhere to leave them, as 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 diarrhoea, so managing the babies was a problem. We tried our level best, we would go inside the isolation unit, 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 of 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. Most stayed negative, however, even if their mothers had died. Even now I don't understand what happened. Was it God's mercy or what? We fail to understand it, but in Liberia, Ebola affected more adults than young babies.

Another challenge was security. Many of our patients became mentally confused and then they would try to escape and run into the community where they could infect others. We had to follow them and bring them back. So the whole situation was challenging.

Waste management was also a problem. At one point we had nowhere to dispose of the urine and other waste from the patients, because all the toilets were blocked. We started giving the patients buckets for short calls and long calls, but when the buckets were full, it was a real dilemma to know what to do with them. In the end they identified one compound which they fenced off and we started carrying those buckets there, waiting for the vehicle to take them away.

When I went to the second isolation unit at Island Clinic, again there was nothing on the ground. We had to build it from scratch. We set up 100 beds, but again, within the first week, we had admitted 150 cases, so there were again patients on the floor. New cases came in all the time, but we could not separate positive cases from negative cases, because the lab results came only in slowly due to the distance of the lab from the isolation unit. As a result, many patients who were not positive contracted Ebola in the ICU. There were a lot of patients who perhaps had malaria or other diseases that could have relatively easily been treated but possibly died of Ebola.

If somebody came in presenting with all the symptoms, high fevers etc., we had to admit that patient to the isolation unit and then wait for the laboratory results. And by the time the laboratory results finally arrived that person would have contracted the virus. So that was a very big gap that resulted in a lot of people being unnecessarily infected. In any future outbreak, the lab needs to be close by so that someone can be tested before they have to go to the isolation unit.

After some time, we arranged a separate ward for those people who would come with some symptoms and other conditions. We would put them in the side rooms in that ward until the results were available. But we still had to handle them like

Ebola cases, because with similar symptoms, you couldn't tell until the lab results came back. That's what it was like, but we kept on working, and in the end we managed to discharge a number of cases whose lab results were negative.

There was a point where we discharged a certain gentleman who had turned negative but after about a week his wife was also admitted positive. We had traced the contacts of that lady, and she had not previously been positive. The conclusion we reached was that this woman might have been infected by the husband through sex because she told us that when he was discharged, he went home and they made love. We knew that the Ebola virus can hide in semen for a period of three months before it dies completely, and we suspected that the woman had been infected by the husband. We need more research on this. We are learning new things about Ebola all the time.

One of the lessons learned is that we need trained human resources on the ground, who are prepared and trained for any outbreak. It is very difficult to ask a nurse who has never even heard the word Ebola to attend to patients. That's why they were serving food to dead bodies, that's why they were just passing through the wards like wind.

We were well paid by the World Health Organization and our contractors, but the Liberian health workers kept on striking. When they did that, we were the ones to suffer, because we had to continue with the work.

This conference is important, because we are trying to draw up solutions and plans for the future. Early preparedness is key, as is training of health workers so that they are aware of the symptoms of Ebola, how it presents or how it occurs, and don't contract the disease before it is diagnosed. We are also planning to set up an outbreak emergency response team which can be deployed at short notice in the event of a future emergency.



Liliane Luwaga

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

In August 2014, I was deployed to 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.

I had first-hand experience of dealing with Ebola in Uganda before I went, but that did not prepare me for what I would encounter in Liberia. This was a much, much bigger response and it was in a foreign country, so you were being looked at as an ex-pat and a foreigner. So it was more challenging, but also rewarding because what we did, I think, had impact.

Although initially deployed for 30 days, in the end I stayed for more than two years. At first we would stay for four months or more without a break, which was very, very stressful, but after that we were allowed to have a break every six weeks – if circumstances on the ground permitted, which wasn't always the case. It was difficult for my family, but they were very supportive, and thanks to WhatsApp, I was always chatting with my three boys and with family and friends.

As a risk and crisis communications expert, my job involved working with local communities to try to make them understand Ebola, how it was transmitted and how they could protect themselves. With risk communication and with communication in general, there are basic principles. First of all you need to identify the best way of working in the community. For these particular interventions we had people going house-to-house to deliver messages, and we targeted community leaders to engage the communities. There would also be messages on the radio, and to a much lesser extent on TV. We used drama, because at times you'd have to really portray the situation in real case scenarios, so



Liliane Luwaga (centre) conducts a community engagement meeting in Liberia during the Ebola outbreak. Photo © Liliane Luwaga

or suspected patients were being taken away to be killed or for other purposes. Later on, if a family was quarantined they had special food support, and you'd find that the rest of the community wanted an equal share. As the outbreak continued we had different challenges, and sometimes it was a case of one step forward and two steps back. You had to constantly reinforce and change the messages.

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. 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.

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 your feet, shoes, the car itself had to be sprayed.

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 happened to that car in the evening, whether the driver had given a lift to a sick friend or relative. So that was a worry.

that people would relate what they are doing to what the disease is about. We also targeted special campaigns for particular groups like people with disabilities, people with hearing and visual impairments.

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.

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. At times you'd feel, oh, we thought we'd had a breakthrough here, but then you come up against another challenge. At one stage people thought that sick

I shared a house with different members of the response team, including medical staff working in the Ebola treatment centres. In the evenings we would cook together and enjoy ourselves, but of course cautiously because we knew that part of the group was working directly with those infected, so there was a possibility of them making a slight mistake and coming home and the infection spreading. Another area of concern was that ladies would come in to clean the house where we were staying. You didn't know whether they had infected people in their communities and now they were coming to clean the house. So after they'd gone we would go around spraying the door handles to make sure everything was infection free. 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.

On a personal level, I feel that these experiences, which could benefit others in future outbreaks, have not yet been properly documented. It's very good for us to share these experiences because we worked across three different countries, and even within a country it was difficult to compare notes. This is a good opportunity to share and to learn, so that we can improve future interventions.

The main lesson from the West African Ebola epidemic is that we need to be prepared. We shouldn't just wait for outbreaks to occur. We need to have constant systems in place to be able to identify the risks in the communities, help them to mitigate some of the risks and the impact. So I would encourage countries to have risk and crisis communication plans and strategies in place, and not just wait for disaster to strike.

In future, we also need to address psycho-social support for both responders and affected communities. We needed psycho-social support, and I think that this is one key area that needs to be addressed. There should have been continuous support, so that when you see a dead body today and tomorrow you see another one being cremated you are not always fighting your own feelings, but somebody is telling you, 'Yes, this is real, this is how you're supposed to respond, this is OK. You can cry if you want.'

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.



The protective gear made communication difficult. Training in non-verbal communication could make a difference. Photo © Loveness Isojick



Dr Appolinaire Manirafasha

is an emergency medicine and medical care specialist teaching at the University of Rwanda. He volunteered to work in West Africa and was deployed to Liberia's capital Monrovia between September 2014 and March 2015. He worked in Liberia.

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.

Before being deployed to West Africa by the African Union I received some formal training in Ethiopia, and once we reached Monrovia we were given some further training from CDC [Centers for Disease Control] in how to handle patients with Ebola. After the training I think I was fully equipped to manage all issues related to protection, prevention and control.

I was a medical doctor treating patients and I helped to train others to recognise and respond to Ebola. All the hospitals and clinics were closed except the main one in Monrovia, and we were working in the main hospital treatment unit, which was housed in tents. At the height of the epidemic in September 2014 we were receiving 10 to 20 patients a day and at least half of them were admitted with Ebola. In the beginning many health workers died because they were not aware of the disease and how to manage it.

First of all the cleaners went in to clean the patient, and then the team of nurses went in, followed by the team of doctors. Then a team of nurses carried out the recommendations of doctors, and the lab technicians took blood samples.

We were often able to save the patients who came to the hospital, but when they came with full blown symptoms of Ebola they were dehydrated and it was difficult to find their veins in order to give them fluids. It was also difficult for us to work more than two hours in the personal protective clothing and as a result it was difficult to manage patients for more than two hours at a time. I wasn't particularly worried about my own safety because I had been well trained, and if you followed the guidelines and paid attention to every step you were doing, it was OK.

I think the Liberian authorities didn't take action quickly enough when the first cases appeared and the lesson for the future is early reporting. Because previous outbreaks had been quite short, they thought it would be over in a week or so, but it just got worse.

We also need to have isolation units ready for an emergency. In Liberia it took at least two weeks to build isolation units, and during those two weeks the infection was spreading a lot. In my country Rwanda they have an isolation unit, but in my opinion the infection prevention and control measures used there are not adequate. It's too small and there are six rooms so if there is tuberculosis in one room, for example, and diarrhoea in another, they can infect each other. We had one case where the patient was

passing blood, and we suspected it might have been Ebola, but it took over an hour to get the protective clothing unlocked from the store and then to find someone who was trained to use it before we could check the patient. Those clothes need to be readily available and everyone needs to know how to use them.

It may not necessarily be Ebola in the next emergency, it could be another disease like swine flu, Marburg and other viruses that can kill people. Every hospital and health centre needs to have policies and guidelines in place so that if someone presents with certain symptoms, they need to report it immediately. This will need a lot of training and resources, but in my opinion it is better to prevent than to cure.



The Ebola Treatment Unit where Dr Manirafasha worked was housed in tents outside Monrovia's main hospital. Photo © WHO



Dr Landry Mayigane

is a Rwandan medical epidemiologist specialising in field epidemiology and outbreak investigation. He was deployed by the African Union to support the Ebola mission in West Africa and worked as the AU's Operations Coordinator in Guinea, where he supervised a team of around 120 epidemiologists and clinicians running Ebola treatment centres.

Initially I started as an epidemiologist supervising contact tracing in the field, and I was personally involved in contact tracing. It was very challenging because in Guinea the population was very resistant to Ebola responders and the communities took time to really be part of the response.

We faced a lot of resistance in the communities. I remember a couple of times 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 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 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, complex situation we were dealing with in some parts of Guinea at the beginning of the response.

I think it was around June 2014 that some health workers were killed in the southern part of Guinea, and I personally went there after that. The communities in that area were very resistant. So the strategies we used to reduce our exposure to angry communities were to involve community and religious leaders as much as possible. Those were the entry points we used to conduct contact tracing, and ensure that people who developed Ebola-like symptoms were taken to the treatment centers. But it was not easy because we were afraid, not only of Ebola, but also of the population threatening to hurt us as we were trying to help them.

For contact tracing to be successful, as Ebola responders, we need to go beyond the science of Ebola. Initially the contact tracers, case managers and surveillance teams made the mistake of focusing too much on the science of Ebola. That's maybe 60% of a good response, but the other 40% is community perceptions and beliefs, the local culture and the way they look at things, the way they treat their patients and family members who have died. We need to integrate all of that in the response so that we are able to engage communities fully, because contact tracing without community engagement is bound to fail completely.

Communities have to submit themselves to the principles of contact tracing. But you can't just tell them not to move around for 21 days when they are in quarantine: You're telling them not to go to work but how are they meant to provide for their families? To be effective quarantine measures need to be accompanied by food distributions. We also need to understand their cultures. There were a lot of problems with stigmatisation - not just of Ebola patients and survivors, but their contacts too. We need to win the hearts of the communities for a response to be successful.

Being an African coming to help an African brother, an African sister, it was easier for us to be accepted and to understand the culture, than perhaps for someone coming from Europe or from the USA. Let me just give you an example: In some communities maybe, a woman is not supposed to speak. So if you are a woman responder and if you are leading a team and you're sent into these communities, you will have trouble. Those are local cultures which have to be respected for the response to be successful.

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 [Lessons learned – what East African learned from fighting the Ebola epidemic in West Africa, held in Nairobi, Kenya from 6th to 8th November 2017] 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.

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 and his team crossing the Niger River in Kouroussa prefecture in Guinea in November 2014, to trace patients who had been exposed to Ebola in remote communities. Photo © Dr Landry Mayigane



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, 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. 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 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.

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.



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



Dr Monica Musenero

is a Ugandan doctor who previously coordinated the response to Uganda's 2007 Ebola epidemic outside the immediate epicentre, and has experience of working with many different agencies. Dr Musenero was deployed to Sierra Leone during the height of the Ebola crisis and is currently WHO's Field Coordinator in Bombali, Sierra Leone, working with the WHO Recovery Team to rebuild the health systems post-Ebola.

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. I knew that the response needed to be very rapid but what I found was a situation that was spiralling out of control. After years of bitter civil war Sierra Leone's already-weak health system had been battered and destroyed and was 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, the panic and confusion was very frightening. Thirty local nurses had already been infected and the only doctor died shortly after she arrived: It was very, very scary.

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 were subsequently traced to this one funeral.

Fighting Ebola is like being at the frontline in a war – except you can't see the enemy – it's everywhere. You cannot trust the person you're sitting next to, you cannot trust the person selling you food in the market. 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.

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.

Many of the deployed experts had a hard time adjusting to life back home once the epidemic was over. They felt 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. After five months on the front line without a break, I still had nightmares about dead bodies.

When I got home and I realised what I was going through, I just tried to get together with other colleagues who had had similar experiences, just to meet and talk. There was no system at all, at least in Uganda, to care for the carers. In fact, there was a lot more stigma because people thought you were dangerous and that you might infect them. So the isolation was very hard, and it was all quite difficult. But now we have started to talk about these mental health issues.

We really need to communicate more to the governments the importance of having trained professionals we can turn to after such trauma. We need to build capacity and put systems in place to prevent people losing their minds completely. Some had to be removed from the front line because they couldn't take the stress anymore.

We also need to reassess the training and equipment we give the health workers to see whether there are gaps, because you never know when you will be the most experienced person available. Some of the young people that came to West Africa, deployed by various agencies, were not prepared. Every day as I worked with them, I was worried they'd get infected, so I actually spent every evening trying to train them.

Governments, along with academic institutions and supporting partners need to put together this kind of training and set up mentoring schemes so that newly trained staff can work alongside people who are



"The scariest place I have ever been" is how Dr Monica Musenero described her time in Sierra Leone. Photo © Dr Monica Musenero

experienced. In Uganda we are trying to do that through the field epidemiology programmes, but it's pretty expensive and probably very slow, so we need to find a way of enhancing that.

The other problem is retention of trained staff. You can't depend on those few people when you have an outbreak. So we need a system which can multiply people, and mentor and build these skills, so that the need arises, people are confident, and we are also confident that we are not sending them into danger.

We've been trying to promote the One Health approach. I personally believe it can enrich responses to epidemics and make more people to deal with them. Because epidemics come and go, it's not possible to keep a large number of people permanently employed. You need a lot of skills to come together, so if we could build the One Health approach then we could use a lot of other people who are employed in our systems. As climate change has its effect, we're going to see a lot more of these things coming up, so the more people we have equipped the better.

Leadership and organisational capacity should also be improved. I was deployed as an epidemiologist, but 80% of my time was spent in leadership and organisational roles, trying to organise things, because there was nobody to do that. We need to equip people with leadership skills and we need communication skills, not just for people who are designated social mobilisers, but we need every responder to have communication skills, so that they can communicate with the various people.

I also strongly recommend that before we deploy international experts who have not been through something similar, we have a place where we take them through some rapid training. It was very heartbreaking to see people coming from the U.S., people coming from other countries, all very well-meaning, but then they have to be evacuated because they had been infected or exposed. They really wanted to help, but this is not what they were

used to, so we need to have a place where we train them before they are deployed. I think we could have reduced a lot of that exposure and infection. We also need to manage their emotions, because at the front line in an epidemic like that they're not going to find the meticulous hospital environments they are used to. The Ebola treatment centres were chaotic, and if you deploy somebody who's used to working in an organised hospital with proper infection prevention measures, they just get upset. So it is important to train and prepare them for what they will face.

I remember having a run-in with one American clinician. He said 'You cannot bring in any more people with Ebola from the field because there is no space.' I told him 'If we are going to stop the spread, we have to bring them in. If we leave them there, they will infect everybody.' He understood what to do with the patients but he did not understand what was happening in the community.



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

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. When I was deployed by WHO, my job was to build capacity in infection prevention and control. Since the health services were very weak after years of conflict in Sierra Leone, and 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.

It was about putting standards in place, but it also needed support from the Ministry of Health and local leaders. If a hospital had no water, they would have to come in and supply it because you can't implement infection prevention and control without water. There needs to be water, because hygiene is paramount in infection prevention and control.

One of the biggest challenges I faced in my work was getting to the healthcare facilities, as they were quite far away and the roads were 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. In each health care facility we had to train staff about the basics of prevention control so that we could get better results. We were told to set up isolation units, but the staff didn't know how to run them so we had to do a lot of training. The knowledge gap was one of the biggest challenges.

One of the biggest lessons for me personally was that by working together as a team a lot can be achieved. Secondly that following good infection control protocols and procedures can prevent infections. But training needs to be constantly refreshed. There also needs to be proper coordination and preparedness planning, otherwise what happened in West Africa might happen again. Frontline workers need someone to direct and coordinate them.



Doreen Nabawanuka

is a Ugandan nurse working at Mulago National Referral Hospital in Kampala as an infection prevention and control specialist. She was deployed to Sierra Leone in 2014 for six months by African Union, and then for a further year by WHO. She worked as an infection prevention and control specialist in Sierra Leone for 18 months.



Dr Bella Nihorimbere

is from Burundi and works as a medical officer specialising in HIV and AIDS. She was deployed to Sierra Leone between November 2015 and April 2016, where she worked in Bombali District.

I was deployed by the African Union as Medical Doctor and I worked in the Red Zone in the Ebola Treatment Unit, in case management. But by the time I arrived the ETU was well established and the virus was decreasing, so it wasn't the hot moment.

At the beginning I was really scared to go inside the Red Zone. But we were following infection prevention and control protocols and with time gained confidence to work there.

Patients were dying from dehydration so, with the other doctors, we tried to find ways of addressing this by giving infusions and using drugs, following WHO guidelines. It was a challenge, but we succeeded because we had the highest level of people who survived. We were proud of that.

The conference [in Nairobi, November 2017] has been very useful because after we went back home, nobody asked us what lessons we learned from our experiences in West Africa. It is important to learn these lessons because in my region and in my country, we must know about Ebola, how to prevent it and if there is an outbreak, how to stop it before it spreads everywhere.

In my country we don't have a unit preparing for future outbreaks. We really must set one up. What happened in West Africa could happen in Burundi. In West Africa they didn't know about Ebola, and that's why it was such a massive epidemic. So my country needs to be prepared and we need to set up a special unit, not only for Ebola, but for other outbreaks of infectious diseases too. Preparedness is the key.

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.

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 the protective devices 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 deal with the stigma. Many people who lost their families were stigmatised by their society or their communities. So we were trying to reduce that stigma, and we were trying to educate people that this is a disease that can be contained.

It was traumatising, because after dealing with people who were showing signs and symptoms of stress and post-traumatic stress disorders, we had nowhere to go and get counselled ourselves, so it was very draining emotionally, as we tried to cope with it.

Liberia was a war-torn country, and people had already lost loved ones in the war, so they had not healed from these previous massacres. The stress, depression and trauma were still there. It was very sad for them because they had not dealt with the grief for the previous loss and now this disease comes and takes away yet more family members. I was very aware of this when I was giving therapy. Some would actually remind you, 'I lost my husband during the war, and now I've lost my son as a result of Ebola.' So hearing these stories, as a human being you also felt traumatised. But we were not getting any support or counselling.

I was the coordinator of the psycho-social team, but there were only four of us, so it was very hectic. The other challenge we had was logistics – 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 came home 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

is a Kenyan mental health nurse who specialises in counselling and psychology. She was deployed to Montserrado County, Liberia. She is a Kenyan mental health nurse who specialises in counselling and psychology, was deployed to Montserrado County, Liberia.

Another thing that worried me as a counselling psychologist, I felt I had left my clients hanging when we left West Africa. The Ebola outbreak might have been declared over, but 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 had bonded fairly well. They didn't want us to leave because we were helping them to heal. All of a sudden we had to tell them that our flight was leaving on 28th June. That was very traumatising because I knew how they were feeling. Personally, I made friends there, and after I came back to Kenya we kept in touch. How are my people there? What's happening in your case? I really wanted to know how those people were doing.



Teresa giving psycho-social support to students at Caldwell school after the last case of Ebola has been identified in Liberia. Photo © Teresa Wairumu Thuku

The medical emergency was over, but the work of treating the psychological and emotional fall-out was only just beginning. And even then, the stigma continued because people were not well informed. I thought the psycho-social team should have stayed for another six months, if not a year. In that time we could have trained local counsellors and therapists to take over and to deal with the problems. So it just felt like I'd walked away and that was personally very upsetting for me. I really felt it.

In actual fact, I worked with the family of the last person to die of Ebola in Liberia. The woman's husband had died, and she later died too. Her brother had been looking after her, and when she died, people really stigmatised that man and he was so depressed. I had to leave him with that depression because I was told my ticket was ready, and we had to leave. I wished I could have left someone to take care of him.

When we came back home to Kenya I expected the Ministry of Health to provide counselling and psychologists to help us deal with the trauma. Instead we were just quarantined in our homes. The government should have organised a team of counsellors to support us during those 21 days of quarantine. Or they should have put us all in a hotel or another place for the quarantine period, so that when we went home people knew that we were not infected. Instead we went straight back to our families. Family members and colleagues were afraid to come close to you. Once I had a common cold and people thought I had Ebola. It was really hard to mingle with people. There was a lot of stigma and ignorance in the community.

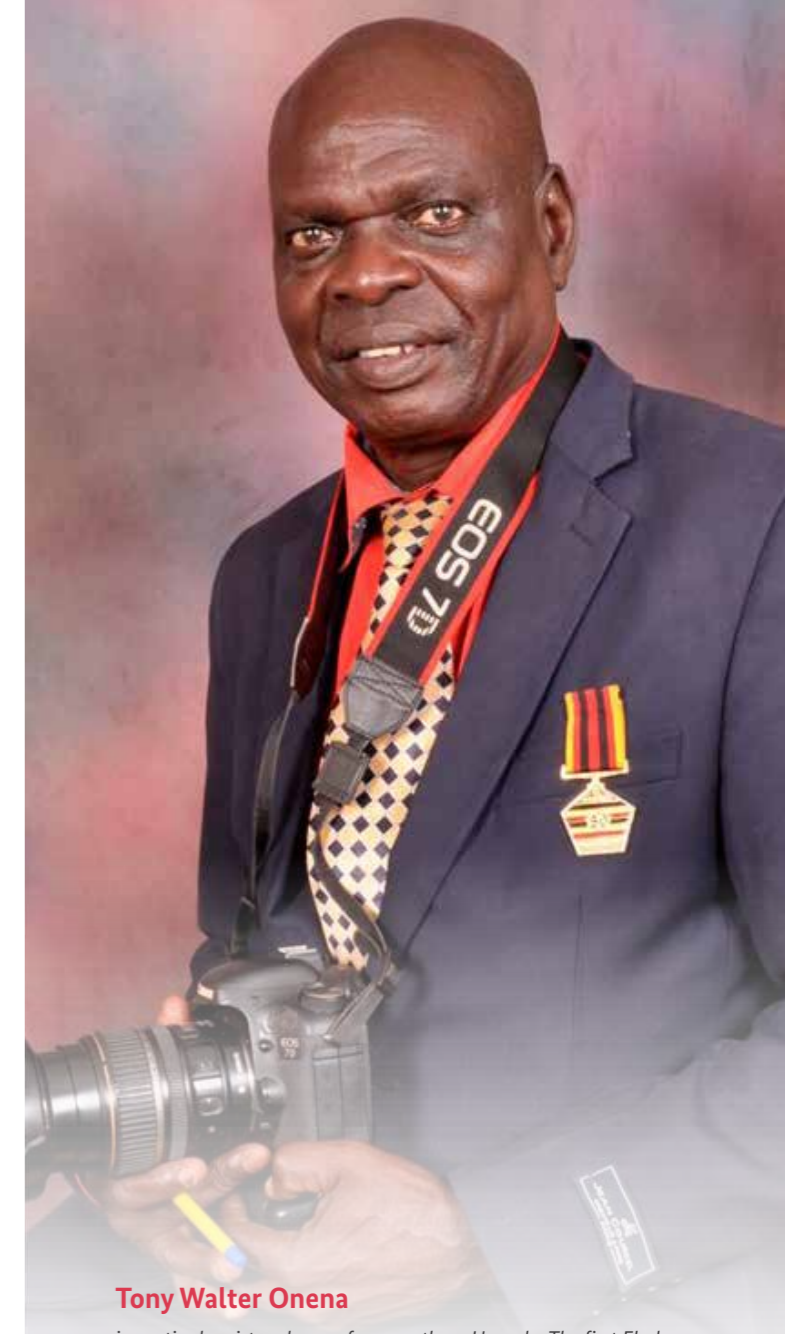
Please, if there is a future outbreak somewhere, even if you make arrangements for people to go for three months, make sure the psycho-social team will go for at least six months or a year, because it is what follows later that really pulls people down.

It was the sixth time I fought Ebola. In Uganda I had fought Ebola five times, and the sixth time was in Monrovia where I went as a consultant case manager. What I had seen in Uganda actually 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. I should have been among the dead, but I managed to survive. By the time we had the second, third, fourth and then fifth outbreak, I had gained a lot of knowledge about how to deal with Ebola.

I'm capable of mobilising the community, training them. Providing that they are good listeners, it should be possible to eradicate an outbreak of Ebola in two months. But if they are poor listeners like those ones in Monrovia, then Ebola can take a long time to eradicate.

In Monrovia, we told people, 'Don't be shaking hands. Don't be touching your colleagues. If one of your relatives goes to visit somebody somewhere, that person should not come back to the community. People should stay where they are.' But people were not listening. In the evenings in Monrovia, you'd find people making love, touching their girlfriends. It was very risky. And when we went to church I was scared because people sat very closely together. In Gulu we designed a system whereby people had to sit at least a metre apart in Church, and as soon as prayers were over, everyone had to go straight home. Activities were similarly restricted in the markets. So fighting Ebola in Gulu, Northern Uganda, took us a very short time because people were good listeners, but in Monrovia people were not listening to what we were telling them.

I worked at the John Frederick Kennedy National Hospital, where all referrals from Monrovia were sent. The medical staff had fled in fear because so many had died already, so Ebola patients had been left for three weeks. That was a great mistake because the virus was continuously multiplying at a rate I cannot just imagine, because nobody



Tony Walter Onena

is a retired registered nurse from northern Uganda. The first Ebola outbreak in East Africa occurred at the hospital where he was working. He then fought Ebola five times in Uganda before being deployed by WHO to Liberia as a case management consultant. He worked as a registered nurse in Liberia. Photo © Tony Walter Onena

knew what to do. They were also doing some risky things, so when we arrived we tried to rectify everything. We started by training, so that we could be with health staff who knew how to fight Ebola. Everybody should be trained if possible, even non-medical staff like cleaners because a patient may vomit on the floor, so they should be trained to know what steps they can take to avoid cross-infection.

I think a lot could be done to improve personal protective equipment in future outbreaks. When you are working in a hot environment in personal protective equipment [PPE] you cannot stay in the isolation unit for more than two hours - two hours is just too much. When you get out it is as if somebody has poured water on you because you sweat so much. 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 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 in the isolation unit. 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.

I also think cameras should be placed on the wards, both so that medical researchers and journalists can know what's going on there and report the facts, but also so that patients can communicate with their families outside the isolation units. Without better communication we will not move a step forward.



Tony Walter Onena (right of centre) and other Ugandan health workers who had been deployed to West Africa were thanked for their courage by President Museveni. Photo © Tony Walter Onena

Acknowledgements

First and foremost we would like to thank all the East African health experts who shared their experiences of working in West Africa during the Ebola crisis, either in interviews conducted or in their written testimonies. The first-hand accounts in this booklet are just a small sample of many hundreds of remarkable personal stories from health workers who volunteered to be deployed to West Africa. It took immense courage, self-sacrifice and determination, and in many cases really took its toll on their mental health, families and jobs back home. Their unique experiences and extensive knowledge gained during this and previous Ebola epidemics needed to be 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.

These first-hand accounts should be read in conjunction with the conference report

Lessons for the Future - What East African experts learned from fighting the Ebola epidemic in West Africa

which gives a much more detailed account of the discussions and deliberations, as well as a summary of the agreed lessons learned and recommendations for the future.

Thanks must also go to the East African Community Secretariat for hosting the conference in Nairobi in November 2017 which brought together over 50 of these deployed experts in order to document these experiences and learn lessons from them. 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.

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Video interviews with some of the conference participants recorded by PixelsKenya (www.pixelskenya.com) can also be viewed at the BMZ's (German Federal Ministry for Economic Cooperation and Development) youtube channel "Healthy DEvelopments" (<https://www.youtube.com/user/HealthyDEvs/search?query=lessons+for+the+future+ebola>).

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Ruth Evans - Lessons Learned writer





Together we can defeat Ebola. Photo © WHO

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