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**One Year Later, Where does the U.S.  
Response to Ebola Stand?  
Kaiser Family Foundation  
November 23, 2015**

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**JEN KATES:** I'm Jen Kates from the Kaiser Family Foundation. Welcome. We hope all of you survived redline delays and other travel challenges on your way and we're glad that you are able to be with us. Today, we're here to look at the U.S. response to the West African Ebola outbreak from last year.

It has been almost a year since the Congress appropriated \$5.4 billion for this response and a little over a year since the U.S. really kicked up its engagement. So, we are pulled together and expert panel to talk about the current status of this effort and hear where we're going from here, what the challenges are now, and really how to think about what we've learned but really for the future here.

As backdrop to this, we're releasing a report today on looking just at the emergency appropriation from Congress to try to unpack what was in it, what the status of that funding was, and I want to just acknowledge that this was really a team effort at the foundation in addition to myself and Josh Michaud, who will be coming up in a little bit. Our colleagues Adam Wexler and Allison Valentine did the bulk of the analytics work here so thanks to them.

I also want to acknowledge that today a very important other report came out from an independent panel convened by the London School of Hygiene and Tropical Medicine and the Harvard

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Global Health Institute about the Ebola response and I think our panel will talk a little bit about what that panel, what that independent panel found. So just turning to the report, I'm going to highlight a few slides. These are all in your packet. The report is posted but just to give us some background on the funding.

So, I'm not going to go through this but just when you have a chance, it's always good to look back and see how, what happened over this year and a half or so or a couple of years almost since the first cases appeared in Guinea and then Liberia and when there was actually an emergency response declared by the WHO in August after NGOs flagged that warning and interestingly that in September 2014, UNMEER was formed. In July, this past July, it closed and just last week as everyone who follows us knows, there were some new cases found in Liberia. So, this is an ongoing real-time challenge.

The U.S. response, so the U.S. activated its DART team, the USA DART (Disaster Assistance Response Team) in August of 2014, the beginning of August. CDC shortly thereafter activated the emergency operations center and then in September of last year, President Obama announced the expanded U.S. response with the deployment of military as well. And prior to passage of the emergency appropriation, the main agencies involved had already committed about 770 million to the response effort.

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So, the emergency request that the president made back in November was for \$6.2 billion. The actual appropriation from Congress was a little less, it was \$5.4 billion and the difference was in part because the president had requested a contingency fund of money that would be at state, USAID and HHS. Congress did not provide that but provided some additional or some emergencies type contingency funding for the Office of the Secretary at HHS, not that full amount but part of it, so that's the difference.

Importantly, because this was considered an emergency appropriation, it didn't count towards the existing budget caps and the funding as it says in the bill can be used to reimburse the prior expenses that the agencies had already been spending. So, this is what it looked like. If you try to breakdown that \$5.4 as best as possible into how much was designated for international activities, domestic activities and research and development, there are some fuzzy lines here and there.

Obviously, R&D can be international, it can be domestic. Some of the domestic work also has some authority to be used internationally but this is roughly how it breaks down. And you can see more than two-thirds was for the international response. And then looking at the agencies that received the funding, almost half was for USA, then followed by CDC and then several other agencies.

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And then finally, the funding was made available over different periods of time and in the report you can see this by agency as well but about a third, actually a third was available until expended so there is no time limit on the use of those funds. And almost half is available for the five year period, so at the end of fiscal year 2019.

So this is very much still in play in terms of the activities. Here, the actual activities, the big picture, we have more detail in our report, with the USAID being the lead agency for the immediate disaster response, state doing assistance prevention, preparedness, etc., and then CDC of course being the medical lead.

Several other agencies have had R&D funding from the emergency appropriation. This is the status by these agencies. Now this is just focused on the international amounts so the main thing to look at is a little under \$2 billion has been spent thus far on the response and there's additional money that has been spent domestically but this is the best counting that can be done to look at the amount spent across the agencies for the international response.

So, some questions that I'm going to leave our panel to talk to us about, where does the U.S. effort stand now and how is funding being used? What are the plans in place to ensure sustainable efforts to defeat Ebola and transition beyond this phase and what have been some of the successes and challenges

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and what is the road ahead? So, to lead this discussion and kick us off, I'm going to turn this over to my colleague, Josh Michaud and he will invite our panel up to talk. Thank you.

**JOSH MICHAUD:** Thank you. Good morning. Please, panel, come up and join us on the stage and I'll be sitting right next to you and we'll go through and have a set of opening remarks from each of the panelists as we go.

So, good morning, good morning, it's a pleasure to have everybody here this morning. And, we have a distinguished panel here to talk about this topic today and it's my honor and pleasure to be the moderator for this panel. I'm Josh Michaud. I am the associate director for global health policy here at the Kaiser Family Foundation.

And I would first introduce our panelists today and each one of them will have introductory remarks, as I said, as we go and then we will have a moderated discussion and then we will open it up for questions from the audience for the last 15 or 20 minutes of the panel. So, to my left is Denise Rollins who is the Senior Coordinator for the African Ebola Unit at the USAID and recently returned from an extended trip to the Ebola affected countries. Thank you for being here.

And to her left is Barbara Marston who is the Director for the Ebola Affected Countries Office within the Division of Global Health at the Centers for Disease Control and Prevention and also recently returned. And to her left is Tolbert

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Nyenswah who is the Deputy Administer of Health for disease surveillance and epidemic control at Liberia's Ministry of Health and he has of course recently arrived from Liberia and will have to head back soon in order to address the ongoing situation which we will talk about.

And finally we have Rabih Torbay, who is the Senior Vice President of International Operations for the International Medical Corps. And before we get into the opening remarks, what I wanted to do first was just to summarize very briefly the key points that came out from the independent panel report this morning. This was an effort to bring together experts across a variety of disciplines within global health to talk about recommendations about how the globe could respond better to Ebola, what are the lessons that could be drawn from the response, how things could be better for the next outbreak response.

And really I would say there are four key points that the panel brought up and it could inform our discussion here today which is why I'm bringing it up. The recommendations from the panel, and there are 10, they focus on four main areas: Better prevention, better response, better research and development, and a better global system to address emerging disease outbreaks.

And on prevention, the focus is on making sure that all countries have invested adequately in their domestic systems

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for prevention, detection and response with validated external assessments of those capacities. In terms of response, the dedicated capacity within world health organization to conduct response was a priority and research and development was an important focus for the report, the sharing of data, the transparent sharing of data, the establishment of dedicated centers for research and development were the focus of the recommendations from the report and in terms of a better global system, establishing a specific U.N. Security Council global health committee to address global health threats, and then major reforms to the World Health Organization itself.

I don't think we'll talk about all of those things in the course of this discussion but certainly they are a background that is important to know for our discussion today. So, without any further ado, what I am going to do is turn it over to each panelist to provide some opening remarks about the key topics that we are focused on today which is where the U.S. government stands in its effort to address Ebola and in this transition phase from emergency to sustained response, so  
Denise.

**DENISE ROLLINS:** Okay and I have some handouts there, too.

**JOSH MICHAUD:** You have handouts?

**DENISE ROLLINS:** Yeah, just the top. Now there may not be enough, can you hand those out? And there may not be enough

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for everyone so maybe you can share but basically what this does is provides the framework for USAID's funding for Ebola, which we will see is that we have four pillars. The first pillar is response and that is where we have been most heavily involved with the Office of Foreign Disaster Assistance and the DART teams that have been on the ground.

I want to start with this particular slide because that is where we are now in the response. As you can see everything peaked around October, November, December last year and now we are at the tail end and some of my panelists will discuss further about where we are with the response. I will quickly go through this.

So, this is the slide that I wanted to talk about. So, as you can see, controlling the outbreak has been the major focus of our efforts over the last year and change, but right now we are transitioning into a recovery phase. The recovery phase and Congress was very generous and gave us resources in order to address not only the health issues but also the economic and food security issues that are going on in these countries.

So under pillar two, we talk about recovery from second order impacts. There are five components to that. The first is on food security. As we know, the farmers were unable to tend to their fields. The borders were closed so trade stopped and it was very difficult for people to get the food that they

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needed for their families. And so under our Food for Peace program, we provided resources for food and one of the kinds of different aspects with Food for Peace is the fact that Congress allowed us to use money rather than commodities.

If you know about our Food for Peace program, normally we bring food from the United States. In this case, we were able to purchase food within the countries to keep the markets operating. So, over 300 metric tons of rice was bought in Liberia for example in order to make sure that food packets were provided to vulnerable populations.

In addition, cash vouchers were provided to the families in order for them to purchase seeds, agricultural inputs, etc., so that when they were able to tend to their fields they could do that. And we also provided funding to the World Food Program so that when schools started again, there would be hot lunches for the children.

So, that is kind of the food security overview and although that says 620 hundred thousand people that is actually closer to 1.5 million people in the region who have received support from the food security activities of our program. And so those are some of the activities that have happened in each of the countries.

So the second component, we call it non-Ebola health services. What that means is just restarting the health services that were there prior to Ebola and we are looking at

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immunizations. I think everyone knows the health system was only focused on Ebola and not on the other essential health services such as maternal and child health, immunizations, and just getting people back into the clinics.

And so just last week I was out in the region and could see that people are beginning to go back into the health facilities. They are not at the levels that they were prior to Ebola but we are starting to see people trickle back and women coming back in for antenatal care. There have been a couple of mop-up campaigns on immunization and there is treatment starting to rev up again for malaria and so some of our resources have focused on this.

And so in Liberia, we work in 120 clinics but the Ebola resources allowed us to expand to 61 more clinics and so we were in three counties. With these additional clinics we are now in six counties in Liberia and working on re-establishing health services.

In Guinea, we are in 185 clinics in our regular development program. The Ebola resources have allowed us to expand into 55 more. And then in Sierra Leone where we didn't have a health program we had to really start from scratch and that's where we are in 361 clinics in Sierra Leone.

The third component of our recovery effort is on health system strengthening, health systems recovery and the focus there is on supply chain and logistics management, making sure

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that the essential drugs and the personal protection equipment and all of the things that are necessary are in the right place at the right time. And so we are working in all three countries on that.

Key to all of this is human resources for health, getting people trained up so they know what to do. They know how to use the equipment. They know how to use the medicines that are being provided through this. And of course, health governance and management and this is making sure that you have appropriate supervision, that you have systems in place so that if and when there is another outbreak of something, just as you saw in Liberia recently, everyone is aware of it. They manage to get people tested into isolation if necessary and then you can bring fence and make sure others are isolated from the population. And these are some of the activities in the health systems' recovery in the three countries.

We also thought about in addition to the health situation and the food security, there is the role of civil society and governance in these countries was tantamount and so we have provided resources to work with civil society so they can become better advocates for their own health and for their own communities, also some of these resources are focused on antidiscrimination, trying to reintegrate survivors back into the community.

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We've also provided funding to get the schools restarted. Last week, we were in Liberia and they had these school kids that we had provided through UNICEF so that the parents don't have to pay for the supplies and things that they need for school. In Liberia, we are also working on water and sanitation. We are providing in three communities that were badly affected by Ebola new water supply systems for clean water.

And these are some of the results. For Guinea, for example, I think several months ago health care workers went into some of communities and they were attacked and so what we've tried to do is to work with these communities, particularly around the elections because it was getting very politically heated. We did a lot of broadcasting. During the elections, as you know, they did have peaceful elections a couple of weeks ago.

In Liberia, we have been working with Search for Common Ground. They are in the six communities and again trying to get survivors reintegrated into communities. And in Sierra Leone, we are just getting started with the civil society program there.

And of the five components, the final piece is innovation, communication and technology. During the crisis, we saw that health management information systems were very weak. And so we have embedded two advisors in the Ministry of

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Health in each of the three countries to help them improve their health management information systems.

This activity has also funded the Grand Challenge, the Grand Challenge which came out in November, a year ago, where we were looking at innovations and there were 14 innovations that were selected. Two of them have to do with new PPE suits. I have got an example of one on my Twitter feed, as a matter of fact.

And then there are some others regarding fever panels, cooling systems, etc., that we're looking at the next phase to see if we can get those developed. And so there's the Grand Challenge but we also had abroad agency announcement and that was where we were looking for partnerships to partner with organizations in order to develop more innovative practices across the three countries.

And the third pillar, if you see the sheet, the third pillar is actually management and operations so that is staffing and the Inspector General who happens to be represented here today. And then our fourth pillar is the global health security agenda and this is where we are working in actually 30 countries around the world, 12 are in Africa and three of those 12 are in the three affected countries. And it is to prevent threats and to respond rapidly to any outbreak of any pandemic disease.

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So, in terms of the pathway forward, obviously we talk about a resilient zero now. We know that there are going to be popups but as long as you can get the systems working so people can get isolated and treated and monitored, that is ultimately what we want to see happen. We are in the transition from response into recovery now and then we are also focusing on survivors.

While we were out in the region, we met with survivors' groups. We met with the international community, NGOs, the other donors, and the governments to talk about what kinds of services we could as the U.S. Government provide to support survivors in their efforts.

**JOSH MICHAUD:** Thank you and so we will turn right over to Barbara and see if she can talk about the CDC's engagement in this response. Thanks for being here.

**BARBARA MARSTON:** Thank you, Denise, and I will try and go quickly to leave a little bit of time for discussion because Denise has covered some of the things I have here. I started with just a list of some of the things the CDC was focused on in the response. We are up over 2,000 international deployments now and some of the activities there so working on emergency response coordination, specifically on some of the epidemiologic aspects, case detection, contact tracing, and you can see others there.

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Denise has covered this. This is more like where we are now. Unfortunately, it doesn't show the few days of last week where there had been additional cases in Liberia but it is interesting to note the amount of work per case goes up phenomenally when you have few cases and the total amount of work doesn't seem to go down all that much, even though the numbers of cases is dramatically controlled.

This is kind of where we are right now. This is the Wall of Cures from the Ebola treatment unit in Forecariah in Guinea including some of the kids that were treated and released successfully just in the past couple of weeks. As we talk about recovery, I just want to make the point that some people have said build back to where things were before and I think it's really important to note that these are some of the poorest countries in the world, that the infrastructure was weak at baseline.

This is a picture of Redemption Hospital and it just gives you some idea that if we'd just go back to where things were, they probably won't do well enough. We really want to go back to where we were and hopefully way beyond that both in terms of how capacity and the ability to respond to health threats and there are a lot of serious health threats there.

The epidemic of course had tremendous impact so we took a difficult situation and made it worse. I think specifically to highlight the deaths of health care workers themselves and

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the number of health care workers that died as part of this epidemic has a meaningful impact on the number of available health care workers in the region. But then other things, so loss of confidence in the health care system that Denise mentioned, interruption of supply chain, interruption of vaccination campaign.

It's not all bad news. The one thing, the last bullet there, is that the outbreak did allow development of a range of capacities for response and I think we are going to be able to tap into that, the world is going to be able to tap into that, and the region will going forward. For CDC, our focus is somewhat less complicated than USAID so it means I should be able to do it pretty quickly.

The efforts in the response and our efforts in the recovery are really very similar so what we do in the response, working on surveillance and laboratory capacity and human capacity and coordination of a response, those are exactly the areas we focus on in recovery. We are establishing country offices in all three countries and our focus for the moment remains get the outbreak controlled but obviously we'll be moving into recovery and the two aren't separate so a lot of efforts have begun on the recovery so far.

I'm going to skip this because Jen did a better job on the funding than I could. And the next two slides just kind of explain what I was trying to say a moment ago. If you think of

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the things that we're focused on for CDC, response, recovery and the efforts related to the Global Health Security agenda in preparation for health threats, for us it kind of looks like that. They are all three really one in the same thing. So, we have a fairly straightforward set of activities.

These are some of the action packages within the Global Health Security agenda and they include laboratory system surveillance work for risk development and you will see that those are high on our list of focus areas. So here are our focus areas in recovery. Again, they are the same things, the exact same things that we would have been working on for Global Health Security if the outbreak hadn't occurred.

There are a few things that are specifically highlighted in the core GHSA activities and a few maybe not so much so infection prevention and control I think probably needs a bigger focus than it originally had in the planning for GHSA, the same for some of the border health activities and I think health communications is another one. It doesn't show up very large in GHSA but it is an important component of all the elements and something we need to focus on here.

When we are doing that kind of activity in the context of a just finished major outbreak or hopefully just finished major outbreak, there are a few things that are different and I've mentioned them here. So, I think we need to maintain enhanced surveillance for Ebola because of the recent outbreak,

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or almost over outbreak I hope, and then support survivors, like Denise mentioned they need a couple of different things. They need clinical services and other services but we also have to pay close attention to them because survivors might be the most likely source of reintroduction of Ebola in the region.

And so some of the activities that we'll have to work on are listed there, clinical services, support for livelihood, but also sexual risk reduction counseling, semen testing and possibly as we learn more about survivors, paying close attention to the possibility of viral persistence or recrudescence. Not our main focus, but obviously there are other very serious health threats in these areas and we want to do what we can to provide technical assistance at least to some of the other major issues, TB, malaria, the general public health capacity in the Ministries of Health and also the research capacity, and I will quit there.

**JOSH MICHAUD:** Tolbert, it is a pleasure to have you here and thank you for coming all the way from Liberia. Now, if you could both talk about the topic at hand and also give us an update on the cases in Liberia and what we know and what we still need to know about the cluster of cases and we would love to hear that and your thoughts on how the transition is going from the emergency response to a more sustained response in Liberia from your perspective.

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**TOLBERT NYENSWAH:** Thank you. Thank you, Josh, thanks to the panelist colleagues, thanks to the participants. Thank you for coming out. It is indeed really a privilege to be here and be part of the team and be at the Foundation to give highlights on the Ebola crisis in the West African, especially most affected countries, Guinea, Liberia, and Sierra Leone.

And also, on behalf of the government of Liberia representing the president, the government of Liberia and the people of Liberia, to express our deepest gratitude to the people of the United States of America and also institutions of the United States of America who helped very greatly in bringing the situation back home in Liberia under control during the days that it was really difficult.

And I say difficult when we were talking about 60 confirmed cases, that the 600 to 800 confirmed Ebola cases per day, no more deaths in the streets, no Ebola treatment units, lack of functioning laboratory system to detect coordination, command and control became very difficult because of lack of logistics, lack of support, lack of resources. And also, with a huge delay also in the international response in terms of operation, in terms of logistics, in terms of planning, in terms of financial support, came very late when the three countries reported initially based on the eye chart as international health regulation, that when there is even the Ebola, this should be reported within 24 to 48 hours.

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We did report that in the month of March of 2014. For Liberia and Guinea, until you saw the events of how things unfolded with the Ebola crisis, when Liberia reported the first case in March, Sierra Leone in May of 2014 and there was response on the ground, actually after the cases were reported. But as I said earlier, lack of capacity made the Ebola virus to chase us more than us chasing the Ebola virus from the very beginning of the outbreak.

But to my best collection, what did happen was in the month of August the establishment of an incident management system as a replica of the CDC, when Dr. Tom Frieden himself went to Liberia in the month of August of 2014 and reported to the rest of the world that Ebola was not only a West African, Liberia, Guinea and Sierra Leone issue, but it was really a global public health problem and needed the support of the United States.

And actually when the international committee came in, they really came in huge with the kind of support and brought back confidence to the affected countries, brought confidence to the Liberian people, brought confidence to the West African people, and we saw this search capacity of building Ebola treatment units more than 1,000 beds in Liberia, building a lab system that could test via hemorrhagic fever for Ebola.

We had about 10 labs that were built managed by the CDC and other organizations, bringing in epidemiologists and

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contact raisers, people who could go house to house and investigate a disease and reporting, investigating, isolating, brought in capacity for managing cadavers. We had barrier teams who were moving dead bodies from the houses, from the streets, from treatment units and moving them to burial sites.

But Liberia had to switch and made a hard decision on cremation, something that was in the culture of the Liberian people. We cremated over 2,000 bodies to make sure that we reduced resistance. We reduced agitation from the communities because people were very much terrified, panicked, afraid of the Ebola virus disease.

The corroborate on some of these things that you heard from CDC and USAID, the U.S. Government really has a very strong ambassador in Liberia called Ambassador Deborah Malac played a very critical role, collaborated with the president of Liberia's office under the leadership of the presidential Ebola council called PEC, that was coordinated and myself as incident manager, headed, coordinated the entire response, was reporting to the president and the ambassadors to ensure that we've got the situation under control.

And so the USG, there were a lot of organizations that we dealt with and Liberia's response was like a multinational response. We got the Americans, we got the Chinese, the Europeans, the Germans, the Cubans, the African Union coming in and were able to coordinate the entire team to ensure that we

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have one response, one plan, one coordination, one strategy; and so all of the U.S. agencies, for instance the ambassador's office, USAID was supporting with the DART team giving logistics.

I personally worked with U.S. Generals, the Department of Defense, did send in the generals, General Darryl Williams, General Gary Volesky, those guys were awesome in the support that they provided. We could fly vertically and horizontally everywhere we wanted to go to provide logistics and I was one of the few building ETU's with the generals on a few dusty roads, DOD was about to play in working with our armed forces of Liberia to provide us support in building treatment units.

CDC was also awesome. We had epidemiologists; we had contact tracers, the laboratory team from CDC, at very high level with people like Kevin De Cock and Barbara herself several times went on the field. We had OFDA, USAID giving support, financial support to organizations, IMC was right here by my side to build treatment units in Bong County and other areas, USAID supported IOM, international organization for migration, they built some ETU's also.

We had organizations like NIH in research about vaccine research going on in Liberia, clinical trials. This was a collaboration with the government of Liberia and NIH to support two vaccine candidates that are very much promising. As I speak now, we are beginning ring vaccination with the new

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contacts in Liberia to prevent people from coming down with Ebola when you are a contact.

And one thing you're trusting also is the United States Public Health Centers (USP), built an ETU for health care workers. So, our health care workers had an ETU (Ebola treatment unit). When the outbreak started, health care workers globally were afraid to go in a region because of lack of medical evacuation but that treatment unit was built and gave strong signal and courage to health care workers to move back in the region, especially in Liberia, to give support.

So organizations, WHO, CDC, USAID, UNDP, U.N. agencies, the USG resources were also supporting the World Bank and other institutions on the ground to beat the Ebola virus disease in terms of laboratory and other capacities. As we speak, Liberia has beaten Ebola twice, was declared Ebola free twice. The 2014, the first wave of the outbreak was declared over by midnight of 2015.

That was the long stretch of the outbreak, from 2014 to middle of 2015, killed more than 4,000 persons, killed 192 health care workers, affected 373 health care workers, about 1,548 survivors of that disease, created more than 3,000 orphans, that long stretch of the outbreak. That was over middle of 2015. And then, when Ebola free, by the time we got a note by June 29<sup>th</sup>, we had another outbreak.

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That one was two months, went for two months, and then we were declared Ebola free for the second time on September 3<sup>rd</sup>. I said okay, let me have some rest [laughter], came and then the news is not too good. We have like three confirmed cases in the ETU right now as I speak from a 15 year old boy, they are all family, but that because of the capacity we've got over the couple of months and years since the Ebola crisis, we did it very carefully, no need for panicing, you can fly back to Liberia and enjoy yourself.

Flights are moving in and we hope to work with the team on the ground to put this under control. And so I think if it wasn't for the support of the United States government and other governments around the world, the Ebola crisis would have killed more people than it did. The number of lives, 10,000 to 11,000 people, 28,000 cases of Ebola in the region.

Though the world came in late, but when it came in, it was huge. We appreciate that. Thanks to Congress and President Obama and the American people for providing the resources that they provided.

As I told Josh, I won't comment on how the resources were spent by the penny, these agencies will take care of that but by the evidence and to corroborate what they said, I saw the capacity, the support, the logistics and U.S. agencies really working on the ground to give that kind of support that was desired by the Liberian people. And now we are recovering.

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We have an investment plan. It has nine areas: for health infrastructure, rebuilding health care services and those things we're concentrating on right now and also looking at the surveillance system to prevent, detect and respond is the key strategy under the Global Health Security agenda and other agendas for building on and aligning with the Liberian health care plan.

And so I will stop here. The story is long. I think these are the support that we have got from the American people and American government, we highly appreciated that. Thank you.

**JOSH MICHAUD:** Thank you, Tolbert. And, we will come back and touch on some of the things that you brought up in our discussion. I will turn to Rabih now. Your organization has been involved from the early days of the response to Ebola in West Africa so giving your perspective as a representative of a non-governmental organization involved in this effort, how did it go and how is the transition going and what kinds of activities do you see being effective going forward in the transition?

**RABIH TORBAY:** Well, thank you, Josh, for having us here and actually I'll start where Tolbert ended and I'll add a little bit there. First of all, we should all be proud of the U.S. government's response and leadership to the Ebola crisis in West Africa. It wasn't just the U.S. government funding but

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also the U.S. government was the first to respond and encourage other donors to actually get engaged in a crisis that we haven't seen something like that before.

But also, Tolbert was very modest. Your leadership on the incident management system was phenomenal. We couldn't have done it there without the leadership of the government of Liberia as well. International Medical Corps did not have any experience working in Ebola before. And when there was an announcement that Ebola was actually spinning completely out of control, we decided to get engaged and we sent our team to Liberia and Sierra Leone in end of July, early August of 2014.

And we started working with the government as well as with USAID. USAID were the first ones to give us a grant to actually start building Ebola treatment units, Ebola treatment tent was built by Save the Children for us in Bong, and we staffed later on in Margibi and we set up also Ebola treatment units in Sierra Leone and later on in Guinea.

And one aspect that we saw was missing was actually a training component, intensive training component, so we started an intensive training component to encourage other organizations to actually come in to those countries and start their Ebola treatment units, start with the community mobilization dealing with communities, and that was a very successful program for us. I think it is one of the main

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success stories that we can take pride in in addition to the Ebola treatment units that we're running.

As I mentioned, we expanded into Sierra Leone and Liberia and, I mean, and Guinea and later on to Guinea-Bissau and Mali and Guinea-Bissau and Mali was mainly preparedness, which is something I'll touch on in a minute. We had about 1600 people working for us in all three countries, working hand in hand with the different ministries, with USAID, with CDC, focusing on treatment but also community engagement.

And from there we noticed that even if Ebola is under control, the health care system has completely ceased to function in those countries and we started something called screening referral units that are attached to health facilities and those screening referral units were key. People were afraid to go to hospitals and clinics for the fear of contracting Ebola there so we had those screening referral units attached to those hospitals and clinics so any patient that would come in will be screened. If they present any symptoms similar to Ebola, they are isolated and tested and if not, they can go to the doctors and nurses and get treatment for malaria or any reproductive health needs. And that was really a key to restart the health care systems in those countries.

In addition to that, which is something that I think Denise and Barbara have touched on, the rapid response teams

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were critical. In the early days, whenever there was a case, it will take a while for people to identify that case, isolate it, refer to the Ebola treatment unit and by then, many people would be at risk. And we started rapid response teams with ambulances and later on even a helicopter in Liberia.

Any time there is a suspect case, it is rapidly isolated and transferred for testing and just I have to give a shout out to the naval labs that we had in Bong where it used to take us days before we could confirm a case and when the navy setup a lab next to our Bong Ebola treatment unit, we used to get results in hours and you can just imagine the different between having to wait for three or four days before you get a result and five or six hours to get a result.

So, the rapid response teams and the SRUs worked together in addition to the training and Ebola treatment units to really try to contain as much as possible at the outbreak. Mental health and psycho-social, for survivors and families as well, was key. It is something that we usually do as part of every program but we focused on it quite a bit in the community engagement.

One lesson that we learned was the early engagement with the communities was critical. The communities need to know what's going on. They need to be informed. They need to be talked to. Isolating family members from their loved ones that are in an ETU was a major issue so we tried to find ways

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to actually get them at least to know what's going on with their relatives or loved ones in the Ebola treatment units and engagement of the community is critical for any successful intervention.

Now that being said, looking forward, I think there are a few things that we should learn from this response. Early engagement is critical, early response is really critical. We cannot afford to wait until another 11,000 people die before we decide to respond. This is not acceptable, not in this day and age.

And as Tolbert mentioned, it's not a West Africa issue. We advocated right from the start as CDC and USAID that this is a global issue and people did not realize it was a global issue until Ebola came knocking at our doors here in the U.S. and in Italy and in other places. That is when the world mobilized. We can't afford to continue operating like this. We need to build preparedness measures in those countries.

Every country should have systems in place that could help them respond to any outbreak, contain it and really isolate and deal with it. In addition to that, we need redundancies. If a country is overwhelmed, you need some kind of a regional response capacity as well that could actually support the country response. And frankly, an international response capacity, we were lucky, we were very lucky that the outbreak, the major outbreaks stayed in these countries.

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I can just imagine if it had spread to a couple of additional francophone countries we will all know how much we struggle in terms of staffing. And had it spread to two or three other countries, I think the whole world would have seen a completely different outcome. The international response needs to be strengthened.

We need to really look beyond Ebola, at the next outbreak, no matter what it is, and make sure that we do have the robust local, regional and international response ready, preparedness measures at every level, infection, prevention and control. This is something that needs to be strengthened at the local level and it should not be an add-on to an existing health care system. It should be an integral part of the health care system.

This is something that should be at the primary, secondary and tertiary health care level, I can see is extremely important. And it's something that really we cannot forget about now that we're seeing the number of cases going down, even though there are three cases in Liberia the government of Liberia managed to contain immediately. But we cannot forget, we cannot assume that this fight is over. This fight is far from being over.

And one more thing I would say, something that Barbara mentioned as well, the health care systems were weak to begin with and if we're going to leave the health care systems the

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same way we found them, or even the same way the way they were before the outbreak, it will be a crime. We have to rebuild those health care systems much stronger and much better than how we found them. We have to make sure they are resilient. We have to focus on building the capacity at the national level, the national government, the first responders, and we need to make sure that we provide whatever technical assistance those countries as well as other neighboring countries in the region need. Thank you.

**JOSH MICHAUD:** Thanks, Rabih, and each of you have touched on this point. I wanted to focus now a little bit on where we go from here. And some of the key points that some of you have raised but I'll go into some more detail.

Specifically, it seems so much the unknown around how the virus is transmitted or maybe persists in survivors, raises a whole host of questions about how we maintain surveillance and response capacities going forward, but it also is a very tricky subject because there is already stigma among the survivors. So could you talk a little bit about some of the programs or some of the approaches that really address or provide a meaningful focus on survivors, what that entails in practice and how you think that those kinds of programs should be positioned going forward to address survivors?

And I would throw out to all of the panelists to talk about that. So, either one, anybody jump in. Yeah, go ahead.

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**DENISE ROLLINS:** Maybe Tolbert you can talk about the NIH study, which is looking at survivors and the semen testing and I don't know what other kinds of activities are going on in that area.

**TOLBERT NYENSWAH:** Thank you. We have several programs going on right now for survivors. Number one is the care. Survivor care, there are a lot of survivors that are still facing consequences after surviving the ETU. They are having psych problems. Some of them are going blind.

Some of them are having persistent hotness in their body. Some of them have hearing problems and so having a comprehensive approach with health care services for them, socioeconomic services for them, and also psychosocial services for survivors, things that we are working on and also mobilizing international support for this.

We still carry on surveillance on survivors, that is doing semen testing. We know the theory from the beginning of Ebola since 1976 was that there was persistent virus in survivors after or during 90 days after they leave the ETU. But now we are seeing up to nine months of persistent virus in survivors' semen. There is published work on that.

And so, semen testing is going on in the region as part of the surveillance for survivors. Not only that for survivors, but even in live cases, people going into our health care centers and hospitals around a country, once you present

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with fever and the other three symptoms, the vomiting, diarrhea, your specimen is taken to the lab and we rule out Ebola.

In cadavers, that is also going on, all dead bodies in Liberia, the policy is they are tested before burial to rule out and this is how we have the swab testing. You do swabbing on the cadaver and then test in the lab to make sure that the presence does not, this is why we were doing. That is how we are able to detect a case of Ebola, jump on it immediately and then trickle all of the interventions. And so these are programs that are going on for survivors.

**DENISE ROLLINS:** So one of the things that we were trying to do when we went to the three countries recently was to look at the survivor question and I think in all three countries there's a lot of plans in place but some of the activities haven't really started yet and so for example in Sierra Leone, WHO has a \$20 million plan to support survivors but they really don't have any money for it at this stage.

So, our negotiations with them was just talking with them as well as some of the NGOs, partners in health, and others that were UNICEF, etc., who were there to see where USAID could play a role, what would be the niche for us. And so we are still having those discussions back here in terms of survivor care. But we recognize, that the whole U.S. government recognizes, that this is a very serious issue and we

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need to get something going pretty quickly, particularly around clinical care.

So, I think that's probably going to be the first thing that we roll out and then psychosocial support, reintegration into the communities or civil society organizations. So, we don't have anything concrete at this stage but there are several plans in place.

**JOSH MICHAUD:** And that psychosocial support and other supports are key. I think it was you that had mentioned earlier in the discussion about the fact that many survivors, because of the stigma, felt the need to move or felt the need to relocate because of their--

**DENISE ROLLINS:** Right because they are not welcome back into their communities. Several months ago, there was an effort afoot to help reintegrate survivors back into their communities but now that you have the viral persistence there is further stigma attached to that because now people don't know.

As Tolbert was saying, they thought it was 90 days that the virus persisted but now we don't know how long it's going to persist. So, there is fear in the communities and so working with the communities is critically important in order to try to get them to understand that they are not at risk.

**JOSH MICHAUD:** Right. So, turning to the broader health system question, this was touched on as well but the

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loss of health care workers and the difficulties of a health system that was already weak, particularly in terms of skilled health care workers going forward now, how they had the tragic loss of so many, are the programs in place to address this problem to a sufficient degree?

It appears that there is a lot of external assistance and a lot of external expertise being brought in to address some of this. Will Liberia be in a place where it can fulfil its health system needs for the short-term and long-term? Do you feel comfortable in saying that those plans are in place and progress and the U.S. government is supporting that effort along the way?

**DENISE ROLLINS:** Well, I mean the U.S. government, we, CDC, and USAID are supporting all three governments in their efforts but I mean one of the issues is that you need more health care workers and more health care workers mean you need more money in order to hire them and to put them into place. And so, that's a very serious concern I think across all three countries. I understand that Liberia has started hiring new health care workers but I don't know if that's enough to address the health needs for the entire country.

**TOLBERT NYENSWAH:** That is part of the investment resilience plan that we just spoke about but to take from my colleague from IMC is if the work does not support the region in these healthcare systems, that would be to repeat after will

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be a crime. Right now, we see that because the numbers of Ebola cases have gone down in the region, so most of the emergency organizations are withdrawing their resources are now pulling back.

We are not for recovery. We are for emergency and so recovery agencies should take the lead and move on. And so, the recovery process is very slow, to admit it's very slow. We would have thought that the recovery rate and the emergency process would have gone hand in hand to see some health care system built in terms of supporting, getting a lot of health care workers back.

Remember, this is contrast with high burden of disease but then the number of health care works who tackled those diseases are very, very limited, a shortage of health care workers. And so, you're right, putting those health care workers, hiring, retraining them in health care facilities in pre-health care institutions that the medical school, all our health care workers institution would take resources and time.

We lost some of our best trained medical doctors, professors at medical school died from the Ebola virus disease. It will take time to recruit foreign medical doctors to come in and provide that kind of training over the years and provide resources for that. Infrastructure is one key area that also rebuilding triage system and isolation units at health care facilities.

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The reason that we spend a bulk of the respond and emergency resources on building temporary and "temporary Ebola treatment units" and not in a hospital is because our hospitals were not engineered on getting isolation units builds that you can take care of viral hemorrhagic diseases and on a high level infectious diseases. This is why I am seeing a lot of organizations have to build treatment unit as separate from the hospitals.

So, as part of our investment plan, it is calling for a re-engineered health infrastructures and building isolation units into health care facilities. Part of the plan is to build regional laboratories that have the capacity to test for not only Ebola but other viral integrated diseases like yellow fever, Lassa, measles, polio, Marburg, Ebola, these infectious diseases to test them.

We don't have that capacity yet. Our capacity is temporary capacity so the government, the international community, we need to work along very closely with the resources to be able to assist them. As we speak, the systems are not in place yet. They are coming up, but very slow, so that's my comment on it.

**BARBARA MARSTON:** Can I emphasize something? It will take time. I mean, this will take money, but also time. It is not something you can snap your fingers and have a replaced health care work force. It wasn't an adequate health care work

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force to begin with. It's been damaged by the outbreak and now it's going to take time and I think one of the things we all have to guard against is our attention span.

We are focused now because the Ebola epidemic is fresh in our minds but this is not going to be something that can to be fixed by December or fixed by next year. It's going to take years to build and training, health care provider takes a long period of time. So right now, what we have, Ebola-focused resources or recovery-focused resources, I think that's an incredibly focus is to build back that capacity but to keep in mind that's not going to happen overnight.

**RABIH TORBAY:** Absolutely, I fully agree with you. I think we really need the long-term commitment from the international community, from the donors at large that this is not just something that we're going to be dealing with because of Ebola. Ebola should be--forgive my language--should be used as an opportunity to build back better and to focus on building health care workers.

And it's not just the Ministry of Health hiring health care workers. You need to look at the universities and institutions that are actually developing those health care workers and make sure that the curriculum is changed or tweaked to address some of the issues, some of the gaps that we identified but also we need to be sure that the World Bank and

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the Ministry of Finance that they budget for these additional health care workers in addition to the infrastructure.

And I just want to focus that it's not enough to address the issue in one country, in West Africa, because if you still have cases in Sierra Leone or Guinea, like we are still at risk. This needs to be addressed at the regional level and beyond so obviously we want to focus on countries that could actually make the next step.

But we really need to focus and engage other donors, not just U.S. government, DFID, the European Union, the World Bank, I am engaging to make sure that there is a comprehensive approach to this issue, a long-term approach. And transition is never easy. We've known that in every emerging transition always. We stumble and we need to make sure, as much as possible, to make it as smooth as possible for the recovery effort.

**DENISE ROLLINS:** And I just want to add that on the ground, so in each of the three countries, there is a very strong coordination among all of the donors. However, those of you who were aware of the recovery conference that took place in July and there was a huge \$3.something billion dollars was committed toward recovery, but those resources really haven't materialized, Tolbert, I don't know if you agree with that.

But USAID and CDC are already on the ground. We are working with the Ministries of Health. We are working with the

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donor community. We are working with civil society and the NGOs, but our resources are limited. We are able to do much of the stuff that I've outlined in the Power Point but even in Sierra Leone, for example, the British who have a huge program there, so Sierra Leone is their Liberia for us.

And their resources, they have told us they won't be available until maybe May or June next year. So it means that they can't get started yet. So if the resources come, it's going to take some time. So, we are there working with the various ministries and others on the ground in order to start the training and to get people back into the facilities.

We are doing what we call the 72 hour makeovers in the countries where you mobilize the communities. They come in. We can do repairs and renovations to health facilities but they do the work and they paint them and we provide equipment and other items. But that's in an effort to get people back into the facilities. And that's kind of the first stage.

And then as they come back, you are training the health care workers so they can do affective infection prevention and control and other things that are critical to staving off another outbreak. But, as we've all said, it does take time. It does take time.

**JOSH MICHAUD:** Well, I have one last question for the panelists before we turn it over to the audience for questions and that's about communities and working with communities and

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one of the important success factors in reducing the number of cases of Ebola was communities becoming empowered, becoming educated, becoming aware of the issue. And also reacting to the--and some of the key work that has been done by USAID, by CDC, by others, in working with communities has also sped that process somewhat.

Are there plans in place to maintain the work with the communities going forward, maintaining this sense of empowerment or education, information providing the resources necessary within the communities which are really the home of the response and any future response to Ebola or whatever threat there might be going forward?

DENISE ROLLINS: So for USAID, we work at the community level anyway. All of our programs, we have a USAID mission in Liberia and we had the regular health program. As I said we were in three counties, we're now in six. But all of those are community clinics.

So, our social mobilizations are working with communities. That's the way we do business. And that's in all three of the countries and we work through organizations such as IMC and there's just a host, there's a plethora of organizations that are actually on the ground doing the work. And so we will continue to do that.

We also work at the central level working with the Ministry of Health along with our CDC colleagues to make sure

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that policies are in place, procedures, etc., that are necessary to ensure that you have an effective working health system. So, that will continue.

In terms of a rapid response capability, our Office of Foreign Disaster Assistance, although they are in the process of transitioning now, but they are transitioning to this rapid response capability so they will have some permanent staff in all three countries who will be there over the long-haul so that if there is another outbreak of anything they will also be there in order to help us address any issues related to that.

**JOSH MICHAUD:** Okay, any other thoughts about the community piece of this, Tolbert?

**TOLBERT NYENSWAH:** During the outbreak, if you really do an analysis of the reproduction numbers of the number of cases from March 2014 up to August, September and October, and you look at when the international committee came in, when community engagement came in and how when the community was terrified, fearful, panicking and all that, and you look at the community, when the community grabbed a sense of Ebola, then you get to know that community engagement is very key because before the end of September, when we got the huge number of international partners, the ETUs built, a laboratory system, you've already seen a decline in the number of cases and drained because the community people were practicing their hand washing.

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The community people were putting their buckets down to wash hands. There was community grouping, the traditional people have stopped charging. They have changed their culture, their barriers and not doing all of the rigors that they usually perform, bathing the dead bodies, dressing the dead bodies, having funeral rites and a lot of that.

So, when you really work with the community, you see the results. And I think we saw that during this outbreak. Moving and recovery phase, we need to continue the community engagement, the Civil Society groupings, and that played a very critical--and today, we are still working with them. USAID has a program called ECAP. There was ECAP-1, ECAP-2 that worked with thousands of communities through USG support. That really helped to make sure that your communities have the resources to do their work, so community engagement, very, very critical.

**JOSH MICHAUD:** We're going to turn now to questions from the audience and if a lot of questions, we'll take them in groups. So, it looks like there is a question over here.

**CARL POLZER:** Yeah, I'm Carl Polzer with the Center on Capital and Social Equity. It's great to hear about all the response and also the concern about going forward with prevention and sort of a comprehensive strategy that could be used in other situations. But I'm wondering if we're buying enough insurance here in the sense of the vaccines.

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I'm glad to hear that two vaccine candidates are being administered to people that are around the people with new cases. But those I understand are established companies using an older strain and I think there is a new technology that just from where I sit I'm puzzled that it hasn't gotten more funding. It was just funded by the Gates Foundation, a \$90 million grant to develop and go to market with an RSV, a respiratory virus vaccine that kills more infants in the developing world than anything else.

Now to demonstrate this, the capacity, the developer of this technology actually did an Ebola trial that killed some animals. Then they went to Australia and they tested in on several hundred humans and with the current strain, it has a three month turnaround. It uses DNA, predominant DNA technology, so you can develop a vaccine twice as fast. It doesn't need to be frozen like the other candidates so it would be good for warm climates.

And I'm puzzled why this hasn't--so the company paid for this on its own to demonstrate to Gates and other potential funders that it had this new technology but it cannot go forward without more funding. So, the technology is like this, that for a small amount of money you could have in your back pocket to go along with those and I don't even know how many other companies are doing this. I am just aware of the one.

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**JOSH MICHAUD:** So the question is about the funding for this kind of thing.

**CARL POLZER:** Yeah, why aren't they getting money? Why aren't we going forward with more investment in prevention?

**JOSH MICHAUD:** Okay thank you. We will work our way this way.

**CARL HENN:** Carl Henn from American International Health Alliance, I'd like to thank the Kaiser Foundation and the speakers for wonderful presentations today and for tremendous success in containing the epidemic so far to this extent; a question that I had, what is the overall mechanism for the U.S. government for coordinating the response? We heard wonderful things about each of the agencies and I remember sometime last fall there was an Ebola czar named, or an Ebola coordinator, and I'm just wondering about sort of from the U.S. government's side, what is the overall sort of coordinating approach including the agencies as well as implementing partners such as IMC? Thank you.

**JOSH MICHAUD:** Great and one other question, alright here, yes.

**GOULDA DOWNER:** Thank you for your presentations. I'm Goulida Downer, Faculty in the College of Medicine at Howard University. HIV continues to be a major issue when it comes to stigma in this country and one of the things at Howard

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University and our national partners were able to do was to address stigma in that way.

We've also submitted a proposal to the Board of Response, Recovery and Resilience with the idea to address stigma in Liberia and we are working with the Tubman University to work with their nurses, the allied health professionals. And I'm hoping at some point in time that if nobody has submitted a proposal addressing not just the cultural competence, but the linguistic support as well that you will consider ours and give us consideration. [LAUGHTER]

**JOSH MICHAUD:** So we have a plug for a potential grant there. Alright so to summarize here, I'd say that we have a question about who is on first in terms of the U.S. Government's response going forward on Ebola, and a question about investing in research and development on promising prevention technologies for Ebola and for other things. So I would ask each of you to comment on that if you have a comment.

**DENISE ROLLINS:** So for the response effort, so locally in each of the countries, actually the DART team as you know, the Office of Foreign Disaster Assistance is the humanitarian lead for the U.S. Government and so in August of last year, they set up a DART operation in the three countries and as you know CDC is the medical lead. But in country, the DART kind of coordinated most of the activities that went on. DOD was there

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putting in the ETUs so through the DART team, OFTA, we were supporting all of that effort.

In Washington, there is the NSC who obviously has a very big role in this and I would say that they coordinate at a larger, higher level. In terms of each of our agencies, we have Ebola leads so USAID, I'm the Ebola lead, but I've worked in collaboration with our global health folks as well and with CDC they have their emergency operations center which was kind of the lead for them.

And then there's the constant coordination and collaboration in discussing on what is needed for the next phase. So, it happens at many different levels is what I would say. And it continues to operate that way in the field.

**BARBARA MARSTON:** It's a little bit different than it has been for some other initiatives. So for example, for the HIV response through PEPFAR there was a specific group setup, the Office of the Global Aids Coordinator, really it's a parallel position for the global health security but I think there is more clarity about what the agency is responsible for what and where everybody is committed in working together and trying to minimize duplications and minimize gaps.

And that explains for example like Denise and I were in the field together last week and then I think the NSC does bring some assurance that things are coordinated to the response. And if you want to take the prevention one, these

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are tough things. You know, probably 1,000 different people have come up with well, I've got this idea and I've got that idea and many of them are valid.

I don't think there's anything technically wrong with the vaccines that are being tried right now. They are perfectly viable. They are also recombinant technology but it is a good thing to keep in mind because nobody really likes spending money on prevention until you are looking back and saying whoops I wish we had spent the money on prevention.

And so we have to keep that idea open and get the balance right, whatever we need funding for right now, but also if we can anticipate what the needs will be in the future and try and get--if we had had a rapid diagnostic test for Ebola or if we had knowledge about an effective vaccine going into this, if we had had knowledge about certain medications that would have been helpful and better.

But I don't know who has the crystal ball to know that it was going to be Ebola as opposed to Nipah virus or some other thing. And so we just have to work constantly I think to try and get that balance correct.

**JOSH MICHAUD:** Okay any other thoughts from the panelists on this question?

**RABIH TORBAY:** Just one thought I'm going to comment on the coordination mechanism. Obviously when you have one player it's much easier within the U.S. Government you had saw there

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is still somebody at the NSC that's coordinating Ebola but on the ground when you've got different donors and different players, it comes down to the host government and they should play the lead.

They should be the coordinating and that's what happened in Liberia and frankly it was a success story in terms of how they managed to get all the donors, the U.N. and NGOs on the same page. So, it is critical that any response that we do not ignore the local capacity and we build that capacity for them to take the lead because at the end of the day we are guests in their countries.

**TOLBERT NYENSWAH:** I think to add, the success story of the Liberia response were highly affected, number one, highly affected country but it fights to be declared Ebola free. One a senior U.S. government official told me that coordinating U.S. agencies can be complicated. But on the ground, chairing and managing the incident as an incident manager, I did not see that complication.

It was really smooth to work with the USG organization. Everybody had their road. We have the CDC, we are contact freezing in epidemiology. I could get the military, the DOD go on the field to build a ETU. So I really did not see the complication that the U.S. government officials were talking about. In Liberia, coordination was great.

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**JOSH MICHAUD:** Well, how about that. Yes, more questions?

**TIM OGBORN:** Tim Ogborn from PCI Project Concern International and Jolene Mullins sends her best wishes.. As an agency that was already in Liberia beforehand working at the community level, didn't run out of a country when Ebola started, hung in there, still there and has no intentions of leaving now that funding streams are going down.

One of the critical issues prior to Ebola was trust between communities and health centers. During the Ebola crisis, that trust broke down almost completely in many cases and I was just wondering what your plans are in the Liberian government to help rebuild that trust, because without that trust it doesn't matter how strong you build the health systems down to the clinic level. If the community is not taking advantage of the services, those services don't really exist. Thank you.

**JOSH MICHAUD:** Thank you for your question. Yes, sir?

**BERNARD:** Good day, my name is Bernard from our House of Hope Medical Clinic. And my question goes to Mr. Tolbert. From what you said, it means that a large number of death and cases were recorded due to the insufficient resources on ground and the rights from international communities so my question what is ENF in Liberia and public health practices doing right

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now to better prepare for future and presented disaster or record of disease? Thank you.

**JOSH MICHAUD:** Alright, thank you, and one other, yeah?

**MARIANN MARKETES:** Hello, I'm Mariann Marketes. I'm with the Africa Ebola Unit. My question is to Tolbert in reference to convalescence or therapy, in reference to survivors. Since the virus is the new focus on response in prevention, what is Liberia using as far as survivors' case in helping the donation of blood to help cure future outbreaks or mitigate future components of outbreaks in Liberia? Because particularly here in the United States, that was one of the key methods that the region declared as an effective measure to prevent and cure people who are in the early stages who have contracted Ebola.

**JOSH MICHAUD:** Okay so we have a couple of questions here. There are questions about rebuilding trust between communities and health centers and how Liberia is presenting itself to address the emergency concerns, and then the last question about prevention from Ebola infected people perhaps through blood transfusions, etc. What protections are in place?

**TOLBERT NYENSWAH:** Thank you. Thanks for those very excellent questions that you asked. I think the trust and health care worker issue in the community is essential. We saw that from the beginning of the outbreak when health care

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workers were the main, falling prey to the Ebola virus disease, especially Ebola is a disease of affection, that's how sometime I describe it, a disease of affection, because those who are highly affected are the family caregivers or health care workers.

These are people who care for people, their family members and health care workers. So, even if somebody, dead bodies, family people care for the dead. Back home, there are weeks that you have funeral rites going on and all of that. So, when the health care workers saw that they were dying from the disease, they all left the health care facility. They stayed home and facilities were closed. Mothers couldn't find place to deliver.

I think by now our maternal mortality ratio should be more than before Ebola because people couldn't find place, scape of delivery and all of that. Vaccine system closed down. There was no trust in the health care facilities because people were also getting infection in the health care facilities so what is key to build this confidence between the community and health care workers is what is going on right now as we speak, infectious prevention and control, really robust system in the facilities, ensuring that health care workers are wearing their basic PPE's, their personal protective equipment.

They are using hand washing corners in the hospitals and organized so you see this year alone we have more than two

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million people that went to health care facilities for various issues. We had two to three rounds of immunizations, out of five were polio, measles, Vitamin A, deworming services went on, children received their vaccines.

From the beginning there was fear of we're having an Ebola vaccine trial so the population was terrified that when you give the trial vaccine they were confusing the trial vaccine with normal routine vaccination program but we've gone past that now. People are giving their kids for vaccination and so IPC Services trust in the health care workers, when patients go to health care facilities, they are tested with thermometers. They wash their hands. They do proper triaging and others to build confidence in the health care system.

The preparedness, the knowledge we've gained, gained a lot of knowledge right now from the response. We trained a lot of community people to identify where the next Ebola will come from. We are keeping eyes on the survivors. We have some ETUs, Ebola treatment units, still in place. Contact tracers are trained.

Community case finals are trained as compared to before the Ebola crisis. And this is why right now we can detect immediately, isolate immediately, do our contact tracing immediately. So, there is a lot of capacity on the ground that the people that respond have taught us to deal with the next crisis. Is it adequate? I would say no.

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Is the entire world prepared for the next Ebola crisis? I will also say no. We have not done much yet in that direction and this is why I concur with the recent paper where we have a group from the London School of Hygiene and Tropical Nursing on those key recommendations. Those are the crusaders of heart and of public gathering that would need an independent body in the WHO that will lead emergency response in future epidemics and pandemics.

Convalescent trials have been going on. There is a lot of research going on naturally, the research on survivors, research on vaccines, research on therapies, the convalescent trial also going on in Liberia. It's just that to date we have not had any licensed drugs or vaccines from the World Health Organization to deal with Ebola. So those are all trials that are going on.

**JOSH MICHAUD:** Well in the interest of time... I know there are other questions. I'm sorry we couldn't get to everybody's question but I think we'll end here. And a sobering note to end on, but I would like all of you to join me in thanking our panelists today who have joined us today [APPLAUSE]. And thank you all for coming.

[END RECORDING]

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