GLOBAL EFFORTS TO FIGHT EBOLA

HEARING

BEFORE THE

SUBCOMMITTEE ON AFRICA, GLOBAL HEALTH, GLOBAL HUMAN RIGHTS, AND INTERNATIONAL ORGANIZATIONS

OF THE

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GLOBAL EFFORTS TO FIGHT EBOLA

WEDNESDAY, SEPTEMBER 17, 2014

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON AFRICA, GLOBAL HEALTH,
GLOBAL HUMAN RIGHTS, AND INTERNATIONAL ORGANIZATIONS,
COMMITTEE ON FOREIGN AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 10 o'clock a.m., in room 2172 Rayburn House Office Building, Hon. Christopher H. Smith (chairman of the subcommittee) presiding.

Mr. SMITH. The subcommittee will come to order and good afternoon, or good morning, I should say, to everybody. We are here today to hold our second hearing in just 5 weeks on the Ebola crisis in west Africa to underscore just how serious a crisis they are facing and I would say we are facing—an international pandemic which threatens to balloon unless confronted head on.

I spoke yesterday to Dr. Tom Frieden, director of the U.S. Centers for Disease Control and Prevention and the lead witness at our August 7 emergency hearing during recess on Ebola, and he said that this is the worst health crisis he had ever seen.

He said, I have never seen anything like this in my life, and coming from the head of the CDC that was an extraordinarily powerful statement.

Since our August emergency hearing, we are seeing a constant movement upwards in the number of actual cases as well as the predictions of how many people may contract the disease and what potentially the number of fatalities might indeed be.

The numbers range. Yesterday the President was talking about hundreds of thousands. I read a German doctor who said something on the order of 5 million.

That, hopefully, is way overinflated but it underscores that nobody really knows and we are talking about a pandemic that even if it stays contained in the west African countries is doing unbelievable damage and imposing unbelievable sorrow.

The World Health Organization estimated we would see as many as 20,000 cases of Ebola before it has ended and, again, the numbers have now begun to exceed that in terms of estimates.

We are holding this hearing to take stock of where our intervention efforts stand, particularly in light of the President's decision to commit U.S. Military personnel to Liberia to fight this disease.

Liberian President Ellen Johnson Sirleaf, with whom I spoke yesterday, has conceded that the Ebola epidemic has overwhelmed her country, her ability to treat.

She said this in a letter that she sent to the President: "The virus is spreading at an exponential rate and we a have limited time window to arrest it." She pointed out that well over 40 percent of the total cases have occurred in the last 18 days alone.

She said the treatment centers are overwhelmed and that at this rate we will never break the transmission chain and the virus will overwhelm us—an ominous statement from the distinguished President of Liberia.

We are also holding this follow-up hearing this morning to determine if there is a reasonable hope for vaccines, treatments, or detection strategies in time to help with this health emergency.

I hesitate to provide figures for the number of people who have died but I think the estimates are something on the order of 2,500 people who have passed away and that is probably an underestimation of the actual number.

Ebola, which was mostly unknown in west Africa until now, presents itself early in the infection like usually non-fatal diseases such Lassa fever, malaria, or even the flu.

The temperature seen in the early stages might even be brought down with regular medicines. Therefore, many people may not believe or may not want to believe that they have contracted this often fatal disease.

If someone is in denial or unknowledgeable about this disease, they may not seek treatment until it is too late, both for them and for the people they unknowingly infect. Families in Africa tend to help each other in times of need, an admirable trait that unfortunately increases the risk of infection.

The sicker a person gets with Ebola, the more contagious they are and never more so than when they die. So burials that don't involve strict precautions to avoid direct contact with highly contagious remains of victims make transmission of this deadly disease almost inevitable.

Burial traditions make avoidance of infection problematic. The porous lightly-monitored borders in west Africa lend themselves to cross-border transmission as people go back and forth along well-traveled roads and into marketplaces where hundreds of people also travel and make contact with those who are infected.

Patrick Sawyer, a Liberian-American, reportedly was caring for his dying sister a few weeks ago. After she died, apparently of Ebola, he left Liberia on his way to his daughter's birthday party in Minnesota. He collapsed at the Lagos airport in Nigeria and died within days.

Had he left Liberia a week or even days earlier, he might have made it home to Minnesota but he likely would have infected people along the way, including his own family.

We can say that because Sawyer infected several people in Nigeria, which led to Ebola being transmitted to health care workers and then to dozens of other people.

We will never know now if Mr. Sawyer realized that he had contracted Ebola and just wanted to go home for treatment or whether he thought his symptoms were from some other illness.

Many people are just like him, however, and they are spreading this disease even to places where they have been brought under

control. For example, the Macenta region of Guinea on the Liberian border was one of the first places where this disease surfaced.

But by early September, no new cases had been seen for weeks. Doctors Without Borders closed one of its Ebola treatment centers to focus on harder-hit areas. Infected people leaving Liberia for better treatment than Guinea have once again made Macenta a hot spot for the disease.

The U.S. Centers for Disease Control and Prevention has established, as we know, teams in Guinea, Liberia, Sierra Leone, and Nigeria to help local staff do fever detection and to administer questionnaires on potential troublesome contacts. The agency also was helping to establish sites at airports for further testing and/or for treatment.

Liberia and Sierra Leone are the hardest hit so far by this Ebola outbreak. This is undoubtedly partly because of the weak infrastructures of the two countries emerging from long conflicts.

However, post-conflict countries also have significant segments of the population who don't trust the central government. The unfortunate mishandling by the Liberian Government of an attempted quarantine in the capital demonstrates why trust has been so difficult to come by.

The Liberian Government, as we know, established barriers to block off the West Point slum area where, after a holding center for Ebola victims was ransacked and contaminated materials were taken.

This quarantine was done without fully informing its 80,000 inhabitants or consulting with the health care workers. Not only did this prevent people from pursuing their livelihoods or bringing in much-needed supplies, this move created great suspicions of the motives of the Liberian Government.

This suspicion was heightened when the official in charge of the area was called to a meeting and was seen leaving just as everyone else was trapped behind barriers. The furor over the quarantine forced the government to abandon it 10 days into its planned 21-day term.

Liberian officials assured us that they have learned from their mistakes, that of the quarantine, and has alerted Liberians of the reality of the Ebola epidemic. I read many of the newspapers from west Africa every single day and it is front-page headlines, sometimes a little bit exaggerated, but certainly front-page headlines, so people are becoming more aware through that medium.

Despite the fact that the drug ZMapp appears to have saved some lives including Americans Nancy Writebol and Dr. Kent Brantly, who we will hear from in our second panel, there are no proven readily available treatments for Ebola.

The death rate for this disease, once more than 90 percent, is now down to 53 percent despite the number of cases growing exponentially.

In Africa, a few patients apparently have been successfully treated with ZMapp and Dr. Fauci, I am sure, will give us additional insights in this, and some others may have been saved using other treatment methods, especially when the disease was identified early.

Yet there is not now nor will there be in the short term large quantities of this medicine or any others. There are other several Ebola therapeutics under development but if this outbreak cannot be brought under control soon, even the most optimistic timetable for the testing and production of these drugs will not be sufficient to meet the ever expanding need.

ZMapp was used with the informed consent of those to whom it was given. But how can we guarantee that the many Ebola victims, whose most likely salvation would be to use an experimental drug, truly understand the risk of using a drug that has not been fully tested?

Lack of faith in national and international systems fighting Ebola has impeded the replacement of many Africa health care workers who have died from this disease. That is one of the untold problems, that people on the front line are dying, as well as their families.

I was talking to a friend who runs an NGO in Sierra Leone who works with obstetric fistula and a nurse at his clinic died, and so did her six children. So health care workers have borne a disproportionate share of this horrific disease.

As of late August, 164 Liberian health care workers had contracted Ebola and 78 had died and that number no doubt has increased. African health care workers face an epidemic that threatens to defy control.

The lack of diagnostic techniques and insufficient supplies of safety equipment have put these health care workers at extreme risk. These health care workers know that the lack of treatment centers and medicines means that those on the front lines of this epidemic are most at risk, as I indicated earlier.

And finally, without objection will put my full statement into the record. I will just point out that yesterday's announcement that some 3,000 American service personnel will be deployed. Nancy will remember that I traveled right after the typhoon hit in the Philippines and if it wasn't for the military providing food, water, shelter, and medicines working with USAID and NGOs like Catholic Relief Services, many more Filipinos would have died as a result of Dengue fever and other terrible diseases might have manifested in large numbers.

Same goes for the tsunami. I will never forget a number of us went and we saw what was being done in Banda Aceh. Again, USAID, working with CDC, NIH, and the military. But this is a little bit different and perhaps our witnesses could elaborate on this either during the Q and A or in their statements about what precautions might be provided to those service members.

I know they will be likely building beds, which are unbelievably lacking, particularly in Liberia. People can't find a bed when they are sick to get treatment or at least to live in until they pass.

And so it does raise the question of what kind of precautions those military personnel will take, whether they will be properly suited, what their mission will be, and when will they be deployed. A number of questions have arisen, I am sure, by many of us concerning it to ensure their safety.

I would like to yield to Ms. Bass and then to the chairman of the full committee, Mr. Royce.

[The prepared statement of Mr. Smith follows:]

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DEAN, NEW JERSEY DELEGATION

"Global Efforts to Fight Ebola"

Rep. Christopher Smith
Chairman
Subcommittee on Africa, Global Health, Global Human Rights and International Organizations
9/17/2014

We are here today to hold our second hearing in just five weeks on the Ebola Crisis in West Africa to underscore just how serious a crisis we are facing – an international pandemic which threatens to balloon unless confronted head on.

I spoke yesterday with Dr. Tom Frieden, Director of the U.S. Centers for Disease Control and Prevention and the lead witness at our August 7 Emergency recess hearing on Ebola that this is the worst health crisis he has ever seen and that Ebola is at risk of spreading beyond those countries currently affected – Guinea, Liberia and Sierra Leone.

Since our August Emergency Hearing, we have seen a constant movement upwards in the number of cases predicted. The World Health Organization now estimates that we will see as many as 20,000 cases of Ebola in this epidemic before it is ended. One hopes that that number does not increase further, but it may be a conservative estimate.

We are holding this hearing to take stock of where our intervention efforts stand, particularly in light of the President's decision to commit U.S. military personnel to Liberia to fight this disease. Liberian President Ellen Johnson Sirleaf, with whom I also spoke yesterday, has conceded that the Ebola epidemic "has overwhelmed" her country's containment and treatment capabilities. A global response, with the United States in the lead, is thus necessary.

It is important to note that in in a letter last week to President Obama, President Ellen Johnson Sirleaf wrote that "The virus is spreading at an exponential rate and we have a limited time window to arrest it. Mr. President, well over 40% of total cases occurred in the last 18 days. Our message has gotten out and our citizens are self-reporting or bringing in their relatives. But our treatment centers are overwhelmed. MSF is now running a 160 bed-unit that will expand even further. I am being honest with you when I say that at this rate, we will never break the transmission chain and the virus will overwhelm us."

We are also are holding this follow-up hearing this morning to determine if there is a reasonable hope for vaccines, treatments and detection strategies in time to help with this health emergency.

I hesitate to provide figures for the number of people infected or who have succumbed to this virus because even as we hold this hearing, dozens, if not hundreds, of new infections will be documented. According to the latest figures, infections are approaching 5,000 people, and 2,500 deaths.

Ebola, which is mostly unknown in West Africa, presents itself early in the infection like usually non-fatal diseases such as Lassa fever, malaria or even the flu. The temperature seen in early stages might even be brought down with regular medicines. Therefore, many people may not believe, or may not want to believe, they have this often fatal disease.

If someone is in denial or unknowledgeable about this disease, they may not seek treatment until it is too late – both for them and for the people they unknowingly infect. Families in Africa tend to help one another in times of need, an admirable trait that unfortunately increases the risk of infection. The sicker a person gets with Ebola, the more contagious they are, and never more so than when they die. So burials that don't involve strict precautions to avoid direct contact with highly contagious corpses make transmission of this deadly disease almost inevitable. Burial traditions make avoidance of infection problematic.

The porous, lightly-monitored borders in West Africa lend themselves to cross-border transmission, as people go back and forth along well-travelled roads and into marketplaces where hundreds of people, also travelling, make contact with those who are infected.

Patrick Sawyer, a Liberian-American, reportedly was caring for his dying sister a few weeks ago. After she died, apparently of Ebola, he left Liberia on his way to his daughter's birthday party in Minnesota. He collapsed at the Lagos airport in Nigeria and died within days. Had he left Liberia a week or even days earlier, he might have made it home to Minnesota, but he likely would have infected people along the way, including his own family. We can say that because Sawyer infected several people in Nigeria, which led to Ebola being transmitted to health care workers and then to dozens of other people.

We'll never know now if Sawyer realized he had contracted Ebola and just wanted to go home for treatment or whether he thought his symptoms were from some other illness. Many people are just like him, however, and they are spreading this disease even to places where it had been brought under control. For example, the Macenta region of Guinea on the Liberian border was one of the first places this disease surfaced, but by early September, no new cases had been seen for weeks. Doctors Without Borders closed one of its Ebola treatment centers to focus on harder-hit areas. Infected people leaving Liberia for better treatment in Guinea have once again made Macenta a hotspot for the disease.

The U.S. Centers for Disease Control and Prevention has established teams in Guinea, Liberia, Sierra Leone and Nigeria to help local staff do fever detection and to administer

questionnaires on potential troublesome contacts. The agency also is helping to establish sites at airports for further testing and/or treatment.

Liberia and Sierra Leone are the hardest hit by this Ebola outbreak. This is undoubtedly partly because of the weak infrastructures of two countries emerging from long conflicts. However, post-conflict countries also have significant segments of the population who don't trust the central government. The unfortunate mishandling by the Liberian government of an attempted quarantine in the capital demonstrates why trust has been so difficult to come by. The Liberian government established barriers to block off the West Point slum area after a holding center for Ebola victims was ransacked and contaminated materials were taken. This quarantine was done without informing its 80,000 inhabitants or consulting with health care workers. Not only did this prevent people from pursuing their livelihoods or bringing in much-needed supplies, this move created great suspicions over the motives of the Liberian government. This suspicion was heightened when the official in charge of the area was called to a meeting and was seen leaving just as everyone else was trapped behind barriers.

The furor over this quarantine forced the government to abandon it 10 days into its planned 21-day term. Liberian officials assure us they have learned from their mistakes, that the quarantine and has alerted Liberians to the reality of the Ebola epidemic. The human rights of victims and those who live in proximity to them must not be sacrificed by the emergency situation Ebola presents.

Despite the fact that the drug ZMapp appears to have saved the lived of Americans Nancy Writebol and Dr. Kent Brantly, one of our witnesses today, there are no proven, readily available treatment for Ebola. The death rate for this disease, once more than 90%, is now down to 53% despite the number of cases growing exponentially.

In Africa, a few patients apparently have been successfully treated with ZMapp, and some others have been saved using other treatment methods, especially when the disease was identified early. Yet there is not now nor will there be in the short term large quantities of this medicine or any others. There are several Ebola therapeutics under development, but if this outbreak cannot be brought under control soon, even the most optimistic timetable for the testing and production of these drugs will not be sufficient to meet the ever-expanding need.

ZMapp was used with the informed consent of those to whom it was given. But how can we guarantee that the many Ebola victims whose most likely salvation would be to use an experimental drug truly understand the risks of using a drug that has not been fully tested and vetted by the authorities in the country in which it is developed? No drug is 100% effective, so what will other victims think if some people die despite taking experimental treatments? We must protect the rights of those willing to take a chance on unproven treatment when they have no other alternatives.

Lack of faith in national and international systems fighting Ebola also has impeded the replacement of the many African health care workers who have died from this disease. For example, even before this Ebola outbreak, Liberia had fewer than two doctors for every 100,000

people. As of late August, 164 Liberian health care workers had contracted Ebola, and 78 had died.

African health care workers face an epidemic that threatens to defy control. The lack of diagnostic techniques and insufficient supplies of safety equipment have put these health care workers at extreme risk. These health workers know that the lack of treatment centers and medicines means that those on the front lines of this epidemic are most at risk. Some have asked for insurance for their families should they succumb to Ebola and certain evacuation for treatment outside the hot zone. These heroes deserve all the support we can muster. Ebola not only challenges the collective ability of the world community to meet the demands it poses, it threatens the progress made over the last decade by African countries in overcoming conflict and improving economic development. Even after this outbreak is finally brought under control, its damage will be seen in lowered gross domestic product and diminished foreign investment.

So we must be prepared to create effective strategies to help affected African nations recover. A large part of any successful strategy will feature efforts to recreate and dramatically expand health care systems in West African and other countries on the continent. This epidemic has shown that we must not be complacent about weak governance or health care systems. To that end, Ranking Member Bass and I will soon introduce a bill to address the emergency and ongoing needs in the fight to contain the Ebola epidemic in West Africa.

We live in a world that is increasingly interconnected, and Ebola has demonstrated that our neighbor's problems can soon become our problems.

Ms. BASS. Thank you, Mr. Chairman, as always for your leadership and for calling today's hearing to give us an opportunity to examine the scope of global efforts to address the ongoing Ebola crisis in west Africa.

This is the subcommittee's second hearing on Ebola in the past 6 weeks and I look forward to getting updates from our witnesses today on how their agencies and organizations continue to combat this deadly outbreak, what trends they are seeing both positive and negative, and what additional support is needed as they coordinate with the governments of the impacted countries.

I appreciate their efforts and outreach to help keep Congress informed on this evolving and devastating epidemic. Yesterday, I was very pleased to see President Obama's announcement at the CDC headquarters in Atlanta where he provided a comprehensive outline of the U.S. support for Liberia and other west African nations impacted by the crisis.

The President's commitment totals, as I understand it, over $700 million over the next 6 months and will include sending 3,000 American military personnel to the region, AFRICOM's establishment of a regional intermediary staging base to facilitate the transport of medical equipment, supplies and personnel to affected regions, and the command's establishment of a medical training site to train up to 500 health care providers per week.

It has been an honor to work with the various U.S. agencies seeking sustainable solutions to the Ebola outbreak including the CDC, USAID, the Departments of State and Defense, respectively.

I also want to commend the steps being taken by the Governments of Liberia, Sierra Leone, Guinea, and Nigeria and the great work of the many health professionals from throughout the world who are doing everything they can to help people who have contracted this disease.

The U.S. commitment will address the unique nature of this outbreak that has made combating the disease particularly difficult. West Africa has not faced this before and communities and governments and health professionals in Guinea, Sierra Leone, and Liberia don't have the expertise and capacity to address the scale, spread, and proper treatment of the outbreak alone.

The crisis is not just about obvious health concerns, and this is a major concern to me and why I was happy with the President's announcement about military support because I am really concerned about the stability of the countries, with post-civil war conflicts.

These countries have weak institutions and a crisis like this could actually lead to a complete destabilization. Although they have elected democracies right now, we know that in many of these countries, as I mentioned before, you could actually have a collapse of the governments.

Yesterday, I also had the privilege to speak with Liberian President Johnson Sirleaf on the impact of the outbreak in her country and the work they have done to fight the spread of the diseases.

She called to thank me and to express her deep gratitude for U.S. assistance and stated that with essential support from the U.S. Government, the World Bank, the African Development Bank, she actually feels confident now and she sees moving toward a

health recovery, and I will say that this was markedly different than the telephone conversation I had with her a few weeks ago, and I am sure the chairman and ranking member and Mr. Smith had the same type of calls, where she seemed to be particularly desperate. So it was nice to have the call yesterday.

It is in America's and the world's interest to continue to assist in this crisis and to continue to support nations as they fight this outbreak and work to develop and strengthen their health care systems.

Health care is a human right. We must ensure that countries have the ability to address this outbreak and are able to move forward and prevent future health epidemics from occurring. In Congress, there has been consistent activity related to the recent crisis.

Prior to the August recess, 100 bipartisan members introduced House Resolution 701 expressing the sense that the current outbreak is an international health crisis and is the largest and most widespread outbreak of the disease ever recorded.

On August 7, the Foreign Affairs Committee's Africa Subcommittee held an emergency hearing on the crisis and 77 members have signed a letter to the Committee on Appropriations to fulfill the President's $88 million funding request to fight the crisis.

And there is also going to be a member meeting tomorrow that we are all doing together to brief members who don't have the opportunity to sit on this subcommittee or the full committee.

I look forward to your testimony and I am interested in hearing from all of you about what more Congress can do to assist your efforts to combat the disease outbreak and support international efforts to improve health care systems around the world.

Thank you, and I yield back.

Mr. SMITH. Ms. Bass, appreciate it.

We are joined by the distinguished chairman of the full committee, Mr. Royce.

Mr. ROYCE. Thank you, Mr. Chairman. I just guess I would start by thanking and welcoming Dr. Kent Brantly who is with us and to say that I am very glad that ZMapp is in trials and I am glad you are here.

Our heart goes out to the families of your colleague who also tried the ZMapp and did not survive. But we are encouraged by the fact you are with us today. We have seen this pandemic in the past in the Philippines, in Uganda, in Congo, different strains, and over the past in each case the strain has burned itself out. I mean, we have had about 2,300 deaths worldwide since 1976 as, time after time, different strains of Ebola have been put to rest.

But in this latest chapter in west Africa, primarily in Liberia and the neighboring states, we see a situation where we have already had 2,300 deaths, as many as in all the previous cases combined.

And I spoke yesterday also to President Sirleaf, who contacted me about the situation in Liberia. She acknowledged that the health system of Liberia has virtually collapsed under the strain of this Ebola crisis and she correctly pointed out that this is not just a health catastrophe affecting her country.

It affects the region. It affects the security of the region, threatens the economic growth and food security but, beyond that, affects the security of the United States.

The entire global health community must come together and put in place a coherent strategy to stem the tide of new infections and my hope is that some of our effort here will encourage this in terms of the entirety of the world health community.

We do not have the luxury of time. Infectious diseases like this one, they do not recognize borders, they do not discriminate, and the time to act is now.

And I spoke recently with Raj Shah, the Administrator of USAID, who shares our concern on this subject. But I really want to thank the witnesses for appearing today and we look forward to working with them to ensure that the U.S. contribution to the global response to Ebola is robust and is effective. And thank you again, Mr. Chairman.

Mr. SMITH. Thank you very much, Chairman Royce. I would like to now yield to the ranking member of the full committee, Mr. Engel, of New York.

Mr. ENGEL. Thank you, Mr. Chairman—Chairman Smith, Ranking Member Bass. Thank you for holding this important hearing on the devastating Ebola outbreak in west Africa.

I want to say at the outset I am very happy that Betty McCollum, our colleague from Minnesota who is a former member of this committee is here with us as well.

Without exception, the global health leaders from around the world continue to sound the alarm about the terrible threat posed by this Ebola outbreak. It is almost impossible to overstate how dire the situation has become in Liberia, Sierra Leone, and Guinea.

The World Health Organization has called this outbreak unparallelled in modern times. Almost 2,500 of the 5,000 individuals infected by Ebola have died. NGOs and humanitarian organizations have shouldered most of the burden in fighting this epidemic for months but their passion and dedication is no match for the speed with which this disease is spreading. More government involvement is desperately needed.

The World Health Organization has also said that if the response is quickly scaled up, only tens of thousands of individuals will become infected by the time the outbreak is contained. That is the best case scenario, believe it or not. The alternative is simply unacceptable.

The need for more well-trained health care personnel, personal protective equipment, and adequate health care facilities is immediate. So I am pleased to see the CDC, USAID, and Department of Defense are rapidly scaling up their efforts. I am also glad that President Obama has decided to send the U.S. Military to help.

It is my belief that our response must be well coordinated, sustained, and nimble enough to meet the needs as they evolve. However, the United States cannot contain this disease alone. It is a threat to the entire international community and requires a truly global response.

I will be interested to hear from our panelists about what our other partners around the world are doing to help with the response and what significant gaps remain to be filled.

I would also like to take a moment to applaud the courage and selflessness of the health workers on the front lines trying to help those afflicted to survive.

They put themselves at significant personal risk and are bearing the brunt of the infection's spread, as one of our witnesses, Dr. Kent Brantly, can attest to. Their bravery and dedication is simply appreciated and a true inspiration to all of us.

So let me say as the ranking member of the House Foreign Affairs Committee, thank you, Chairman Smith and Ranking Member Bass, for convening this hearing and thank you to our witnesses for coming to talk about this urgent issue. I yield back.

Mr. SMITH. Thank you very much, Mr. Engel. Mr. Stockman.

Mr. STOCKMAN. I just want to say a brief note to those that are here in attendance today, I was in South Sudan and one of the organizations, Mr. Chairman, that I saw there, of all the other nongovernmental organizations that were there, was Samaritan's Purse, and wherever I travel around the world they are a shining light and example of true compassion and sacrifice and it is done in silence that most Americans aren't aware of.

And Kent's sacrifice is not just in Africa, but your whole organization is to be commended for the compassion and the heart you have and I know Franklin Graham and others have worked tirelessly and has not broadcast that.

But wherever I went Samaritan's Purse was there and it is really a testimony to the work that you and others have done on behalf of the United States and I just want to send a thank you for that.

Mr. SMITH. Thank you very much, Mr. Stockman.

Mr. Cicilline.

Mr. CICILLINE. Thank you, Mr. Chairman. I want to thank you and Ranking Member Bass for holding today's hearing on this very serious outbreak of Ebola in west Africa.

I also want to acknowledge and send thoughts and prayers to all of the families who have already been affected by this outbreak and I know in my home state of Rhode Island, which is the very proud home to a wonderful Liberian community, it has caused considerable heartache and concern.

I want to particularly offer my gratitude to the witnesses today for your testimony and for the really important work that you are doing and to the government panel in particular for keeping Congress so well informed with regular updates on the situation on the ground.

In particular, I also want to acknowledge and thank Dr. Kent Brantly for joining us on the second panel and for sharing with us the work that he has been doing in Africa to fight Ebola and, of course, his own personal experience surviving the virus.

The United States has both a humanitarian responsibility and a national interest in doing all that we can to fight this outbreak, and in addition to obviously protecting against Ebola within our borders, we also have a responsibility to work to help save lives and strengthen the economies of our trading partners and maintain political stability in the region that has been affected by this outbreak.

We must all be concerned about the serious issues of civil unrest, food insecurity, and the collapse of national health care systems in the African countries impacted by this outbreak, and I hope our witnesses will share with us ways that we can address this crisis

more effectively and what are the things Congress might do to support an effective response to this crisis.

And with that I, again, thank the witnesses and yield back, Mr. Chairman.

Mr. SMITH. Thank you, my friend. I would like to yield to Dr. Burgess.

Mr. BURGESS. Well, thank you, Mr. Chairman, and thank you and Ranking Member Bass for allowing me to be part of your committee's activities today and I am anxious to hear from the witnesses that you have assembled and to learn more.

I am on the Energy and Commerce Committee and we do have a healthcare footprint. But, Mr. Chairman, let me just say you have taken an outsized role in providing leadership in the Congress in having the hearings on this very important outbreak.

Certainly, Dr. Fauci, for the last 12 years you have been a resource for me whenever infectious disease threatens and, unfortunately, it does and I have always looked to you for your expertise and your leadership in this area.

Dr. Brantly, I just had a chance to meet you for the first time today. You are from my part of the world in Fort Worth and I appreciate your service at Samaritan's Purse and certainly grateful that you are with us and I really mean that you are with us today.

Others have said it so well but more people have died in this outbreak than all of the previous outbreaks of Ebola going back to 1976. No one expected the outbreak to reach the proportions that it did, but it did.

No one expected it to last the length of time that it has, but it has. Now, certainly, whatever criticism there may be for lack of action in the past I am pleased that action is occurring now.

Just also feel obligated to note that an obstetrician is recovering today in Omaha, Nebraska—Dr. Rick Sacra—who was not actually treating Ebola patients but was exposed through his work in labor and delivery, and it just underscores part of the risk—the accelerated risk that healthcare providers experience in this illness and in the countries that are so affected but also the fact that the rest of civil society and the healthcare infrastructure is really put under strain by this.

And you can really scarcely devote the resources that are needed to treating malaria and accident victims and mothers in labor when everything else has to be diverted to taking care of people with Ebola.

So, Mr. Chairman, I thank you for the opportunity to be with you today. Thank you for your leadership on this issue and I will yield back my time.

Mr. SMITH. Thank you very much, Dr. Burgess.

I would like to yield now to the gentlelady from Minnesota, Ms. McCollum

Ms. MCCOLLUM. Well, thank you, Mr. Chair. That is an unexpected surprise. Thank you very much.

I would also like to extend my thanks to the panels that are here today who reflect all the healthcare workers around the world, especially those in Africa who are working so hard and the researchers who are trying to find ways in which to defeat this disease.

Minnesota is my home state. We are a state that is blessed to have so many wonderful, wonderful people from all over the world who call Minnesota home including a large Liberian population, one who is mourning the loss of their own, as Chairman Smith pointed out.

We are also the home to my first state epidemiologist, Mr. Osterholm, who sometimes gets accused of talking fire but he is saying look where the fire exits are.

So in my work on the Appropriations Committee and the Department of Defense I am pleased that we are putting boots on the ground to fight this disease. Thank you, Mr. Chairman.

Mr. SMITH. Thank you very much, Ms. McCollum.

I would like to now introduce our very distinguished panel, beginning first with the Honorable Nancy Lindborg, who is the Assistant Administrator for the Bureau for Democracy, Conflict and Humanitarian Assistance at USAID, and she has testified before our subcommittee several times and provided very valuable input and leadership for her respective portfolio but also great input to this subcommittee as to what we ought to be doing to be of assistance.

Since assuming her office in October 2010, Ms. Lindborg has led DCHA teams in response to the ongoing Syria crisis, in the Horn of Africa in 2011, the Sahel 2012 droughts, the Arab Spring upheaval, in the aftermath of Typhoon Haiyan in the Phillippines, and numerous other global crises. Prior to joining USAID, Ms. Lindborg was the president of Mercy Corps where she spent 14 years.

We will then hear from Dr. Anthony Fauci, who is Director of the National Institute of Allergy and Infectious Diseases at the NIH.

Since his appointment as NIAID Director in 1984, Dr. Fauci has overseen an extensive research portfolio devoted to preventing, diagnosing, and treating infectious and immune-mediated diseases. Dr. Fauci has made numerous discoveries related to HIV/AIDS and is one of the most cited scientists in the field.

Dr. Fauci serves as one the key advisors to the White House and the Department of Health and Human Services on global AIDS issues and he was one of the principal architects of PEPFAR.

We will then hear from Dr. Luciana Borio, who serves as Assistant Commissioner for Counterterrorism Policy and the Director of the Office of Counterterrorism and Emerging Threats in the Office of the Chief Scientist, U.S. Food and Drug Administration.

In this capacity, Dr. Borio is responsible for providing leadership, coordination and oversight for FDA's national and global health security, counterterrorism, and emerging threat portfolios.

She serves as FDA's point of entry on policy and planning matters concerning counterterrorism and emerging threats, collaborates across U.S. Government and internationally on actions to advance global health security and U.S. national security.

And our fourth witness in Panel I will be Dr. Beth Bell, who is the Director of the National Center for Emerging and Zoononic Infectious Diseases.

Most recently, Dr. Bell served as the Associate Director for Epidemiologic Science in the National Center for Immunization and Respiratory Diseases.

Dr. Bell has served in leadership roles during CDC responses to several major public health events including the 2001 anthrax attacks—and she will recall one of the post offices hit was my own in Hamilton Township where we had a number of people who contracted cutaneous anthrax—Hurricane Katrina, and the 2009 H1N1 influenza pandemic.

As a member of the senior leadership team for the 2009 H1N1 influenza pandemic response she provided oversight of policy and scientific direction. So four extraordinarily important and, I think, great leaders in the field.

I would like to now go to Ms. Lindborg and then to Dr. Fauci.

STATEMENT OF THE HONORABLE NANCY LINDBORG, ASSISTANT ADMINISTRATOR, BUREAU FOR DEMOCRACY, CONFLICT AND HUMANITARIAN ASSISTANCE, U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Ms. LINDBORG. Thank you. Thank you, Chairman Smith, Ranking Member Bass, members of the subcommittee and other members.

Thank you for inviting me to testify today on the U.S. response to the really unprecedented Ebola epidemic in west Africa and special thanks for your continued support and vital interest in these issues.

I think as a number of you have very articulately laid out, this is the largest and most protracted Ebola epidemic in history. Thousands have already been sickened or killed and for the first time ever it is being transmitted in densely populated urban areas.

So we are now seeing a near exponential increase in the transmission of the virus with the potential for a regional spread beyond the primary countries of Guinea, Liberia, and Sierra Leone.

The United States began combatting the epidemic when the first cases were reported in March and what began as a public health crisis began morphing into a multidimensional public health, humanitarian, and security crisis this summer.

And so we then significantly expanded our efforts and on August 5 USAID deployed a Disaster Assistance Response Team, or a DART, to the region to oversee and coordinate the U.S. response, drawing on critical assets and resources from across the U.S. Government including CDC, USAID, HHS, DoD and the U.S. Forest Service.

We developed a clear four-part government strategy that supports the U.N. and country-led responses. That was first and most urgently focused on controlling the epidemic. Next, we are working to mitigate the side effects of the crisis. This includes blunting the economic, social, and political tolls.

Third, we are helping to coordinate with the U.N. and enable a broader effective global response, and finally, very importantly, we will work to fortify the global health infrastructure.

So we had deployed 120 experts to the region and began airlifting urgent supplies, personal protective equipment for healthcare workers, disinfectant backpack sprayers, water treatment, chlorine, body bags, et cetera—the kinds of supplies that are absolutely critical.

The team is providing technical guidance to strengthen the local response systems, do the contact tracing, and upgrade laboratory testing facilities. We have supported the U.N. humanitarian air service and we funded those organizations willing to step forward to run Ebola treatment units.

However, we very quickly ran into the reality that there is simply not the global expertise or capacity in the humanitarian or health world to respond to this kind of crisis at this scale at the rate that it is continuing to increase.

With the disease transmission rates nearly doubling each week there is little time to spare, and as President Obama announced yesterday, we are now significantly expanding the response with the deployment of the unique capabilities of our military to respond with the speed and the scale that is so essential to get ahead of this disease.

So those efforts will essentially provide the backbone for an expanded regional effort that will enable the entire international community to contribute.

It will include the establishment of a joint force command headquartered in Liberia, very importantly, a training facility in Liberia that will have a tent city and the training facilities to train 500 workers a week so that we can have a vital pipeline of health and management personnel.

They will include a regional base with lift and logistical capacity to expedite a surge of urgently needed equipment, supplies and personnel, and include command engineers to help construct the Ebola treatment units.

This is the critical infrastructure, coordination and logistics to provide the foundation for an ever greater response as needed so that we can bring all our resources to bear and set the lead for our international partners.

The President also announced the launch of our community care campaign. This is focused on getting vital information and support to families and communities so they can protect themselves and their families.

We will work with local communities and international partners to initially target 400,000 of the highest risk households with intensive outreach, information, and important tools for those unable to access a bed in a healthcare unit and we will simultaneously work on broad information campaigns to reach all of society and every household.

We recognize that a significant number of people in this region don't seek formal healthcare which is why ultimately the virus will only be controlled if people have a better understanding of what this is and how to prevent transmission.

We are hearing stories of ordinary west Africans who do not believe that Ebola is real. Show me Ebola, they say. So we are challenged to reverse deeply-ingrained cultural practices even as we help the affected communities.

Cultural funeral traditions, such as washing the body where family members touch and clean the body of the deceased, are contributing to the spread and women are especially vulnerable as even those who sometimes know they shouldn't continue this practice are pressured to do so.

Our partners are already saying thank you for the public messaging campaigns, that now people know that this is harmful and can spread the disease, even though it goes against their traditions.

This is a region of fragile states just emerging from decades of conflict and poverty, so we are also looking at how to help with economic help, food support, and salaries for health workers. We know that tough months lie ahead.

It will take a coordinated effort by the entire global community to stem this terrible crisis, but past outbreaks have been stopped and we are confident with this concerted effort we can stop this one.

I want to just add my commendation for the extraordinary courage of the health workers, including Dr. Brantly and the many, many west Africans who have sacrificed to provide help for their families and their neighbors.

We are remaining focused on outreach efforts to get additional medical workers willing and able to go to west Africa. So we encourage those who are interested in joining this historic response to go to our Web site at www.usaid.gov/ebola and we will continue to work together and across the international community to stem the tide on this disease.

Thank you very much.

[The prepared statement of Ms. Lindborg follows:]

Testimony of U.S. Agency for International Development
Assistant Administrator for Democracy, Conflict and Humanitarian Assistance
Nancy Lindborg

House Foreign Affairs Subcommittee on Africa, Global Health, Global Human Rights and International Organizations
September 17, 2014

"Global Efforts to Fight Ebola"

Chairman Smith, Ranking Member Bass, and Members of the Subcommittee; thank you for inviting me to testify on the U.S. response to the ongoing Ebola epidemic in West Africa, and for your interest in USAID and this critical issue.

Today the world is facing the largest and most-protracted Ebola epidemic in history. This devastating virus has sickened or killed more than 4,000 people across West Africa and for the first time ever, is being transmitted in densely populated urban areas. Since USAID last testified on the epidemic before this committee August 7, the situation on the ground has significantly deteriorated. In just over a month, both the number of reported cases and of deaths have more than doubled, and the situation has become increasingly grim. Without immediate action, the world is facing an unprecedented humanitarian crisis that could claim thousands more lives, threaten development and stability in West Africa, and spread to other parts of the world.

Growing in severity since July, the outbreak has spread through Guinea, Liberia, and Sierra Leone—countries that are fighting this vicious disease with fragile health and economic systems. Liberia and Sierra Leone have also only recently emerged from decades of civil war and are now falling prey to a new battle with Ebola. Further, the potential for regional spread has already revealed itself in Nigeria and Senegal. President Obama has declared this a top national security priority.

U.S. GOVERNMENT RESPONSE

The United States has been combating the Ebola epidemic since the first cases were reported in March, and we have expanded our efforts and increased personnel in the region as the crisis has unfolded. More than 120 specialists from across the U.S. government are on the ground in West Africa to prevent, detect, and stop the spread of this disease. USAID deployed a Disaster Assistance Response Team—or DART—to the region to oversee and coordinate the U.S. response, providing logistics, planning, program, and operational support to the affected countries; drawing forth critical assets and resources from several U.S. departments and agencies.

Through a whole-of-government approach, we're mounting an aggressive U.S. effort to fight this epidemic and have devised a clear strategy with four key pillars to stop this epic crisis: controlling the epidemic; mitigating second-order impacts, including blunting the economic, social, and political tolls; coordinating the U.S. and broader global response; and fortifying global health security infrastructure in the region and beyond.

Our goal is to enable the most effective international response possible, using our government-wide capabilities to fight the epidemic on a regional basis. Our current efforts have focused on controlling the spread of the disease—bringing in labs for specimen testing; supporting the construction and management of Ebola treatment units; airlifting critical relief supplies; strengthening emergency response systems of the affected governments; supporting burial teams who are safely managing human remains to prevent transmission; and spearheading mass public awareness campaigns with communities, describing how to prevent, detect, and treat Ebola.

EXPANDING U.S. GOVERNMENT EFFORTS

This crisis continues to escalate exponentially and requires an intensified speed and scale of response to address a rising rate of infection. That's why yesterday afternoon President Obama announced a significant expansion of our response.

These new efforts include U.S. Africa Command's establishment of a Joint Force Command headquartered in Liberia that will serve as a regional command and control to support and organize the U.S. military's activities in the region. We're setting up an Ebola training boot camp to create a pipeline of capable health care and management personnel—training up to 500 people per week—to boost our response capacity on the ground. To strengthen our logistics support, we're establishing a regional base that will expedite our surge of equipment, supplies, and personnel to West Africa. Most importantly, these efforts will provide the critical infrastructure of coordination, supplies, communications, and logistics that will enable and support an even greater response—so that we can bring all of our resources to bear and set the lead for our international partners.

The Department of Defense will also set up a 25-bed hospital in Liberia to help draw qualified medical personnel to the region; to date a critical gap in the international response. This facility will be open to all health care and aid workers who are working in West Africa on the Ebola crisis, should they fall ill while responding to this crisis.

The President also announced the launch of our Community Care Campaign, which will ensure that every family and every community gets the support they need to protect themselves from this deadly virus. Partnering with the affected countries, the U.N. Children's Fund (UNICEF), the Paul G. Allen Family Foundation, and organizations on the ground, USAID will initially

target 400,000 of the highest risk households in Liberia with vital training and important tools—soap, chlorine, and protective equipment.

Working alongside the Paul G. Allen Foundation, we will airlift 50,000 USAID-funded home healthcare kits this week to be delivered to some of the most isolated and vulnerable communities in Liberia. We will simultaneously work with every part of society to educate people on how to prevent and detect Ebola through mass public awareness campaigns supported by radio, text, television and community announcements. As we scale up our response, the only way the virus will be controlled is if we make concerted efforts to reach every community, and every home in the affected areas.

We know tough months lie ahead. It will require a coordinated effort by the entire global community to help stem this terrible public health crisis. But every outbreak of Ebola in the last 40 years has been stopped, and this one will be, as well.

STOPPING THE EPIDEMIC

In West Africa, the deadly spread of Ebola is presenting unique and distinctive challenges. Here in Washington, I head the USAID task force on the crisis that brings together experts from the disaster response, humanitarian, development, and health fields. This also includes our DART, which pulls specialists from USAID, the Centers for Disease Control and Prevention (CDC), the Department of Defense (DOD), the Department of Health and Human Services (HHS), and the U.S. Forest Service to coordinate the U.S. government's response.

The DART team's medical component, led by CDC, is supporting Ebola treatment units that help isolate and treat those affected by the disease, helping minimize the further spread of Ebola. CDC specialists across the region are assisting with contact tracing, database management, and health education. These experts are also providing technical guidance to the national public health agencies in the region to help prevent, detect, and stop the spread of the virus. The Department of Defense is working to upgrade laboratory testing facilities to help quickly detect the disease.

Days after the DART deployed to the region in early August, we began airlifting urgent medical supplies and emergency equipment to West Africa. This includes 10,000 sets of personal protective equipment to safeguard health workers—with an additional 130,000 being delivered in the coming weeks. Two portable water storage tanks and two water treatment systems; 40 tons of chlorine; 250 rolls of plastic sheeting to help bolster infrastructure at the Ebola treatment units; 5,000 body bags to increase support for the safe and dignified removal and transport of the bodies of Ebola victims; and 500 infrared thermometers to boost Ebola screening efforts.

To ensure these critical supplies are reaching the affected countries, USAID is supporting the UN Humanitarian Air Service, which is operating flights in and out of Guinea, Liberia, and Sierra Leone, ensuring that personnel and medical equipment are getting to areas of need despite commercial flight limitations.

FIGHTING MISCONCEPTIONS ABOUT EBOLA

This response has not only been about battling the disease, but also combating misconceptions about Ebola's very existence. Our DART staff tell us stories of ordinary West Africans who don't believe Ebola is real. "Show me Ebola," they say. That's why our Communications Care Campaign is prioritizing public education efforts to spread the word on prevention and treatment of the disease. Messages are being conveyed through radio, text, and television in local languages, and through the production of nearly 100 billboards and thousands of posters. To reach people with low literacy, USAID is training health volunteers on how best to verbally provide key messages to the community.

We're working to reverse deeply ingrained cultural practices as we help the affected communities understand that Ebola can be prevented, if and when the proper steps are taken. Cultural funeral traditions, such as burial procedures where family members touch and clean the body of the deceased, are contributing to the spread.

Our partners say that thanks to our public messaging campaigns, more people now know that touching dead bodies is harmful and can spread the disease—even though this goes against the cultural burial norms of the affected countries. Women are at the heart of this epidemic, and many are still pressured by the elders in their communities to clean the deceased, even though they know it can spread the disease and put them at risk.

There is also a stigma that comes with infection. We know that 50% of people who get sick don't seek treatment at hospitals or Ebola treatment units. Many are also terrified to get help because they hear rumors that if you fall ill and go to a hospital, you will never return. That's why USAID is targeting all of the families in the most at-risk counties in Liberia, beginning with four counties—or approximately 400,000 households—with household protection kits to help ensure they have the protection they need. Each kit provides basic protection and sterilization tools such as soap, chlorine, gloves, surgical masks, and gowns to help caregivers stay safe as they support their sick family members. These household interventions have been shown to reduce transmission and can be life-saving.

MITIGATING SIDE EFFECTS OF THE EPIDEMIC

This deadly epidemic underscores the importance of USAID's focus on ending extreme poverty and promoting resilient, democratic societies. As fragile states just emerging from decades of conflict and poverty, Sierra Leone and Liberia were particularly vulnerable as the disease jumped to urban environments. Even people who aren't sick have not escaped Ebola's reach. Commerce and trade have slowed, and daily life in some areas has come to a virtual standstill. Economic growth projections have been cut by more than half in all three of the most impacted countries, and the cost of living is rising—particularly in Liberia where inflation is expected to nearly double by the end of the year.

The United States is providing basic needs support and food aid to help counter these effects and boost access to food and water, especially for isolated communities. Through USAID's Office of Food for Peace, we're providing more than $6.6 million to the UN World Food Program's regional response—assistance that is providing rice, peas, and vegetable oil to patients receiving care at Ebola treatment units.

Responding together with the international community is vital for this crisis, which is why we're working not only across the U.S. government, but also diplomatically engaging with our donor and regional partners to drive more resources to the World Health Organization (WHO), which serves as the international lead on the Ebola response, and other NGOs on the ground. Our recent collaboration with the African Union (AU) to support the urgent deployment of trained and equipped AU medical workers to the region is a key example of how we can work together to combat this outbreak. These partnerships will be key to paving an effective way forward and addressing the crisis.

NEED FOR HEALTH CARE WORKERS

USAID is building a better system as we scale-up aid efforts. Our DART is strengthening emergency operations in the affected countries and has members supporting the Liberian Ebola Command Center, for example, to build the Liberian government's emergency response systems. The goal is to establish a framework of disaster response to improve coordination and streamline protocols so these governments can ultimately implement an organized and swift response.

Prior to the current epidemic, only one organization in the world—Médecins Sans Frontières (MSF)—had the Ebola-specific clinical capacity to treat and respond to such a crisis. Even so, MSF's capacity was premised on a moderate scale for a rural outbreak; what we face today in West Africa is a full-blown epidemic, concentrated increasingly in highly populated urban settings. The capacity to respond to an Ebola crisis of this scale and in this part of the world just simply did not exist—within MSF, in the international community, with the U.S. military, or

elsewhere. Our collective ability to rapidly deploy additional health care workers with the skill-set to combat this disease has been minimal.

There's also a high burn-out rate for the medical workers involved in this response, so it's absolutely critical that we have a pipeline of trained and skilled personnel who are on deck and ready to go. The bulk do not require advanced medical skills necessarily, but rather a rigorous understanding to approach infection control. This is why our Ebola training boot camp will be a vital tool as we move forward—and the Department of Defense is well-placed to establish this component.

We also encourage medical workers—nurses, doctors, and physicians assistants—who are interested in joining this historic response to register at www.usaid.gov/ebola/volunteers. Here they can find information on the crisis and how they can help.

CONCLUSION

We face a challenging global humanitarian situation today, and it is without doubt an unprecedented time for providing assistance. There are four 'Level 3 emergencies'—the UN designation for the highest level of humanitarian crisis—due to the conflicts in Syria, Iraq, South Sudan, and the Central African Republic. We are simultaneously confronting protracted emergencies in a number of other places around the world. It is within these extraordinary circumstances that, for the first time in history, USAID's Office of U.S. Foreign Disaster Assistance has deployed four DARTs—including our team in West Africa—to help save lives and alleviate suffering.

Importantly, I want to commend the courageous health care and aid workers who are every day risking their lives to save others. These are the true heroes in our fight against Ebola—and we owe it to them, and the thousands who have tragically succumbed to this cruel disease, to continue to think creatively and bring our resources to bear to stop the outbreak.

A coordinated global effort is required to help stem this tragic and deadly epidemic. But we can, and we will, stop the spread of Ebola. As President Obama said, we consider this epidemic to be a national security priority, and we are taking a whole-of-government approach to bring our resources to bear and enable the most effective international effort in the fight against Ebola. The United States remains committed to working with our international partners and the governments of the affected countries to end this crisis. Thank you for your time today and for the vital Congressional support that makes our life-saving work possible.

Mr. SMITH. Thank you very much, Nancy.

I would like to now ask Dr. Fauci if you would proceed.

STATEMENT OF ANTHONY S. FAUCI, M.D., DIRECTOR, NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES, NATIONAL INSTITUTES OF HEALTH, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Dr. FAUCI. Ranking Member Bass, members of the committee, I appreciate the opportunity to discuss with you today the role of the National Institute of Allergy and Infectious Diseases in the research that addresses the Ebola epidemic.

There are some visuals, I believe, on your screen in front of you and I will speak from them if you see them, if we can do that.

It is very interesting that we became involved in this in an unusual way dating back to the tragic events of 9/11 followed by the attacks by mail of anthrax to United States Senators and to the press because that triggered a multi agency effort in what we call biodefense involving the CDC, the FDA, the NIH, a variety of other agencies—including Homeland Security—to develop an agenda to be able to be prepared not only against deliberate attacks but against natural emerging and reemerging infectious diseases.

We developed a research agenda against what we call Category A agents, which is shown on this visual, including anthrax, botulism, plague, smallpox, tularemia, and notice on the last bullet is what we call the viral hemorrhagic fever viruses including Ebola, Marburg, Lassa and others.

These were of particular concern because, as we are painfully witnessing now, these viruses have a high degree of lethality and infectivity. Unfortunately, therapy consists mainly of supportive therapy with no specific anti-viral drugs, and a vaccine, as I will get to in a moment, is not yet available.

This is an electron micrograph of the Ebola virus, a particular deadly character, as you know, as we are experiencing. It is a member of the filovirus family because of the filamentous look that you see on this image.

Just a very brief word as to what we were referring to as the kinetics or dynamics of the epidemic. This visually shows you the 22 previous outbreaks, some of which were so small that they don't even fit on the scale.

If you will look at the far right, the current outbreak, as we have all mentioned several times, is more than all of the others combined both in numbers and in deaths. And if you look at the map of west Africa, this is a few days outdated but, indeed, even the underestimated numbers show about 5,000 infections and about 2,500 deaths in the countries involved.

Now, without a doubt, the approach to this is an intensification of the effort of infection control. This next slide is a bit frightening because if you look at the red line under Liberia that is a mathematical manifestation of what we call exponential increase.

Linear and incremental is not a steep slope. When you go up like that what you have is an exponential increase at the same time that we might be incrementally increasing our response. As we know in public health when you put incremental against exponential, exponential always wins and that is really the problem and

why we are so gratified and excited about the President's initiative about really ratcheting up the response in infection control.

But also supplementing and complementing that is the development of countermeasures and let me just take a minute to outline this because we at NIH and NIAID are involved in everything from basic to clinical research and also supplying the research resources for academic as well as industrial partners to develop the three main interventions—diagnostics, therapeutics, and vaccines.

So a moment on therapeutics. You have heard a lot about ZMapp. It is a combination of three artificially-produced antibodies directed against the Ebola virus.

The results in an animal—in this case, monkey model—have been really quite striking, and as I will get to in a moment it has been given to seven humans, the first time it has been in human.

It is the responsibility and the mandate of the NIH when more of this becomes available to strike the delicate balance of getting it to people who need it and at the same time proving that it is safe, that it really does work and if it does, how well does it work and does it, in fact, hopefully not have any paradoxical harm.

Also shown on this slide are a couple of other interventions that you will be hearing about or have heard about again. All did well in an animal model and now are either in or getting ready to go into Phase I trials—things like novel drugs that interfere with the reproductive process of the virus or small molecules that interfere with the replication of the virus.

This is a series of press releases regarding the ZMapp and you know there have been anecdotal data that it works. We are very, very pleased and gratified to have our colleague, Dr. Kent Brantly, with us today who received this.

Whether or not that was the deciding factor, we hope so and we hope to be able to prove it, but we don't know that right now and that is why a clinical trial is important.

And then, finally, the issue of vaccines. We have been working on vaccines for Ebola for several years and incrementally have done better and better in an animal model and even gone into Phase I. The most recent one is shown on this first bullet. It is referred to as the NIAID/GlaxoSmithKline candidate.

It is not the only vaccine candidate but it is the one that we have actually just started now, and as I know I have mentioned to this committee before, you go from an animal preclinical to a Phase I in human. If it is safe and it proves to be immunogenic, you then expand the trial to be able to find the important information—A, is it safe, B, does it work, and C, does it do no harm.

And, again, it will be the delicate balance of determining that at the same time that we actually make it available to the best extent that we can, and in this regard on September the first human received this at the NIH in Bethesda, Maryland in a 20-volunteer study. This is a little bit outdated.

We injected the 13th volunteer about 1 hour and 45 minutes ago up at the NIH, and we are hoping to get to 20, and the data will be available by the end of November or the beginning of December.

So in summary, members of the committee, the NIAID research has a dual mandate. For years and years, we continually do robust

and basic clinical research to be able to fulfill and determine pathogenic mechanisms and microbiology in infectious diseases.

Despite this effort every day, every week, every month, we still stand prepared at a moment's notice to respond to surprising emerging and reemerging infectious diseases and this is exactly what happened with the reemergence of Ebola in west Africa.

So we stand prepared for this pandemic and, hopefully, for anything in the future. Thank you.

[The prepared statement of Dr. Fauci follows:]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

The Role of the National Institute of Allergy and Infectious Diseases Research in Addressing Ebola Virus Disease

Testimony before the

House Foreign Affairs Committee

Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations

Anthony S. Fauci, M.D.

Director

National Institute of Allergy and Infectious Diseases

September 17, 2014

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to discuss the National Institutes of Health (NIH) response to the global health emergency of Ebola virus disease. I direct the National Institute of Allergy and Infectious Diseases (NIAID), the lead institute of the NIH for conducting and supporting research on infectious diseases, including viral hemorrhagic fevers such as those caused by Ebola virus infection.

For over six decades, NIAID has made important contributions to advancing the understanding of infectious, immunologic, and allergic diseases, from basic research on mechanisms of disease to applied research to develop diagnostics, therapeutics, and vaccines. NIAID has a dual mandate that balances research addressing current biomedical challenges with the capacity to respond quickly to newly emerging and re-emerging infectious diseases, including bioterror threats. Critical to these efforts are NIAID's partnerships with academia, pharmaceutical companies, international organizations such as the World Health Organization, and collaborations with other Federal entities, particularly the Centers for Disease Control and Prevention, the Food and Drug Administration (FDA), the Biomedical Advanced Research and Development Authority (BARDA), and the Department of Defense (DOD).

OVERVIEW OF EBOLA VIRUS DISEASE

Viral hemorrhagic fevers are severe illnesses that can be fatal and are caused by a diverse group of viruses including Marburg virus, Lassa virus, and Ebola virus. Infection with Ebola virus typically causes fever, severe vomiting, diarrhea, rash, profound weakness, electrolyte loss, impaired kidney and liver function, and in some cases internal and external bleeding. Since the

discovery of Ebola virus in 1976, outbreaks of hemorrhagic fever caused by Ebola virus have had fatality rates ranging from 25 percent to 90 percent, depending on the species of virus and the availability of medical facilities to care for infected patients. West Africa is currently experiencing the most severe Ebola epidemic ever recorded. As of last week, the epidemic surpassed 4,400 cumulative reported cases, including nearly 2,300 documented deaths according to CDC. The ongoing Ebola epidemic in Guinea, Liberia, Sierra Leone, Nigeria, and Senegal has generated more cases and deaths than the 24 previous Ebola outbreaks combined.

The ongoing public health crisis in West Africa demands a major amplification of efforts to identify and isolate infected individuals, perform contact tracing, and provide personal protective equipment for healthcare workers involved in the treatment of infected individuals. This still remains the time-proven approach to controlling and ultimately ending the epidemic. However, there is also a critical need to develop improved diagnostics, as well as safe and effective therapeutics and vaccines for Ebola since there are no such FDA-approved interventions available at this time. In this regard, NIAID has a longstanding commitment to advancing research to combat Ebola while ensuring the safety and efficacy of potential medical countermeasures such as treatments and vaccines.

HISTORY OF NIAID EBOLA VIRUS RESEARCH: RELATIONSHIP TO BIODEFENSE RESEARCH

The ability to safely and effectively prevent and treat Ebola virus infection is a longstanding NIAID priority. Since the 2001 anthrax attacks, NIAID has vastly expanded its research portfolio in biodefense and naturally emerging and re-emerging infectious diseases. This research targets pathogens that pose high risks to public health and national security. NIAID

has designated pathogens with high mortality such as anthrax, plague, smallpox, and Ebola virus as NIAID Category A Priority Pathogens to highlight the need for medical countermeasures against these dangerous microbes.

NIAID's expanded efforts in biodefense and emerging and re-emerging infectious diseases were undertaken with specific objectives. The first is to advance basic and translational research and facilitate development of effective products to combat deadly diseases such as Ebola. The second is to employ innovative strategies, such as broad spectrum vaccines and therapeutics, to prevent and treat a variety of related infectious diseases. The third is to strengthen our partnerships with biotechnology and pharmaceutical companies to help accelerate the availability of needed products for affected and at risk individuals.

Since 2001, NIAID's biodefense research has supported the development and testing of numerous candidate products to prevent or treat viral hemorrhagic fevers, including those caused by Ebola and other related viruses. The progress we have made with candidate vaccines, therapeutics, and diagnostics for Ebola virus would not be possible had we not made this important investment.

DEVELOPMENT AND TESTING OF EBOLA MEDICAL COUNTERMEASURES

In response to the Ebola public health emergency in West Africa, NIAID is accelerating ongoing research efforts and partnering with governments and private companies throughout the world to speed the development of medical countermeasures that could help control the current epidemic and future outbreaks. NIAID research on Ebola virus focuses on basic research to

understand how Ebola virus causes illness in animals and in people as well as applied research to develop diagnostics, vaccines, and therapeutics.

Diagnostics

Accurate and accessible diagnostics for Ebola virus infection are needed for the rapid identification and treatment of patients in an outbreak because the symptoms of Ebola can be easily mistaken for other common causes of fever in affected areas, such as malaria. NIAID continues to provide resources to investigators attempting to develop Ebola diagnostics. With NIAID support, Corgenix Medical Corporation is developing diagnostics for Ebola virus using recombinant DNA technology. NIAID also is advancing development of diagnostics, including those using novel technologies, which are capable of detecting multiple viruses including Ebola. Such innovative approaches can provide information critical to the creation of point-of-care diagnostics that could be distributed and used in areas where Ebola virus outbreaks occur. Intramural scientists from NIAID's Rocky Mountain Laboratories (RML) in Hamilton, Montana, and Integrated Research Facility in Frederick, Maryland, have responded to the epidemic by providing technical diagnostic support in Liberia.

Therapeutics

Currently, supportive care, including careful attention to fluid and electrolyte replacement, is the only effective medical intervention for patients with Ebola virus disease; no drugs are available specifically to treat Ebola virus infection. Experts are now evaluating whether drugs licensed or approved for the treatment of other diseases should be reevaluated for potential treatment of patients with Ebola in the current epidemic on an emergency basis. In parallel,

NIAID is supporting the development of novel therapeutics targeting Ebola virus. These investigational candidate therapeutics could possibly be used in clinical trials in the current epidemic and hopefully will prove to be safe and effective; if so, such treatments could be more widely available for future outbreaks. It is important to note that NIAID-supported candidate therapeutics are in early development and are currently available only in limited quantities.

NIAID has provided support to and collaborated with Mapp Biopharmaceutical, Inc., to develop MB-003, a combination of three antibodies that prevents Ebola virus disease in monkeys when administered as late as 48 hours after exposure. An optimized product derived from MB-003, known as ZMapp, has shown to be substantially more effective in animal models than earlier combinations and protected monkeys from death due to Ebola virus up to five days after infection, according to Mapp Biopharmaceutical, Inc. NIAID's preclinical services are now being used to provide pivotal safety data to support the use of ZMapp for clinical trials in humans. Mapp Biopharmaceutical, Inc., has announced that ZMapp was recently administered to humans for the first time as an experimental treatment to several Ebola-infected patients, including two Americans. It is not possible at this time to determine whether ZMapp benefited these patients. NIAID is working closely with partners at DOD, BARDA, and FDA to advance development and testing of ZMapp to determine whether it is safe and effective. BARDA has recently announced plans to optimize and accelerate the manufacturing of ZMapp so that clinical safety testing can proceed as soon as possible.

NIAID also has funded BioCryst Pharmaceuticals to develop and test BCX4430, a novel drug that interferes with the reproductive process of the virus and has activity against a broad spectrum of viruses. According to BioCryst, BCX4430 has protected animals against infection

by Ebola virus and the related Marburg virus. BioCryst has announced that a Phase 1 clinical trial of this drug is expected to begin in late 2014 or early 2015.

In related work, NIAID intramural scientists at RML are working on therapeutics that might be effective against all hemorrhagic fever viruses including the filoviruses Ebola and Marburg and the arenavirus Lassa. Ribavirin, a drug currently used to treat hemorrhagic fever viruses such as Lassa virus, is being examined for its potential use in combination therapy to treat Ebola virus infection. NIAID scientists also are studying human interferons as Ebola therapies. Other therapeutics being examined by scientists at RML are in early stages of study and if successful, will advance to animal model testing.

Vaccines

A safe and effective Ebola vaccine could be a critically important tool to help prevent Ebola virus disease and help contain future outbreaks. The hope is that such a vaccine could be licensed and used in the field to protect frontline healthcare workers and individuals living in areas where Ebola virus exists. Two Ebola vaccine candidates are entering Phase 1 clinical testing this fall. NIAID will play a critical role in advancing these Ebola vaccine candidates. The results of these Phase 1 studies will inform essential discussions about whether and how such vaccines could be of use in the current epidemic or future Ebola outbreaks.

The NIAID Vaccine Research Center (VRC) has a robust viral hemorrhagic fever vaccine development program. Since 2003, the VRC has evaluated three early-generation Ebola vaccine candidates and one Marburg vaccine candidate in Phase 1 clinical trials at the NIH campus. An additional Phase 1 clinical trial was conducted in Kampala, Uganda, in collaboration with DOD. None of the early-generation candidates raised safety concerns in these small trials; however,

they did not elicit the level of immune response thought to be needed to provide protection against exposure to the virus. The data from those trials have contributed directly to the VRC's current Ebola vaccine collaboration with the pharmaceutical company GlaxoSmithKline (GSK). VRC and GSK have developed an experimental vaccine that uses a chimpanzee virus (similar to the common cold virus), Chimp Adenovirus 3 (CAd3), as a carrier, or vector, to introduce Ebola virus genes into the body; these genes code for Ebola proteins that stimulate an immune response. The vaccine candidate has shown promising results in animal models against two Ebola virus species, including the Zaire Ebola species responsible for the current epidemic in West Africa. A small Phase 1 study to examine the safety and ability of this candidate to induce an immune response in humans began on September 2, 2014, at the NIH Clinical Center in Bethesda, Maryland. Results from the study are anticipated by the end of this calendar year, and will help inform future development of the vaccine.

Additional Phase 1 clinical trials of Ebola vaccine candidates are expected to launch before the end of 2014. In October, testing will begin in the United States on a vaccine candidate derived from the CAd3-vector designed to protect against a single Ebola virus species, the Zaire Ebola virus. NIAID and GSK also will donate doses of this vaccine candidate to enable testing by NIAID partners in the United Kingdom and the West African country of Mali, where existing NIAID research infrastructure will support the vaccine trial. Also this fall, NIH is collaborating with DOD and NewLink Genetics Corporation on Phase 1 safety studies of an investigational Ebola vaccine based on vesicular stomatitis virus (VSV). The VSV vaccine will serve as a vector or carrier for an Ebola gene similar to how the Chimp adenovirus served as a vector or carrier as described above for the NIAID/GSK vaccine. This vaccine candidate was developed by and licensed from the Public Health Agency of Canada.

In addition to these Ebola candidates entering Phase 1 trials in 2014, NIAID supports a broad portfolio of Ebola vaccine research, including partnering with biopharmaceutical companies. NIAID also makes preclinical services such as animal testing to advance product development available to researchers in academia and industry. More than 30 different filovirus vaccine formulations have been evaluated through NIAID's preclinical services since 2011 using animal models and assays that NIAID has developed over many years.

NIAID has supported the biopharmaceutical company Crucell to develop a recombinant adenovirus-vectored Ebola vaccine. In animal studies, this vaccine candidate protected against filovirus infection, including Ebola virus. NIAID has played an instrumental role in the recent announcements by Johnson & Johnson (parent company of Crucell) and Bavarian Nordic that they will collaborate on a two dose (prime-boost) vaccination regimen that will begin Phase 1 testing in 2015.

NIAID intramural scientists are collaborating with Thomas Jefferson University investigators to produce a vaccine candidate based on an existing rabies vaccine. The researchers aim to generate immunity to Ebola, Marburg, and rabies viruses, important diseases in certain regions in Africa. The investigators plan to pursue a version of the vaccine for human and veterinary use as well as a version for use in African wildlife. The wildlife vaccine could help prevent transmission of Ebola virus from animals to humans. The vaccine candidate for use in humans is undergoing preclinical testing and has demonstrated protection against infection by rabies and Ebola viruses in animal models. NIAID is currently partnering with DOD to produce sufficient quantities of the vaccine candidate to begin clinical testing in early 2015.

NIAID also is supporting the biotechnology company Profectus BioSciences, Inc., to investigate a second recombinant VSV-vectored vaccine candidate against Ebola and Marburg

viruses. Profectus is pursing preclinical testing of the vaccine in preparation for a future Phase 1 clinical trial. Additionally, NIAID is collaborating with the Galveston National Laboratory & Institute for Human Infections and Immunity at the University of Texas Medical Branch at Galveston to further progress made by NIAID intramural scientists on a paramyxovirus-based vaccine against Ebola and Marburg viruses.

Other NIAID-supported efforts include Ebola virus vaccine candidates in early development, such as a DNA vaccine targeting Ebola and Marburg viruses, an adenovirus-5-based intranasal Ebola vaccine, and a combination virus-like particle/DNA vaccine targeting Ebola and Marburg viruses to be delivered by microneedle patch. Knowledge gained through these studies will further the goal of the ultimate deployment of a safe and effective vaccine that will prevent this deadly disease.

Clinical Trials

It is important to balance the urgency to deploy investigational medical countermeasures in an emergency such as the current Ebola outbreak with the need to ensure the maximal safety and to determine the efficacy of candidate drugs and vaccines for Ebola. We will do this with the strictest attention to safety considerations, established scientific principles, and ethical considerations and compassion for and realization of the immediate needs of the affected populations. The United States government, working in partnership with industry, has an established mechanism for testing and reviewing the safety and efficacy of potential medical interventions. We also have an emergent crisis in West Africa that demands a quick and compassionate response.

NIAID is committed to working with our partners to evaluate candidate drugs and vaccines for safety and efficacy. We are working to generate the evidence to show whether potential interventions are safe and effective to reassure affected communities that we are pursuing the tools needed to prevent and treat this deadly disease. Our partnerships with industry will be critical to move these products expeditiously along the development pipeline into clinical trials. NIAID is currently working to accelerate the vaccines discussed above into Phase I clinical trials in healthy volunteers. The data from these trials will help demonstrate whether candidate Ebola vaccines are safe in humans and are capable of generating the desired immune response. Candidate Ebola treatments will be similarly evaluated for safety and markers of potential efficacy. If successful, these candidates will be advanced to further testing in larger numbers of people. As we proceed through clinical testing, we will continue to work with our partners in the FDA to accelerate development of and speed access to the products, while also protecting the safety and rights of study volunteers.

CONCLUSION

While NIAID is an active participant in the global effort to address the public health emergency occurring in West Africa, it is important to recognize that we are still in the early stages of understanding how infection with the Ebola virus can be treated and prevented. As we continue to expedite research while enforcing high safety and efficacy standards, the implementation of the public health measures already known to contain prior Ebola virus outbreaks and the implementation of treatment strategies such as fluid and electrolyte replacement are essential to preventing additional infections, treating those already infected, protecting health care providers, and ultimately bringing this epidemic to an end. We will

continue to work with biopharmaceutical companies and public health agencies throughout the world to develop and distribute medical countermeasures for Ebola virus disease as quickly as possible. NIAID remains committed to fulfilling its dual mandate to balance research on current biomedical challenges with the capability to mobilize a rapid response to newly emerging and re-emerging infectious diseases.

Hearing of the House Foreign Affairs Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations

The Role of the National Institute of Allergy and Infectious Diseases in Research Addressing Ebola Virus Disease

Anthony S. Fauci, M.D.
Director
National Institute of Allergy and Infectious Diseases
National Institutes of Health

September 17, 2014

9/11 Attacks

2001 Anthrax Attacks

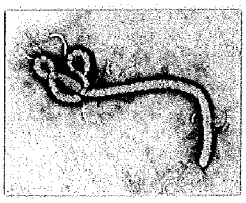
Category A pathogens

- Anthrax (*Bacillus anthracis*)
- Botulism (*Clostridium botulinum* toxin)
- Plague (*Yersinia pestis*)
- Smallpox
- Tularemia (*Francisella tularensis*)
- Viral hemorrhagic fever viruses (e.g., Ebola, Marburg, Lassa and Machupo)

Viral Hemorrhagic Fever Viruses

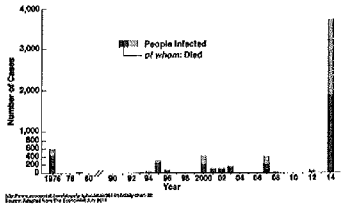
- High degree of lethality and high infectivity
- Therapy: Mainly supportive
- Vaccine: Not available at present

Ebola Virus

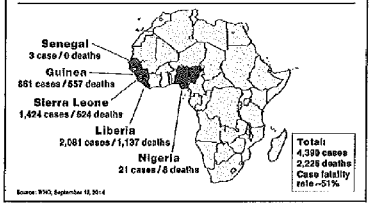


Source: CDC

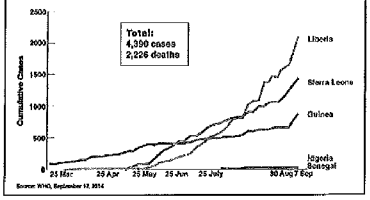
Ebola Outbreaks Since 1976

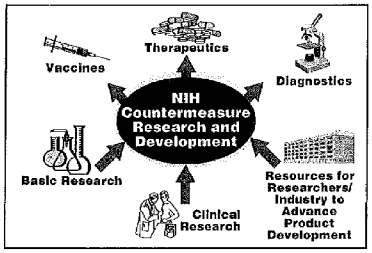


Ebola Virus Disease in West Africa, 2014



Ebola Virus Disease In West Africa, 2014 by Country





NIAID Ebola Therapeutics in Development

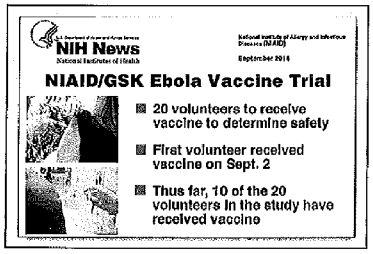
- ZMapp (Mapp Biopharmaceutical)
  - Combination of 3 artificially produced antibodies directed against the Ebola virus
- BCX4430 (BioCryst)
  - A novel drug (nucleoside analogue) that interferes with the reproductive process of the virus
- TKM-Ebola (Tekmira Pharmaceuticals)
  - Small inhibitory RNA molecule that interferes with the replication of the virus (supported by the Department of Defense)

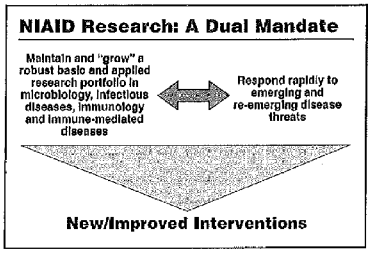
ZMapp Administered to Several Individuals

NIAID Ebola Vaccines in or Approaching Phase I Trials

NIAID/GSK (chimp adenovirus vector)	*Phase I trials initiated September 2014 at the NIH*
NewLink (VSV vector)	*Phase I trials expected fall 2014*
Crucell (adenovirus vector)	*Phase I trials expected fall 2015*

Other vaccines in development: Profectus (VSV vector); Bavarian Nordic (MVA vector); NIAID Intramural, Thomas Jefferson Univ. (rabies vector)


NIH News
National Institutes of Health
September 2014
NIAID/GSK Ebola Vaccine Trial
20 volunteers to receive vaccine to determine safety
First volunteer received vaccine on Sept. 2
Thus far, 10 of the 20 volunteers in the study have received vaccine


NIAID Research: A Dual Mandate
Maintain and "grow" a robust basic and applied research portfolio in microbiology, infectious diseases, immunology and immune-mediated diseases
Respond rapidly to emerging and re-emerging disease threats
New/Improved Interventions

Mr. SMITH. Dr. Fauci, thank you so very much for your testimony and your leadership.

Dr. Borio.

STATEMENT OF LUCIANA BORIO, M.D., DIRECTOR, OFFICE OF COUNTERTERRORISM AND EMERGING THREATS, OFFICE OF THE CHIEF SCIENTIST, U.S. FOOD AND DRUG ADMINISTRATION, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Dr. BORIO. Good morning, Chairman Smith, Ranking Member Bass and members of the subcommittee. Thank you for the opportunity to appear before you today to discuss FDA's actions to respond to the Ebola epidemic in west Africa.

This epidemic, with so many lives lost, is heartbreaking and tragic. My colleagues and I at the FDA are fully dedicated to doing all we can to help end it as quickly as possible.

The primary approach to containing this epidemic remains standard, tried and true public health measures, but effectively implementing such measures on a broad scale has proven challenging, and I know the professionals caring for patients with Ebola are doing all they can under very difficult conditions.

They are operating in a setting of very limited healthcare infrastructure which has made it almost impossible for them to provide supportive medical care, such as intravenous fluids and electrolytes, for the large number of patients who need them, and this response is further complicated by the lack of specific treatments or vaccines that have been shown to be safe and effective for Ebola.

In situations like this, the FDA plays a very critical role. We have one of the most flexible regulatory frameworks in the world and we are working diligently to facilitate and speed the development, manufacturing, and availability of investigational products such as vaccines, therapies, and diagnostic tests.

We are providing FDA's unique scientific and regulatory expertise to U.S. Government agencies that support medical product development, agencies such as Dr. Fauci's at NIAID, BARDA, and the Department of Defense.

We are working interactively with companies to clarify regulatory requirements to help expand manufacturing capacity and we expedite the review of data as it is received so there is no lag between receiving data and reviewing data.

As a result, the vaccine candidate being co-developed by the NIAID and GlaxoSmithKline began Phase I testing on September 2 and a second vaccine candidate is expected to begin clinical testing very soon.

We will continue to work closely with all of these companies, again, to speed development of their products. In addition, we are collaborating with the WHO and working with several of our international counterparts, including the European Medicine Agencies and Health Canada, to exchange information about investigational products for Ebola and considerations for their deployment in west Africa.

It is important to note, though, that these investigational products are in the earliest stages of development. For most, only small amounts have been manufactured for early testing. This constrains

options for assessing their safety and efficacy in clinical trials and for wider distribution and use.

Access to limited the supplies of investigational products during an epidemic like this should be through clinical trials when possible because they provide an ethical means for access while also allowing us to learn about product safety and efficacy.

FDA is working with developers to encourage the conduct of practical, ethical, and informative trials so the global community can know for sure the risks and clinical benefits of these products.

But until such trials are established, we will continue to facilitate access to these products when available and when requested by clinicians.

We have mechanisms such as compassionate use which allow patients to access investigational products outside of clinical trials when we assess that the expected benefits outweigh the potential risks for the patient.

This epidemic has posed incredible demands on FDA. There are more than 200 staff at FDA involved in this response and without exception everyone involved has been proactive, thoughtful, and adaptive to a complex range of issues that have emerged.

Developing these products for Ebola is highly complex and will, unfortunately, take time. I once again stress that public health measures remain the cornerstone of curbing this epidemic and improving the medical infrastructure in the affected countries is critical to save lives.

Such infrastructure is also essential for advancing product development to meet the global access to vaccines and cures. FDA is fully committed to sustaining our deep engagement and aggressive response activities.

Thank you so much.

[The prepared statement of Dr. Borio follows:]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration
Silver Spring, MD 20993

STATEMENT

OF

LUCIANA BORIO, M.D.

ASSISTANT COMMISSIONER FOR COUNTERTERRORISM POLICY

DIRECTOR, OFFICE OF COUNTERTERRORISM AND EMERGING THREATS

DEPUTY CHIEF SCIENTIST (ACTING)

FOOD AND DRUG ADMINISTRATION

DEPARTMENT OF HEALTH AND HUMAN SERVICES

BEFORE THE

SUBCOMMITTEE ON AFRICA, GLOBAL HEALTH, GLOBAL HUMAN RIGHTS,

AND INTERNATIONAL ORGANIZATIONS

COMMITTEE ON FOREIGN AFFAIRS

U.S. HOUSE OF REPRESENTATIVES

"Global Efforts to Fight Ebola"

September 17, 2014

RELEASE ONLY UPON DELIVERY

INTRODUCTION

Good afternoon Chairman Smith, Ranking Member Bass, and members of the Subcommittee. I am Dr. Luciana Borio, Assistant Commissioner for Counterterrorism Policy, Director of the Office of Counterterrorism and Emerging Threats, and Acting Deputy Chief Scientist at the Food and Drug Administration (FDA or the Agency). Thank you for the opportunity to appear today to discuss FDA actions in response to the need for interventions against the Ebola epidemic in West Africa.

As you know, the Ebola epidemic in West Africa is the worst in recorded history. As of September 8, 2014, there are 4,293 confirmed or suspected cases in Guinea, Liberia, Nigeria, and Sierra Leone, and 2,296 deaths. A single imported case has been documented from Guinea to neighboring Senegal. In addition, Ebola infections have re-emerged in Central Africa in the Democratic Republic of the Congo, and appear to be unrelated to the epidemic in West Africa, with 62 suspected cases and 35 deaths.

The toll of this epidemic, with so many lives lost and so many others fighting for their lives, is heartbreaking and tragic. As Dr. Thomas Frieden, Director of the Centers for Disease Control and Prevention (CDC), who advised this Committee a few weeks ago and has since visited the countries affected in West Africa, has noted, the epidemic is larger than reported and the situation is going to get worse before it gets better. The World Health Organization (WHO) recently assessed that the actual number of cases may be two to four times higher than reported and the number of infections could exceed 20,000 over the course of the epidemic.

The primary approach to containing the current epidemic remains standard public health measures, such as identifying, isolating, and caring for patients who are ill, making sure health care workers have access to personal protective equipment and are properly trained in infection control measures, and tracing patients' contacts to detect any secondary infections as soon as possible. However, this epidemic presents complex challenges because of the minimal health care and public health infrastructure available within affected countries and very limited capacity to provide supportive care in-country. This tragic situation is further complicated because there are no treatments or vaccines shown to be safe or effective for the Ebola virus, and products currently under development are in the very early stages of investigation. FDA is dedicated to do all that we can to respond effectively and rapidly to this epidemic.

FDA's Response to the Ebola Epidemic

FDA has a critical role in helping to facilitate the development, manufacturing, and availability of investigational products for use against Ebola virus disease. FDA is actively working to facilitate development of treatments and vaccines with the potential to help mitigate this epidemic. We are providing scientific and regulatory advice to U.S. government agencies that support medical product development, including the National Institute of Allergy and Infectious Diseases (NIAID) at the National Institutes of Health (NIH), the Biomedical Advanced Research and Development Authority (BARDA), and the U.S. Department of Defense (DoD), to help speed development and production programs. We also are working interactively with medical product sponsors to clarify regulatory requirements and expedite regulatory review of data, and thereby help advance the development of investigational products as quickly as possible. This includes expediting the review of Investigational New Drug (IND) applications, which are required for FDA-regulated clinical trials of drugs and vaccines to proceed. For example, FDA

reviewed IND applications for two investigational Ebola vaccines and, after such review, allowed them to proceed. NIAID, which is co-developing an Ebola vaccine with GlaxoSmithKline (GSK), publicly announced that it began Phase I clinical testing in early September of this year. Additionally, NewLink Genetics stated publicly that it will proceed with Phase I clinical trials of its Ebola vaccine candidate. We continue to work closely with therapeutic product developers to speed development of these products as quickly as possible.

FDA also is collaborating with WHO and working with several of our international regulatory counterparts, including the European Medicines Agency, Health Canada, and others, to exchange information about investigational products for Ebola. These efforts support regulatory collaboration to harmonize and accelerate development and, we hope, will result in approval of medical products in the United States and in other nations. With this important goal in mind, FDA recently entered into a confidentiality commitment with WHO to allow the exchange of non-public information concerning medical products that address issues relevant to response to the current Ebola crisis, as well as more broadly to prepare for or respond to any future events.

Last week, I had the opportunity to participate in a WHO-sponsored consultation with my Federal colleagues, as well as representatives of the international public health community and medical product sponsors, to discuss leading investigational treatments and vaccines for Ebola and key considerations for deployment in West Africa. The complex issues discussed included clinical testing (e.g., study designs and location of studies), availability and evidence supporting the use of novel therapeutic drugs, ethical considerations such as inclusion of patients in experimental protocols, and data collection. Moving forward, FDA is participating in a regulatory working group of international health regulators that includes members of the affected

countries in West Africa. We are looking forward to working with our international colleagues to foster development of and access to investigational products in affected countries.

The investigational vaccines and treatments for Ebola are in the earliest stages of development and have not been tested for safety or effectiveness in humans. Currently, there are only small amounts of some experimental products that have been manufactured for testing. This constrains our options for both properly assessing safety and efficacy of these investigational products in, and making material available for therapeutic use outside of, a clinical trial (also known as expanded access) to respond to the epidemic. Nonetheless, while investigational products are being developed, with the goal of product approval and manufacturing for wide-scale use, FDA is doing all it can to enable access to these products when requested and the circumstances warrant. FDA has one of the most flexible regulatory frameworks in the world, which includes mechanisms to enable access to investigational medical products when, based on criteria that, among other considerations, balance expected risk and benefit to the patient, it would be appropriate to use such products. It also means that FDA's regulatory decisions are based on the best available science and the best interest of public health.

Under certain circumstances, clinicians may submit an emergency IND (eIND) application to FDA under the FDA's Expanded Access provisions to make available investigational products for individual patients outside of clinical trials. FDA has enabled access to Ebola products under an eIND in response to this epidemic. In addition, under the FDA's Emergency Use Authorization (EUA)[1] authority, we can allow the use of an unapproved medical product—or an unapproved use of an approved medical product—for a larger population during emergencies,

[1] Under the Federal Food, Drug, and Cosmetic Act, amended by the Project BioShield Act of 2004 [PL 108-276] and the Pandemic and All-Hazards Preparedness Reauthorization Act of 2013 [PL 113-5], the Secretary of HHS has the authority to authorize the "emergency use" of medical countermeasures in certain situations [21 USC § 360bbb-3].

when, among other reasons, there is no adequate, approved, and available alternative. FDA authorized the use of an Ebola diagnostic test, developed by DoD, under an EUA to detect the Ebola virus in laboratories designated by DoD. This test can help facilitate an effective response to the ongoing epidemic in West Africa by rapidly identifying patients infected with Ebola virus and facilitating appropriate containment measures and clinical care. The authorized test also has been made available to 12 laboratories within the United States. These laboratories are located close to "ports-of-entry," such as those in Texas known to have travelers from West Africa working in the energy business. The tests also are being used to rule out Ebola in individuals with signs and symptoms similar to Ebola infection, such as those with malaria infection. We are continuing to work with other diagnostic product developers who are interested in pursuing an EUA, or other appropriate mechanisms, for their investigational diagnostics to test for Ebola.

Unfortunately, during epidemics such as this, fraudulent products that claim to prevent, treat, or cure a disease rapidly appear on the market. FDA has learned of several fraudulent products that claim to prevent or treat Ebola virus infection. In response, we issued a statement, warning consumers about fraudulent Ebola treatment products, and we are taking actions against fraudulent claims to protect public health.

CONCLUSION

This epidemic has posed incredible demands on FDA, and, I could not be more proud of the dedication and leadership the Agency has shown in responding to this epidemic. We have explored multiple ways to be highly responsive and adaptive to the complex range of issues this epidemic has presented and will continue to present.

Developing the medical products to help bring this Ebola epidemic under control is highly complex and will, unfortunately, take time. The close cooperation and collaboration within FDA, within the U.S. government, and with our international partners, is essential. These efforts will help facilitate the development and availability of medical products to respond to Ebola.

FDA is fully committed to sustaining our deep engagement and aggressive response activities. We will continue to work closely with our U.S. government and international partners and with product developers to speed the development and availability of promising medical products that offer the potential to end this epidemic as quickly as possible. Finally, we are committed to sustaining these efforts to help prevent such epidemics in the future.

Thank you, and I am happy to answer your questions.

Mr. SMITH. Thank you very much for your testimony.
Dr. Bell.

STATEMENT OF BETH P. BELL, M.D., DIRECTOR, NATIONAL CENTER FOR EMERGING AND ZOONOTIC INFECTIOUS DISEASES, CENTERS FOR DISEASE CONTROL AND PREVENTION, U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

Dr. BELL. Good morning, Chairman Smith, Ranking Member Bass, members of the subcommittee and members of other committees.

I am Dr. Beth Bell. I am the director of the National Center for Emerging and Zoonotic Infectious Diseases at the CDC. I appreciate the opportunity to be here today to discuss the current epidemic of Ebola in west Africa, which illustrates in a tragic way the need to strengthen global health security.

I will be updating you on testimony that CDC Director Tom Frieden gave before this subcommittee in August when you played an important role in calling attention to this emerging epidemic.

The Ebola epidemic in Guinea, Liberia, and Sierra Leone is ferocious and it is spreading exponentially. The current outbreak is the first that has been recognized in west Africa and the biggest and most complex Ebola epidemic ever documented.

As of early September, there were more than 4,500 confirmed and suspected cases and over 2,500 deaths, though we believe the actual numbers could be at least two or three times higher.

We have now also seen cases imported into Nigeria and Senegal from the initially affected areas and other countries are at risk of similar exportations as the outbreak grows. There is an urgent need to help bordering countries to better prepare for cases now and to strengthen detection and response capabilities throughout Africa.

The secondary effects of this outbreak now include the collapse of the underlying healthcare systems resulting, for example, in an inability to treat malaria or to safely deliver an infant as well as non-health impacts such as economic and political instability and increased isolation of this area of Africa.

These impacts are intensifying and not only signal a growing humanitarian crisis but also have direct impacts on our ability to respond to the Ebola epidemic itself. There is a window of opportunity to control the spread of this disease but that window is closing.

If we do not act now to stop Ebola, we could be dealing with it for years to come, affecting larger areas of Africa. Ebola is currently an epidemic, the worst Ebola outbreak in history, but we have the tools to stop it and an accelerated global response is urgently needed and underway, as the President announced yesterday.

It is important to note that we do not view Ebola as a significant public health threat to the United States. The best way to protect the U.S. is to stop the outbreak in west Africa. But it is possible that an infected traveler might arrive in the U.S.

Should this occur, we are confident that our public health and healthcare systems can prevent an Ebola outbreak here and recog-

nize that the authorities and investments provided by the Congress have put us in this strong position.

Many challenges remain, particularly since there is currently no therapy or vaccine shown to be safe and effective against Ebola. We need to strengthen the global response which requires close collaboration with WHO, additional assistance from international partners and a strong and coordinated United States Government response.

CDC has over 100 staff in west Africa and hundreds of additional staff are supporting this effort from Atlanta. CDC will continue to work with our partners across United States Government and elsewhere to focus on five key strategies to stop the outbreak: Establishing effective emergency operations centers in countries, rapidly ramping up isolation and treatment facilities, helping promote safe burial practices, strengthening infection control and other elements of healthcare systems, and improving communication about the disease and how it can be contained.

Controlling the outbreak will be costly and require a sustained effort by the U.S. and the world community. Within HHS the administration recently proposed that the Congress provide $30 million for CDC's response during the continuing resolution period and for efforts to develop countermeasures.

Yesterday the President was briefed at CDC on the epidemic and announced that the unique logistics and materiel capabilities of the U.S. Military will be engaged as part of an urgent and intensified U.S. Government response.

As my colleagues can attest, we are working across United States Government to assess the full range of resources that can be leveraged to change the trajectory of this epidemic.

Working with our partners, we have been able to stop every previous Ebola outbreak and we are determined to stop this one. It will take meticulous work and we cannot take shortcuts.

As CDC Director Tom Frieden has noted, fighting Ebola is like fighting a forest fire—leave behind one burning ember, one case undetected, and the epidemic could reignite. Ending this epidemic will take time and continued intensified effort.

The tragedy also highlights the need for stronger public health systems around the world. There is worldwide agreement on the importance of global health security but the Ebola epidemic demonstrates that there is much more that needs to be done.

In Dr. Frieden's previous testimony, he outlined new investments we are seeking to strengthen fundamental public health capabilities around the globe. If these people, facilities, and labs had been in place in the three countries currently battling Ebola, the early outbreaks would not have gotten to what we are facing now.

Stopping outbreaks where they occur is the most effective and least expensive way to protect people's health. I know many of you have travelled to Africa to see our work in global health, as have I, and we all come away with an appreciation for the enormous challenges many people and countries face.

These may never have been more evident than in the current Ebola epidemic. Each day for the past months I have been in personal contact with our teams in the field. Their experiences rein-

force the dire need and put real stories and faces on a tragedy that can't simply be reduced to numbers and charts.

But these stories from the field also reinforce the unique and indispensable role that CDC and our many partners are playing and the sense that with an intensified global focus we can make a real difference.

Thank you again for the opportunity to appear before you today and for making CDC's work on this epidemic and other global threats possible.

[The prepared statement of Dr. Bell follows:]

House Committee on Foreign Affairs, Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations

Global Efforts to Fight Ebola

September 17, 2014

Statement of Beth Bell, MD, MPH, Director, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention

Good afternoon Chairman Smith, Ranking Member Bass and members of the Subcommittee. Thank you for the opportunity to testify before you today and for your ongoing support for the Centers for Disease Control and Prevention's (CDC) work in global health. I am Dr. Beth Bell, Director of the National Center for Emerging and Zoonotic Infectious Diseases at the CDC. I appreciate the opportunity to be here today to discuss the current epidemic of Ebola in West Africa, which illustrates in a tragic way the need to strengthen global health security.

We do not view Ebola as a significant public health threat to the United States . It is not transmitted easily, does not spread from people who are not ill, and cultural norms that contribute to the spread of the disease in Africa – such as burial customs – are not a factor in the United States. We know how to stop Ebola with strict infection control practices which are already in widespread use in American hospitals, and by stopping it at the source in Africa. There is a window of opportunity to tamp down the spread of this disease, but that window is closing. CDC is committing significant resources both on the ground in West Africa and through our Emergency Operations Center here at home. But this is a whole of Government response, with agencies across the United States Government committing human and financial resources.

To date, the United States Government has spent more than $100 million to address the Ebola epidemic, and just last week the U.S. Agency for International Development (USAID) announced plans to make available up to $75 million in additional funding. In addition, we have just proposed that the Congress provide an additional $88 million through the continuing resolution process. This funding would allow us to support development and manufacturing of Ebola therapeutic and vaccine candidates for clinical trials and to send additional response workers from CDC as well as lab supplies and equipment. If the Congress includes this additional funding, it would bring our total commitments to date to over $250 million. Last week, the President indicated that the need to engage the unique logistics and materiel capabilities of the U.S. military on this response.

We need to, and are, working with our international partners, to scale up the response to the levels needed to stop this epidemic.

Ebola is a severe, often fatal, viral hemorrhagic fever. The first Ebola virus was detected in 1976 in what is now the Democratic Republic of Congo. Since then, outbreaks have appeared sporadically. The current epidemic in Guinea, Liberia, and Sierra Leone is the first that has been recognized in West Africa and the biggest and most complex Ebola epidemic ever documented. We have now also seen cases imported into Nigeria and Senegal from the initially affected areas, which is of concern.

Ebola has an abrupt onset of symptoms similar to many other illnesses, including fever, chills, weakness and body aches. Gastrointestinal symptoms such as vomiting and diarrhea are common and severe, and can result in life threatening electrolyte losses. In approximately half of cases there is hemorrhage--serious internal and external bleeding. There are two things that are very important to understand about how Ebola spreads. First, the current evidence suggests human-to-human transmission of Ebola only happens from people who are symptomatic– not from people who have been exposed to, but are not ill with the disease. Second, everything we have seen in our decades of experience with Ebola indicates

that Ebola is not spread by casual contact; Ebola is spread through direct contact with bodily fluids of someone who is sick with, or has died from Ebola, or exposure to objects such as needles that have been contaminated. While the illness has an average 8-10 day incubation period (though it may be as short as two days and as long as 21 days), we recommend monitoring for fever and signs of symptoms for the full 21 days. Again, we do not believe people are contagious during that incubation period, when they have no symptoms. Evidence does not suggest Ebola is spread through the air. Catching Ebola is the result of exposure to bodily fluids, which we are seeing occur in West Africa, for example, in hospitals in weaker health care systems and in some African burial practices. Getting Ebola requires exposure to bodily fluids of someone who is ill from – or has died from – Ebola.

The early recorded cases in the current epidemic were reported in March of this year. Following an initial response that seemed to slow the early outbreak for a time, cases flared again due to weak systems of health care and public health and because of challenges health workers faced in dealing with communities where critical disease-control measures were in conflict with cultural norms. As of last week, the epidemic surpassed 4,400 cumulative reported cases, including nearly 2,300 documented deaths, though we believe these numbers may be under-reported, by a factor of at least two- to threefold. The effort to control the epidemic in some places is complicated by fear of the disease and distrust of outsiders. Security is tenuous and unstable, especially in remote isolated rural areas. There have been instances where public health teams could not do their jobs because of security concerns.

Many of the health systems in these countries are weak or have collapsed entirely, and do not reach into rural areas. Health care workers may be limited (for example, we are aware of one nurse for 90 patients in one hospital in Kenema, Sierra Leone), or may not reliably be present at facilities, and those facilities may have limited capacity. Poor infection control in routine health care, along with local traditions such as public funerals and cultural mourning customs including preparing bodies of the deceased for burial, make efforts to contain the illness more difficult. Furthermore, the porous land borders among countries

and remoteness of many villages have greatly complicated control efforts. The secondary effects now include the collapse of the underlying health care systems resulting for example, an inability to treat malaria, diarrheal disease, or to safely deliver a child, as well as non-health impacts such as economic and political instability and increased isolation in this area of Africa. These impacts are intensifying, and not only signal a growing humanitarian crisis, but also have direct impacts on our ability to respond to the Ebola epidemic itself.

I There are three key things which we need to respond to this epidemic. The first is resources – this epidemic will take a lot of resources to confront. That is why the U.S. Government is putting our resources into this effort and asking the Congress for your assistance. The United Nations believes the cost of getting supplies needed to West African countries to get the Ebola crisis under control will be at least $600 million. I personally believe that to be an underestimate. The second is technical experts in health care and management to assist in country. Last, is a coordinated, global unified approach, because this is not just a problem for Africa. It's a problem for the world, and the world needs to respond.

Fortunately, we know what we must do. In order to stop an Ebola outbreak, we must focus on three core activities: find active cases, respond appropriately, and prevent future cases. The use of real-time diagnostics is extremely important to identify new cases. We must support the strengthening of health systems and assist in training healthcare providers. Once active cases have been identified, we must support quality patient care in treatment centers, prevent further transmission through proper infection control practices, and protect healthcare workers. Epidemiologists must identify contacts of infected patients and follow up with them every day for 21 days, initiating testing and isolation if symptoms emerge. And, we must intensify our use of health communication tools to disseminate messages about effective prevention and risk reduction. These messages include recommendations to report suspected cases and to avoid close contact with sick people or the deceased, and to promote safe burial practices.

In Africa, another message is to avoid bush meat and contact with bats, since "spillover events", or transmission from animals to people, in Africa has been documented through these sources.

Many challenges remain. While we do know how to stop Ebola through meticulous case finding, isolation, and contact tracing, there is currently no cure or vaccine shown to be safe or effective for Ebola. We need to strengthen the global response, which requires close collaboration with WHO, additional assistance from our international partners, as well as a coordinated United States Government response. At CDC, we activated our Emergency Operations Center to respond to the initial outbreak, and are surging our response. One of the surge objectives was initial deployment of fifty disease-control experts in thirty days to the region to support partner governments, WHO, and other partners working in the region. We surpassed that goal, and as of last week, CDC has over 100 staff in West Africa, and more than 300 staff in total have provided logistics, staffing, communication, analytics, management, and other support functions. CDC will continue to work with our partners across the United States Government and elsewhere to focus on five pillars of response:

- Effective incident management – CDC is supporting countries to establish national and sub-national Emergency Operations Centers (EOCs) by providing technical assistance and standard operating procedures and embedding staff with expertise in emergency operations. All three West African countries at the center of the epidemic have now named and empowered an Incident Manager to lead efforts.
- Isolation and treatment facilities – It's imperative that we ramp up our efforts to provide adequate space to treat the number of people afflicted with this virus.
- Safe burial practices – Effectively shifting local cultural norms on burial practices is one of the keys to stopping this epidemic. CDC is providing technical assistance for safe burials.
- Health care system strengthening – Good infection control will greatly reduce the spread of Ebola and help control future outbreaks. CDC has a lead role in infection control training for

health care workers and safe patient triage throughout the health care system, communities, and households.

- Communications – CDC will continue to work on building the public's trust in health and government institutions by effectively communicating facts about the disease and how to contain it, particularly targeting communities that have presented challenges to date.

The public health response to Ebola rests on the same proven public health approaches that we employ for other outbreaks, and many of our experts are working in the affected countries to rapidly apply these approaches and build local capacity. These include strong surveillance and epidemiology, using real-time data to improve rapid response; case-finding and tracing of the contacts of Ebola patients to identify those with symptoms and monitor their status; and strong laboratory networks that allow rapid diagnosis.

CDC's request for an additional $30 million for the period of the Continuing Resolution will support our response and to allow us to ramp up efforts to contain the spread of this virus. More than half of the funds are expected to directly support staff, travel, security and related expenses. A portion of the funds will be provided to the affected area to assist with basic public health infrastructure, such as laboratory and surveillance capacity, and improvements in outbreak management and infection control. Should outbreaks recur in this region, they will have the experience and capacity to respond without massive external influx of aid, due to this investment. The remaining funds will be used for other aspects of strengthening the public health response such as laboratory supplies/equipment, and other urgent needs to enable a rapid and flexible response to an unprecedented global epidemic. CDC will continue to coordinate activities directly with critical federal partners, including USAID and non-governmental organizations.

Though the most effective step we can take to protect the United States is to stop the epidemic where it is occurring, we are also taking strong steps to protect Americans here at home. For example, it is possible that infected travelers may arrive in the United States, despite all efforts to prevent this; therefore we need to ensure the United States' public health and health care systems are prepared to rapidly manage cases to avoid further transmission. We are confident that our public health and health care systems can prevent an Ebola outbreak here, and that the authorities and investments provided by the Congress have put us in a strong position to protect Americans. To make sure the United States is prepared, as the epidemic in West Africa has intensified, CDC has:

- Assisted with extensive screening and education efforts on the ground in West Africa to prevent ill travelers from getting on planes.
- Developed guidance for monitoring and movement of people with possible exposures, and guidance and training for partners (including airlines, Customs and Border Protection officers, and Emergency Medical Systems personnel)
- Provided guidance for travelers, humanitarian organizations, and students/universities
- Advised United States' health care providers to consider Ebola if symptoms present within three weeks of a traveler returning from an affected area
- Provided guidance for infection control practices in hospitals to prevent further spread to United States health care workers and communities
- Developed response protocols for the evaluation, isolation and investigation of any incoming individuals with relevant symptoms.
- Expanded the capacity of our Laboratory Response Network to rapidly test suspected cases so that appropriate measures can be taken.

Working with our partners, we have been able to stop every prior Ebola outbreak, and we will stop this one. It will take meticulous work and we cannot take short cuts. It's like fighting a forest fire: leave behind one burning ember, one case undetected, and the epidemic could re-ignite. For example, in response to the case in Nigeria, 10 CDC staff and 40 top Nigerian epidemiologists rapidly deployed, identified, and followed 1,000 contacts for 21 days. Even with these resources, one case was missed, which resulted in a new cluster of cases in Port Harcourt.

Ending this epidemic will take time and continued, intensive effort. The FY 2015 President's Budget includes an increase of $45 million to strengthen lab networks that can rapidly diagnose Ebola and other threats, emergency operations centers that can swing into action at a moment's notice, and trained disease detectives who can find an emerging threat and stop it quickly. Building these capabilities around the globe is key to preventing this type of event elsewhere and ensuring countries are prepared to deal with the consequences of outbreaks in other countries. We must do more, and do it quickly, to strengthen global health security around the world, because we are all connected. Diseases can be unpredictable – such as H1N1 coming from Mexico, MERS emerging from the Middle East, or Ebola in West Africa, where it had never been recognized before – which is why we have to be prepared globally for anything nature can create that could threaten our global health security.

There is worldwide agreement on the importance of global health security, but as the Ebola epidemic demonstrates, there is much more to be done. All 194 World Health Organization Member States have adopted the International Health Regulations (IHR). Progress has occurred over the past years, but 80 percent of countries did not claim to meet the IHR capacity required to prevent, detect, and rapidly respond to infectious disease threats by the June 2012 deadline set by WHO. No globally linked, inter-operable system exists to prevent epidemic threats, detect disease outbreaks in real-time, and respond

effectively. Despite improved technologies and knowledge, concerning gaps remain in many countries in the workforce, tools, training, surveillance capabilities, and coordination that are crucial to protect against the spread of infectious disease, whether naturally occurring, deliberate, or accidental. The technology, capacity, and resources exist to make measurable progress across member countries, but focused leadership is required to make it happen. If even modest investments had been made to build a public health infrastructure in West Africa previously, the current Ebola epidemic could have been detected earlier, and it could have been identified and contained. This Ebola epidemic shows that any vulnerability could have widespread impact if not stopped at the source.

Earlier this year, the United States Government joined with partner governments, WHO and other multilateral organizations, and non-governmental actors to launch the Global Health Security Agenda. Over the next five years, the United States has committed to working with at least thirty partner countries (with a combined population of at least four billion people) to improve their ability to prevent, detect, and effectively respond to infectious disease threats - whether naturally occurring or caused by accidental or intentional release of pathogens. As part of this Agenda, the President's FY 2015 Budget includes $45 million for CDC to accelerate progress in detection, prevention, and response, and we appreciate your support for this investment. The economic cost of large public health emergencies can be tremendous – the 2003 Severe Acute Respiratory Syndrome epidemic, known as SARS, disrupted travel, trade, and the workplace and cost to the Asia-Pacific region alone $40 billion. Resources provided for the Global Health Security Agenda can improve detection, prevention, and response and potentially reduce some of the direct and indirect costs of infectious diseases.

Improving these capabilities for each nation improves health security for all nations. Stopping outbreaks where they occur is the most effective and least expensive way to protect people's health. While this

tragic epidemic reminds us that there is still much to be done, we know that sustained commitment and the application of the best evidence and practices will lead us to a safer, healthier world. With a focused effort and resources proposed in the FY 2015 President's Budget, we can stop this epidemic, and leave behind strong system in West Africa and elsewhere to prevent Ebola and other health threats in the future.

Thank you again for the opportunity to appear before you today. I appreciate your attention to this terrible outbreak and I look forward to answering your questions.

Mr. SMITH. Thank you very much, Dr. Bell.

Let me just begin the questioning and then I will yield to my colleagues for their questions. I will throw out a few questions and if you wouldn't mind jotting them down because I do have about 100. I exaggerate a little bit.

There has been a lot of criticism about who is in charge. Is it the health ministers in country? WHO puts out a lot of press releases.

Dr. Brantly made an observation, and I think it is a very good one, that

> "Agencies like the World Health Organization remain bound up by bureaucracy. Their speeches, proposals, and plans—though noble—have not resulted in any significant action to stop the spread of Ebola. The U.S. Government must take the lead immediately to save precious African lives and protect our national security."

You know, I know that you might be loathe to criticize WHO but we need to know who is actually in charge on the ground.

Secondly, if I could, the deployment of 3,000 members of the U.S. Military obviously, that was weeks, certainly, days in preparation. Interagency coordination had to have been a part of that for that announcement to be made. I am just wondering if you could tell us who will be deployed.

I will never forget making a trip to the border of Iraq and Turkey immediately after the Kurds flocked to that border, and many were dying from exposure and disease and Operation Provide Comfort was established.

Within about 5 days a group of us went over there to take a look at it and to talk to people, and if it wasn't for the Special Forces and the work they did, and they handed the baton eventually to NGOs and others who helped those individual Kurds, but for about a month had it not been for the Special Forces, particularly the military doctors and others that were there, hundreds if not thousands would have died. So my question is how that force will be configured.

Will it be made up of a significant portion of MDs, nurses, and others? I know that we have heard that they will be constructing or, I believe, that is one thing they are going to do in Liberia, you know, hospital beds or at least places where people can find refuge and get help.

But what will that configuration look like? Dr. Brantly, again, in his testimony makes an excellent point, "For too long, private aid group have been confronting this Ebola epidemic without adequate international support." Then he says these organizations cannot go it alone.

"A significant surge in medical boots on the ground must happen immediately to support those already working in west Africa" . . . and he goes on in his testimony. How many medical personnel are needed?

How many have been deployed and will this deployment of 3,000 of our service members be significantly made up of medical personnel? On force protection—and Dr. Fauci, you might want to speak to this as well—obviously, when you are dealing with an epidemic and people can contract this disease it gives new meaning

to force protection, you know, all the usual. How many protective suits will be needed?

Do you have adequate access to those suits and gear? You know, as Dr. Brantly points out, he took every precaution and he still got Ebola. So the question would arise, and I am sure for the individual service members being deployed and their families: Will there will be adequate protections?

Is more money needed? You know, as my friend and colleague pointed out at the Rules Committee the other day, $88 million is in the supplemental: Is that enough?

You know, we should leave no stone unturned to make sure that people are protected and hopefully safe from this hideous disease but when putting many more Americans into harm's way, no stone should be left unturned in making sure they are protected as well.

If there are any gaps there, please speak to that. Let me also ask you: How do you attract medical personnel to be deployed? You know, if they are ordered by way of military, that is one thing.

But how do you incentivize it? Many of the faith-based groups go there and risk their lives, as do the non-faith based, out of pure love of African people or wherever it is that they are deployed.

But now they are dealing with a pandemic. How do you incentivize and are people coming forward to go? The range of the estimates of infections and, Dr. Fauci, I want you to speak to this, is there a possibility or probability that this could mutate into an airborne, you know, infection?

Right now we are told that is not the case but is that a possibility and, again, if you could put any kind of number on how many medical personnel are needed to be deployed. You know, I have been trying—I read everything I can on Ebola, talk to people nonstop about it.

I still don't know how many people—because so much of the infrastructure, as we all know, in west Africa for healthcare has been decimated as well as the NGOs that were there early on where their personnel have been hurt as well.

And finally, to Dr. Borio, if you could, at our last hearing I raised the issue of TKM-Ebola and the FDA's suspension of the trials. Has that changed?

I remember reading the company's information and they were kind of surprised. But has that been reversed on that particular drug? Ms. Lindborg.

Ms. LINDBORG. Yes.

Mr. SMITH. Okay. Dr. Fauci, if you could.

Dr. FAUCI. No. Actually, Ms. Lindborg was going to, I think, take the first question. There were several you asked me for which I will be happy to answer but I think Ms. Lindborg is going to take the first question.

Ms. LINDBORG. Let me also offer, Chairman Smith, that it might be helpful to come and do a more—even more detailed walkthrough since that seems to be something that is of great interest.

What I will say is that there is a two-star, General Williams, from AFRICOM who arrived in Monrovia yesterday and is already beginning to work closely with the DART on detailing out the exact configuration of the mission. It will come out of the African Command.

There will be a large contingent of logisticians and engineers, medical planners, planners, that will be setting up the fundamental nerve center that will be able to support this overall response.

There will also be 60 medical trainers who will be operating the training facility and critical barriers in moving forward a more robust response have been several key constraints.

First is there has not been confidence that people could get in and out of the region. Therefore, we are looking at laying down the significant lift capacity that will serve the entire region.

Secondly, people are worried because they have been uncertain about Medevac in the event that they are ill, and so we are working to increase the reliability and availability of Medevac services for health workers.

Thirdly, they have been concerned about lack of healthcare for the health workers, which is why the military is bringing in a 25-bed hospital for healthcare workers.

It will be staffed by public health workers, teams of 65 at a time out of HHS, and the first of the 13 plane loads bringing that hospital in arrive on Friday in Monrovia. So that will be set up.

Then finally is the lack of training. It is not so much that you need high-level medical expertise so much as there needs to be rigorous, very disciplined infection control.

Most urgently is a large cadre of basic care workers and part of what this training will seek to do is create a pipeline of healthcare workers who understand how to minimize the infection and how to run a clinic that is absolutely rigorous in following the right kind of procedures, and we will be working with MSF to adopt their training so that that is available to a larger cadre.

Finally, there are doctors needed both for the Ebola treatment units but also for the larger revitalization of the health systems.

As Dr. Bell mentioned, this is a problem throughout the country and it is training those healthcare providers and those clinics also on rigorous infection control because of the stories that we have heard of people coming in and being treated for other problems and end up you have transmission of the Ebola virus.

So there is that whole package of issues that when we address those, the goal is to unlock greater capacity of organizations and healthcare workers who can come in, augmented by this extraordinary capability that the U.S. Military is bringing.

Mr. SMITH. And we do have sufficient moneys allocated? I mean, is there——

Ms. LINDBORG. DoD has requested a $500 million——

Mr. SMITH. Reprogramming?

Ms. LINDBORG [continuing]. Reprogramming previously and I believe today they will be submitting an additional $500 million.

Mr. SMITH. Now, is that request being based on what they think can be gotten or is it to really get the job done?

You know, we know that U.N. agencies notoriously underestimate what the cost will be because they think when they put out their request to other nations—donor nations—they think that is all they are going to get rather that what is the need and then we fight like the devil to get that money allocated.

I have had that argument with them for 30 years in Geneva. Ask for what is really needed even if we don't reach it so we know the true need. Is what you are asking for what is needed?

Ms. LINDBORG. Well, that is for the military's budget.

Mr. SMITH. Yes, I mean—but also, like, the $88 million——

Ms. LINDBORG. The $88 million, and USAID has allocated $100 million from our budgets. We think so for at least the initial response but this is unprecedented. This is new territory for all of us.

And so as we lay down this urgent scaled response we will be closely monitoring to see what impact it makes and what else we might need.

Mr. SMITH. Gotcha. Dr. Fauci.

Dr. FAUCI. So let me answer the question about this potential scope, which is important because there is a lot of confusion about that.

So the issue is—the question that is asked and that sometimes frightens people: Is it possible that this virus would mutate and then by the mutation completely change its modality of transmission, mainly going from a virus that you get by direct contact with bodily fluids to a virus that is aerosolized, so if I am talking like this I can give it to Ms. Lindborg or to Dr. Borio? So let me explain to you how that possibly could happen and why I think it is unlikely, but not impossible.

Ebola is an RNA virus and when it replicates it replicates in a sloppy way. It makes a lot of mistakes when it starts trying to duplicate itself. Those mistakes are referred to as mutations.

Most mutations in this particular situation are irrelevant. Namely, they don't—they are not associated with a biological function that changes anything.

They just mutate and it is meaningless. Every once in a while, rarely, a mutation, which is called a nonsynonymous mutation—that is what scientists call it—does have a change in biological function.

That change, if it occurs—if you historically look at viruses that mutate, it generally, if it changes the function, modifies an already existing function. It makes it either a bit more virulent or a bit less virulent.

It makes it a little bit more efficient in spreading the way it usually spreads or a little less efficient. What it very, very rarely does is completely change the way it is transmitted. So although this is something that is possible, and I need to emphasize because whenever I try to explain it people might think I am pooh-poohing it.

I am not. It is something we look at very carefully and we actually have grants and contracts with organizations like the Broad Institute in Boston which very carefully follow the sequential evolution of the virus to alert us if in fact this is happening.

So A, we take it very seriously, B, it is something that we look at and that we follow closely. But we don't think it is likely to happen. So I would rather that I lose sleep and Dr. Borio and Ms. Lindberg and Dr. Bell lose sleep over that, but not the American public lose sleep over that because we are watching it very carefully.

Having said that, what is likely, and this gets to everything we are talking about, is that if this virus keeps replicating and keeps

infecting more and more people, you are going to give it more of a chance to mutate.

So the best possible way that we can take that off the table is to actually shut down this epidemic and if we do, as I always say, a virus that doesn't replicate doesn't mutate. So if you shut it down then that thing is off the table. I hope that was clear.

Mr. SMITH. And your best case estimate on September 17th, what this could evolve into? I mean, exponential was used several times during your statement.

Dr. FAUCI. Well, Mr. Chairman, the estimate is going to be directly related to our response because it is kind of a race.

If our response is like this and Ebola is going like that, as I said, this is going to win all the time and that is the reason why we are excited and pleased to hear that the President came out and said what he did and we are going to see the things that Ms. Lindborg and others have been talking about because once you get over that curve then you start to see the epidemic coming down.

Now, that could be within a period of a few months if we really put a full court press on. If we fall behind, it could go on and on. So it is almost impossible to predict without relating it to the degree of your response.

Mr. SMITH. Dr. Brantly calls for a surge of medical boots on the ground. How many U.S. medical personnel are now in the impacted areas and how many do you think will be there in the next month, how many the next several months? I have been trying to get a handle on that for some time.

Ms. LINDBORG. So one of the things we are doing is supporting a worldwide call, this is really going to be an all hands on deck response.

The African Union has mobilized 100 health keepers, which is doctors, nurses, and other health clinicians, and the U.S. is supporting their mobilization. Their advance team is on the ground right now led by a Ugandan doctor who led the Ebola response in Uganda.

The Chinese have mobilized medical personnel and the U.K. and EU are both contributing facilities, labs and funding. So we will continue to mobilize. One of the questions is how many of these Ebola treatment units we will need.

Each Ebola treatment unit, according to the MSF model, takes about 216 people, the majority of whom are basic healthcare providers, basic care providers, augmented by, you know, a chief medical officer, a lot of infection control logistics, water sanitation—those kinds of management capabilities.

So what we are seeking to do is to create a pipeline of the trained medical care providers with this 500-a-week training facility augmented by additional support, training and direct provision of that management infection control piece because ultimately the most important thing is it is rigorous, disciplined, almost command and control of the——

Mr. SMITH. All right. If I could just get back to that. How many medical boots on the ground do we have as of today—U.S.?

Ms. LINDBORG. We have—we are focused right now not on the direct care but rather on providing the system that can enable a full-throated response.

We have supported organizations like International Medical Care and we are in discussions with several other organizations that will bring—International Medical Care has a 60-bed unit that they have stood up and it is a combination of medical and other personnel that are needed to make each one of these Ebola treatment units functioning.

Mr. SMITH. But we do have doctors and nurses on the ground?

Ms. LINDBORG. Correct.

Mr. SMITH. Could you get back to us if you can find that number? Because, you know, I understand the training component and that is extraordinarily important.

But we know that there must be, including in the military deployment, a number of doctors and nurses that will be a part of that. Just to know what our commitment is on that side of it.

Ms. LINDBORG. Yes. And it is part of a much larger number. We will get you—we will get you the break out of what the 25 percent are, the 115 people already in the region and the 3,000 who are being mobilized.

Mr. SMITH. And anyone else? Yes, Dr. Bell.

Dr. BELL. I was—thank you, Chairman Smith, and I actually just wanted to mention that I led the field team in New Jersey during the 2001 anthrax attack so I know your district, actually, quite well from the old days.

I just wanted to say a couple of other things about this training pipeline, to build on what Nancy was saying and to make a couple of these important points—that the majority of the workers are local workers but there is a need for some nurses and doctors and more higher-trained healthcare workers and we have at CDC, working with MSF, established a training program which will be held in Anniston, Alabama, every week.

It is a 3-day program which is meant to build a pipeline of U.S. healthcare workers that are getting ready to deploy to the region. Our first training, will begin next week and is already full at something like 40 healthcare providers.

So, as Nancy says, we need sort of a very multifaceted and multi disciplinary approach to addressing the problem and at our end here at CDC we have had the—we will have these series of classes every week for the foreseeable future to help build that pipeline.

Mr. SMITH. Just two final questions. The deployment of 3,000, when will the full contingent be actually in theater and, again, to reassure not only those who will be deployed but their families, will they have the protective gear in adequate numbers from masks and the like to ensure that they do not contract the disease?

And, Dr. Borio, if you could, speak to the issue of the TKM-Ebola and whether or not the suspension has been lifted so that the trial can continue.

Dr. BORIO. So, Mr. Chairman, I am unable to discuss the specific product today but what I can tell you is that clinical hold issues it is based on our assessment of the benefit risk profile for a proposed clinical study.

So whereas a product may be on clinical hold for a specific study, it may not be on hold for different types of studies.

For example, sometimes the dose or frequency proposed in a study does not allow us to believe the benefits will outweigh the

risks. In addition, sometimes we put a study on hold because of adverse events that are identified immediately after, you know, using the drug in the first few volunteers.

Another reason for a study to be on hold has to do with the patient population that is being studied on that particular proposed study. So there are many reasons for a study to be on hold.

It is rare that we are not—well, in situations where a study is on hold we will work the company very closely, especially in a situation like this with Ebola, to be able to make sure that we can design the studies where the benefit-risk balance would be more appropriate.

Mr. SMITH. Again, are there cross conversations? You mentioned how flexible FDA is, like with NIH and others. I was shocked when that hold was placed because I read a lot about the drug.

It doesn't make me an expert, but there were some encouraging signs and when you only have three or so drugs in the pipeline that is not a large universe.

Dr. BORIO. We are working very closely with our colleagues at the NIH, at BARDA, DoD, as well as all the different companies that have products of interest to the U.S. Government to do all we can to move the development programs forward as fast as we can.

Mr. SMITH. Okay. Again, Ms. Lindborg, do we know when the 3,000 will actually be there? You know, I know they will be going in components but when fully will they be deployed?

Ms. LINDBORG. They are going in components and I will just quote General Dempsey, who said they will move as fast as they possibly can until they hit the laws of gravity.

Mr. SMITH. Okay.

Ms. LINDBORG. So they are fully seized and deployed.

Mr. SMITH. And fully protected?

Ms. LINDBORG. Yes, and if—I just want to underscore one other point in response to your questions and that is we are continuing to conduct outreach efforts so that we can find other medical workers—doctors, nurses, and physicians assistants—who are interested in working with organizations who are responding and that is the Web site, usaid.gov/ebola, and with the training that is available and the pipelines of this critical gear that the response will provide of PPE, et cetera.

Mr. SMITH. Thank you. Dr. Bell.

Dr. BELL. Mr. Chairman, just to your point about will the force be adequately protected, I just wanted to say that, you know, at CDC we have over 100 young trainees, many of them in the field, and so we have worked very hard on the sort of information people need ahead of time—very, very clear delineation of the sorts of protective equipment, things to do to protect yourself, and what to do when you are in a situation that you think is perhaps not as safe and secure as it should be.

And so this is the sort of information that I think we have spent—actually, quite a while now we have had people in the field sort of perfecting and it is the sort of thing, I think, that can be used with the military.

We all want to make sure that people are as safe as humanly possible. The other thing I see off of my list of questions I just wanted to address your question about the funding and to just say

from the CDC perspective that the $30 million is enough to get us through the continuing resolution and allow us to keep our people in the field but that we are going to be considering during the period of the CR, what additional funding we might need for the rest of the year.

Mr. SMITH. Thank you, Dr. Bell. You know, in a conversation I had with the President of Guinea, who has deployed his military, I was concerned about how well-protected they were, you know, when they rush in to be of assistance and then all of a sudden they find themselves contracting the disease.

So and I am very concerned about our military as well. I would like to yield to Ms. Bass.

Ms. BASS. Thank you, Mr. Chair, and I would like to begin by asking a question on behalf of my colleague, Mr. Cicilline, who had to leave and in his opening statement he mentioned that many of his constituents are from Liberia.

So his question is the current extension of deferred enforced departure for Liberians living legally in the U.S. is scheduled to expire at the end of the month and apparently this summer several Senators sent a letter to President Obama asking him to end the uncertainty, especially given the current crisis.

And so even though this is an issue under the jurisdiction of USCIS, he was wondering if you know whether the administration is really taking into account the health crisis if many of these individuals would have to return home.

Dr. BELL. Thank you, Congresswoman Bass. As I testified yesterday before the Senate HELP Committee and Senator Reed asked a similar question, as you say, this is an important issue in Rhode Island and other parts of the country as well, and actually my deputy participated in a number of briefings and town hall meetings on this topic.

This is a humanitarian issue, we agree, but we don't have any further information about what is happening from the perspective of the Immigration Service on this topic. Do you have any information, Nancy?

Ms. LINDBORG. We will take that question. We are coordinating closely across the interagency that is a State Department question. We will take it and get back to you.

Ms. BASS. Okay. All right. Thank you. And then I, in speaking to a number of my colleagues yesterday as we were preparing for this member briefing tomorrow, several of them mentioned to me their concerns about the virus mutating and becoming airborne, and I am not sure if those came up in the questions before. Oh, they did?

Mr. SMITH. They did.

Ms. BASS. Yes. You raised it? Okay. Well, maybe you could explain why that is not a concern.

Dr. FAUCI. Well, I wouldn't say it is not a concern but it is not an overwhelming concern.

Ms. BASS. Okay.

Dr. FAUCI. As I mentioned, and I will just very briefly summarize what I said when you were out, Ms. Bass, that this is a virus that continually replicates and makes a lot of mistakes.

It mutates, and the overwhelming majority of the mutations are irrelevant. They are not associated with any change in function of the virus. Rarely, occasionally, you will get a mutation that actually does have a biological function.

Now, that could be that it evades the diagnostic or the mutation makes it a little bit more virulent or a little bit less virulent. It makes it a little bit more efficient in being transmitted or a little bit less efficient. But it would be distinctly unusual, underline, not impossible——

Ms. BASS. Right.

Dr. FAUCI [continuing]. For it to completely change the way it is transmitted. In fact, of the many, many viruses like HIV that replicate in millions and millions of people and mutate a lot, you don't see a change in the way it is transmitted.

Now, having said that, we have contracts and grants with organizations that do continuing phylogenetic sequencing which means they trace the evolution.

So we are looking at that very, very carefully and thus far with all of the infections and all the mutations we have not seen any indication of any modification of biological function associated with the mutations.

So, again, although it is not something you can completely rule out, it is not something that I would put at the very top of the radar screen and say this is something that is occupying all of my concern. Having said that, the easiest way to avoid that is to stop the infections which will then stop the mutations and then you won't have to have the discussion we are having right now.

Ms. BASS. So it is safe to say that in previous outbreaks that has never happened?

Dr. FAUCI. Right. Right.

Ms. BASS. Okay. Thank you very much. I yield back my time.

Mr. SMITH. Dr. Burgess.

Mr. BURGESS. Thank you, Mr. Chairman. And Dr. Fauci, along those lines, now 10 years ago in the language of avian flu I remember the discussion was genetic drift and genetic shift—genetic drift being why we have to have a new flu shot every year because there are little changes that occur and then genetic shift would be one of those major changes that would occur in—say avian flu, the transmissability from human to human where it hadn't been occurring before.

Is that the same sort of thing you are talking about here?

Dr. FAUCI. A bit different, Dr. Burgess. It is a bit different because when we talk about a drift we are talking about the immune response that the body has made to previous viruses and when it drifts a bit it doesn't change much in its fundamental way that it is transmitted.

How it changes is that it evades your already existing immune response or the immune response that a particular vaccine might induce. A little bit it drifts. It doesn't change.

A shift is that it is so different than the previous virus that you don't have any background immunity to it. So when you have a new pandemic like the H1N1 2009 influenza, except for people who were alive and well back in the late 1960s, early 1970s, mid-1970s, most of the young people never had seen a virus like that.

So they didn't have any background immunity. Did that mean it changed the way it was transmitted? No. Flu is a respiratory-borne virus whether it is a pandemic flu or a seasonal flu.

The actual shift means that it was so different than anything else that you experienced that you don't have any background immunity which makes it much easier for it to turn into a pandemic.

Mr. BURGESS. Okay. Thank you for the clarification.

Now, we have got CDC, FDA, NIH, and USAID today because we understand from yesterday's speech by the President, Department of Defense is involved and we have heard Department of State mentioned today.

So I guess my question is, and this may be fundamentally naive as far as the function of government, but who is in charge? Who is in charge of our response to what is happening in Western Africa?

Is it the CDC? Is it the State Department? Is it now going to be Department of Defense? Who is our go-to agency as far as who is in charge?

Ms. LINDBORG. So the U.S. Military is working in support of USAID on the ground. This is very similar to the approach that Chairman Smith noted. We worked in the Philippines just recently.

There are task forces in each of the critical agencies that are enabling CDC, HHS, State Department, USAID to organize across our agencies to mobilize for the best response.

USAID is leading the U.S. interagency response as part of the worldwide efforts led by the U.N. in support of sovereign nations—Liberia, Guinea, and Sierra Leone—working very closely across those task forces and with the NSC.

Mr. BURGESS. So things are already—things are already tough. If they get a lot tougher USAID is who we call? If things go really bad, who do we pick up the phone and call?

Ms. LINDBORG. Yes.

Mr. BURGESS. USAID? All right. So noted. I will put you on speed dial.

You know, we heard through some of the discussion—I guess, Dr. Fauci, this will be to you is that, you know, previous episodes this virus has burned itself out. Is there still a possibility, even with your rather frightening exponential graph that you showed us, is it still possible that at some point this episode will burn itself out?

Dr. FAUCI. It is more than possible. That is what we are all striving for. The escalation—it was very clear that the rate of increases of cases that we were seeing, particularly in the densely populated areas where instead of two or three contacts you have 30, 40, 50, 70 or 100 contacts, that the growth of it was outstripping even our ability to increase it at incremental levels.

So that is the reason why, as I mentioned, Dr. Burgess, when the President made this announcement that it is going to be a sea change. It is not going to be an increment, it is going to be a major change in how we approach this with a considerable amount of resources—not only direct resources of healthcare but home kits, home care components, education components.

It is a very comprehensive package that the President announced at the CDC yesterday. So if we implement that, which I believe we will—I hope we will—I think there is a very good chance that it

is not going to happen tomorrow and it is not going to happen next month but that we are going to turn this around. But it is going to require that really accelerated effort that the President spoke about yesterday.

Mr. BURGESS. Well, Dr. Fauci and Dr. Borio, let me ask you as well, being representatives for the Food and Drug Administration, Dr. Fauci, I have been to the Galveston National Laboratory.

I remember right after Hurricane Ike going down there to make certain they were okay and hearing about the work they were doing on Ebola. Then I was down there I think it was less than a year ago.

So there has been ongoing work. I mean, this—you have known of the risk and there has been ongoing work. I guess I am just a little disappointed, Dr. Borio, to hear about a clinical hold—I don't know that I had heard that term before.

I mean, we knew this was out there. We knew this was percolating. U.S. taxpayer resources were being put toward the research and development and I guess my question is what does it take to get us over that obstacle to where we can put these things in the field and begin—and begin clinical trials. Instead of talking about clinical holds let us talk about clinical trials. Let us talk about breakthrough designation. Let us talk about making things available. Can either of you speak to that?

Dr. BORIO. Absolutely, Dr. Burgess. So for the vaccines, for example—I will give an example—you know, even though they have been in development for a number of years when this outbreak—epidemic began we did not have any of the INDs filed with the FDA for the vaccines.

So I think what you are hearing is really an unprecedented level of engagement by the FDA to facilitate the applications for these vaccines and to be able to begin clinical trials in record time.

I can tell the reviewers review the applications in a matter of a few days and in addition prior to the application being received we work intensely with the sponsors to be able to get them ready for this—for the submission.

So I hope that I conveyed that, you know, so that there is no doubt that we are doing all we can to be—to exert not only maximum flexibility but also to speed development and to engage very actively with all the developers, government partners, and the companies.

So the clinical hold that—the clinical hold situation that I was asked, again, all of our decisions are based on the science we have available and with the interest of public health in mind and we are working with every one of the developers to move their programs forward.

But there are situations where if the risk is believed to outweigh the benefits based on the available science we—it is called a clinical hold. We basically tell the sponsor that the study cannot proceed in volunteers at this moment until some adjustments are made and the benefit-risk profile is more favorable.

Mr. BURGESS. There is a broad understanding at the Food and Drug Administration that this is no ordinary time, correct?

Dr. BORIO. Absolutely. I think, as I mentioned in my testimony, there are more than 200 people at the FDA who are engaged in

this response and working very actively with the developers. There is no question in my mind that it is all hands on deck and everybody is very aware of the gravity of the situation and very determined to do all they can to help mitigate it. There is no question about that.

Mr. BURGESS. Mr. Chairman, I realize that I am a guest on your committee and I wasn't going to bring this up but you did—you said you were loathe to criticize the World Health Organization but then you went ahead.

So, Dr. Bell, not really a criticism but observation and then, of course, this goes back several years—if it were not for the CDC the global outreach and response network of the World Health Organization would be pretty thin.

Now, I talked to the folks at the CDC right at the end of July. Someone there told me you had 30 people that were getting ready to deploy to western Africa.

I believe I have that number correct. And Chris Smith talked about, you know, the surge of people that are needed in the healthcare field. But we also recognize healthcare personnel are under special risk in this outbreak.

Are you all the go-to people for that preliminary training for people who are going to western Africa to mitigate that risk somewhat and to minimize that risk to the extent that it can be minimized?

Does that fall to CDC or is that actually a World Health Organization jurisdiction?

Dr. BELL. Thank you, Dr. Burgess. I think, as Nancy mentioned, the scale of this problem is such that we are going to need many, many different partners assisting.

On the topic of training and infection control, I think, first of all, the good news is I think because of the leadership of MSF we have actually a very clear and very tried and true protocol or method for minimizing risk to healthcare workers when they are treating Ebola patients.

I believe that there is something like 450 MSF workers who have been working in west Africa and we have seen no infections so far, thank goodness, in those healthcare workers.

So it is impossible to drive the risk to zero, obviously. There are extremely difficult conditions but we do have, I think, a good framework for training. As I mentioned, we at CDC we sort of have the public health lead, as you well know, in this response and in many others and given the importance of infection control as part of the public health response we have been ramping up our efforts in many spheres around infection control as we work to stop the outbreak and one of them is to have taken a leadership role among others to build this pipeline of training in safe—how to work safely in an Ebola treatment unit.

As I mentioned, we have this course that we have put together in collaboration with MSF which we think will help with building a pipeline of U.S. healthcare workers who are going to be deploying to the region.

But as Nancy said, there are many other groups that I think will be helping to gather people together to sort of bring to bear the resources that we need to bring to bear in the region.

I do think that we have the sort of training that is necessary in order to minimize that risk and that is a training that can actually be sort of spread and propagated in any other venues where training might occur.

The same is true in-country. As Nancy mentioned, there is a very large need for basic infection control in healthcare facilities. As I mentioned, the healthcare system is really completely collapsed and this was largely because healthcare workers were seeing patients who turned out to have Ebola. They didn't realize that. They have no protective equipment.

They have no understanding of infection control. They don't know what safe triage means and therefore, tragically, many of them got infected and the facilities closed. So this is another large priority on the topic of infection control that we and many other groups are working together.

We would like to see an infection control practitioner in every facility in Liberia, for example, similar to the way we deal with infection control here in U.S. hospitals.

Mr. BURGESS. Mr. Chairman, fascinating panel. You have been most courteous. I will yield back.

Mr. SMITH. Thank you very much, Doc. Ms. McCollum.

Ms. MCCOLLUM. Thank you. We hopefully will have someone from the Department of Defense who can maybe inform members more at the co-briefing we are doing with the Global Health Caucus along with you and Ms. Bass to have maybe some of those questions answered.

But my understanding is, first and foremost, we need staging areas. We need, you know, places where people can be treated and so the DoD is bringing in a wave of engineers and those engineers for the most part will not be coming into contact with patients or people who are ill, and the DoD has a great medical staff.

I mean, infectious disease is something that they are—they have their own research. They collaborate with the CDC, the NIH, everybody—the Department of Health. They all work together on this.

So I am fairly confident that AFRICOM has a good handle on the first wave that is going to come in because if we don't have the infrastructure, and that is the boots on the ground—it is building, the framing up the hospitals and all that will be really, really important and then our soldiers will get really excellent training before going in.

But the first wave going in for a lot of what we are talking about they are not going to be coming in contact, and you are all kind of shaking your heads yes. So I just wanted to kind of say that DoD knows when it is trained to this.

And so one of the things that I think you pointed out as, you know, you all kind of have a hierarchy. You have your own special responsibilities. You are getting together. This is an emergency and you are talking amongst yourselves quite a bit.

But I want to just kind of talk about some secondary impacts. We touched on a little bit about what is, you know, happening with maternal-child health, what is happening with people who maybe have been diagnosed with cancer, tuberculosis, HIV/AIDS—all of

those critical resources in healthcare systems that we have been working to make better in these countries.

Now people are not being able to access that kind of a treatment especially in some of the countries where the Ebola has gone. So, for example, in Guinea, Sierra Leone, and Liberia are large poor populations, limited access to clean drinking water, basic infrastructure, other public health services.

One of the things that has come up time and time again—how farmers are not out in the field, how we are expecting a major food crisis—this is already—many countries, as I pointed out, with some of the very poor people whose health is fragile as it is what are some of the things we should be looking from the international community to supplement the work that you are doing from the World Bank, from the African Development Bank, from the, you know, World Food Programme? What are some of the things that we should be thinking of next step?

Ms. LINDBORG. Great. Thank you. And I would just fully agree with you and reiterate that what DoD is fundamentally bringing is their unique capability of having a scaled, fast response that sets that framework up, as you said.

On the second order impacts, this is very important to pay attention to and we are coordinating closely with the World Bank, IMF, African Development Bank, all of which are preparing economic support packages.

We are also looking at ensuring that health workers' salaries are paid during this critical period where you need people to continue to come to work at a time where there is the threat of total collapse. We are working throughout the region on preparedness.

Countries that border throughout west Africa are increasingly concerned and so we have teams working to help them strengthen their health systems and be more prepared in the event that there is a case that appears.

Malaria, especially as we come into the rainy season, is a particular threat so there is an increased effort among all of the agencies—UNICEF, USAID, CDC—who participate—WHO—who participate in the stop malaria efforts to ensure that there is a redoubled effort and a coordinated effort to get bed nets into the most affected areas.

One of the most important issues is, first of all, controlling the outbreak and as a part of that enabling people to have the kind of information that can reduce the fear level because they are better equipped to protect themselves.

Since it isn't an airborne disease, there are measures that families and communities can take to protect themselves so that commerce and regular activities can resume, borders can stay open, and economic activity is not brought to a standstill.

So these are all part of that secondary impact piece of the strategy that we are very focused on, working with these global partners.

Ms. MCCOLLUM. Thank you.

Mr. Chair, much has been said about vaccines and having a vaccine is critically important. But making sure that we go through the same clinical trials that we would for anyone in the United

States or in Europe, for that matter, before a vaccine is widely disbursed is critically important.

To rush into this and not have it tested by sex, age, health condition, and blanketly using a vaccine that is not ready to go will discredit and make people more fearful of some of the vaccines and preventions that we currently have in the field and there is—there is grave concern from some in Africa, and I have heard it from some of the population here, that Africa not be a testing ground, that their African brothers and sisters and relatives have stuff that has been safely vetted to the best of scientific ability.

There is always going to be, you know, human error and things that don't go the way we quite planned. So I know that there is a lot of pressure but I, for one, think it is really important that we follow the science and that we do this safely so it could be done effectively. Thank you, Mr. Chair.

Mr. SMITH. Thank you very much. Before yielding to Mr. Wolf, I would just point out that TKM-Ebola is a treatment and we have such a limited universe of treatments available. Even Dr. Brantly took a risk in taking ZMapp. I am not suggesting that we bypass the safety, and the efficacy remains an open question, but I am still bewildered as to why TKM-Ebola has this hold. I would like to yield to the distinguished chairman of the Subcommittee on Commerce, Justice, Science, and Related Agencies Congressman Frank Wolf.

Mr. WOLF. Thank you, Chairman Smith.

One, I want to thank Mr. Smith for having this hearing and being really one of the first here in Congress doing it at the end before the Congress went away. The other thing I just felt like saying as I was listening at the other hearing too, two groups—MSF, every time they travel everywhere you go they are there.

They are in little villages, they are in places and Samaritan's Purse, which is a Christian group run by Franklin Graham who, quite frankly, I think at one time was even disinvited from an event that this administration had somewhere because he might have wanted to pray at a prayer breakfast—I forget what it was—two groups, MSF and the Samaritan's Purse, have been out in the front before our Government was and I want to personally thank MSF, all of their people.

They—and I think we should be thanking them, all of them, and also Samaritan's Purse and all of their people for what they have done because they have been out in front of everyone and, Mr. Smith, and Samaritan's Purse people calling and having a hearing back in the summer and I think we should recognize them.

I know you kept referencing MSF. Thank God for MSF. Thank God for Samaritan's Purse. I think Dr. Burgess made an interesting point. I think you need one person—I want to thank all of you for what you do—I think you need one person in the administration so that there is a central point.

You have the State Department. You have the Health Department. You have the Defense Department. I think Ms. McCollum was right—Agriculture would be involved. It would be very difficult if you don't have one person who is the person that they can—not that they will do it all, but one place to go to call.

I also think, and that leads me to the question, you probably need someone to travel the world the same way that Secretary Kerry is, to his credit, asking for people to support the effort that is going to be taking place with regard to ISIL and Syria and places like that. When I listen to the testimony and read all the articles, I only have America and reference periodically to one or two other countries.

Are the other countries giving commensurate with what we are giving based on their size and population? China, the Saudis, Qatar, Germany, France, England—are they stepping up the same way that President Obama stepped up the other day?

Is Cameron stepping up in England doing that? Is the French Government stepping up? Are the Scandinavians stepping up? Are the Saudi princes stepping up? Is the Chinese Government stepping up?

Are they stepping up to the same degree, and I am not going to try and embarrass each and every country but are they all cooperating and have they all been asked to do as much as we are?

Ms. LINDBORG. This is a very important point and what we know is that when America leads it sets the frame for others to make a bolder and more aggressive response as well. So on the heels of yesterday's announcement there are calls this morning.

Secretary Kerry has been having meetings as a part of his Paris conversations. There will be a U.N. meeting tomorrow on Thursday and during the U.N. General Assembly next Thursday there will also be a meeting on Ebola. The hope and the goal is that, inspired by the response that the U.S. announced yesterday, there will be a ramped up response from a large number of international actors.

We are already seeing some additional more forward leaning responses from the UK. We expect them to make an announcement any day now that is quite larger.

As I mentioned earlier, the African Union has mobilized what they call health keepers of 100 health workers who will be travelling to Liberia and we are supporting that effort. The European Union has pledged $180 million and there will be more.

There will be more efforts as a part of the mobilization. So over the next week watch for the global response, which we anticipate will continue to ramp up.

Mr. WOLF. Okay. And I would assume, unless you differ with me, that you all agree with me with regard to MSF and Samaritan's Purse.

Ms. LINDBORG. Absolutely, and, you know, we support Samaritan's Purse in many countries around the globe and are very aware of the heroic efforts of Samaritan's Purse and of MSF, who are on the front lines of so many crises globally.

What is particular about this outbreak is that Ebola has not been this kind of a challenge before. There have been small, relatively contained outbreaks so there hasn't been a requirement for large-scale global capacity to address Ebola and that has been one of the challenges as this particular outbreak jumped borders and went into urban areas in countries that were absolutely ill equipped to deal with that level of transmission.

So this will—this will be a sea change in how the global community understands and responds to Ebola.

Mr. WOLF. Thank you, and I want to thank all of you and your people, too, the CDC that are on the front lines, and thank all of your people for what they are doing and what I know they will be doing.

With that, Mr. Chairman, I yield back. Thank you very much.

Mr. SMITH. Thank you very much, Chairman Wolf. Just one final very brief question. Whose idea was it for this surge? Did it come in from an interagency recommendation or was there one person who said this is what has to be done?

Dr. FAUCI. There have been intensive discussions going on at various levels and it became apparent to us all that we really needed to have a sea change and that is how it evolved.

Ms. LINDBORG. So I would say that, as I mentioned earlier, USAID through our DART and our Office of Foreign Disaster Assistance is responsible for coordinating the U.S. Government response to disasters overseas.

Each of the critical agencies here in Washington has a task force and we are using that whole of government approach to draw from critical resources from across the government and there has been a concerted effort working together to identify both the need and then the kind of response that is necessary to get ahead of the transmission, which has resulted in yesterday's announcement.

Mr. SMITH. Thank you for your leadership. Thank you for spending time this morning with us, now afternoon, and we look forward to work with you going forward. Thank you.

I would like to now welcome our second panel, beginning with Dr. Kent Brantly, who is a family medicine physician who has served since October 2013 as a medical missionary at a hospital in Monrovia, Liberia.

In the spring of 2014, Dr. Brantly found himself fighting on the front lines in the battle against the deadliest Ebola outbreak ever to occur and was appointed as medical director for what would become the only Ebola treatment unit in all of southern Liberia.

On July 26, he was diagnosed with Ebola, became the first person to receive the experimental drug ZMapp and the first person with Ebola to be treated in the United States. Thank you, Doctor, for being here.

We will then hear from Dr. Chinua Akukwe, who is an Academy Fellow and chair of the Africa Working Group of the National Academy of Public Administration.

The Africa Working Group is the leading NAPA's effort to forge lasting partnerships in governance and public administration reform efforts in Africa with the U.S. and African stakeholders. Dr. Akukwe was the technical advisor in the design of two continent-wide initiatives in Africa, the Communicable Disease Guidelines for the Africa Development Bank and the Framework for Achieving Universal Access to HIV/AIDS, Tuberculosis and Malaria Services for the African Union. He has written extensively on health and development issues and we welcome Dr. Akukwe to the subcommittee.

We will then hear from Mr. Ted Alemayhu, who is the founder and executive chairman of U.S. Doctors for Africa, a non-profit organization that is dedicated to providing support to the continent of Africa with regard to volunteer healthcare professionals, dona-

tions of medical supplies and equipment, as well as hosting high-level healthcare seminars involving African First Ladies and pan-African medical doctors. He is also founder of the African First Ladies Health Summit as well as a key contributor to the formation of the African Union Foundation.

Then we will hear from Dr. Dougbeh Chris Nyan, who is a medical doctor and a biomedical research scientist of Liberian origin.

He specializes in infectious disease diagnostics and his expertise focuses on developing simple and rapid diagnostic tests for detecting blood-borne infections and pathogens. Dr. Nyan is currently a scientist at the FDA but he is testifying here in this capacity as the head of the Diaspora Liberian Emergency Response Task Force on the Ebola Crisis, a conglomeration of Liberian professionals and Diaspora organizations in the fight against the Ebola outbreak in Liberia and in the region.

If you could begin, Dr. Brantly, and then we will go to each of the distinguished physicians.

STATEMENT OF KENT BRANTLY, M.D., MEDICAL MISSIONARY, SAMARITAN'S PURSE (SURVIVOR OF EBOLA)

Dr. BRANTLY. Thank you very much, Mr. Chairman. Chairman Smith, Ranking Member Bass and fellow guests of this committee and fellow witnesses, thank you for allowing me to testify here today on behalf of those suffering in west Africa as a result of the Ebola outbreak there.

I would also like to take this opportunity to express my deep gratitude to the U.S. Government, particularly to the State Department, and everyone else involved in my evacuation. Thank you for bringing me home when I was sick.

I am a little torn because I have this prepared testimony and my personal story and there are so many questions and issues that were just raised in the previous panel that I want to address. But let me first present my prepared testimony here for you today.

I began work as a medical missionary, a missionary doctor at ELWA Hospital in Monrovia, Liberia in October 2013, as you said. Even before Ebola came to our area we worked long hours in challenging conditions to provide quality healthcare to support the country's struggling medical infrastructure.

Missionary facilities like ours provide between 40 and 70 percent of healthcare in sub-Saharan Africa. So it is easy to see why we were one of the first to join in the fight against Ebola as it made its deadly march into Monrovia.

In June, we received our first Ebola patients and the numbers quickly and steadily increased from that time on. My organization, Samaritan's Purse, took over responsibility for direct clinical care of Ebola patients for all of Liberia the following month.

MSF had been present in Liberia but because of the growth of the outbreak in Guinea and Sierra Leone their resources had been stretched and they were unable to provide personnel at that time for the outbreak in Liberia.

Ebola is a scourge that does not even allow its victims to die with dignity. Most of them suffer a lonely horrifying death. I came to understand the extreme physical and emotional toll that Ebola in-

flicts in an even more personal way when I was diagnosed with Ebola virus disease on July 26.

I had isolated myself 3 days earlier when I first felt ill. I had a dedicated team of medical professionals who cared for me in Liberia. But even their best efforts could not prevent the virus from racking my body with sustained fever, excruciating pain, and vomit and diarrhea filled with blood.

Like the dozens of Ebola patients I had treated, I found myself suffering alone, and the men and women who cared for me were wearing protective personal equipment that looked like space suits and all I could see were their eyes through their protective goggles.

The only human contact I had came through double layers of medical gloves. While in Liberia I became the first human being to receive the experimental drug ZMapp. Shortly after receiving ZMapp, I was evacuated to Emory University Hospital in Atlanta.

As a survivor of Ebola, it is not only my privilege but my duty to be a voice for those who continue to suffer devastation from this horrible disease in west Africa.

When Nancy Writebol and I were diagnosed with Ebola at the end of July 2014, the global media began feverishly reporting on the grave situation in west Africa.

I am grateful for that coverage but it is unfortunate that thousands of African lives and deaths did not warrant the same global attention as two infected Americans. Even after this attention, when my colleague, Rick Sacra, arrived in Liberia 2 weeks after my diagnosis, it was impossible to buy a box of medical gloves in the city of Monrovia.

Agencies like the World Health Organization, as has been mentioned, remained bound up by bureaucracy. Their speeches, proposals and plans, though noble, have not resulted in any significant action to stop this Ebola outbreak.

I was honored to meet with President Obama yesterday and I am pleased that the U.S. has now committed to take the lead and provide military and medical resources to fight against Ebola.

Now we must make those promises a reality if we are to accurately represent the compassion and generosity of the American people and reduce the suffering and death in west Africa.

Just this week, I saw a report that the 160-bed isolation unit at my hospital in Liberia is turning away an average of 30 infectious patients every day because they don't have beds.

Those with other life-threatening diseases are also suffering, as Liberia's already substandard healthcare infrastructure continues to collapse under the weight of this epidemic.

The military assets that have been committed must be mobilized as quickly as possible to set up larger treatment facilities, to send in skilled personnel and provide logistical support.

It is also imperative that our Government response be conducted in close partnership with nongovernmental organizations that have been on the front lines of this epidemic as well as other governmental organizations like the health ministries of the countries that are affected and other countries who wish to join in the fight.

These NGOs that have been involved in the fight, as was mentioned by the Congressman earlier, specifically MSF and Samari-

tan's Purse, are now taking the lead in finding creative interventions to halt the spread of Ebola.

Past outbreaks have been contained through the identification and isolation of infected patients and the tracing of their contacts. But the rate of transmission for this current outbreak has rendered this approach nearly impossible.

A large part of the problem is that Ebola-infected people are choosing to stay at home because of overwhelming fear and superstition. Family members are caring for these sick individuals at home and therefore contracting the disease themselves.

We now have to educate and equip these home caregivers for their own protection. They must be trained in safety measures and supplied with basic equipment to protect themselves.

Ebola survivors can be instrumental in reaching their communities with critical information and resources. As the number of survivors increases, employing them as educators and community health workers can make them champions in this fight and help restore their dignity while tearing down the walls of fear and stigma attached to this disease.

Admittedly, home-based care is less ideal than treatment provided in an isolation unit. However, Ebola treatment units are overcrowded and unable to take new patients at this time.

If we do not provide education and protective equipment to caregivers now, we will be condemning countless numbers of mothers and fathers and brothers and sisters to death simply because they don't want to let their loved ones die alone.

There is no time to waste in implementing this home-based care strategy in addition to the deployment of the resources the President has promised.

As the current outbreak is on the verge and maybe already over the edge of becoming a significant threat to our national security, in societies where fear and distrust of authority are the norm many still deny that Ebola is real and they actively seek other explanations for the deaths of their loved ones.

I had one patient in early July who died after 2 days in our isolation unit. As we tried to explain to the family the cause of her death, some of her family members, with the help of a witch doctor, determined that her death was caused by a curse placed on her by her best friend. The family was bent on getting revenge and that meant the death of the person they believed had caused the curse on their loved one.

There is a palpable sense of tension on the streets that is priming the pump of society for skirmishes that could quickly lead to war. The world cannot afford to allow more conflict in this region that is home to dictators-in-hiding and terrorist groups.

This epidemic must be brought to a halt as soon as possible to regain order and reestablish confidence in local governments. This is a global problem and the U.S. must take the lead immediately. The longer we wait the greater the cost of the battle both in dollars and in lives.

We must act immediately and decisively to bring healing and stability to the people of west Africa, the African continent, the United States and the world.

Thank you, Mr. Chairman, for allowing me to testify today.

[The prepared statement of Dr. Brantly follows:]

Dr. Kent Brantly

House Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations

Global Efforts to Fight Ebola
September 17, 2014

Chairman Smith, esteemed Representatives, and fellow guests of this committee, thank you for allowing me to speak here today on behalf of those suffering in West Africa as a result of the Ebola outbreak there. I would also like to take this opportunity to express my deepest gratitude to the U.S. government, particularly the State Department, and everyone else involved in my evacuation, for helping to bring me home when I was sick.

I began work as a missionary doctor at ELWA hospital in Monrovia, Liberia, in October 2013. Even before Ebola came to our area, we worked long hours in challenging conditions to provide quality healthcare and support the country's struggling medical infrastructure. Missionary facilities and faith-based facilities like ours provide between 40 and 70 percent of the healthcare in sub-Saharan Africa. Because of this, you can see why we were the first to join the fight against Ebola when it began its deadly march into Monrovia.

We had been preparing to treat Ebola patients since March after hearing that the disease was spreading quickly throughout the neighboring country of Guinea. We put an Ebola treatment protocol in place even as we prayed we would never have to use it.

In June, our first Ebola patients arrived, and the numbers increased steadily from that time on. My organization, Samaritan's Purse, took over responsibility for

direct clinical care of Ebola patients for all of Liberia the following month. I was appointed Medical Director for the only isolation unit in the Monrovia area. At the same time, we were doing our best to continue providing basic medical care for patients suffering from conditions other than Ebola.

As cases increased into the month of July, we had to build a new, larger Ebola Treatment Unit to accommodate the influx of Ebola patients that showed up at our facility each day. This 20-bed unit was quickly overwhelmed as well, housing 30 patients within days of its opening. We knew we were on the cusp of a humanitarian catastrophe and desperately needed more help from the international community. Samaritan's Purse and Doctors Without Borders sounded the alarm and called for more personnel and resources. Sadly, our pleas for assistance were seemingly ignored, and now we are months behind where we should be in containing this disease.

As Americans, we believe that our Creator endowed us with certain unalienable rights, namely life, liberty, and the pursuit of happiness. Ebola is a scourge that robs its victims of these basic human rights and does not even allow them to die with dignity. Most of them suffer a lonely, horrifying death. I came to understand the extreme physical and emotional toll that Ebola inflicts in an even more personal way after I was diagnosed with the disease on July 26.

I had isolated myself three days earlier when I first felt ill. Thankfully, my family had flown home to the U.S. several days earlier, so I knew that I had not passed the virus on to them. I also had a dedicated team of medical professionals who cared for me in Liberia, but their best efforts could not prevent the virus from

racking my body with sustained fever and excruciating pain along with vomit and diarrhea filled with blood. Like the dozens of Ebola patients I had treated, I found myself suffering alone—cared for by men and women wearing personal protective equipment that looked like "space suits," with only their eyes visible through goggles. The only human contact I received came through double layers of medical gloves.

While in Liberia, I was the first human being to receive an experimental drug called Zmapp, and I would like to recognize Mapp Biopharmaceuticals for all of their hard work to develop this potential treatment for Ebola long before this present outbreak. While I had a dramatic and positive response to Zmapp, it is important to remember that this is still an experimental drug that requires further testing. Though possibly an effective treatment, there is no magic pharmaceutical bullet that will bring this outbreak to an end.

Drugs like Zmapp can only be given to people under close medical supervision in an Ebola Treatment Unit. While this could reduce the death rate in isolation units, it does not address the problem of disease transmission within communities. While scientists continue their hard work to find vaccines and cures for Ebola, it is our job to contain this current epidemic by ending the transmission of the virus from one innocent victim to another.

Shortly after receiving Zmapp, I was evacuated to Emory University Hospital in Atlanta. It was a relief to be back home, where I knew I would receive the highest level of care available. My heart ached, however, as I remembered all of the patients I watched suffer and die while I struggled to treat them without even basic supplies

like a blood pressure cuff. As a survivor of Ebola, it is not only my privilege, but my duty to be a voice for those in West Africa who continue to face the mounting devastation of Ebola.

When my colleague and friend, Nancy Writebol, and I were diagnosed with Ebola, the global media began feverishly reporting on the grave situation in Liberia, Sierra Leone, and Guinea—and now Nigeria and Senegal. I am grateful for the coverage because it put a spotlight on the catastrophe overtaking those countries, but it is unfortunate that thousands of African lives—and deaths—did not warrant the same global attention as two infected Americans.

Even now, the international response is woefully inadequate. My colleague, Dr. Rick Sacra, arrived back in Liberia two weeks after my diagnosis. He worked tirelessly to provide medical care for pregnant women and babies even as he was forced to scramble to find basic equipment such as gloves and rubber boots. He is now at a hospital in Nebraska struggling to recover from Ebola.

Agencies like the World Health Organization remain bound up by bureaucracy. Their speeches, proposals, and plans—though noble—have not resulted in any significant action to stop the spread of Ebola. The U.S. government must take the lead immediately to save precious African lives and protect our national security.

I applaud President Obama's recent commitment of U.S. military support in the fight against Ebola, and I am in favor of his request for $88 million in additional funding for the Centers for Disease Control. So far, however, the only assistance to come from the president's promise is a 25-bed Ebola Treatment Unit and some

much-needed equipment. I do not believe that these small gestures accurately represent the compassion and generosity of the American people, and they will do little to reduce the suffering and death in West Africa.

Just this week, I saw reports that the 120-bed isolation unit at my hospital, ELWA, is turning away as many as 30 infectious individuals each day. Those with other life-threatening diseases are also suffering as Liberia's already substandard healthcare infrastructure continues to collapse under the weight of the epidemic. The U.S. must mobilize all necessary military assets to set up larger treatment facilities, send in skilled personnel, provide logistical support, establish mobile laboratories for Ebola testing, and ensure the safety and security of healthcare workers, patients, and local populations. It is also imperative that we provide greater resources to the non-governmental organizations who have been on the frontlines of this epidemic and to others who want to join the fight.

For too long, private aid groups have been confronting this Ebola epidemic without adequate international support. Their medical personnel have been stretched to the limit as they work day and night to care for patients while enduring the physical hardship of wearing layers of personal protective equipment in the sweltering African heat. Watching nearly all of your patients suffer an agonizing death while having to turn away others is also emotionally draining. These organizations cannot continue to go it alone. A significant surge of medical boots on the ground must happen immediately to support those already working in West Africa and care for the thousands of people expected to contract Ebola in the coming weeks.

These medical professionals will not be able to effectively do their work without the proper equipment and supplies. Right now, organizations fighting this disease are forced to rely on limited commercial airline service to transport personnel and critical resources. This is inefficient and unacceptable. U.S. military aircraft must be mobilized to provide an "air bridge" to ensure there is a reliable logistical pipeline.

We also must be willing to think beyond traditional interventions in halting the spread of the disease. Ebola outbreaks of the past have been contained through the identification and isolation of suspected cases and the tracing of contacts. The rate of transmission for the current outbreak has rendered this approach ineffective. We must think outside of the box to find complementary strategies for bringing an end to disease transmission.

A large part of the problem is that Ebola-infected people are choosing to stay home because of the overwhelming fear and superstition surrounding the disease and the isolation units. Family members, and sometimes neighbors, are caring for these sick individuals at home and therefore contracting the disease themselves. We now have to look at interventions that involve educating and equipping these home caregivers for their own protection.

Those tending to their sick loved ones must be trained in safety measures and supplied with basic protective equipment—gloves, masks, and detergent or bleach at a minimum—so that they can protect themselves. Ebola survivors can be instrumental in reaching their communities with critical information and resources. This would also give them the opportunity to combat stigma by serving their

neighbors. Right now, these fortunate survivors often are prevented from returning to their communities because of fear, stigma, and superstition. Employing them as educators and community health workers can make them champions in this fight and help restore their dignity while tearing down the walls of fear and stigma.

Admittedly, home-based care is less ideal than the treatment provided in an isolation unit. The current reality, however, is that Ebola Treatment Units are overcrowded and unable to take new patients. Even if we build bigger units, we will still lack the staff needed to care for the thousands who will undoubtedly fill these new facilities.

In some areas, entire communities have been quarantined so that they cannot reach a healthcare facility. Many individuals are choosing to die at home because of fear and superstition. All of these factors are resulting in the spread of the disease. If we do not provide education and protective equipment to caregivers, we will be condemning countless numbers of mothers, fathers, daughters, and sons to death simply because they chose not to let their loved ones die alone.

To provide the level of community intervention necessary to contain this disease will require a technical and logistical infrastructure that can only be put in place by a highly trained force such as the U.S. military. This is not an unreasonable request as it is becoming more and more obvious that the current outbreak is on the verge of becoming a significant threat to our national security.

As Ebola spreads throughout West Africa, there is increasing civil unrest that could easily lead to regional instability. I had one patient in early July who died after spending two days in our Ebola Treatment Unit. Although we tried to explain the

cause of death to her family, some of them—with the help of a witch doctor—determined that she died because of a curse placed on her by her best friend. They sought revenge, which meant taking the life of the person they thought was responsible. In societies like this, where fear and distrust of authority are the norm, many still deny that Ebola is real and actively seek other explanations for the deaths of their loved ones. There are many conspiracy theories, including the belief that Ebola is a government plot for monetary gain. You can see how this sort of thinking can easily lead to large-scale violence.

There is a palpable sense of tension on the streets that is priming the pump of society for skirmishes that could quickly lead to war. The world cannot afford to allow more conflict in this region that is home to dictators-in-hiding and terrorist groups like Boko Haram. This epidemic must be brought to a halt as soon as possible to regain order and re-establish confidence in local governments.

Since I fell sick less than two months ago, the death toll from Ebola has tripled. At that rate of growth, there will be hundreds of thousands of deaths within the next nine months. This is a global problem, and the U.S. must take the lead immediately to extinguish the hellish fire of Ebola before it consumes entire nations. We cannot wait for international agencies tied up in bureaucracy or organizations that rely on volunteers and funding from private donors.

The longer we wait, the greater the cost of the battle—in dollars and lives. We must act immediately and decisively to bring healing and stability to the people of West Africa, the African continent, the United States, and the entire world.

Mr. SMITH. Dr. Brantly, thank you for providing this committee the honor of hearing your testimony and for your very significant recommendations, particularly in the home healthcare, which has not been focused upon enough.

During Q and A hopefully you will elaborate on some of your answers to some of the questions raised early.

Dr. Akukwe, thank you for being here.

STATEMENT OF CHINUA AKUKWE, M.D., CHAIR, AFRICA WORKING GROUP, NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

Dr. AKUKWE. Thank you, Chairman Smith, and Ranking Member Bass and other members of the subcommittee. I think that this is a great honor and a privilege to be part of this hearing in the global fight against Ebola, and I must say that it is also a honor to share this podium with Dr. Kent because when I saw him walk out of that ambulance and into the hospital, I knew that he had sent a very powerful message that you can actually survive from Ebola. So thank you, Dr. Kent, for all your wonderful efforts.

While I listened to the first panel I think a lot of what I had intended to discuss have been touched in various ways because my discussion is around the idea that we can use this threat of Ebola, the global outbreak of Ebola, to strengthen health systems in Africa.

I think for many of us who spent more than 20 years working on HIV/AIDS in Africa, one of the things we learned within the first decade is that you cannot really make any dent in the effort against HIV/AIDS without addressing some parts of the healthcare system and the thing about Ebola, as I have already mentioned, is that if you look at the three main countries, two of them just came out of war.

But if you look at all indices of health, Liberia, Sierra Leone, and Guinea are always dominate the laggards. They are always among the worst ranked for the past two decades, even before the wars started, and it is getting worse since the onset of civil war and now they are trying to emerge from the civil war.

And if you look at other indices of human development, Liberia, Sierra Leone, and Guinea also have very poor rankings and if you look at indices of health systems, Africa really has multiple challenges.

Liberia, Guinea, and Sierra Leone have very difficult challenges, always coming up among the worst ranked, and we do know that WHO about 5 years ago indicated that Africa has 24 percent of the global burden of disease with only 3 percent of the global workforce.

So we are dealing with 25 percent disease burden and you only have 3 percent of the global workforce. So what you have in the situation in Africa is that we have Ebola today. We have HIV/AIDS.

Tomorrow we are going to have another outbreak. So no matter what you are doing now, you know, send in people, boots on the ground, trying to contain the epidemic, if you don't address some of the lingering issues of a poor health system then you are going

to come back again with this kind of emergency response within the next few years as other epidemics come up.

And we do know that in the late 1970s and 1980s the global coalition that included USAID, U.N. agencies, World Bank, they came together and from that infrastructure development had a primary healthcare system.

In many African countries, physically, the only existing health systems that you find are those health systems that were built as primary healthcare centers, medical centers in the 1970s.

Not much has changed, and I think what I am calling for is to use the opportunity of the Ebola outbreak to reevaluate how we can assist Africa to become part of this global health architecture that both the Obama administration and the Bush administration have actually spent significant amounts of money trying to have a situation where all regions in the world are part of this global health architecture taking care of emerging diseases and other outbreaks.

And I agree with what has been expressed today that we need to go beyond WHO. We need to make sure that we put together a coalition that includes African governments, multilateral agencies, global foundations, the academia, organized private sector to look at the best ways to address healthcare systems in Africa.

In my book on healthcare services we did find out that it is not easy for Africans on their own to deal with this problem. You probably need a lot of technical assistance—not just money but technical assistance to change the sort of health systems.

Let me use an example. Technical capacity at continental and regional level—we are happy that the Africa Union set up the health keepers program.

But we do know that Africa needs a lot of leadership at the continental and the regional economic levels to provide technical assistance for some of these very poor African countries that will never have the capacity to manage some of these outbreaks like we are seeing in Sierra Leone, Guinea and Liberia.

And in closing, I think that in 2000 the U.S. Congress, the 106th Congress, when we were all paralyzed by the response to HIV/AIDS, came up with the Global AIDS Trust Fund that jumpstarted the global response to HIV/AIDS. It wasn't a lot of money, about $50 million.

But what it did was that it now allowed the World Bank and other multilateral agencies and other stakeholders to begin the process of looking at HIV/AIDS from a totally different perspective from the regular way of doing things.

And I think that this is what we probably need at this time from the Congress in order to help African health systems be rebuilt in such a way that they could become part of the global health architecture.

Thank you so much.

[The prepared statement of Dr. Akukwe follows:]

WRITTEN STATEMENT

NAME: Dr. Chinua Akukwe

AFFILIATION: Academy Fellow and Chair, Africa Working Group

National Academy of Public Administration (NAPA), Washington, DC

COMMITTEE: House Committee on Foreign Affairs

DATE: September 17, 2014

TITLE OF THE HEARING: Global Efforts to Fight Ebola

EBOLA: A UNIQUE OPPORTUNITY TO REBUILD AND STRENGTHEN HEALTH SYSTEMS IN AFRICA

I thank Chairman Christopher Smith and Ranking Member Karen Bass and other members of the Subcommittee on Africa, Global Health, Global Human Rights and International Organizations for the unique, privileged opportunity to participate in this very timely hearing on global efforts to fight Ebola. I also express my gratitude to the Foreign Affairs Committee Chairman, Edward Royce for the formal invitation to this hearing.

I am particularly honored to share this podium with Dr. Kent Brantly, perhaps the best known face in ongoing global efforts to fight Ebola for his inspiring, heroic and graceful personal fight against Ebola. Seeing Dr. Kent Brantly walk out of the ambulance on his own after his evacuation from Liberia to Emory Hospital in Atlanta will forever remain one of the brightest days in the global fight against Ebola. By making those fateful, short steps into the hospital, Dr. Kent sent an incalculable message to the world: Ebola is not a universally, fatal disease. You can win the fight against Ebola. Dr. Kent's discharge home weeks later from the hospital also represented another powerful milestone: survival is possible.

Eminent clinicians and scientists, Dr. Anthony Fauci and Dr. Lucinna Borio should have addressed key clinical, epidemiology and security implications of an unchecked Ebola global epidemic in their prior presentation. The focus of my intervention is on how the preventable spread of Ebola presents a unique opportunity to rebuild and strengthen health systems in Africa to minimize future occurrences.

What Do We Know About Ebola in Africa?

According to the World Health Organization (WHO), as of Sunday, September 14, 2014, at least 4366 cases of Ebola have been identified, with 2218 deaths (www.who.int/csr/disease/ebola/en/). Three countries in Africa: Guinea, Liberia and Sierra Leone remain the epicenter of Ebola. These countries have "widespread and intense transmission" according to the WHO. Nigeria and Senegal have "cases" or "localized transmission." Neighboring countries such as Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau and Mali are at risk of cross border transmission. The WHO also reports that the Democratic Republic of Congo is recording an upswing in confirmed Ebola cases, with 31 more cases since early September. Ebola as noted by the WHO is endemic in poor, remote villages at the edge of rainforests in Central and West Africa. The current 47% fatality rate with the 2014 Ebola outbreak is significantly lower than previous rates of more than 90 percent.

The overwhelming mode of transmission in the 2014 Ebola outbreak is human-to-human. Between 2 and 21 days, suspected cases must only be quarantined but should be monitored closely until the end of the incubation period. As of today, the WHO is reportedly not aware of any "licensed, specific treatment or vaccine" to manage serious cases of Ebola.

Each serious case requires intensive, supportive care by doctors, nurses, laboratory scientists and other paramedical staff. In Ebola outbreaks, strict protocols must be observed in regards to direct contact between an infected person and other individuals. This protocol extends to exchange of bodily fluids and interaction with environments contaminated with bodily fluids, including blood.

Challenges of Health Systems in Africa

Any individual that has spent time in a typical public hospital or health center in Sub-Sahara Africa can immediately grasp the fundamental challenge of stopping human-to-human spread of Ebola in Africa. Sub-Sahara hospitals and health centers are typically overcrowded, with overwhelmed health workers trying their best to cope with huge demand. As we noted in my edited book on *Healthcare Services in Africa: Overcoming Challenges, Improving Outcomes,* a typical hospital or health center faces difficulties of operating in dilapidated infrastructure, working under the constant threat of poor funding, navigating inadequate supplies and malfunctioning equipment, dealing with poorly motivated co-workers and facing dissatisfied clients on a daily basis.

In every index of health by multilateral agencies, including the WHO, African countries dominate the laggards. The WHO estimates that although Africa accounts for 24% of the global burden of diseases, it is home to only 3% of the global health workforce. Life expectancy in Africa has now "improved" to 58 years according to the WHO (www.who.int/healthinfo/global_burden_diseases/en/) compared to 76 years in the Americas; 67 and 76 in South East Asia and Europe, respectively. At least 63 out of every 1000 newborn in Africa will die before their first birthday compared to 13 in the Americas, 39 in South East Asia and 10 in Europe. Adult deaths in Africa are nearly three times higher than comparable rates in the Americas and Europe.

In regards to coverage of preventive and treatment services, Africa is the only region to show on the average just 50% of its population covered by both modalities of care. Latin America and the Caribbean have more than 70% coverage. In nearly every healthcare indicator, the Africa region overall ranking is much lower than other regions.

Guinea, Liberia and Sierra Leone face enormous, daunting healthcare challenges. According to the WHO, the proportion of physicians per 1000 population in the three countries are among the lowest in the world at rates of 0.1 for Guinea, 0.014 for Liberia and 0.022 for Sierra Leone. Compare these rates to 2.79 in the United Kingdom and 2.453 in the United States. In every healthcare indicator with country specific data, Guinea, Liberia and Sierra Leone consistently rank poorly.

Concurrent Human Development Challenges

One of the most worrying trend is that Africa and African countries dealing with serious health challenges also lag behind in human development indicators. The widely respected United

Nations Development Program (UNDP) *Human Development Index (HDI)* consistently show Africa and African countries lagging behind other regions and countries. The 2014 HDI reaffirms Sub-Sahara's highest rates of income inequalities compared to other regions (www.undp.org/en/2014-report; hdr14-report-en-1.pdf) with up to 72% of Africans living with "multidimensional" poverty related issues such as poor living standards and limited access to quality education and healthcare services. Of the 187 ranked countries in the 2014 HDI, with number one, Norway adjudged the best, Guinea is ranked 179, Liberia 175 and Sierra Leone, 183.

Progress towards attaining the *Millennium Development Goals (MDGs)* by 2015 also show the Africa region and African countries struggling to meet the eight MDG goals. The United Nations 2013 MDGs report (www.un.org/millenniumgoals/pdf/report-2013/mdg-report-2013-english.pdf) and the accompanying Africa regional report (www.uneca.org/publications/mdg-report-2013) show that Sub-Sahara Africa lags behind other regions in meeting each goal on or before 2015. Guinea and Sierra Leone will likely achieve only one of the eight goals by 2015. Liberia, optimistically, may meet the target of two goals. A critical challenge for Africa post 2015 is how to deal with the dual challenge of ensuring timely access to services and at the same time improving quality of services.

Governance remains a fundamental challenge in Africa despite progress made in organizing elections, the peaceful transfer of power in some countries and reduction in intractable conflicts. Africa retains poor ranking in various accountability and transparency indices. The Transparency International *2014 Corruption Perception Index* ranks Guinea at 150th out of 170 countries and Sierra Leone at 119th. Liberia is ranked better at 83rd. The Heritage Foundation *2014 Index of Economic Freedom* lists Guinea, Liberia and Sierra Leone as "mostly unfree" with poor ranking among 165 nations.

Taking Advantage of Global Anti-Ebola Efforts to Rebuild and Strengthen Africa's Health System

The Global fight against Ebola has firmly reestablished the concept of the global village. An outbreak that reportedly started with a traditional healer in a remote part of Guinea without extensive, expensive countermeasures could have reached major capitals of the world by now. Although it is possible for Ebola to be transmitted in Western countries, including the United States, the existing healthcare infrastructure can adequately handle emerging cases. Years of steady advancements in all facets of healthcare delivery ensures a robust response to any emerging health threat in the U.S. and other industrialized countries. This is far from the situation in Africa, including West Africa with three hardest hit countries.

I have shown earlier the poor health and human development indicators in Guinea, Liberia and Sierra Leone, current epicenters of the 2014 Ebola outbreak. This scenario is applicable to many African countries. Simply put, only a handful of African countries can mount a robust first

response to a potential Ebola outbreak. Nigeria is one of such countries as evident from its so far, successful containment efforts.

However, I am not aware of any African country that can mount a sustained, multi-sectoral, multidimensional response to Ebola or any fast spreading infectious disease.

We have learnt from the HIV/AIDS global epidemic that robust health systems are critical in mounting and sustaining a vigorous response to an emerging disease threat. A successful response against a multi-country disease threat requires rapid national and coordinated regional responses. It also requires sharing resources, expertise and experiences. Mainstreaming human development strategies in highly optimized, functional healthcare delivery system is equally important.

Unlike mistakes made with the largely vertical response to HIV/AIDS in Africa until recently, the 2014 Ebola outbreak provides a unique opportunity to rebuild and strengthen health systems in Africa. This rebuilding and strengthening effort unlike the primary healthcare days of the late 1970s and 1980s when many health facilities were constructed should **focus on dedicated, long term, public/private international partnerships to tackle specific deficiencies in healthcare delivery systems in Africa.** This long term approach will end the current episodic, disease specific response that I have witnessed in Africa in nearly three decades of active engagement in the healthcare industry. A deliberate, systematic process for tackling specific deficiencies in Africa's current chaotic healthcare system will be the best guarantee that Africa will not only protect its people in the event of an emerging health threat but will also be part of a resilient global health architecture capable of safeguarding individuals and families around the world.

I briefly review the proposed international public/private partnership should.

International Public/Private Partnerships on Transforming Africa's Health System

United States and other industrialized nations should go into a mutually beneficial, long term partnership with African countries to transform healthcare delivery systems in the continent.

The envisaged partnership should include:

1) African governments, continental and regional institutions;
2) Bilateral agencies;
3) Multilateral agencies;
4) Global Foundations;
5) The Academia;
6) The Organized Private Sector;
7) The Civil Society; and,
8) Africans in the Diaspora.

The International Partnership should target the following overarching issues that bedevil seamless operation of healthcare delivery systems in Africa:

A) Intractable Governance, Accountability and Regulatory deficiencies;
B) Lack Luster Continental and Regional Technical Response;
C) Silo-based Human Development and Healthcare Strategies and Programs;
D) Ineffective Health Financing Mechanisms;
E) Dilapidated Infrastructure;
F) Erratic Logistics support;
G) Poor Operational Management and Service Delivery;
H) Limited Monitoring and Evaluation protocols and utilization processes; and,
I) Inadequate Stakeholder Engagement and Participation.

The **foundation of the proposed International Partnership** is that both African and international partners must commit to transparency and accountability in the health sector, to timely access to care for at-risk populations and to the highest quality of care at all times.

The International Partnership should **holistically address the following technical challenges in Africa's healthcare systems**:

i) **Establishing strong technical capability at continental and regional economic levels in Africa.** Africa needs strong continental and regional leadership on technical assistance, research, regulatory frameworks, public/private partnerships and rapid response mechanisms. Very few African countries at present can mount a credible, sustained response to disease outbreaks and emergencies. The African Union Commission and the WHO Africa region can develop strong technical capacities to provide assistance to African countries. The regional economic communities can also provide critical early response support on emerging and known health threats;

ii) **Rebuilding and Strengthening National Health System Architecture.** Virtually every country in Africa will benefit from this effort. Key national rebuilding efforts include transparent policy frameworks, accountable operational mechanisms, infrastructure development, surveillance systems/situation assessment/response mechanisms, health workforce development/retention, essential drug regimen, health financing mechanisms, management of primary healthcare systems, and management of secondary and tertiary healthcare systems;

iii) **Supporting Viable Public and Private Health Systems.** I am not aware of any African country where public sector health systems are meeting needs of target population, especially the poor. I am also not aware of any African country where private sector healthy systems are perceived as comprehensively attuned to health priorities of target populations as well as an ethical, affordable alternative. The key is to encourage viable, ethical, affordable and accessible public and private health systems throughout Africa.

iv) **Implementing Successful Preventive Health Programs**. A worldwide problem particularly acute in African due to cultural taboos and practices, mistrust of governments and its foreign partners as well as limited access to health services.

Designing credible, effective information, education and communication (IEC) campaigns will be crucial to any successful transformation of Africa's health system. The early effort against Ebola in Guinea and Liberia suffered from poorly managed and poorly received IEC campaigns, with disastrous consequences. It took several weeks for some target population in these two countries to believe that an Ebola outbreak was afoot and several more weeks to alter risky practices such as elaborate burial rites that facilitate human-to-human transmission.

v) **Science, Research and Technology should be key**. The envisaged international partnership can play accelerated, catalytic role in jumpstarting the role of science, research and technology in successful healthcare transformation efforts in Africa. Twinning arrangements between Africa and academic institutions around the world will be crucial in assuring a steady pipeline of world class scientists and translation of findings from innovative scientific/research projects to guide transformation efforts.

vi) **Engaging Africans in the Diaspora.** This will be a very tough nut to crack since it is difficult to organize Africans in the Diaspora for specific, large scale efforts in Africa. However, the upside is incredible. The National Medical Association, the National Dental Association, the National Black Nurses Association and other similar organizations have thousands of members that could be incentivized to work and live in Africa. Africa Diaspora entrepreneurs and investors, scientists, lawyers, administrators and other professionals can play critical roles in reshaping healthcare delivery systems in the continent.

Africa healthcare system is currently at crossroads. The 2014 Ebola outbreak is exposing well known fault lines in Africa's healthcare system that could have grave repercussions worldwide. Africa is not prepared to deal with Ebola or any future health threat on its own without external assistance. I am calling for a long term, mutually beneficial international partnership to SPECIFICALLY ADDRESS known deficiencies in Africa's health systems and transform the continent into a reliable component of a global healthcare architecture capable of preventing and warding off known and emerging health threats. More 14 years ago, the 106th Congress passed the historic, novel Public Law 106-264, The Global AIDS and Tuberculosis Relief Act of 2000 (www.gpo.gov/fdsys/pkg/STATUTE-114/pdf/STATUTE-114-Pg748.pdf) to jumpstart the global response against HIV/AIDS. Today, the 2014 Ebola Outbreak in Africa provides another opportunity for the U.S. Congress to lead the way, one more time.

Thank you so much for your time and attention.

Dr. Chinua Akukwe

National Academy Fellow and Chair, Africa Working Group,

National Academy of Public Administration, Washington, DC.

Mr. SMITH. Dr. Akukwe, thank you very much for your testimony and your leadership.

Dr. Alemayhu.

STATEMENT OF MR. TED ALEMAYHU, FOUNDER & EXECUTIVE CHAIRMAN, US DOCTORS FOR AFRICA

Dr. ALEMAYHU. Thank you, Mr. Chairman. First and foremost, I would like to thank you and Congressmember Bass. You both have been the true soldiers for the continent of Africa.

Every time there has been a pressing need you have been on the forefront calling for hearings and showing mutual leadership. So I am truly grateful for that. Also, I want to thank my colleagues here at the table. Let me read my statement, Mr. Chairman, if you don't mind.

Members of the United States Congress, it is my deepest honor and privilege to come before you this morning in order to show, in order to share what I know and what should be done to assist Ebola-affected nations in west Africa.

I, first, wanted to express my sincere gratitude to you, Members of Congress, and to the entire Government of the United States for giving your fullest attention for this deadly crisis. I would also like to thank Dr. Kent Brantly for his extraordinary service for the people of Africa. We are delighted to see him well and alive.

Mr. Chairman, Members of Congress, I have come before you this morning as a son of Africa and a proud citizen of the United States. As a son of Africa, I am deeply concerned and heartbroken to see my people once again suffer from another deadly virus.

As you may recall, the HIV/AIDS virus has murdered millions of Africans across the continent. I am terribly scared and terrified as to what could happen now if we do not act rapidly and decisively to stop this deadly virus.

Mr. Chairman, the Ebola virus does not discriminate. It is killing babies. It is killing mothers. It is killing fathers, doctors, and nurses and anyone else that is in its way.

The World Health Organization reports that over 2,400 of my fellow Africans have been murdered by this disease. If we do not act rapidly and decisively we could potentially witness tens of thousands of dead bodies across west Africa and possibly even beyond.

What is happening on the ground, particularly in the Republic of Liberia, Sierra Leone, and Guinea is simply heartbreaking. The governments of these nations are screaming for help and we must respond to their call immediately.

We must still deploy some of our basis healthcare resources and accessories, medical supplies, and equipment immediately because they are needed and needed badly on the ground. Items such as protective gears, hospital beds, gloves, and masks and gowns are in dire need.

Local healthcare workers are threatened to quit their service if their safety is not ensured with the delivery of these items. And who really can blame them? According to the World Health Organization, approximately 301 healthcare workers were infected by this virus and half of them are dead.

There is a severe shortage of healthcare professionals in most African nations and particularly those nations that have been af-

fected by this virus. I am speaking averaging one doctor per 50,000 people or more. This is what I call a perfect remedy for massive disaster.

Once again, the World Health Organization has called for an additional 500 healthcare professionals to be deployed on the ground in order to assist effectively with this crisis.

Mr. Chairman, I can tell you that U.S. Doctors For Africa and our partners are ready to help. In partnership with the AFYA Foundation of America—the president and chairman is right behind me—and many other strategic partners we are able to mobilize medical supplies and equipment worth tens of thousands of dollars and ready for shipment.

We are also looking into actively recruiting medical doctors and nurses to be deployed to Africa. U.S. Doctors for Africa has access to medical clinics, telemedicine technology, emergency care units, and other personnel. They look to do all of this and can deploy them to Africa.

Mr. Chairman, we need strategic assistance and the sponsors to deliver these units on the ground. Thank you, sir.

[The prepared statement of Dr. Alemayhu follows:]

US Doctors For AFRICA

Written Testimony

House of the Representatives – COMMITTEE ON FOREIGN AFFAIRS
Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations

Sep. 17th, 2014

Member of the United States Congress, it is my deepest honor and privilege to come before you, in order to share what I know and what needs to be done to assist Ebola Affected nations in West Africa.

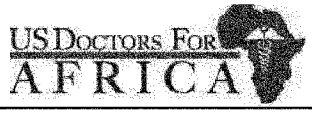
I first would like to express my sincere gratitude to you, Member of Congress, and to the entire Government of the United States for giving the fullest attention possible for this deadly crisis.

I would also like to express my sincere gratitude to Dr. Kent Brantly for his extraordinary service to the people of Africa. We are grateful to see him alive and doing well.

Mr. Chairman, members of the committee, I have come before you this morning as the SON of Africa and a Proud citizen of the United States.

As a SON of Africa, I am deeply concerned and heart-broken to see my people yet-again suffer from another DEADLY virus. As you may recall, the HIV/AIDS Virus has murdered millions of people across the African Continent…I am terribly SCARED, and TERRIFIED as to what could happen if we do not act RAPIDLY and decisively to stop the spread of this DEADLY virus.

Mr. Chairman, The Ebola virus does NOT discriminate…it is KILLING Babies, Mothers, Fathers, Doctors, Nurses, and anyone else that is in its way.



The World Health Organization reports that over 2000 of my fellow Africans have been murdered by this virus thus far. If we do not act rapidly and decisively, we could potentially witness tens-of-thousands more dead bodies across West Africa and beyond....

Mr. Chairman, Members of the Committee, what is happening on the ground, particularly in The Republic of Liberia, Sierra-Leone and Guinea is simply heart-breaking!

The Governments of these nations are screaming for HELP and we must respond to their call UNCONDITIONALLY.

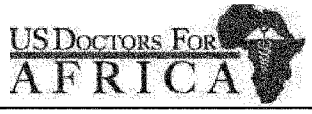
We must start deploying some of the basic but most important healthcare accessories and supplies immediately.

Items such as PROTECTIVE GEARS, HOSPITAL BEDS, GLOVES, MASKS, and GOWNS are in DIRE-NEED.

Local healthcare workers have threatened to quit their services if their safety is not ensured with the delivery of these items. And who could blame them...? Almost half of the 300-plus health-care workers who have developed the disease have lost their lives.

There is a severe shortage of healthcare professionals in all of Ebola Affected nations....some averaging 1-Doctors per 50,000 people. This is a perfect remedy for a real disaster.

In order to fulfil this massive shortage of medical manpower, we must start deploying our Volunteer healthcare personnel in order to FIGHT the virus and to ultimately STOP it from further spreading across the African continent and beyond.



The World Health Organization has called for additional 500 healthcare professionals to be deployed in order to effectively deal with the crisis.

Mr. Chairman, US Doctors for Africa and its partners are ready to HELP! In partnership with the AFYA Foundation of America, and many other strategic partners, our organization is able to secure several containers of healthcare accessories and supplies that is ready for shipment.

Our organization is also actively recruiting volunteer Doctors, Nurses, and other healthcare professionals to be deployed to Liberia, Sierra Leone, and Guinea as well as to Nigeria.

Joining the men and women healthcare professionals from the WHO, the CDC, and many other supporting institutions, our volunteers Doctors and Nurses could make some substantial difference on the ground.

US Doctors for Africa has access to additional resources such as Mobile Clinics, Tele-medicine technology, Emergency care unites and personnel to treat patients and to also train local care providers.

In order to ensure the delivery of the healthcare supplies and materials, as well as the deployment of our volunteer medical forces, we must seek strategic financial partners that would make the delivery of such vital resource possible.

Cultural challenges in dealing with the Ebola Virus

Ebola virus cases in West Africa are rising faster than the ability to contain them, the World Health Organization says, as experts warn that the exponential rise could become a worldwide disaster.

The death toll has risen to more than 2,400 out of 4,784 cases. Health-care workers have been infected with the virus while treating patients. Almost half of the 301 health-care workers who have developed the disease have died.

Among the many challenges is contributing to the spread of the virus is that of certain cultural rituals and practices in rural communities and densely populated capital cities where strong cultural practices and traditional beliefs come into play.

Some of the reports suggests that in some of the Ebola affected nations, there seem to be a denial and panic and that has triggered myths and misconceptions surrounding treatment and control efforts. This happens to be true, particularly in Kailahun and nearby districts that border Liberia and Guinea.

In some instances, members of the public have stoned medical staff working the treatment centers. Some patients have left treatment facilities against medical advice. They are being harboured in private homes, amplifying the infection risk and making it nearly impossible for outbreak responders to trace contacts.

Sierra Leone health officials estimate that at least 57 confirmed or suspected Ebola patients have fled or gone into hiding, as referrers reported.

Confronting fear, misperceptions

Misconceptions about the disease need to be addressed and people from the affected communities need to accept that Ebola is the cause of the unusual illnesses and deaths.

Certain steps to communicate key messages through radio discussions and dissemination of jingles, posters, and fact sheets needs to be considered.

Traditional leaders and politicians needs to be mobilized to help spread the messages, and community health workers needs to be trained to conduct house-to-house and village-to-village sensitization.

Additionally a clearer understanding of the disease and handling of the dead (which is one of the most impt means of transmission prevention) needs to be effectively communicated across the board.

It is imperative to provide specific guidelines for how to safely transport and Bury Ebola victims. It should include instructions and to be aware of the [victim's] family's cultural practices and religious beliefs, and to help the family understand why some practices should be done because they place the family or others at risk for exposure.

Among the traditional practices involving the handling of the dead, such as family-led body preparation and religious rituals that require direct contact with the corpse must be eliminated.

Mr. SMITH. Dr. Alemayhu, thank you very much for your leadership as well and later on I will ask you about actively recruiting doctors and how well that is going.

I would like to now ask Dr. Nyan if you could present your testimony.

STATEMENT OF DOUGBEH CHRIS NYAN, M.D., DIRECTOR OF THE SECRETARIAT, DIASPORA LIBERIAN EMERGENCY RESPONSE TASK FORCE ON THE EBOLA CRISIS

Dr. NYAN. Thank you, Mr. Chairman, and members of this august committee, distinguished panelists, specifically Dr. Kent Brantly, to whom on behalf of the people of Liberia and also Sierra Leone and Guinea we pay you our deepest respect and to other healthcare workers who did not make it through as a result of the infection.

Members of the fourth estate, ladies and gentlemen, I would like to thank the organizers of this hearing for the invitation extended to Diaspora Liberia Emergency Response Task Force on the Ebola crisis to testify on the situation of the current Ebola epidemic in Liberia and the subregion.

We in the Liberia task force from the Diaspora believe that through this medium U.S. policymakers will have the first opportunity of hearing about the outbreak from the Liberian perspective primarily.

The Diaspora task force is an umbrella organization which conglomerates Liberian healthcare professional organizations, community organizations, individuals of varying professional expertise including medical doctors, nurses, public health practitioners, pharmacists, biomedical research scientists and engineers, journalists, et cetera.

From the inception of its nationhood in 1847, Liberia has always maintained a very special link to the United States of America and have always played a major role on the world stage. Also, Liberia was always a trusted Cold War ally of the United States.

Cognizant of this relationship, Liberians have always turned to the United States for rescue in times of problems be it economic, social or political, now medical. Today, Liberia, along with countries of the Mano River subregion find itself in a situation that is occasioned by the current Ebola outbreak.

This epidemic is dissipating lives, breaking up families as well as stigmatizing and traumatizing the country and its people. It is no secret that the Liberian healthcare system, as has been discussed over and over, completely collapsed under the pressure of the Ebola outbreak while also the leadership and local health authorities demonstrated an incapability of dealing with the outbreak.

Most hospitals are still closed due to the lack of basic medical supplies. Healthcare workers lack the necessary protective gear to go in the field to perform their duties.

Although there have been massive input of medical support and supplies from countries of the global community like China and India and the United States, we have yet to see a logistic plan put in place for the proper distribution and delivery of materials to intended clinics and hospitals.

There is also the issue of mistrust and confidence between citizens and government authorities, as have been discussed over and over, and a total breach of confidence. The crisis have been deepened also by the appointment of unqualified personnel, particularly nonmedical personnel, as spokespeople to lead government's fight against the Ebola outbreak.

And this has led to wrong decisions of government grossly contradicting public health disease control measures. Also, the unprofessional utterances from some nonmedical officials have engendered widescale disbelief in the general population that the Ebola virus is not real.

Additional challenges include the lack of trained medical personnel in specialized areas of epidemiological infectious disease control.

On the side of the Diaspora efforts, coordination of logistics across the United States has been difficult due the lack of financial resources. In Liberia, reduction of air flights into the country and the lack of clear policy on duty-free process for Ebola equipment and supplies have hampered anti-Ebola efforts from the Diaspora community.

These are among a few examples of the looming challenges in the fight against Ebola in Liberia and the subregion as a whole.

Notwithstanding, Diaspora Liberians and, as we have met with others from the subregion, Guineans and Sierra Leonians, have since embarked on massive mobilizations of medical supplies and materials as well as food, and continue to send these items to Liberia and the other countries on a revolving basis.

For example, partnering with other organizations and foundations, the Diaspora Liberia Emergency Response Task Force recently airlifted about 4,000 pounds of medical supplies to Liberia on August 27, 2014, set up its own distribution mechanism that was very much independent of government's control, and effectively delivered directly to healthcare facilities that were serving impoverished communities.

One of those communities was the West Point community which was locked down, and in this service we utilized organized community involvement. It is important to note that Guinea, Liberia, and Sierra Leone were ravished by civil wars and this damaged the little infrastructure that these countries had.

Yet, at the onset of the prevailing crisis there were some miscalculations also on the part of the international community. First, the international community should have had the inclination that these three Mano River Union countries of Guinea, Sierra Leone, and Liberia did not have the professional and technical capacity to control the outbreak of Ebola virus, a WHO-classified risk group four or biosafety level four or category A virus.

Second, the international community failed to understand the cultural and traditional ties that exist among the people living in the common geographic region that connects Guinea, Sierra Leone, and Liberia.

In that geographic triangle resides common ethnic groups, example the Kissi and Mandingo, that cannot be separated by political or colonial boundaries.

Third, the response of the international community was seemingly uncoordinated. After looking for a while, the French Government quickly went into Guinea with scientists, doctors and medical supplies to help out.

Then the British Government followed suit, helping Sierra Leone alone. Liberia was left alone for a little while, left alone, and by the mercy of Samaritan's Purse and Doctors Without Borders—we take our hats off to you again—Liberia was being cared for.

As if British and the French Government were saying to Liberia, well, you have got America—let America come to your aid. True to this, in the last several days the U.S. Government has begun taking significant steps toward helping Liberia fight the Ebola crisis.

As the WHO has since declared the Ebola outbreak as a humanitarian crisis and called for a coordinated response, in this regard the Diaspora Liberia Emergency Response Task Force on the Ebola Crisis will kindly call for the following.

One, that Britain, France, and the United States create a triangular coordination of their assistance to the region for Guinea, Sierra Leone, Liberia, and Nigeria.

Two, that the international community, mainly the United States of America, with the WHO should take immediate control of the healthcare system of Liberia and the subregion in order to resuscitate its capacity building.

Three, that the fight against Ebola be conducted through a community-based approach and community empowerment through nongovernmental institutions as civic groups, churches, and community organizations have demonstrated competence and experience in service delivery during the war crisis at a time.

An example will be the Catholic Church through the Catholic Relief Services and now we can make the Diaspora task force as an example and civic society groups that have already organized themselves in Liberia presently. Their acronym is called CASE. These will be viable partners for U.S. Government and international donors.

Four, that the U.S. Government actively and practically supports the proposal of the Diaspora Liberia Emergency Response Task Force for the establishment of a national institute of disease control and prevention in Liberia to conduct disease surveillance and prevent future outbreaks of Ebola and other related diseases and establish a west African institute for disease control and prevention so as to create a network of infectious disease professionals again in Liberia, Nigeria, and Sierra Leone as well as the subregion to conduct disease surveillance and prevent future outbreak of Ebola and other related diseases.

Six, that the United States Government or its aid agencies kindly provide assistance to the Diaspora Liberian, Guinean, and Sierra Leonian initiatives that are aimed at sending Diaspora healthcare professionals among whom are doctors, nurses, public health practitioners, et cetera, to their respective countries on a revolving 6-week basis.

Seven, that the United States Government kindly increase its civilian medical expertise at about 1,000 in the region in Liberia to augment the 3,000 soldiers that will be sent. And this we are currently requesting should come from the Centers for Disease Con-

trol, the National Institute of Health, and the Food and Drug Administration.

On this note, we would like to thank the Government of the United States of America and the Obama administration for the concrete steps it is taking in fighting against Ebola outbreak in Liberia and the subregion.

Thank you, Mr. Chairman.

[A prepared statement was not submitted by Dr. Nyan.]

Mr. SMITH. Dr. Nyan, thank you very much and for your very specific recommendations to the subcommittee and hopefully by extension to the administration and to the rest of Congress.

Just a few questions and, Dr. Akukwe, when you talked about watching Dr. Brantly walking on his own and what a sense of hope that sent to you, that sense of hope is felt here on Capitol Hill in a huge way that Ebola isn't necessarily a death sentence, that some intervention may work.

And my first question to all of you and to Dr. Brantly maybe in particular since he was on the ground dealing with Ebola patients: How do you incentivize doctors and healthcare personnel, other than those who might be ordered to be there as part of a military deployment, how do you incentivize people to take up that huge, not only responsibility, but to incur that risk that comes with it? I know for you, and I watched your press conference when you were with the doctors who had assisted in your recovery, and I was awed by your statement of faith in Jesus Christ, your sense of that motivating you to do what you did in helping those who were suffering so immensely, especially when the Ebola crisis hit, and you might want to elaborate on that because I think it goes unrecognized that even people in governments, even people who are a part of a military deployment, very often it is their faith that is the prime motivator for their tremendous acts of love, compassion, and altruism. If you could maybe elaborate on that.

Dr. BRANTLY. Thank you, Mr. Chairman. I think there are a lot of practical things that people want if they are going to respond to a situation like this.

They want to know that they are going to be safe, that they are going to have the support they need, they will have all the protective equipment they need. But none of that provides motivation.

I think the only way to get volunteers to go serve in these situations, to go serve the people of Liberia and Guinea and Sierra Leone in the midst of this terrible Ebola outbreak, is for people to have some internal motivation and for a lot of us that is our religious faith.

You know, Jesus instructed us, taught us to love your neighbor as yourself, and he told "The Parable of the Good Samaritan" and when he was asked the question: "Who is your neighbor?" the answer is "Whoever is in need; that is who your neighbor is."

So for a lot of people that is and could be and should be their motivation. But even for people who don't hold a close religious faith, for medical professionals—I spoke to the Senate yesterday and said healthcare workers take oaths such as the Hippocratic Oath and all of us from the time we write our application essays for medical school we want to save the world, we want to help peo-

ple, we want to serve people—everybody's application essay says that—but it has to be true.

You have to have a sense of compassion on your fellow man and an internal urge to serve your neighbor, to serve people in need, and I think healthcare workers in this country and other countries need to remember that that was their motivation for getting into the practice of medicine in the first place, and when they have that assurance that they will be supported and provided with the necessary protective equipment that they—many people don't want to make a personal sacrifice—so if they can be compensated for their lost work or they can have someone fill in in their practice to be sure that their patients don't suffer because of their service to others, those things are all helpful. But people have to be motivated from their hearts to go serve.

Mr. SMITH. In your service would you, others—yes, Doctor.

Dr. AKUKWE. Thank you, Chairman Smith. I agree with what Kent said. But there are a couple of other things that we have learned because I served as the first executive chairman of the Africa Diaspora Health Initiative is that there are a series of things that are very critical when you are talking of professionals going into "what they may consider hardship."

First one is about, in addition to faith and commitment, is logistics. They want to be sure that they are going to be safe and that there is an organizing platform. You were asking this morning who is in charge. That is one of the first questions that a typical professional will ask.

Who is, what is the coordinating authority or coordinating body and then while they are in the host country the issue of safety and then, are they going to have basic supplies in order to do their work?

We found out a lot of people, when they do not receive very specific assurances of that, they will not like to deploy. And then, of course, the issue of compensation. Not necessarily getting paid for what they are earning in United States but some form of compensation so they can take care of their families.

And I think also the issue of nonprofits MSF and Samaritan's Purse. The more people get to know what they are doing and they are successful in deploying people in some of these countries, the more you are going to get volunteers.

And then finally, with respect to Africa, the issue of Africans and the Diaspora, when we see what the Indians are doing, what the Chinese are doing in China, the issue of Africans and Diaspora, there are thousands of healthcare professionals.

The National Medical Association has over 25,000 medical doctors. I know they have a program on the Diaspora but that is not well funded. So you do have to help prepare professionals within the Diaspora who with some kind of incentives, perhaps they will be more inclined to deploy to Africa.

Mr. SMITH. Excellent point. Yes, Doctor.

Dr. ALEMAYHU. Thank you, Mr. Chairman. I guess the short answer to your question is really what is the mission of being a medical professional.

I think most doctors and healthcare providers that I know of their mission is very simple. It is to save lives. It may have been

in different very, very difficult situations in the past with the war zones, floods, earthquake disasters, you name it, and every step of the way they go they take a huge risk.

And this is just another challenge and it is not so much of what is in it for them but I think it is so much of what they can do for others and that is—actually that is their mission.

With regards to Africa for a moment, just 1 second, Mr. Chairman, the African Union is doing its best, you know, despite all these tremendous challenges and a lack of resources and everything else.

Currently, they are assembling volunteer medical professionals from across the continent. Apparently, there are about 100 of them are being mobilized and being trained in Ethiopia at the African Union headquarters and supposedly they will be deployed in the next 48 hours or so.

So the African Union does need a lot of help because ultimately I certainly don't want to come before you, and I am sure none of us want to come before this subcommittee, 5 years or 10 years from now.

What we would like to see is hopefully an Africa taking care of Africa's business and challenges, and I think the work could be done as despite what we think about the situation on the ground, the African Union and the African governments should be supported in every effort they are out to accomplish.

And so such as the African CDC is something that the President of the United States mentioned and the African Union is pursuing and the Ethiopian Government introduced this, and I think they are doing fantastic work but they do require a lot of supports. Thank you, sir.

Mr. SMITH. Let me just ask—we are going to have to leave at 1 o'clock because there is another hearing that will have to be convened. But let me just ask the question—Dr. Brantly, you pointed out that a significant surge of medical boots on the ground must happen immediately and I asked that question and it was right from your testimony to our distinguished witnesses in Panel I and I, frankly—I still don't have a sense—the subcommittee members don't have a sense: What is the critical mass that is necessary?

It is hard to build up and build out capacity if you don't know what is needed. You also make an excellent point. I read a couple of articles about how people are getting in taxis and they can't find a bed anywhere and the taxis are actually getting hot—at least that is the way the author of the article put it—you know, potentially putting people at risk who get into the taxi.

And you mentioned that your 120-bed isolation unit in ELWA is turning away as many as 30 infectious disease individuals every day. Where do they go? And again, this idea of home healthcare—can that be set up?

Do you think that is part of the plan? I wish I would have asked that of the earlier panel but I didn't but I will because that ought to be incorporated and integrated, I would think, to a response.

Dr. BRANTLY. Thank you. Let me answer this in an orderly way. The Ebola treatment units are absolutely necessary for handling this outbreak but right now they are insufficient. That is where the home care comes in.

People are staying at home. There are not enough beds and it takes time to construct new units and put beds in them and provide adequate staff.

A unit with beds but without the staff is just a place for people to die and that is more incentive for people to stay home where at least they are with their family. So we have—also have to have the staff, which is—goes to your question as well.

The home healthcare strategy, I believe, has been addressed by the President in his plan when he—I think he committed 400,000 home care kits to be delivered and they have to be delivered without delay and those kits—I am not sure what is contained in them but it has to be not only things like oral rehydration solution and Tylenol to help treat the patient with that supportive care—and there are other types of supportive care that are not possible at home like intravenous fluids and other more technical medical interventions—but we can do some basic things like try to keep people hydrated with oral rehydration and ease their pain or their fever with small doses of Tylenol.

But the more important part of that kit is the equipment to protect the caregiver and that is going to require education of those caregivers as well and that is where I think implementing, employing survivors to help reach their own communities.

You know, survivors are stigmatized and many times can't return to their communities safely. But if they can return to their communities with the support of the authorities with some safety and security to be able to do this lifesaving work of educating their communities, of helping those caregivers provide good care to their patients, their family members in a safe way, I think that is very important and that can be mobilized more quickly than we can build new units. The two have to happen together. But I think the home healthcare needs to start immediately.

As for numbers of medical boots on the ground, Mr. Chairman, obviously I can't give you an exact number but let me give you an idea of what is required to run a unit.

The treatment team is made up of a doctor, two or three nurses or PAs or paramedics and two or three what we call hygienists. The hygienist does not have to be a medical professional.

They have to be safety conscious people who are able to follow instructions and who are willing to do dangerous and difficult work. Those are the people who spray the unit with the chlorine to keep everything sanitized. They take care of the bodily waste of the patients and they deal with the dead bodies when patients pass away.

So if you have this team of five or six individuals it would be one doctor, two or three other healthcare professionals which can be nurses, physician's assistants, paramedics, and then two or three of the hygienists, those people can care for maybe ten patients before—maybe not even that many—maybe five patients before they have to leave the unit because of the difficulty of wearing the personal protective equipment in the heat and you can't drink when you are wearing that equipment; there is a time limitation for how long you can stay in the unit.

I think MSF has or WHO has estimated that for a 100-bed unit you have to have 200 personnel with that breakdown of, you know,

six nurses, PAs, and paramedics for every three hygienists for every one doctor.

So if you had 1,000 patients that needed to be cared for you would need roughly 600 healthcare workers, 100 physicians, and 300 hygienists and that is for people that work 12-hour shifts with no days off.

It requires half of that again to work 12-hours shifts and give people a day off every once in a while. So we are talking about for every 100 patients, 200 personnel or 300, if you want people to be able to take a break and not be burned out after a few days of working.

So it is large numbers but it is not that we need 10,000 doctors. It is that we would need 1,200 nurses, 600 hygienists, and 200 doctors for 2,000 patients. Those are roughly the kinds of numbers we are looking at.

So if we are looking at 10,000 patients in the next few weeks you can see the numbers of healthcare professionals and other volunteers that we would need to treat them.

Dr. AKUKWE. Let me say—in Guinea, Liberia, and Sierra Leone there are lots of trained community health workers who are either out of work, have retired, or have left the healthcare industry.

So as part of work Kent is talking about on home health. It is easy to remobilize these individuals who benefited from very rigorous training 10, 15, 20 years ago—hundreds of them.

Dr. BRANTLY. And Mr. Chairman, may I also say I am not suggesting that all of these people would have to be deployed from the United States of America. There are lots of Liberians in Liberia who can help in this response and in fact there are units—isolation units, Ebola treatment units—that are being run entirely by Liberians.

There is one on the ELWA campus, which we refer to as ELWA II, being headed up by Dr. Jerry Brown and they are having phenomenal success by providing supportive care to patients, nutritional supplementation, vitamins, and providing compassionate care to them, and just in the last couple of days they had 50 patients and they have released 19 survivors.

In the month of August they released 51 survivors. So supportive care works but you just have to have the personnel to provide it.

Mr. SMITH. Before we conclude, is there anything else you would like to add? Any answers to the questions that might have been posed earlier to Panel I that you think you would like to address? Anybody? Yes, Doctor.

Dr. ALEMAYWU. Just quickly, Mr. Chairman. What one key piece that I have not heard us talking about is the psychological part of this whole thing. I am delighted to be joined by Dr. Judy Kuriansky from Columbia University—she is also a board member—it is unthinkable what is going on now with regards to the psychological challenge and the fear, and, of course, we have forgotten one huge piece in this which is the traditional healers—the traditional doctors, if you can call them that—because the locals, whether we like it or not, they believe who they know and who they trust, not so much of the outside forces coming to save them.

And I think getting those elements in place and letting them be a part of the solution making process is absolutely key. Thank you, sir.

Dr. AKUKWE. And you need to know, from the earlier discussion—the problem is that I think in long term beyond the immediate response to Ebola, the next few years you are going to have another outbreak. So what is the best way to assist African countries and manage these outbreaks on their own in the future?

Mr. SMITH. I would like to thank all four of our distinguished panelists for your tremendous insight, your recommendations. I think it will help not only Congress but it will help the administration with your guidance and your wisdom.

And, again, thank you for your leadership. It is extraordinary. The hearing is adjourned.

[Whereupon, at 1:01 p.m., the committee was adjourned.]

APPENDIX

Material Submitted for the Record

SUBCOMMITTEE HEARING NOTICE
COMMITTEE ON FOREIGN AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515-6128

Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations
Christopher H. Smith (R-NJ), Chairman

September 17, 2014

TO: MEMBERS OF THE COMMITTEE ON FOREIGN AFFAIRS

You are respectfully requested to attend an OPEN hearing of the Committee on Foreign Affairs, to be held by the Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations in Room 2172 of the Rayburn House Office Building (and available live on the Committee website at www.foreignaffairs.house.gov):

DATE: Wednesday, September 17, 2014

TIME: 10:00 a.m.

SUBJECT: Global Efforts to Fight Ebola

WITNESSES: Panel I
Anthony S. Fauci, M.D.
Director
National Institute of Allergy and Infectious Diseases
National Institutes of Health
U.S. Department of Health and Human Services

Luciana Borio, M.D.
Director
Office of Counterterrorism and Emerging Threats
Office of the Chief Scientist
U.S. Food and Drug Administration
U.S. Department of Health and Human Services

The Honorable Nancy Lindborg
Assistant Administrator
Bureau for Democracy, Conflict and Humanitarian Assistance
U.S. Agency for International Development

Beth P. Bell, M.D.
Director
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention
U.S. Department of Health & Human Services

Panel II
Kent Brantly, M.D.
Medical Missionary
Samaritan's Purse
(*Survivor of Ebola*)

Chima Akukwe, M.D.
Chair
Africa Working Group
National Academy of Public Administration

Mr. Ted Alemayhu
Founder & Executive Chairman
US Doctors for Africa

Dougbeh Chris Nyan, M.D.
Director of the Secretariat
Diaspora Liberian Emergency Response Task Force on the Ebola Crisis

By Direction of the Chairman

The Committee on Foreign Affairs seeks to make its facilities accessible to persons with disabilities. If you are in need of special accommodations, please call 202-225-5021 at least four business days in advance of the event, whenever practicable. Questions with regard to special accommodations in general (including availability of Committee materials in alternative formats and assistive listening devices) may be directed to the Committee.

COMMITTEE ON FOREIGN AFFAIRS

MINUTES OF SUBCOMMITTEE ON *Africa, Global Health, Global Human Rights, and International Organizations* HEARING

Day *Wednesday* **Date** *September 17, 2014* **Room** *2172 Rayburn HOB*

Starting Time *10:07 a.m.* **Ending Time** *1:01 p.m.*

Recesses [*0*] (____to____) (____to____) (____to____) (____to____) (____to____) (____to____)

Presiding Member(s)

Rep. Chris Smith

Check all of the following that apply:

Open Session [✓]
Executive (closed) Session [ ]
Televised [✓]

Electronically Recorded (taped) [✓]
Stenographic Record [✓]

TITLE OF HEARING:

Global Efforts to Fight Ebola

SUBCOMMITTEE MEMBERS PRESENT:

Rep. Steve Stockman, Rep. Mark Meadows, Rep. Karen Bass, Rep. David Cicilline

NON-SUBCOMMITTEE MEMBERS PRESENT: *(Mark with an * if they are not members of full committee.)*

Rep. Eliot Engel, Rep. Ed Royce, Rep. Michael Burgess*,Rep. Betty McCollum*, Rep. Frank Wolf*

HEARING WITNESSES: Same as meeting notice attached? Yes [✓] **No** [ ]
(If "no", please list below and include title, agency, department, or organization.)

STATEMENTS FOR THE RECORD: *(List any statements submitted for the record.)*

Statement of Rep. Chris Smith, submitted by Rep. Chris Smith
Questions for the record from Rep. Mark Meadows
Statement of Dr. Dougbeh Chris Nyan, submitted by Rep. Chris Smith

TIME SCHEDULED TO RECONVENE _____
or
TIME ADJOURNED *1:01 p.m.*

Gregory B. Simpkins
Subcommittee Staff Director

MATERIAL SUBMITTED FOR THE RECORD BY DOUGBEH CHRIS NYAN, M.D., DIRECTOR OF THE SECRETARIAT, DIASPORA LIBERIAN EMERGENCY RESPONSE TASK FORCE ON THE EBOLA CRISIS

Diaspora Liberia Emergency Response Task Force

Dougbeh Chris Nyan, M.D.
Director of the Secretariat
Diaspora Liberia Emergency Response Task Force on the Ebola Crisis
Testimony to the
House Committee on Foreign Affairs
17th September 2014, Global Efforts to Fight Ebola

Members of the House Subcomittee on Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations

Distinguished Panelists, Specifically Dr. Kent Brantly

Member of the 4th Estate, Ladies and Gentlemen

I would like to thank the organizers of this hearing for the invitation extended the Diaspora Liberia Emergency Response Task Force on the Ebola Crisis to testify on the situation of the current Ebola epidemic in Liberia and the Sub region. We in the Diaspora Liberia Task Force believe that through this medium, US policy makers will have the opportunity of hearing about the Ebola outbreak from a Liberia perspective for the first time. The Diaspora Task Force is an umbrella organization which conglomerates Liberian health care professional organizations, community organizations, and individuals of various professional expertise (medical doctors, nurse, public health practitioners, pharmacists, biomedical research scientists and engineers, journalists, medical psychologists, etc. etc).

From the inception of its nationhood in 1847, Liberia has always maintained a special link to the United States of America and have always played a major role on the world stage. Also, Liberia was always a trusted cold-war ally of the United States. Cognizant of this relationship, Liberians have always turned to the United States for rescue in times of problems, be it economic, social, or political. Today, Liberia along with countries of the Sub region finds itself in a situation that is occasioned by the current Ebola outbreak. This epidemic is dissipating lives, breaking up families, as well as stigmatizing and traumatizing the country and its people.

• P. O. Box 100 Germantown, Maryland 20876 USA • Tel. 240-421-5909 •

It is no secret that the Liberian health care system completely collapsed under the pressure of the Ebola outbreak, while also the Liberian leadership and health authorities have demonstrated an incapability of dealing with the outbreak. Most hospitals are still closed due to the lack of basic medical supplies; health care workers lack the necessary protective equipment. Although, there have been massive in-pour of medical support and supplies from countries of the global communities like China and India, the government has yet to put in place a logistic and distribution mechanism to have these materials delivered to the intended clinics and hospitals. There is also the issue of mistrust and confidence crisis between the citizens and government authorities due to the history of corruption in government, lack of transparency, and a total breach of the people's confidence. The appointment of unqualified personnel (non-medical personnel) as spokespersons or to lead the government's fight against the Ebola outbreak has led to wrong decisions by government that grossly contradict public health disease control and prevention measures. Also, the unprofessional utterances from some non-medical government officials have engendering wide scale disbelief in the general population that the Ebola virus is real. Additional challenges include the lack of trained medical personnel in specialized areas of epidemiological/infectious disease control. On the side of the Diaspora efforts, coordination of logistics across the US has been difficult due to lack of financial resources; reduction of air flights to Liberia and lack of clear policy on duty free process for Ebola equipment and supplies have hampered anti-Ebola efforts from the Diaspora community. These are among the few examples of the looming challenges in the fight against the Ebola outbreak in Liberia.

Notwithstanding, Diaspora Liberians have since embarked on massive mobilization of medical supplies and materials as well as food, and continue to send these items to Liberia on a revolving basis. Partnering with other organizations and foundations, the Diaspora Liberia Emergency Response Task Force on the Ebola Crisis recently airlifted about 4000 lbs of medical supplies to Liberia on August 27, 2014, set up its own distribution mechanism (independent of government) and delivered to health care facilities serving impoverished communities (e.g. the Star of the Sea Clinic in West Point, Monrovia) by utilizing organized community involvement.

It is important to note that Guinea, Liberia, and Sierra Leone were ravaged by civil wars which damaged the little infrastructure that these countries had. Yet, at the onset of providing aid to the region, there were some miscalculations on the part of the international community:

1. First, the international community should have had the inclination that these three Mano River Union countries (of Guinea, Sierra Leone, and Liberia) did not have the professional and technical capacity to control the outbreak of the Ebola virus, a WHO classified Risk Group 4 (or Biosafety Level-4) virus;

2. Second, the international community failed to understand the cultural and traditional family ties that exist among the people living in the common geographic region that connects Guinea, Sierra Leone, and Liberia. In that

geographic triangle, reside common ethnic groups (e.g. the Kissi and Mandigo) that cannot be separated by any political or colonial boundaries.

3. Third, the response of the international community was seemingly uncoordinated: after looking on for a while, the French government quickly went in with scientists, doctors, and medical supplies to help Guinea; then the British government followed suit, helping Sierra Leone; Liberia was left alone for a long while, left only to the mercy of Samaritan's Purse and Doctors Without Borders (MSF). As if Britain and France were saying to Liberia…..*well Liberia, you have got America; let America come to your aid.* True to this in the last several days, the US government has begun taking significant steps towards helping Liberia fight the Ebola outbreak.

The WHO has since declared the Ebola outbreak as a humanitarian crisis and called for a coordinated response. In this regards, the Diaspora Liberia Emergency Response Task Force on the Ebola Crisis calls for the following:

1. That Britain, France, and the United States create a triangular coordination of their assistance to the region (for Guinea, Sierra Leone, Liberia, and Nigeria);

2. That the international community (mainly the WHO and the US) should immediately take over the health care system of Liberia in order to resuscitate it with capacity building;

3. That the fight against Ebola be conducted through a community-based approach and community empowerment through non-governmental institutions such as civic society groups, the churches and community organizations who have demonstrated competence and experience in service delivery in the past (e.g. the Catholic Church and the Diaspora Task Force, and the civic society group that have already organized under one umbrella called CSAE in Liberia); these will be viable partners for US government and international donors;

4. That the US government actively and practically supports the proposals of the Diaspora Liberia Emergency Response Task Force for the establishment of a National Institute for Disease Control and Prevention in Liberia to conduct disease surveillance and prevent future outbreak of Ebola and other related diseases, and

5. Establish a West African Institute for Disease Control and Prevention so as to create a network of infectious disease professionals in Guinea, Liberia, Nigeria, and Sierra Leone to conduct disease surveillance and prevent future outbreak of Ebola and other related diseases.

6. That the US government or its aid agency provide assistance for the Diaspora Liberian, Guinean, and Sierra Leonean initiatives aim at sending Diaspora

health care professionals (doctors, nurses, CNAs, public health practitioners, ect.) to their respective countries on a 6 weeks rotational basis;

7. That the United States government increase its civilian medical expertise by about 1000 in Liberia and the region through the US Center for Disease Control (CDC), the National Institutes of Health (NIH) and the Food and Drugs Administration (FDA);

On this note, we like to thank the government of the United States of America and the Obama administration for the concrete steps it is taking in the fight against the Ebola outbreak in Liberia.

Thank you very much for the opportunity!

QUESTIONS FOR THE RECORD OF THE HONORABLE MARK MEADOWS

SUBCOMMITTEE ON AFRICA, GLOBAL HEALTH, GLOBAL HUMAN RIGHTS, AND INTERNATIONAL ORGANIZATIONS,
COMMITTEE ON FOREIGN AFFAIRS, U.S. HOUSE OF REPRESENTATIVES
"Global Efforts to Fight Ebola"
September 17, 2014

1. Provided success of clinical trials, is there a plan to accelerate the regulatory approval of therapies and vaccines that are currently in development to treat Ebola, and if so, what has been the extent of interactions between regulators and sponsors?

[RESPONSE NOT RECEIVED AT TIME OF PRINTING]

2. If treatment(s) for Ebola is/are approved, can you detail the extent of planning that has taken place thus far to ensure that treatment(s) are able to be paid for and distributed in an effective manner?

[RESPONSE NOT RECEIVED AT TIME OF PRINTING]

3. What is the Administration doing to educate Americans about how to protect themselves when traveling?

[RESPONSE NOT RECEIVED AT TIME OF PRINTING]

4. Does the Administration have a plan in place, if the virus spreads beyond its current locations? Have these plans been clearly communicated to state, local and tribal governments?

[RESPONSE NOT RECEIVED AT TIME OF PRINTING]

5. The African nations are trying to fight & contain the Ebola outbreak, as well as keep their fragile economies on track. With the potential slowing of the economies of these countries, what kind of economic challenges are, or could, these countries encounter due to this outbreak? What can US companies with a presence in the region do to mitigate these risks? Particularly those outside of the healthcare industry?

[RESPONSE NOT RECEIVED AT TIME OF PRINTING]

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